

Database on Irish Forestry and Forest Products Literature of the 20<sup>th</sup> Century

Compiled by Brian Galvin

**Number**

1

**Author**

Hendrick E., OCarroll N.O., Pfeifer A.R.

**Title**

Effect of ploughing direction and method on the stem form of south coastal lodgepole pine.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1984

**Source**

Irish Forestry

**Volume**

Vol. 41, No. 2

**Key Word**

ploughing direction stem form, lodgepole pine, silviculture, Pinus contorta

**Abstract**

The effect of ploughing direction and method on the stem form of lodgepole pine was assessed in two replicated field experiments on low level blanket peat in Co. Mayo. Four ploughing methods were tested and compared. Tunnel ploughing, a form of subsurface drainage, resulted in significantly less sweep than the open furrow methods.

**Page**

pp 66-76

**Location**

Coillte Research Division

**ISBN**

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**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4.

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**Number**

2

**Author**

Forest and Wildlife Service

**Title**

An investigation into biomass production on blanket peat.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service. Research Communication No. 19

**Date**

1978

**Key Word**

biomass production, nutrient cycles, blanket peat, total dry matter production, silviculture, litter fall, soil nutrients, peatlands

**Abstract**

This report examines the results of an investigation into biomass production and nutrient cycles in Sitka spruce and lodgepole pine on blanket peat in Glenamoy, Co. Mayo. Total dry matter production is estimated for the period 1969-72 inclusive. Litter fall and nutrient levels in soil and the tree crop are estimated for lodgepole pine. The methods used to estimate litter fall and nutrient levels are not considered reliable. However, because of the absence of information on nutrient levels and litter falls the estimates are included.

**Page**

26p

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**Number**

3

**Author**

Carey M.L., McCarthy R.G., Miller H.G.

**Title**

More on nursing mixtures.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1988

**Source**

Irish Forestry

**Volume**

Vol. 45, No. 1

**Key Word**

nursing mixtures, nitrogen turnover, mycorrhizal fungal flora, silviculture, Sitka spruce, Japanese larch, Larix kaempferi, Picea sitchensis, soil nutrients, thinning

**Abstract**

Sitka spruce mixtures with Japanese larch, Scots pine and lodgepole pine lead to an enhancement in the growth of Sitka spruce via increased nitrogen turnover in soils. This increased turnover is affected by mycorrhizal fungal flora. Mixtures are particularly apt on nitrogen deficient sites such as oligotrophic peats and podsolised mineral soils. In situations where windthrow is problematic, slow-growing lodgepole pine or Scots pine will lead to self-thinning mixtures while increasing nitrogen turn-over is ensured.

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**Address of author**

Coillte Research and Technology, Sidmonton Place, Bray, Co. Wicklow

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**Number**

4

**Author**

Fitzsimons B.

**Title**

An assessment of the extent of basal sweep in south coastal lodgepole pine.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1988

**Source**

Irish Forestry

**Volume**

Vol. 45, No. 1

**Key Word**

basal sweep, lodgepole pine, tree stability, stem form, thinning, Pinus contorta, silviculture, joinery timber, timber quality

**Abstract**

Lodgepole pine is a species which causes great difficulties for the forest manager. Washington and Oregon provenances are the most extensively planted provenances but are affected by problems of stability and poor stem form. It has been shown that, given the right environment, lodgepole pine from these origins can produce logs of good joinery quality. In the trial the average extent of sweep was 12.9 degrees. This was reduced to 9.2 degrees after selection of final crops trees. Selective thinning yielded 80% of stands giving joinery quality timber. Without selective thinning 60% of stands appear to have joinery potential.

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**Address of author**

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**Number**

5

**Author**

Evertsen J.A.

**Title**

Potential end-use applications of lodgepole pine in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1988

**Source**

Irish Forestry

**Volume**

Vol. 45, No. 1

**Key Word**

log quality, lodgepole pine, timber processing, manufacturing, timber utilisation, production, Pinus contorta, log quality, pulpwood

**Abstract**

During the next decade the realisation of the potential of lodgepole pine as high end-value product is imperative as increased volumes become available. Import substitution is a possibility for this species' timber. Lodgepole pine comprises 21% of total afforestation in 1988. Log quality and timber properties influence the end-use applications of the timber. Large saw-log will comprise 9% of the total volume produced and the volume of pulpwood that will become available is forecast at 259,000,000 cubic metres during the next decade.

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**Address of author**

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**Number**

6

**Author**

Convery Frank J.

**Title**

Tree farming in Ireland: potential and prospects.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Irish Forestry

**Volume**

Vol. 37, No. 2

**Key Word**

tree farming, drumlin soils, Gundelach plan, Leitrim, flushed soils, gley soils, land use, silviculture, marginal land, afforestation

**Abstract**

Drumlin soils are remarkably productive for tree growth according to available productivity estimates. The Agricultural Institute concluded that much of the drumlin area of County Leitrim can be afforested to the national advantage. In order to allay fears and suspicions of people in drumlin areas, it should be made clear that only landowners wishing to participate in tree farming need do so.

**Page**

pp 99 -106

**Location**

Coillte library

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**Address of author**

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**Number**

7

**Author**

Lynch Ted

**Title**

A thinning experiment in Avoca Forest: results over 23 years.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1988

**Source**

Irish Forestry

**Volume**

Vol. 45, No. 1

**Key Word**

thinning, basal area, volume increment, silviculture, crop productivity, effects of thinning, rotation period

**Abstract**

During the spring of 1964, a thinning experiment was established in Avoca Forest, Co. Wicklow. The object of the experiment was to "determine the effects of thinning to different levels of standing basal area after treatment, on basal areas and volume increment, diameter and height of the 40 largest stems per acre and diameter assortments of the crop". There were no management tables at the time, and therefore no recognised thinning prescription which was consistent with crop productivity. On free-draining, stable sites heavy thinning offers a series of lucrative thinnings with very little deleterious effects on production. Also the economic rotation of a Sitka spruce crop can be significantly shortened with heavy thinning because of the early attainment of tree sizes which yield maximum values.

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**Address of author**

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**Number**

8

**Author**

Rushton Brian S., Toner Anne E.

**Title**

A comparative study of wind damage to the leaves of ash (*Fraxinus excelsior* L.) and sycamore (*Acer pseudoplatanus* L.)

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1988

**Source**

Irish Forestry

**Volume**

Vol. 45, No. 1

**Key Word**

leaf damage, regression analysis, ash, sycamore, *Fraxinus excelsior* L., *Acer pseudoplatanus* L., wind damage

**Abstract**

99.2% of all sycamore leaves and 88.8% of all ash leaves, at a site assessed about 5km from the coast of Derry in 1986, were found to have suffered some degree of wind damage. The mean area of damage for all the sycamore leaves was 2.41% whilst that for ash was significantly lower at 1.38%. Regression analysis established that there was a positive relationship between percentage damage and leaf area in sycamore, but the relationship for ash was not significant.

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**Address of author**

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**Number**

9

**Author**

McAdam J.H.

**Title**

The pulp potential and paper properties of willows with reference to *Salix viminalis*.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1987

**Source**

Irish Forestry

**Volume**

Vol. 44, No. 1

**Key Word**

willow, *Salix viminalis*, pulp, paper properties, pulping process, bleaching, forest products, chemical treatments, pulp yields, timber processing

**Abstract**

In view of the early interest shown in growing willows as a novel source of pulpwood in Northern Ireland a review of the pulp and paper properties of the genus *Salix* was carried out. In general, pulp yields were acceptable and the quantities of chemicals consumed in the pulping process were not excessive. A practical evaluation of the pulp and properties of the juvenile *Salix viminalis* was high. A high-strength pulp with barely adequate drainage properties was produced. This would tend to limit the range of paper types for which the pulp would be suitable but this range could probably be increased by using more mature stems from plants grown on a longer harvesting cycle.

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**Address of author**

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**Number**

10

**Author**

Durand J.

**Title**

Building a national resource, fifty years of Irish forestry. (The text of the 1992 Augustine Henry memorial lecture given by Dr. Jack Durand to a public meeting at U.C.D. Belfield, March 1992)

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1992

**Source**

Irish Forestry

**Volume**

Vol. 49, Nos. 1 & 2

**Key Word**

forestry history, Society of Irish Foresters, Wildlife Act, Coillte, EC, EU, education and training, State forestry, forestry development, European Community, European Union

**Abstract**

The author's account of the history of Irish forestry begins with the purchase of Avondale by the early Dept. of Agriculture in 1904. The foundation of the Society of Irish Foresters in 1943 and its development over the next 50 years are recounted. The great expansion in forest planting after the war was facilitated by new techniques in drainage and ploughing and, later, by the increasing mechanisation of the industry in the 50s and 60s. The establishment of a commercial semi-state forestry company, Coillte Teoranta, is identified as the most important development in state forestry since its beginning.

**Page**

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**Number**

11

**Author**

Schaible Richard

**Title**

Sitka spruce in the 21st century, establishment and nutrition.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1992

**Source**

Irish Forestry

**Volume**

Vol. 49, Nos. 1 & 2

**Key Word**

ground preparation, site degradation, fertilisers, Sitka spruce, natural regeneration, productivity, nutrient deficiencies, silviculture, mechanical ground preparation, *Picea sitchensis*

**Abstract**

Historically, new plantations of Sitka spruce were planted on a raised, weed-free planting position in Ireland and Great Britain using manual or mechanical techniques. Some of the benefits of mechanical ground preparation can be achieved using herbicides. The application to second rotation sites of the results of research and development of mechanical ground preparation methods for afforestation is speculative. Phosphate and nitrogen fertilisers have been necessary on most upland sites.

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**Number**

12

**Author**

Thompson D.G., Pfeifer A.R.

**Title**

Future options for the genetic improvement of conifers. Part I: Current and near-term technologies.

**Publisher**

Society of Irish Foresters

**Place**

Bray

**Date**

1992

**Source**

Irish Forestry

**Volume**

Vol. 49, Nos. 1 & 2

**Key Word**

selection, flowering stimulation, vegetative propagation, crop ideotypes, tree improvement, progeny testing, tree breeding, genetic improvement, conifer, genetic control, photosynthesis silviculture, genetic improvement, genetics

**Abstract**

Natural forest ecosystems are less productive than their theoretical net productivity rates. This difference can be lessened by silvicultural methods, including genetic improvement. This paper summarises current and near-term (within 5 years) technologies including early selection, flower stimulation, vegetative propagation and crop ideotypes and describes how these are used to reduce the time required to breed and put into use genetically improved material.

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**Address of author**

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**Number**

13

**Author**

Downes Anne, Whelan John

**Title**

A study of the impact of the European wild rabbit (*Oryctolagus cuniculus* L.) on young tree plantations.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1992

**Source**

Irish Forestry

**Volume**

Vol. 49, Nos. 1 & 2

**Key Word**

rabbit damage, young tree plantations, shoot damage, stem damage, control measures, forest protection, pedunculate oak *Quercus robur* L., ash, *Fraxinus excelsior*, Sitka spruce, *Picea sitchensis* (Bong.) Carr, Japanese larch, *Larix kaempferi* L., Beech, *Fagus sylvatica* L., sweet chestnut, *Castanea sativa* L., Douglas fir, *Pseudotsuga menziesii*, wildlife

**Abstract**

Four tree species are identified as being susceptible to rabbit damage to the leading shoot, side-shoots or to the stem. These are pedunculate oak (*Quercus robur* L.), ash (*Fraxinus excelsior*), Sitka spruce (*Picea sitchensis* (Bong.) Carr) and Japanese larch (*Larix kaempferi* L.). Relatively low levels of damage were displayed by beech (*Fagus sylvatica* L.), sweet chestnut (*Castanea sativa* L.) and Dougals fir (*Pseudotsuga menziesii*). Differences between tree species in susceptibility to different forms of rabbit damage are identified as being due to a number of interrelated factors, which were ecological, chemical and physical in nature.

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**Address of author**

Regional Technical College, Dundalk Co. Louth

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**Number**

14

**Author**

Culleton N., Bulfin M.

**Title**

Effects of weed and grass control on the establishment of *Fraxinus excelsior* L.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1992

**Source**

Irish Forestry

**Volume**

Vol. 49, Nos. 1 & 2

**Key Word**

*Fraxinus excelsior* L., ash, weed control, soil moisture, grass, forest protection

**Abstract**

*Fraxinus excelsior* L. was planted at Johnstown Castle, Co. Wexford in a loam to clay loam soil which had previously been used for intensive beef production. Weed control, using glyphosate, was practised on part of the site for three consecutive years, the rest remained untreated. In treated plots tree height averaged 220 cm after three growing seasons. Where no weed control was applied 75cm was the mean height attained. The mean values for tree width was at 30cm was 27mm for treated plots and 10mm for untreated plots. In treated plots with complete weed control 70% of trees were of medium and good quality. Where no weed control was applied 32% of trees were of medium and good quality. It is suggested that vegetation competing for moisture, rather than nutrients, was the main reason for the poor growth in the control plots.

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**Address of author**

Teagasc, Kinsealy Research and Development Centre, Malahide Road Dublin 17.

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**Number**

15

**Author**

Carey M.L.

**Title**

Forest decline and acid rain - some facts and fallacies.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1987

**Source**

Irish Forestry

**Volume**

Vol. 44, No. 1

**Key Word**

acid rain, forest decline, soil fertility, sulphur dioxide, *Elatobium abietinum*, *Lophodermium* spp, *Rhizosphaera kalkhoffii*, air pollution, nitrous oxide, ozone, environment, forest ecology

**Abstract**

The acid rain controversy and forest decline in Europe are reviewed. Although forest damage is extensive, there are suggestions that much of it may be due to factors other than changes in atmospheric chemistry. A combination of elevated ozone levels, acid mists, fogs and frosts, following drought years, seems the most plausible hypothesis in areas worst affected. Low soil fertility may accentuate the problem. Rainfall acidity is less in Ireland compared with the rest of Europe and projected emissions of sulphur dioxide from generating stations appear to be of little consequence to Irish forests.

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**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

16

**Author**

Bulfin Michael

**Title**

Availability of land for forestry in Ireland and its suitability for Sitka spruce (*Picea sitchensis* (Bong.) Carr).

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1987

**Source**

Irish Forestry

**Volume**

Vol. 44, No. 1

**Key Word**

*Picea sitchensis*, Sitka spruce, State afforestation, private forestry, farmer forestry, marginal land, agricultural

soils, land availability, grants, support systems, land use, land acquisition, forestry policy

**Abstract**

The author notes the government's inability to take advantage of falling land prices to consolidate forest holdings. At least 10,000 hectares will need to be planted for a further 15 years to ensure stability of supply to the timber industry. It is unlikely that private institutional afforestation will make up for the shortfall caused by government cutbacks in the State's forestry programme. Support for farmer afforestation is suggested as a partial solution to the reduction in planting.

**Page**

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**Address of author**

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**Number**

17

**Author**

Nieuwenhuis Maarten

**Title**

Road systems in forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1987

**Source**

Irish Forestry

**Volume**

Vol. 44, No. 1

**Key Word**

road construction, road maintenance, forest roads, transportation, geotextiles, geographic information systems, planning, GIS, economics, road networks, harvest transportation costs, harvesting

**Abstract**

The high costs of forest road construction, maintenance, and timber transportation warrant extensive planning of forest road network layout. Two factors have to be considered during the planning process: road density, which influences off-road transportation distances; and road class, which relates to trucking and road maintenance costs. In order to establish well planned forest roads, it is essential that the planning process involves the total network, not individual roads or road networks. Current research, including computerised road location procedures, the use of geotextiles in road construction, and the development of a central tyre inflation concept, will have an important impact on the control of future harvest transportation costs.

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**Address of author**

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**Number**

18

**Author**

Fallon J.

**Title**

The utilisation of timber by the ESB.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1987

**Source**

Irish Forestry

**Volume**

Vol. 44, No. 1

**Key Word**

transmission poles, pole dimensions, Douglas fir, larch, timber preservation, pressure treatment, full cell process, empty cell process, electricity supply, ESB, energy. Larix, Pseudotsuga menziesii

**Abstract**

The Electricity Supply Board has sole responsibility for generation, transmission, distribution and sale of electricity in the Republic of Ireland. Its main timber requirements are 17 kilovolt transmission poles, 38 kv distribution poles and smaller wood in the form of cattleguard, staylog, marker boards, sleepers and bog boards. Preservation of the timbers are carried out by use of a creosote oil or water-borne preservative. After preservation the poles are impregnated by the Bethell (full cell) process or the Reuping (empty cell) process.

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**Address of author**

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**Number**

19

**Author**

Clear T.

**Title**

Forestry - a personal view.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Irish Forestry

**Volume**

Vol. 37, No. 2

**Key Word**

forestry policy, forestry education, silviculture, management tables, European forestry, tree farming, forest history, silviculture

**Abstract**

This is the author's overview of Irish forestry from 1929 to 1979. He describes past policies and procedures and the early Irish forestry pioneers who are especially noted for introducing Sitka spruce and lodgepole pine into Ireland. He also comments on the development of forestry education, and in particular the NUI's faculty of agriculture. Forestry in the West of Ireland before the emergency, forestry in the Slieve Blooms, Scots pine on upland sites, ploughing, soil research, management tables, timber use and European forestry decline are also dealt with.

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**Number**

20

**Author**

Gilliland John

**Title**

A re-appraisal of Irish silvicultural practices.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Irish Forestry

**Volume**

Vol. 37, No. 2

**Key Word**

Oceanic system, selection systems, spacing, windthrow, thinning, silvicultural systems, silviculture

**Abstract**

Irish silvicultural practices are essentially continental in style, even though our wet climate and moisture retentive soils mean Sitka spruce and lodgepole pine are our main tree crops. Norway spruce is the prevalent tree on mainland Europe. Thinning difficulties are considered to be of great concern in Ireland and wide initial spacing or re-spacing are needed to deal with the windthrow problem. The Oceanic system, also called early final selection system, is advocated for Ireland but is not considered suitable for lodgepole pine plantations. A re-appraisal of Irish silvicultural practices is advocated.

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**Number**

21

**Author**

Nelson E. Charles

**Title**

What is the correct name for the Dunkeld Hybrid Larch (*Larix decidua* x *L. leptolepis*)

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Irish Forestry

**Volume**

Vol. 37, No. 2

**Key Word**

Larix decidua, Larix leptolepis, Larix kaempferi, Larix sibirica, Larix marischlinsii, Larix x henryana, European larch, hybrid larch, Japanese larch, Siberian larch, taxonomy, botany

**Abstract**

The name *Larix eurolepis*, widely used for the larch hybrid originally raised at Dunkeld in Scotland between *L. leptolepis* (Japanese larch) and *L. decidua* (European larch) is shown to be invalid and, it is argued, should be replaced by the earlier name *L. x henryana*, which commemorates Augustine Henry. However, it is noted that if the parentage of *L. x marschlinsii* can be determined beyond reasonable doubt, this name could take priority over the other two. At present *L. x marschlinsii* is considered to have arisen when *L. leptolepis* crossed with either *L. sibirica* (Siberian larch) or *L. decidua*.

**Page**

pp 112 - 118

**Location**

Coillte library

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**Address of author**

National Botanic Gardens, Glasnevin Dublin 9.

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**Number**

22

**Author**

Anderson M.L.

**Title**

Items of forestry interest from the Irish statutes prior to 1800 A.D.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

Nov, 1944

**Source**

Irish Forestry

**Volume**

Vol. 1, No. 2

**Key Word**

legislation, Statutes, Irish Parliament, law, history, Acts, forestry policy, seventeenth century planting, eighteenth century planting

**Abstract**

The period 1600 to 1800 is an extremely important one in Irish forestry because a very considerable proportion of the mature trees felled in recent years were either planted towards the end of that period or as a result of legislation enacted during that period. The article deals with all items of forestry interest contained in the Irish Statutes enacted by the Irish Parliament during the period, whether of a silvicultural, management, protection or utilisation character.

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**Number**

23

**Author**

McEvoy T.

**Title**

Irish native woodlands: their present conditions.

**Publisher**

Society of Irish Foresters

**Place**

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**Date**

Nov, 1944

**Source**

Irish Forestry

**Volume**

Vol. 1, No. 2

**Key Word**

coppice, native species, naturalised species, introduced species, Irish woodlands, silviculture, coppicing

**Abstract**

Less than 50,000 acres (or one third of 1% of the land surface) of native woodland still exists, even in semi-natural conditions. The largest part owes its survival to its position on steep rocky slopes which are incapable of being cultivated, e.g. Arklow to Rathdrum and Aughrim. While coppicing, a traditional English method of oakwood exploitation was carried out in some native woodlands, it was not practised widely. After 1820, oak coppice became uneconomic as did most hardwood coppicing. Scots pine and larch coppicing developed, but during the second world war the treatment of oak coppice became more common. Sessile oak and pedunculate oak occur on siliceous and non-acidic sites respectively. Oak, birch, elm, alder, poplars, willows, rowan, yew, white beam, strawberry tree, beech, sycamore and Scots pine are naturalised introductions.

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24

**Author**

Clear T.

**Title**

The role of mixed woods in Irish silviculture.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

Nov, 1944

**Source**

Irish Forestry

**Volume**

Vol. 1, No. 2

**Key Word**

mixtures, bio-diversity, nursery practice, planting, pioneer species, silviculture, oak ash mixtures, frost protection

**Abstract**

There is an increased interest in the role of 'good companion' and pioneer species in the maintenance of healthy conditions in the forest. A number of Avondale mixtures show how successful these mixtures have been. Comparisons between sessile oak and shade bearing beech show that beech rapidly outgrew the light-demanding oak. Light-tolerant oak and ash mixtures failed. Temporary mixtures of larch and Scots pine gain most by the indicator *Erica cinerea*. Rare exotics and certain hardwoods are expensive if the full compliment of plants is used. Inexpensive fillers are used, e.g. Japanese larch was suppressive to its Norway spruce filler. Frost protection of Sitka spruce by mixture with Japanese larch is examined.

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**Number**

25

**Author**

Magan A.T.S.

**Title**

Some views on the private forests of Ireland, past and present.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1944

**Source**

Irish Forestry

**Volume**

Vol. 1, No. 2

**Key Word**

Oak woods, natural forests, replanting, private forests, natural regeneration, coniferous woodlands, woodcock cover, game, hunting

**Abstract**

The author deals with the use of coniferous woodland for woodcock cover in Ireland. He criticises under-planting with rhododendron, dog-wood and laurel. The natural oak forest at Mote Park, Co. Roscommon regenerated naturally until it was invaded by ivy. Ash and sycamore are the only natural regenerating species. The suggests that the potential of planting Californian redwoods in Ireland should be examined.

**Page**

pp 36 - 41

**Location**

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**Number**

26

**Author**

Fitzpatrick H.M.

**Title**

Some methods of estimating the volume of timber in woods and plantations.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

Nov, 1944

**Source**

Irish Forestry

**Volume**

Vol. 1, No. 2

**Key Word**

volume estimates, Hardy's method, Ulrich's method, girthing, sample plots, basal area, wood volume

**Abstract**

All methods of estimating the volume of woods and plantations have as their basic principle an accurate count of all trees and an accurate measurement of one or more sample trees. Sample plot data and girthing of stems are important as is the method of calculation of mensurational data. The total volume of the plantation or wood is the most relevant.

**Page**

pp 46 - 49

**Location**

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**Number**

27

**Author**

Convery Frank J.

**Title**

Rural land use and the balance of payments.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1973

**Source**

Irish Forestry

**Volume**

Vol. 30, No. 1

**Key Word**

yield class, Sitka spruce, saw-milling, timber processing, economics revenue, land use, economic growth, fiscal policy, agriculture, Picea sitchensis, lowland drumlin soils, marginal land

**Abstract**

The author discusses a recently completed study comparing forestry and agriculture as land uses on the lowland drumlin soils of County Leitrim. The article concentrates on the likely effect of the two uses on the nation's balance of payments. It is demonstrated that the land is very productive for wood production and the value added in processing wood is high relative to grassland products. Therefore forestry is a much higher generator of foreign earnings per land unit on lowland drumlin soils than forage products.

**Page**

pp 4 - 15

**Location**

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Available

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**Number**

28

**Author**

Convery Frank J.

**Title**

Diversity and Irish forestry policy.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1973

**Source**

Irish Forestry

**Volume**

Vol. 30, No. 1

**Key Word**

rural development, forestry policy, economics, amenity forestry, State afforestation, land use, diversification, economics, private forestry

**Abstract**

The author recommends increased investment in forestry, not only because of the strong forward linkage associated with the industry, but also because it can play an important role in diversifying an unstable rural economy. Although there has been a strong degree of support for a policy of afforestation among politicians and the general public, the author is not optimistic about the expansion of State forests. Rising land prices, and consequent resentment of farmers at Forest and Wildlife Service intervention in the land market, will make the target of 10,000 hectares expansion increasingly difficult to maintain. An integrated approach to rural land use planning in Ireland is recommended. Diversity of species, ideas, interest groups, and power bases provides the best hope of sustaining and expanding a viable forestry estate.

**Page**

pp 4 - 20

**Location**

Coillte library

**Notes**

available

**Address of author**

UCD Environmental Institute Richview, Clonskeagh Drive Dublin 14

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**Number**

29

**Author**

Mooney O.V.

**Title**

An unusual frost in September 1972.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1973

**Source**

Irish Forestry

**Volume**

Vol. 30, No. 1

**Key Word**

frost, winter cold, frost lift, hardening off, Sitka spruce, Scots pine, Douglas fir, climate, temperature, Pinus sylvestris, Picea sitchensis

**Abstract**

Frost lift is the main hazard for seedlings in Ireland. In September 1972 an exceptional frost, with gross minimum temperatures commonly less than 5 degrees C. occurred in the midlands and west. Sitka spruce, Scots pine and Douglas fir in particular were badly affected. Sitka is the most resilient of the three species.

**Page**

pp 21 -24

**Location**

Coillte library

**Notes**

available

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**Number**

30

**Author**

McCracken Eileen

**Title**

Six 18th century letters.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1973

**Source**

Irish Forestry

**Volume**

Vol. 30, No. 1

**Key Word**

elm, poplar, yews, laurel, fir, walnut, birch, forest nurseries, pruning, oak, pine, eighteenth century history, Henry Boyle, Anthony Foster, planting, garden history

**Abstract**

The letters reproduced are of interest to foresters in that they describe some planting at a relatively early date and they illustrate the difficulties the early planters had in obtaining trees. They were all written in the eighteenth century. The topics covered include transporting trees by horse, obtaining 'elms', grafting and planting oak and sowing of pine seeds. Four of the letters were written by various employees to Henry Boyle, the Earl of Shannon, and two are from Anthony Foster to Sir Maurice Crosby.

**Page**

pp 25 - 28

**Location**

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**Number**

31

**Author**

McLoughlin Aiden J.

**Title**

Microbial utilization of cellulosic materials as a commercial venture.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1972

**Source**

Irish Forestry

**Volume**

Vol. 29, No. 1

**Key Word**

wood sugar, fermentation, cellulose conversion, hydrogenation, oxidation, dehydration, lignins, protein, yeast, enzymes, hydrolysis, microbe, cellulosic materials, wood products, hydrolysed wood, chemistry, forest products, wood sugar

**Abstract**

The possibility of using hydrolysed wood as a source of fermentable carbohydrate has been recognised for many years. Forests are a source of this carbohydrate. Conversion of cellulosic material to 'wood sugar' involves the breakdown of high polymer carbohydrates and the hydrolysis of the bonds between them and other compounds. Several processes may achieve this: the Bergius-Rheinau process; the Scholler-Tornesch process; the Giordanie-Leone process; the Madison process; and the sulphite process. Lignins and fermentation based on wood provides a wide range of products such as proteins and alcohols.

**Page**

pp 15 - 19

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Industrial Microbiology, UCD, Belfield Dublin 4

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**Number**

32

**Author**

O'Carroll N.

**Title**

Chemical weed control and its effect on the response to potassium fertilisation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1972

**Source**

Irish Forestry

**Volume**

Vol. 29. No. 1

**Key Word**

growth check, frost damage, hardening off, weed competition, nutrient deficiency, fertilisers, factorial experiments, Sitka spruce, tree growth, ground vegetation, foliar analysis, herbicides, forest protection, *Picea sitchensis*, *Picea abies*

**Abstract**

Growth check of Norway spruce and Scots pine on reed swamp peat appeared to be due to potassium deficiency. Ground vegetation may prevent the efficient utilisation of applied potassium in 20 - 22 year old crops. In two of three to eight year old crops, which had potassium fertiliser application and annual vegetation control treatments, potassium deficiency was severe. Vegetation control on its own gave some small growth increase compared with potassium alone but tended to decrease growth or be ineffective when the treatments were combined. On the third site where the potassium deficiency was milder there were indications that N and P deficiency may be limiting growth. Potassium fertilisation significantly increased late frost damage.

**Page**

pp 20 - 31

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Department of Agriculture, Food and Forestry, Leeson Lane Dublin 2

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**Number**

33

**Author**

De Brit G.

**Title**

Cocoon size and sex in the European pine saw fly.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1972

**Source**

Irish Forestry

**Volume**

Vol. 29, No. 1

**Key Word**

European pine sawfly, Neodiprion sertifer, insects, forest pests, entomology, forest protection

**Abstract**

Recent investigations have demonstrated that the cocoon of adult female European pine flies was larger than that of the male. Tests were carried out on a sample size of 300.

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**Number**

34

**Author**

Farrell E.P, McAleese D.M.

**Title**

The response of Sitka spruce to sulphate of ammonia and ground rock phosphate on peat.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1972

**Source**

Irish Forestry

**Volume**

Vol. 29, No. 2

**Key Word**

fertilisers, ammonium sulphate, ground rock phosphate, factorial experiments, foliar analysis Sitka spruce, peat, vegetation, height increment, leader breakage, silviculture, Picea sitchensis, peatlands

**Abstract**

Results from an experiment on Sitka spruce, which had ground rock phosphate and sulphate of ammonia supplied 5 and 7 years post planting, demonstrate that both fertilisers significantly increased height growth. Both reduced foliar nitrogen and foliar potassium concentrations significantly. It was shown that leader breakage and total tree height are related.

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pp 14 - 15

**Location**

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**Number**

35

**Author**

Deasy J.J.

**Title**

Labour cost trends in forest nurseries.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1972

**Source**

Irish Forestry

**Volume**

Vol. 29, No. 2

**Key Word**

forest nurseries, labour costs, herbicides, rotation, weeding transplanting, fertilisers, wages,

**Abstract**

Costs of producing planting stock in the Forest and Wildlife Service have been reduced appreciably since the early 1960s. About this time small, manually operated nurseries began to close and larger mechanised operations became more common. Costs reductions were achieved in the areas of weeding of seed beds and transplant lines. The use of herbicides contributed significantly to these savings. Improved rotation practices are also important. Lining out accounts for the highest percentage of nursery costs at 31.8%.

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**Location**

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**Number**

36

**Author**

Gallagher G.

**Title**

Some patterns in crop structure and productivity for unthinned Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1972

**Source**

Irish Forestry

**Volume**

Vol. 29, No. 2

**Key Word**

crop structure, unthinned sites, site productivity, Sitka spruce, *Picea sitchensis*, regression analysis, management tables, yield class, mortality, basal area, silviculture, crop structure patterns

**Abstract**

Patterns of crop structure in unthinned Sitka spruce stands are examined by multiple and polynomial regression. Productivity categories for top height are evolved on the basis of confidence belts. Wide variation in volume to 8cm top diameter amounting to 160-200 cubic metres/ha is shown within a range of top heights 7m to 20m. Volume production per ha up to 8cm top diameter for top height is greater in young unthinned stands in Ireland than indicated in the Forest Management Tables (1971). Total stem-wood volume is equivalent to timber volume plus 20 cubic metres/ha. Top height/age patterns indicated a range of yield classes to over 24 cubic metres/ha/an. Mortality is not severe up to 14m top height. Variation in site conditions meant that volume/top height patterns could not easily be explained by the site factors, elevation, aspect and slope.

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pp 33 - 55

**Location**

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**Notes**

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**Number**

37

**Author**

Hendrick Eugene, Cahill Declan

**Title**

Utilisation and treatment of Norway spruce (*Picea abies*) transmission poles in France and Germany.

**Publisher**

Coillte Teoranta/

Eolas. Forest Products Department

**Place**

Dublin

**Series**

Coillte Teoranta. Report No. 1/92

**Date**

1992

**Key Word**

Norway spruce, forest products, transmission poles, preservatives, timber processing, electricity supply, *Picea abies*, telecommunications, preservative treatment, timber end use

**Abstract**

The object of the study was to determine the use and treatment methods of Norway spruce transmission poles in France and Germany. The report shows that Norway spruce is used extensively in both France and Germany for transmission poles. The total pole market in France is 300,000 poles p.a., and 400,000 in Germany. In both France and Germany poles are treated with creosote and CCA. In Germany poles are drilled to improve uptake of creosote. There are strict regulations surrounding the use of all preservative chemicals in both countries. Electricity and telecommunication companies have very tight specifications covering this and all aspects of pole quality and production. Both France and Germany also have national standards for poles. Raw material is readily available apart from large pine poles which are imported into Germany.

**Page**

70 p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD Belfield Dublin 4.

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**Number**

38

**Author**

McEvoy T.

**Title**

Why forests?

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1974

**Source**

Irish Forestry

**Volume**

Vol. 31, No. 1

**Key Word**

wood use, wood demand, product development, agricultural subsidies, land supply, marginal land, grants, marketing, forest products

**Abstract**

The author notes that in 1974 investment in farms and forests was sometimes rated ahead of stocks and shares. He deals with wood as raw material rather than an environmental necessity. A new balance in prices for primary products is emerging globally but forest owners ought not expect to increase profits without increasing operating efficiency. Aggressive developments of new products and markets is necessary to ensure the success of wood sales from the forest which are seen as producing environmentally safe products. In Europe agricultural prices will decide the final balance between forest and agricultural land-uses.

**Page**

pp 19 - 21

**Location**

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**Notes**

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**Number**

39

**Author**

Savill P.S.

**Title**

Assessment of the economic limit of plantability.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1974

**Source**

Irish Forestry

**Volume**

Vol. 31, No. 1

**Key Word**

exposure, planting, windthrow, isopleth, Sitka spruce, *Picea sitchensis*, tree growth, elevation, exposure

**Abstract**

The aim of this study, carried out in Cos. Antrim and Fermanagh, was to investigate the effects of exposure on the growth of Sitka spruce on a local scale. There is a positive relationship between tree growth, exposure and elevation. This information is of practical use if a plantable boundary based on predicted plant yields is being sought. This can only be assessed for localised areas. Exposure expressed as tattered flags is a more reliable indicator than altitude for growth differences locally. An isopleth (contours of exposure) map of one forest, produced from tatter flag results was remarkably similar to a local forestry staff isopleth which assessed relative exposure levels from their own knowledge.

**Page**

pp 22 - 35

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Agriculture for Northern Ireland, Dundonald House, Upper Newtownards Road Belfast BT4 3SB.

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**Number**

40

**Author**

Farrell E.P., O'Hare P.J.

**Title**

Depth of water table in *Picea sitchensis* fertilisation experiment on blanket peat.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1974

**Source**

Irish Forestry

**Volume**

Vol. 31, No. 1

**Key Word**

water table, moisture deficit, blanket peat, Sitka spruce, *Picea sitchensis*, fertilisation, phosphate, height increment, diameter increment, volume increment, evaporation, evapotranspiration, *Picea sitchensis*, silviculture, peatlands

**Abstract**

Depth to water table was measured at weekly intervals over a one year period in each plot of a N/P factorial, Sitka spruce (*Picea sitchensis* (Bong.) Carr.) fertilization experiment on deep peat in western Ireland. The relatively rapid adjustment of water table levels to changing precipitation patterns suggested that no extreme deficits occurred in the peat during the growing season. While tree growth was increased with N and P fertilisers, depth to water table was significantly increased in the phosphate treated plots only. The greatest depression was recorded at the lowest level of added phosphate. It is difficult to evaluate the long term effects of tree growth on this peat. Information is needed on the relationship between peat moisture content and water table depth and on the optimum moisture conditions for tree growth on this site.

**Page**

pp 36 - 45

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield Dublin 4

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**Number**

41

**Author**

Cantwell J.

**Title**

Resource allocation for forest fire protection.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1974

**Source**

Irish Forestry

**Volume**

Vol. 31, No. 1

**Key Word**

forest fire, forest protection, resource allocation, forest management

**Abstract**

In this paper a practical procedure for assisting forest management in allocating funds for fire protection in plantations is proposed, and its application to a specific situation discussed. It is proposed that protection should be allocated in proportion to the relative values of index numbers calculated for each plantation. These index numbers are calculated as the product of two other numbers, one indicating the risk or chance that the plantation will be threatened by a fire, and the other the value of the plantation. This is the first attempt to introduce an objective decision-making mechanism into a situation where management has traditionally relied on experience and judgement.

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pp 46 - 54

**Location**

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**Number**

42

**Author**

Neff M.J.

**Title**

Furze.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1974

**Source**

Irish Forestry

**Volume**

Vol. 31, No. 1

**Key Word**

furze, whins, gorse, Irish furze, European furze, legumes, Ulex gallii

**Abstract**

Furze is a leguminous plant. Two species are found in Ireland, the common furze, which flowers from March until May, and the dwarf, or Irish furze, which flowers from August to September. It is commonly associated with ditches and is believed to have been of some economic importance in Ireland. Irish furze, (*Ulex gallii*) is more common in the East and South, while *Ulex europaeus* is found more in the north and west. Irish furze is more common on thin peaty soils and rare on calcium rich substrates.

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pp 55 - 58

**Location**

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**Number**

43

**Author**

Gallagher G.

**Title**

The effects of green pruning in conifer crops.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service. Research Communication No. 14

**Date**

1975

**Key Word**

pruning, conifer, green pruning, silviculture

**Abstract**

Pruning experiments on dominant trees of six conifer species indicate that the effects of green pruning on increment are rather similar over all species. Diameter at breast height is affected most, height least. Depression of increment lasts about 4 years with pruning treatment up to 40% live crown removal. Above this intensity the depression lasts longer and volume loss becomes serious. 40% to 60% live crown removal would be needed to give adequate clean stem lengths in one treatment. 40% live crown removal would be acceptable silviculturally provided a high enough price could be obtained for clean timber (over £2 per cubic metre for pruned Sitka spruce at 1974 prices). There is no evidence of severe disease risk in green pruned trees.

**Page**

32 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2.

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**Number**

44

**Author**

Mutch W.E.S.

**Title**

Forest economics: evaluation for rural development.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1971

**Source**

Irish Forestry

**Volume**

Vol. 28, No. 1

**Key Word**

land use, economics, rural development, afforestation, land development, timber processing

**Abstract**

A number of criteria used for project assessment by various forestry authors are assessed. The difficulties associated with the use of net present worth and the rate of return, and cost-benefit analysis as criteria are outlined. A major problem with these criteria is the measurement of 'profit' for a region or a nation. Input-output analysis takes a broader view than other analytical tools and is appropriate for regional and national considerations. A number examples of the use of this analytical tool in various locations are provided.

**Page**

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**Number**

45

**Author**

Jack W.H.

**Title**

The influence of tree spacing on Sitka spruce growth.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1971

**Source**

Irish Forestry

**Volume**

Vol. 28, No. 1

**Key Word**

spacing, tree size, basal area, branchiness, thinning, Sitka spruce, *Picea sitchensis*, form factor, form height, growth pattern, silviculture, tree growth

**Abstract**

In Northern Ireland Sitka spruce is the most important single species planted, but often it is found on sites where thinning operations are costly. There is interest in growth development without thinning for the species with particular regard to gross increment and size of individual trees. The experiment used a 12 year old crop with mean height of 4 metres just before thicket stage. Tree height, DBH, mean volume per tree, basal area per sub-plot and per hectare, volume per hectare, branchiness, tree volume, frequency distributions, form factor, form height of crop, mortality and volume/basal area relationship were assessed. It is suggested that much better financial returns would be obtained by longer rotations under usual conditions.

**Page**

pp 13 - 33

**Location**

Coillte library

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**Number**

46

**Author**

O'Carroll N.

**Title**

Forest cover and water table in peat.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1971

**Source**

Irish Forestry

**Volume**

Vol. 28, No. 1

**Key Word**

peat, water table, establishment, clearfelling, drainage, early growth, peatlands

**Abstract**

Irish forestry has been concerned mainly with establishment of crops and early growth on peatlands and not with later development of crops and crop generation. In Finland clear felling has led to 20-40cm rises in water table levels with smaller rises post thinnings. It is thought that post clearfell situation will require repeated drainage for crop establishment.

**Page**

pp 38 - 39

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2.

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**Number**

47

**Author**

Neff M.J.

**Title**

Conservation in woodland and other vegetation communities.

**Publisher**

Forest and Wildlife Service.

**Place**

Bray

**Series**

Forest and Wildlife Service. Research Communication No. 12

**Date**

1974

**Key Word**

conservation, vegetation communities, semi-natural woodlands, regeneration, environment, native woodlands

**Abstract**

This survey of native woodland and other areas of scientific interest in the State forests is the first step in a long-term and comprehensive programme of nature conservation under the direction of the Forest and Wildlife Service. The main aims of this programme and the various management objectives to which they give rise are set out. These objectives include the control of grazing, control of alien woody species which regenerate freely, zoning, control of burning, and control of collection of plants and animals. The current state of regeneration of the woody species in Irish semi-natural woodlands is assessed, and a regeneration strategy is outlined. It is recommended that a silvicultural system in which there is the minimum of interference be chosen. A brief history of Irish woodlands and a survey of woodland types is included.

**Page**

40p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Parks and Wildlife Service, OPW, 51 St. Stephens Green Dublin 2.

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**Number**

48

**Author**

Hendrick E.

**Title**

Site amelioration for reforestation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1979

**Source**

Irish Forestry (The Challenge of the Second Rotation - Symposium held by the Society of Irish Foresters at University College Dublin, April 6th, 1979).

**Volume**

Vol. 36, No. 2

**Key Word**

site amelioration, reforestation, clear-fell, harvesting, species selection, brash, slash, burning, *Rhizina undulata*, fertilisers, soil structure, wind-rowing, site cultivation, silviculture, forest soils

**Abstract**

Reforestation will become increasingly important during the period between 1979 and 1989 due to the tenfold increase needed in regeneration, from 400 hectares p.a. to 4,000 hectares p.a. Most clear-felling has been done in the east of Ireland but species selection and cultivation is irregular. An increase in yield class results in very large increases in NDR especially for lower yield classes. These data highlight the financial implications of correct species selection. Harvesting affects the nutrient store on a site as well as the physical properties of the soil. Harvesting systems dictate the amount of slash produced and windrowing by bulldozer is used for its simplicity where slash is heavy. It is more desirable to wind-row than to burn/slash because of the danger of *Rhizina undulata* development.

**Page**

pp 89 - 98

**Location**

Coillte library

**Notes**

Available

**Address of author**

National Council for Forest Research and Development, Agriculture Building UCD, Belfield Dublin 4.

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**Number**

49

**Author**

Moloney B.

**Title**

Treatment of lop and top.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1979

**Source**

Irish Forestry

**Volume**

Vol. 36, No. 2

**Key Word**

lop and top, forest management, reforestation, windthrow, silviculture, brash removal, site cultivation, wind-rowing

**Abstract**

The various options open to the forest manager in dealing with lop and top are outlined. These are: leave the lop and top undisturbed and plant through it; burn the lop and top in situ and pit plant; plant on mounds on top of lop and top; finally, bulldoze stunted trees which are of no value and rip ground at the same time. In Nordic countries soil cultivation is generally practised but in Denmark removal of brash only is carried out prior to cultivation. The author recommends planting through top and lop on good sites but wind-rowing on site cultivation is recommended for poorer sites.

**Page**

pp 99 - 104

**Location**

Coillte library

**Notes**

Available

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**Number**

50

**Author**

Condon L.

**Title**

The challenge to the forest manager.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1979

**Source**

Irish Forestry

**Volume**

Vol. 36, No. 2

**Key Word**

forest ecosystems, forest protection, species selection, soil microbes, thinning, harvesting, age-class, forest management, diseases, silviculture, fire protection, silviculture

**Abstract**

Forest managers must ensure that decisions made regarding timber production, and ancillary activities such as wildlife and amenity functions within a forest, contribute to balanced resource management in the future. Silviculture and soil biological activity are assessed as is the question of species selection and financial criteria. Preservation of crop structure, especially in the context of windthrow is considered. Ecosystem management, weed problems, planting standards, thinning regime, disease problems, harvesting and fire protection are also covered.

**Page**

pp 105 - 110

**Location**

Coillte library

**Notes**

Available (Paper given at Society of Irish Foresters Symposium - The Challenge of the Second Rotation, UCD, March 1979)

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**Number**

51

**Author**

Gallagher G.

**Title**

Spacing trials in Sitka spruce.

**Publisher**

Forest and Wildlife Service

**Series**

Forest and Wildlife Service. Research Communication No. 11

**Date**

1973

**Key Word**

Picea sitchensis, spacing, Sitka spruce, planting, nitrogen demand, height growth, thinning, silviculture, growth

rate

**Abstract**

Spacing experiments in various conifer tree species have been conducted since 1958 with a view to assembling information on growth rates and crop structure in differently spaced stands. As this report demonstrates, differences in spacing at planting time have no effect on survival. Spacing has little influence on height growth. Nutrient deficient sites, where demand for nitrogen apparently reduces height growth in close spacings, are exceptions, as are spot fertilised crops where greater manurial application per hectare at close spacing slightly increases height growth. Diameter breast height differences between close (1.2m squared) spacings and wider spacings occur when the trees have reached 4 metres height. (2.4m squared) spacings show distinct within-crop competition when trees have reached height of 11-14 meters. This competition can be reduced by thinning. Branch diameter differences due to spacing difference become apparent when trees have attained 4 meters height.

**Page**

18p

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2.

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**Number**

52

**Author**

McAree Diarmuid

(Forest and Wildlife Service. Research Branch)

**Title**

Dutch elm disease.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

FWS Research Communication. No. 15

**Date**

May/1975

**Key Word**

Dutch elm disease, bark beetles, Scolytus multistriatus, plant pathogens, pathogens, forest protection, fungal diseases, fungus, pests, fungicides, Ceratocystis ulmi

**Abstract**

This communication is intended as a guide to the identification of Dutch elm disease, its mode of infection and life history. Because elms are far less common in Ireland than in Britain, the impact of the disease on the landscape is far less severe. It is a typical wilt disease causing excess of water loss over absorption and can appear very suddenly. The disease is caused by a fungus *Ceratocystis ulmi* which is introduced into the trees as spores by either of the two bark beetles *Scolytus scolytus* or *Scolytus multistriatus*. The fungus then spreads rapidly in the sap of the latest formed annual ring. Control depends largely on preventing the bark beetles breeding in the trees. Experiments have been carried out in the U.S. and U.K. using systemic fungicides.

**Page**

6p

**Location**

Coillte library

**Notes**

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**Number**

53

**Author**

O'Carroll N.  
(Forest and Wildlife Service)

**Title**

Fertiliser prescriptions.

**Publisher**

Forest and Wildlife Service

**Series**

FWS Research Communication No. 13

**Date**

1975

**Key Word**

fertilisers, planting, manuring, potash, rock phosphate, silviculture, soil nutrients, fertilisation

**Abstract**

The sharp increase in the cost of potash and rock phosphate fertilisers in recent years creates an urgent need for a more precise specification for the use of fertilisers in practice. Four aspects need to be specified: the specific nutrient element or elements required; the rate at which they should be applied; the source or form in which the required nutrients should be supplied; and the method of application. Recommendations are made for application of fertiliser on sites of the following classifications: fields and ornamental ground; furze or whin; rough pasture, with or without cropping rock; and woodland.

**Page**

22p

**Location**

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**Notes**

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**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2.

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**Number**

54

**Author**

Gallagher G.J.

**Title**

Crop structure studies in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Supplement to Irish Forestry. Growing Space in Coniferous Crops: Proceedings of symposium held at University College, Dublin, Belfield, March 1980. (Edited by E.P. Farrell)

**Volume**

Vol. 37, No. 2

**Key Word**

crop structure, cumulative volume, spacing, volume distribution, stability thinning, mortality, volume increment, wood quality, silviculture, data storage retrieval system, economics

**Abstract**

As a result of recent research in the area of crop structure, a data storage retrieval system has been developed to manipulate plot measurement data. Cumulative volume production differences due to changes in growing space have less practical significance than those for diameter size, diameter and volume distribution. Volumes in the larger tree size categories increase considerably with increased spacing and thinning. This in turn influences profitability and quality. Economic criteria tend to favour increased growing space due to wider spacing and thinning, though with the former, especially, serious consideration must be given to possible quality limitations which must be investigated further. Stand stability may be safeguarded by wider spacing and put at risk by

thinning, but data are scanty. There is room to develop broader stand management strategies related to supply and demand and for constructing new forecasts.

**Page**

pp 5 - 32

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**Number**

55

**Author**

Phillips J.C.L.

**Title**

Some effects of a no-thinning regime on forest management.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Supplement to Irish Forestry: Growing Space in Coniferous Crops:proceedings of symposium held at University College, Dublin, Belfield, March 1980. (Edited by Farrell E.P.)

**Volume**

Vol. 37, No. 2

**Key Word**

gley soils, peat soil, windthrow hazard, exposure, forest management, forest amenities, environmental impact, Northern Ireland, thinning, topex, volume production, silviculture

**Abstract**

The Northern Ireland Forest Service has adopted a no-thinning policy for Sitka spruce on most areas of peat and gley soils due to experience of early windthrow following thinning both in Northern Ireland and elsewhere on such sites. The reasoning behind this decision is explained and its effects on such aspects of management as production timing, employment, road construction, recreation, conservation, landscape values and the work of the forester are discussed. The author concludes that there are considerable areas in Northern Ireland of a suitable age for respacing and the Forest Service is considering to what extent it should be carried out.

**Page**

pp 33 - 44

**Location**

Coillte library

**Notes**

available

**Address of author**

District Forest Officer, Castle Barracks, Wellington Place, Co. Fermanagh.

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**Number**

56

**Author**

Lynch T.J.

**Title**

Thinning and spacing research in Sitka spruce and lodgepole pine.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Supplement to Irish Forestry. Growing Space in Coniferous Crops: Proceedings of a symposium held at University College, Dublin, Belfield, March 1980. (Edited by E.P Farrel)

**Volume**

Vol. 37, No. 2

**Key Word**

thinning, spacing, Sitka spruce, Picea sitchensis, lodgepole pine, Pinus contorta, timber quality, volume production, silviculture

**Abstract**

The paper outlines the principle results from thinning and spacing experimentation in the Republic of Ireland. Experimentation began in Ireland in the late 1950s. Some meaningful results are now available from these experiments. If spacing at planting is increased from 1.8 to 2.4m square in Sitka spruce a loss in production of about 4% is incurred. A loss of the same magnitude results from a thinning intensity which removes 80% of volume increment. Wider initial spacings or heavier thinning intensities than those conventionally practised give greater quantities of sawlog timber. A first thinning in spruce which removes alternate lines of trees does not depress increment. There are implications for timber quality where wide spacing and heavy thinning are employed.

**Page**

pp 45 - 67

**Location**

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**Number**

57

**Author**

O'Flanagan L.P.

**Title**

Lodgepole pine - silvicultural alternatives.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Supplement to Irish Forestry. Growing Space in Coniferous Crops: Proceedings of symposiums held at University College, Dublin, Belfield, March 1980. (Edited by E.P. Farrell)

**Volume**

Vol. 37, No. 2

**Key Word**

economics, respacing, thinning, spacing, silviculture, Sitka spruce, Picea sitchensis, lodgepole pine, Pinus contorta, wood quality

**Abstract**

An economic evaluation of a number of silvicultural treatments, which include spacing, respacing and thinning in Sitka spruce and coastal lodgepole pine is presented. The results show, for the two prices assumed, that lower crop densities than those practised lead to greater profitability if wood quality is not drastically reduced. The need for a detailed examination of the relationship between silvicultural treatment and wood quality is stressed. The evidence indicates that while lower than current crop densities lead to greater profitability, the optimum will depend upon the results from the suggested wood quality study.

**Page**

pp 68 - 76

**Location**

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**Number**

58

**Author**

McCusker P.

**Title**

A new interpretation of forest recreation management.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1984

**Source**

Irish Forestry

**Volume**

Vol. 41, No. 2

**Key Word**

forest management, forest recreation, forest policy, forest use, economics, amenities, environment, tourism landscape

**Abstract**

There are 1.5 million visitors to Irish forests each year. However, the recent expansion in this area is beginning to level off, and there is a need to clearly define the nature and the possibilities of forest recreation. The first task is to ascertain the reasons visitors come to the forest and their needs and expectations. The author discusses forest recreation in terms of its contribution to an understanding of native heritage. Apart from the passive use of forest amenities, such as walking or nature trails, the forest has potential for more active, vigorous activities such as following 'rough trails' or pony trekking. The educational function of forest amenity management is stressed. The central role of interpretative facilities in increasing public awareness and appreciation of forests must be recognised.

**Page**

pp 59 - 65

**Location**

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**Number**

59

**Author**

Cregan M.

**Title**

Returning to nature.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1984

**Source**

Irish Forestry

**Volume**

Vol. 41, No. 2

**Key Word**

landscape, wilderness, aesthetic theory, art, environment, natural woodlands, conservation

**Abstract**

Prior to the 18th century there was little appreciation of the aesthetic qualities of wild or unproductive land. The taste for cultivated, man-made landscape emerged in the 15th century as the medieval puritanical aloofness to worldly things began to wane. The violence of this period contributed to mistrust of forests and other wilderness areas. Only in the late 17th century did the beauty of the Alps begin to be admired. Gradually beauty came to be seen in what was previously regarded as barren and chaotic. The paintings of the Italian and Dutch landscape painters of the 17th century are seen as central to the development of a landscape aesthetic. Later landscape came to be revered and the pursuit of the picturesque became obsessive. After this stage passed it became possible to enjoy an easier, unmediated experience of nature and scenery.

**Page**

pp 77 - 83

**Location**

Coillte library

**Notes**

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**Address of author**

Department of Horticulture, UCD, Belfield Dublin 4.

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**Number**

60

**Author**

Long P.A., Whelan J.

**Title**

The economics and management of the forest habitat for pheasants.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1984

**Source**

Irish Forestry

**Volume**

Vol. 41, No. 2

**Key Word**

pheasant forest habitats, colchicus, nesting, forest operations, game hunting, game management, game birds, environment, forest ecosystems

**Abstract**

Basic ecological requirements for pheasants include the availability of food, roosting sites, cover for shelter and concealment, and the present of open areas for territorial display. An ideal forest habitat might be described as structurally diverse woodland of mixed hardwood and conifer composition with good ground cover and easy access to open areas. Because optimum habitat for pheasants is competitive with commercial forestry, careful management of small unproductive areas of woodland and other resources is required. To assess the feasibility of integrating pheasant shooting and forestry a number of theoretical management options were tested on a study area where the intensity of forest management might perhaps allow for the provision of a pheasant shoot for monetary gain. The most suitable option was found to be the release of pheasants into a modified forest habitat.

**Page**

pp 84 - 98

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept of Agricultural Zoology and Genetics, UCD, Belfield Dublin 4.

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**Number**

61

**Author**

Carey M.L., Griffin E.

**Title**

Sitka spruce or lodgepole pine: a financial appraisal.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1981

**Source**

Irish Forestry

**Volume**

Vol. 38, No. 2

**Key Word**

mixtures, nitrogen fixing, fertilisers, Japanese larch, Sitka spruce, lodgepole pine, sandstone, peat, mineral soils, furze, weed control, conifers, *Picea sitchensis*, *Pinus contorta*, *Larix kaempferi*

**Abstract**

The object of this study was to make a financial comparison between growing Sitka spruce on Old Red Sandstone sites, using fertiliser nitrogen, and lodgepole pine which grows vigorously without any inputs of nitrogen. Japanese larch/Sitka spruce mixtures are also included in the appraisal. Results showed that growing lodgepole pine, or the larch/spruce mixture, are more feasible propositions on ORS soils. However, because of the lower nitrogen requirements, and lower production potential of lodgepole pine, Sitka spruce is the more attractive option on some peat soils.

**Page**

pp 61 - 77

**Location**

Coillte library

**Notes**

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**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2.

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**Number**

62

**Author**

Convery Frank J.

**Title**

The native sawmilling industry and Irish forestry: sawmilling and the economy.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1981

**Source**

Irish Forestry

**Volume**

Vol. 38, No. 2

**Key Word**

sawmilling, timber imports, marketing, forest products, forest policy, sales methods, State forestry, revenue forecasting, economics, forest employment, volume assortments, timber products, timber processing

**Abstract**

In the period between 1980 and 1990 the availability of sawlogs will increase by 238%. The softwood sawmilling industry has the potential to become one of the most dynamic sectors of the economy over the next few decades. State stumpage will increase to £30.2m in the year 2000 (1980 £). The author advocates the setting up of a forest products development board, the development of a policy regarding the range within which the quantity offered for sale will fall from year to year, and a carefully monitored examination of alternative sales methods to reach an optimum sales method mix.

**Page**

pp 78 - 91

**Location**

Coillte library

**Notes**

available

**Address of author**

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**Number**

63

**Author**

Caulfield Seamus

**Title**

Forest clearance and land use in Mayo around 3000 B.C.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1981

**Source**

Irish Forestry

**Volume**

Vol. 38, No. 2

**Key Word**

forest clearance, land use, archaeology, rural settlement, farming, landscape, megalithic man, blanket peat, forest history, archaeology, ancient woodlands, peatlands

**Abstract**

For thousands of years man inhabited the post-glacial forests of Europe but it was not till the advent of farming that his impact on the forest became significant. Stone axes are the most widespread, if tenuous, evidence of early forest exploitation. Because of special circumstances in the west of Ireland the actual landscape of the Stone Age farmers is still available for study. The discovery of extensive land enclosure under blanket bog which must have preceded by major forest clearance is changing our view of the nature and scale of early farm settlements in Ireland.

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pp 92 - 100

**Location**

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**Number**

64

**Author**

McNally A., Doyle G.J.

**Title**

Tree ring-series - a valuable source of ecological and environmental information.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1981

**Source**

Irish Forestry

**Volume**

Vol. 38, No. 1

**Key Word**

Tree ring analysis, dendrochronology, regression analysis, environment, climate, bog oak, archaeology, dating, sub-fossil forests, ancient woodlands

**Abstract**

The object of dendrochronology, or tree ring analysis, is to place a calendar date on any particular ring by correlating wide or narrow rings with some limiting factor. The tree ring series then becomes a valuable source of environmental and ecological information. By combining information from living and dead timber long tree-ring-series can be obtained. This is very useful in dating archaeological objects made from wood. Oak is particularly suited to this type of analysis as it produces annual rings so consistently. Regression analysis allows ring width to be regressed against a series of environmental parameters such as temperature, precipitation etc. Multiple regression analysis may be used to elucidate the relationship between ring width and a combination of environmental factors, and can account for a considerable proportion of ring width variation (80%). Dendrochronological techniques have been applied to studies of sub-fossil forests under Irish peat deposits and in studies which demonstrated correlations between ring patterns and regional environmental patterns as well as local site factors.

**Page**

pp 7 - 18

**Location**

Coillte library

**Notes**

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**Address of author**

Dept. of Botany, UCD, Belfield Dublin 4.

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**Number**

65

**Author**

O'Driscoll J.

**Title**

Henry - the tree breeder.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1981

**Source**

Irish Forestry

**Volume**

Vol. 38, No. 1

**Key Word**

Augustine Henry, tree breeding, hybrids, conifers, oaks, genetics, varieties, forestry history, botany, hybridisation

**Abstract**

Augustine Henry's interest in forestry began during his time in the Imperial Customs Service in China. While studying forestry in Europe in the early 1900s he became very aware of the importance of choosing the correct species for site conditions. His work on 'Trees of Great Britain and Ireland' clearly demonstrated that it was a mistake to base both Irish and English forestry on purely European species, which grew in a climate quite different from that of the western British Isles. He was convinced that species native to the western part of North

America were more suited to British and Irish conditions, and he encouraged the planting of species from countries with mild damp climates such as Douglas fir, Sitka spruce, Scots pine and Sequoia. He concluded from his study on elms that supposed varieties were often simple combinations of two existing species. A similar study of oaks convinced him of the value of hybrids in the search for fast-growing varieties, a theme which continued to occupy him throughout his career. In 1913 he completed "Trees" and took up the first chair of Forestry in Dublin.

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pp 19 - 26

**Location**

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**Number**

66

**Author**

O'Carroll Niall, Carey M.L., Hendrick Eugene, Dillon James

**Title**

The tunnel plough in peatland afforestation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1981

**Source**

Irish Forestry

**Volume**

Vol. 38, No. 1

**Key Word**

tunnel ploughing, peatland forestry, double mouldboard plough, root spread, load bearing, raised bogs, blanket bogs, crop stability, drainage, ploughing, afforestation, marginal land, silviculture, peatlands

**Abstract**

The principal limitations in the use of peatlands for crop production have been waterlogging and infertility. The most common ploughs used in Ireland for pre-establishment drainage are a double mouldboard (DMB) plough, designed to give drains 20-30cm deep and 70-80cm wide, and the tunnel plough, which gives a drain channel 38cm high and 20cm wide. Recent experiments have shown that the tunnel ploughing technique results in tree growth as good or better than the DMB open ploughing technique, which is standard on peatland in Ireland. It also has the advantage that the lower water table and the better aeration encourage root development. The tunnel ploughing technique has widespread application on blanket bog peats deeper than 1.5m. However, there are some doubts at present as to its applicability on raised bogs.

**Page**

pp 27 - 42

**Location**

Coillte library

**Notes**

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**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2.

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**Number**

67

**Author**

O'Toole P., Dowds J., Farrell E.P.

**Title**

Nitrogen accumulation by *Ulex gallii* (Planch.) in a forest ecosystem.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1984

**Source**

Irish Forestry

**Volume**

Vol. 41, No. 1

**Key Word**

nitrogen fixation, Old Red Sandstone, geology, Devonian period, peat legumes, furze, plant litter, humus, forest ecosystems, *Ulex gallii*, poor soils, nitrogen accumulation, carbon mineralisation, nitrogen mineralisation

**Abstract**

Accumulation of nitrogen was assessed under naturally occurring, 5 year old *Ulex gallii* (Planch.) dwarf furze, on impoverished soils formed from Old Red Sandstone. Nitrogen accumulation in *U.gallii* and non-*Ulex* vegetation (including litter), in roots and soils (25 x 25 x 25cm cores) was estimated within 5 x 2m squared subplots chosen subjectively on the basis of legume occurrence within a single, phosphate-fertilised plot of a forest experimental site at Kilworth, Co. Cork. The influence of *U. gallii* on carbon and nitrogen mineralisation in litter and soil was also evaluated. A close correlation ( $r = 0.99$ ;  $p < 0.05$ ) was found between *U.gallii* cover (2.4 to 19.9 t DM ha<sup>-1</sup>) and the nitrogen content on total vegetation (220 to 495kg N ha<sup>-1</sup>, resp.) The relationship between *U. gallii* occurrence and soil nitrogen (2325 to 2588kg N ha<sup>-1</sup>, resp.) or soil plus vegetation N (2545 to 3085kg N ha<sup>-1</sup>, resp.) were weaker ( $r = 0.72$  and  $0.86$  resp.) The correlation between legume cover and the nitrogen content (% DM) of the non-*Ulex* vegetation was  $r = 0.83$ . The annual accumulation of nitrogen within the vegetation was estimated to be 55kg N ha<sup>-1</sup>. Only *Ulex* litter released appreciable quantities of nitrogen after 80 days incubation at 20°C.-5.89 compared to 1.1.7 and 2.28mg N g<sup>-1</sup> total-N by senescent *Ulex* spines and non-*Ulex* litter, respectively. Mineralisation of soil nitrogen after 112 days incubation at 20 degrees C. was considerably greater under *U. gallii* than under other vegetation (*Culluna-Mollina* spp) - 3.3% and 0.4% of soil -N, respectively. These results were corroborated by CO<sub>2</sub> evolution studies. The results are discussed in the context of the nitrogen requirements of Sitka spruce stands on these soils and the distribution and exploitation of *U.gallii* as a nurse crop.

**Page**

pp 14 - 29

**Location**

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**ISBN**

0021 - 1192

**Notes**

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**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield Dublin 4.

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**Number**

68

**Author**

Campbell Peter

**Title**

Driven woodcock shoots at Cong.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1984

**Source**

Irish Forestry

**Volume**

Vol. 41, No. 1

**Key Word**

game birds, shooting, woodcock, forest habitats, forest fauna, hunting, environment, recreation, woodland ecosystems

**Abstract**

The driven woodcock shoot at Cong, in which birds are flushed and driven towards the guns on the right and left of the 'beat', is the only remaining one of any significance in Europe. The forest on the Ashford Castle Estate was developed primarily to provide cover for game. The first driven shoot in Cong was in 1905. The prime habitat of these birds is woodland with unthinned Sitka spruce, Norway spruce, Douglas fir, grand fir and western hemlock.

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pp 30 - 35

**Location**

Coillte library

**ISBN**

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**Number**

69

**Author**

Anon

**Title**

Masonite still confident on factory go-ahead.

**Place**

Birr

**Date**

June/ 1195

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 4

**Key Word**

Masonite Corporation, Leitrim, planning permission, manufacturing industry, heritage, environment, employment, timber processing, forest products, environment, landscape, tourism

**Abstract**

Despite several objections to the granting of planning permission for the Masonite moulded door facing manufacturing plant at Drumsna Co. Leitrim, the company is confident the development will go ahead. Following a meeting with the company the Minister for Arts and Culture with responsibility for Heritage, Michael D. Higgins, withdrew his late objection to the siting of the plant and stated that changes agreed would ameliorate the visual impact of the plant. These changes included more extensive landscaping and a 5 to 6m reduction in the ridge height of the main building. However, 10 of the original 11 appeals to An Bord Pleanala are still standing. The objections centre primarily on the location of the plant and its visual impact on tourism and the waterways.

**Page**

pp 4 - 6

**Location**

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**Number**

70

**Author**

O'Carroll N., Carey M.L.

**Title**

Planting position on old red sandstone soils.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service. Research Communication No. 9

**Date**

1972

**Key Word**

planting position, ploughing, drainage, old red sandstone, mineral soils, silviculture, gley soils, pan podsols, peaty soils, peatlands, bogs, cultivation

**Abstract**

Unlike peat, mineral soils are best aerated by a combination of drainage and cultivation, rather than by drainage alone. Therefore there is more than one planting position to be considered. This report describes experiments designed to compare the three main positions available for planting: in the furrow; between the furrow and ribbon; and on top of the ribbon. Three major soil groups were represented in the planting position experiments, and planting positions are recommended for each one. These were: on the ribbon top or on the step for peaty podsolised gleys; in the furrow for peaty iron pan podsols; and in the furrow for indurated iron pan podsols where the average depth is less than 35 cm.

**Page**

28p

**Location**

Coillte library

**Notes**

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**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2

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**Number**

71

**Author**

O'Driscoll J.

**Title**

The importance of lodgepole pine in Irish forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Irish Forestry

**Volume**

Vol. 37, No. 1

**Key Word**

lodgepole pine, basal sweep, *Pinus contorta*, timber quality, lodgepole pine provenances, timber processing, forest products, silviculture, economics, species distribution

**Abstract**

The species *Pinus contorta* is native to North America where its present day distribution is extremely large, covering a very wide ecological amplitude. Early planting records placed lodgepole pine fifth most important species in Irish forests, but its status has gradually increased and it accounted for 35% of the trees planted in the late seventies. The coastal provenance has been found to be most suited to Irish conditions. All experiments to date have shown that the most vigorous provenances have always come from the southern end of the species distribution, while the northern coastal group has ranked intermediate between the south coastal and inland groups. The quality of home grown timber has been consistently high and tests have shown it to saw and season

very well. It compares well to Sitka spruce in both these respects, and has superior strength qualities. Where available, large timber is converted to panelling. The most pressing problem facing growers of the species coastal provenance is its vulnerability to basal sweep.

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pp 5 - 22

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**Number**

72

**Author**

Gardiner John J.

**Title**

Future markets for Irish wood products.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Irish Forestry

**Volume**

Vol. 37, No.1

**Key Word**

roundwood, pulpwood, markets, wood products, forest products, small dimension roundwood, particleboard, fibreboard, pulp production, timber processing, wood residues, timber end use

**Abstract**

There is unlikely to be a change in the traditional, limited utilisation of pulpwood over the next 5 - 10 years. Most small dimension roundwood and mill residues will be processed into particleboard (chipboard), fibreboard, pulp and paper. After a difficult period for pulp producers the markets for these products looks set to grow steadily over the next few years. It is estimated that by 1990 Ireland will have over 1m cubic metres of smallwood and wood residues for processing, but the quantities of materials produced should not have any marked impact on world trade. However, to make an impact on available markets the industry in Ireland must have available to it modern, fully integrated export oriented industrial capacity, located near the timber supply.

**Page**

pp 23 - 30

**Location**

Coillte library

**Notes**

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**Address of author**

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**Number**

73

**Author**

McCusker P.

**Title**

Forest guided walks.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1980

**Source**

Irish Forestry

**Volume**

Vol. 37, No. 1

**Key Word**

guided walks, recreation, forest amenities, tourism, landscape, environment

**Abstract**

The author offers advice to foresters who are asked to conduct guided walks in their own forests. Emphasis is placed on effective communication which can only be achieved if the guide is comfortable with the route chosen and technical language is avoided. The recommended length for a walk is about 1 1/2 to 2 hours covering about 1.5miles. The optimum group size is estimated to be about 20 - 25 people.

**Page**

pp 31 - 35

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**Number**

74

**Author**

Carey M.L.

**Title**

Whole tree harvesting in Sitka spruce: possibilities and implications.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1980

**Source**

Irish Forestry

**Volume**

Vol.37, No. 1

**Key Word**

whole tree harvesting, Sitka spruce, Picea sitchensis, site fertility, slash removal, nutrients, energy content of slash

**Abstract**

A study was carried out in a 50 year old crop of Sitka spruce, yield Class 20, in order to determine: (i) The extent to which total production could be increased through implementing complete tree harvesting, and; (ii) The effect this would have on site fertility. The result showed that the stemwood and bark represented 62%, the slash 20% and the roots 18% of the total dry matter production. Although inclusion of the slash in the final harvest would result in a very large increase in the amounts of nutrients removed, it is concluded that this would have serious consequences for site fertility only on impoverished mineral soils with low reserves of organic matter. Data are included on the actual value of the nutrients (N,P and K only) in the slash and on its energy content.

**Page**

pp 48 - 63

**Location**

Coillte library

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available

**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2.

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**Number**

75

**Author**

Pfeifer A.R.

**Title**

Factors that contribute to basal sweep in lodgepole pine.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1982

**Source**

Irish Forestry

**Volume**

Vol. 39, No. 1

**Key Word**

basal sweep, lodgepole pine, *Pinus contorta*, root distortion, nursery practice, stem form, silviculture, climate, soil condition, aeration, drainage, forest soils

**Abstract**

The high incidence of basal sweep on exposed areas causes difficulties in both the harvesting and conversion of lodgepole pine timber. It has been suggested that the underlying cause of basal sweep is the result of strong winds acting on a tree which has an imbalance between the root and the shoot during the early years of planting. The object of this paper is to examine the various contributing factors to this imbalance, including poor physical condition of the soil, inadequate aeration or drainage, incorrect planting technique, defective nursery stock as well as those genetic features of the trees themselves which control the growth of the root and shoot. It is suggested that the problem of root distortion at planting can be overcome by using some form of containers in which seedling roots are allowed to develop naturally and the root plug complete with growing medium is planted without disturbance. A change in cultivation practice is also required to encourage radial root spread.

**Page**

pp 7 - 16

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**Address of author**

Coillte Research &amp; Technology, Sidmonton Place, Bray Co. Wicklow.

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**Number**

76

**Author**

O'Carroll Niall

**Title**

The nursing of Sitka spruce 2. Nitrogen-fixing species.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1982

**Source**

Irish Forestry

**Volume**

Vol. 39, No. 1

**Key Word**

legume, nitrogen fixing, Sitka spruce, nursing effect, furze, lupin, broom, alder, *Picea sitchensis*, silviculture

**Abstract**

Three experiments covering the use of common broom, two species of lupin and two species of alder as aids in the establishment of Sitka spruce are described. One experiment was begun in 1961 and the others in 1964. Of the species tested common broom and tree lupin showed most promise. Broom when young is susceptible to destruction by hares, and tree lupin dies after about 5 years. A combination of tree lupin and broom has resulted in a satisfactorily growing crop of Sitka spruce after 20 years. Establishment of tree lupin is improved by ground limestone and by intensive cultivation, but the long-term benefit of tree lupin alone to a tree crop has not been established. It is suggested that further work is required to investigate the use of a shrubby or dwarf species of alder and also into the use of the native dwarf furze as nurses for Sitka spruce.

**Page**

pp 17 - 29

**Location**

Coillte library

**Notes**

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**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2.

---

**Number**

77

**Author**

Fitzsimons B.

**Title**

An investigation of the effects of poor stem form and sawmill recovery on coastal lodgepole pine.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1982

**Source**

Irish Forestry

**Volume**

Vol. 39, No. 1

**Key Word**

basal sweep, stem form, coastal lodgepole pine, tree form, sawmilling, regression analysis, forest economics, *Pinus contorta*, timber processing

**Abstract**

Coastal lodgepole pine LP (C) grown in the Republic of Ireland is frequently of very poor form. A small scale sawmill study was undertaken in order to answer several questions about the LP (C) materials which will be produced over the next ten to fifteen years. The main issues addressed in this paper are the quality of the form, the consequences in terms of sawmill recovery, and the possibility of relating sweep at the base to recovery. Results indicated a loss of about 30% of the expected sawn wood return if the trees had been straight. Regression analysis indicated that there is a relationship between sweep at 1.3m and recovery. An economic analysis revealed that at current prices and costs it is not profitable to sacrifice vigour for slower growing but straighter crops.

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**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2.

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**Number**

78

**Author**

Evertsen J.A., Cahill D.C.

**Title**

Uptake of organic solvent preservative by plantation grown lodgepole pine.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 2

**Key Word**

preservatives, preservative treatment, lodgepole pine, Pinus contorta, organic solvents, bis (tir-n-butylin) oxide (TBTO), fungicides, pesticides

**Abstract**

In order to ensure the durability of lodgepole pine used in joinery it is necessary to apply a preservative treatment with strong fungicidal and insecticidal action. The objectives of the study on which this report focuses were: (i) to measure the volumetric uptake of organic solvent preservative by plantation grown Irish lodgepole pine; (ii) to determine the retention (loading) of the active fungicidal ingredient bis(tir-n-butylin) oxide (TBTO) in the preservative solution used. The treatability of a timber species indicates the amenability of that species to preservative impregnation. It reflects the level of preservative absorption and retention. The average gravimetric uptake of preservative solution by Irish lodgepole pine is 22.77 l/cubic metre, only slightly less than the results for imported Scots pine. Irish lodgepole pine can be successfully treated with an organic solvent preservative by the Double-Vacuum process. It is concluded that the treatability of Irish lodgepole pine contributes to the potential import substitution of red deal.

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**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9.

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**Number**

79

**Author**

Mulloy Fergal

**Title**

Tropical deforestation - why bother? (An Irish forester's perspective).

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 2

**Key Word**

tropical forests, deforestation, development, third world, conservation, import substitution, timber products, environment

**Abstract**

At present Ireland has probably the largest per capita investment in afforestation in Europe. However, the low percentage of broadleaf species results in Ireland importing tropical timbers to satisfy the demand for high quality hardwood, and statistics are given for imports of these woods from each producing country. The 53,193 tonnes of tropical wood imported in 1987, together with processed woods, represents a tropical forest area of 4,000 ha. felled to supply Ireland's needs. The author suggests that it is possible that an increased demand for native lodgepole pine and Douglas fir could help to largely replace tropical wood requirements. However, genetic research must continue on ash, cherry, and sycamore. It is recommended that a strategy orientated towards quality broadleaf production should receive priority, and argues for a substantial increase in investment into tree improvement.

**Page**

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**Location**

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**Address of author**

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---

**Number**

80

**Author**

Ni Dhubhain A., Nieuwenhuis M.A., Gardiner J.J.

**Title**

Feller productivity in first thinning systems.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 2

**Key Word**

thinning systems, windthrow, rack, selective thinning, feller productivity, rack thinning

**Abstract**

Systematic thinnings, in particular 1-in-3 line thinnings, have been applied on a widespread basis in Ireland at first thinning stage. However, the risk of windthrow associated with such thinnings has renewed interest in making first thinnings more selective. This paper describes a study that was carried out to quantify the effects of rack and selective thinning systems upon feller productivity. It was shown that feller productivity is 23% lower in a 1-in - 9 rack and selective systems than in the line thinning system. It is likely that with training, feller productivity in these systems will increase.

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**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Belfield Dublin 4.

---

**Number**

81

**Author**

McCurdy R.J.

**Title**

Deer in Northern Ireland forests: distribution, impact and management.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 2

**Key Word**

Northern Ireland, red deer, sika deer, fallow deer, lodgepole pine, Pinus contorta, tree damage, deer management, forest recreation, amenities, wildlife, forest protection

**Abstract**

Red, fallow and sika deer occur in Northern Ireland forests. Fallow, often associated with old estate deer parks are most widespread. Sika occur in large numbers in Tyrone and Fermanagh, while red are a comparatively minor species slowly spreading in from Donegal. Economic damage in coniferous woodland has been relatively light arising mainly from the activities of male deer cleaning velvet and marking territories. Lodgepole pine is particularly susceptible to damage by red and sika deer. The essence of good deer management lies in the design of more open forests enabling the deer to be observed, assessed and culled as necessary. Deer have an important educational and recreational role within forestry.

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**Number**

82

**Author**

Lenihan Sean

**Title**

Preventing deer damage to Douglas fir by power fencing.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 2

**Key Word**

deer damage, Douglas fir, power fencing, wildlife, forest protection, *Pseudotsuga menziesii*, deer culling, bark stripping

**Abstract**

In Ballinglen forest, Co. Wicklow, 40 of the 60 ha reforested with Douglas fir have suffered severe damage as a result of bark being stripped by deer. Culling has not prevented further damage, so a purpose built electric fence has been erected. The fence consists of an outer fence 1 metre high with four strands of live wire, and an inner fence with three strands of live wire. The total cost of the fence was £3,900 (£3.35 per metre). Since the fence was erected there has been no further sign of incursion by deer.

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**Location**

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**Number**

83

**Author**

Murphy Wm., Gardiner J.J.

**Title**

Measuring values in recreation: six different approaches.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1984

**Source**

Irish Forestry

**Volume**

Vol. 41, No. 1

**Key Word**

forest recreation, amenities, economics, outdoor pursuits

**Abstract**

This paper deals with cost benefit analysis techniques which are available to measure user's willingness to pay for recreation services. The data from a survey of users of forest recreation were analysed using six separate techniques in order to estimate the value of one recreation hour. It was found that the methods which focused on user's willingness to pay provided the most satisfactory results, and it is concluded that these methods of recreational evaluation can be modified to give valid results under Irish conditions.

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pp 36 - 44

**Location**

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**Notes**

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**Address of author**

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**Number**

84

**Author**

Ward Declan

**Title**

From then to now: recent developments in Irish forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 2

**Key Word**

forestry development, timber industry, Coillte, forestry history, silviculture, management structures, business organisation

**Abstract**

The author traces the origin of modern forestry in Ireland to 19th century attempts to begin to reverse the almost complete deforestation of the country. The change from a Civil Service dual management structure to more modern effective management system in the 1980 is seen as the most significant organisational issue of recent times. In 1987 the government decided to establish a commercial state-sponsored forestry company, and Coillte was launched in December 1988.

**Page**

pp 120-122

**Location**

Coillte library

**Notes**

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**Address of author**

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**Number**

85

**Author**

Cross J.

**Title**

Status and value of native broadleaved woodland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1987

**Source**

Irish Forestry

**Volume**

Vol. 44, No. 2

**Key Word**

broadleaves, conservation, forest history, timber production, nature reserves, natural woodlands, broadleaved plantations, biodiversity, conservation

**Abstract**

The author dates the beginning of the demise of Irish forests to Neolithic times, and the original forest cover comprises only 0.2% of land area today. Present day broadleaved woodlands may be grouped into three categories: remnants of the wildwood; plantations; and secondary woodland on abandoned farmland. All of the native timbers were of considerable importance in everyday life up to this century, and today oak, ash and beech are still in demand, especially for furniture. The importance of conserving existing broadleaved woodland is stressed. A clear distinction is drawn between woodland on nature reserves, whose primary purpose is to maintain biodiversity, and broadleaved plantations, which are managed for timber production. The author believes that this type of plantation has an economic future and, if properly managed, it will be able to supply

the demand for good quality timber.

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pp 81 - 88

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**Number**

86

**Author**

Fitzsimons Brendan

**Title**

Broadleaves in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1987

**Source**

Irish Forestry

**Volume**

Vol. 44, No. 2

**Key Word**

broadleaves, yield, forest management, broadleaf planting, investment, timber processing, production costs

**Abstract**

This paper describes briefly the existing stock of broadleaf forest in the Republic. Stands of broadleaves represent only 0.5% of the land area. The total area of broadleaf high forest is 9% of the forested area of the country. Two-thirds of the private and one-third of the State woodlands were planted before the turn of the century. Figures provided show that the existing stock of broadleaves is scattered and mixed. Because of its diversity it is not suitable for extensive management prescriptions. There are considerable costs involved in producing quality hardwood, and only the higher yield classes of ash and sycamore have a reasonable prospect of giving a return at 2%. It is unlikely that oak or beech will produce timber of sufficient quality to fetch high prices given the short rotations and low costs assumed in this analysis.

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**Address of author**

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**Number**

87

**Author**

Gallagher Leonard U.

**Title**

The market for Irish hardwood timbers.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1987

**Source**

Irish Forestry

**Volume**

Vol. 44, No. 2

**Key Word**

hardwood timbers, timber trade, manufacturing, timber prices, broadleaf forestry, timber imports, broadleaves, hardwood forests, environment, economics, biodiversity, timber processing

**Abstract**

An outline is given of the development of Irish hardwood and forest trade. Recent trade figures for hardwood timber and manufactures show that imports exceeded exports due to a low level of home production of timber. It is estimated that at least 20% of the 20m tonnes import of raw material could be supplied from Irish timber, were it available. The current structure of hardwood forestry and downstream industry in Ireland is weak. However, it can be made viable. The demand for quality timber in Europe in the next few years will be met by reduced and more costly supply. As more productive agricultural land becomes available for alternative uses, the potential for establishing hardwood forests will increase. Besides the economic argument, improved environment and diversified forestry are two further important reasons for expanding hardwood forestry.

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**Address of author**

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**Number**

88

**Author**

Pfeifer A.R.

**Title**

Clonal forestry - a view to the future.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1988

**Source**

Irish Forestry

**Volume**

Vol. 45, No. 2

**Key Word**

genetics, cloning, clonal forestry, vegetative propagation, clonal varieties, growth rate, rooting, mist propagation

**Abstract**

The problems associated with vegetative propagation through the rooting of cuttings from mature trees has meant that foresters have not had the same opportunities to develop clonal varieties as farmers and horticulturalists. But recent technical developments, especially the use of mist propagation and the realisation that young individuals from genetically superior populations can be used to overcome the problem of low rooting success, have considerably increased the prospects for success in this area. There is a description of the method of vegetative propagation using rooting cuttings. The use of clonal varieties could result in considerable genetic gains in traits such as growth rate, adaptability, branching habit, timber quality, and insect and disease resistance. There are risks associated with clonal forestry, but these can be overcome if restrictions in the genetic diversity of plantations is avoided. Theoretical evidence suggests that from 7 to 30 clones would be safe for use

in a typical clonal plantation.

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**Address of author**

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**Number**

89

**Author**

De Brit Gerard

**Title**

Trends in plant demand in the Forest Service.

**Publisher**

Society of Irish Foresters

**Place**

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**Date**

1988

**Source**

Irish Forestry

**Volume**

Vol. 45, No. 2

**Key Word**

plant supply, plant sizes, species variation, planting programme, planting stock, plant demand

**Abstract**

The expected expansion of the Irish forest industry will result in an increasing demand for good quality planting stock. This paper looks at the plant requirements of the State sector. Figures for Sitka spruce and lodgepole pine plant requirements for the years 1970 - 88 are analysed. Variation in plant demand, variation in total plant demand and variation in the species proportions within that demand during the period are examined. Provision has been made for a 10,000 ha. planting programme. The author concludes that Sitka spruce will remain the dominant species representing not less than 75% of total plant demand. Demand for Douglas fir will also increase, but the position with lodgepole pine is not as clear.

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**Address of author**

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**Number**

90

**Author**

Dillon James

**Title**

Planting stock for tommorrow's forest: 'what the manager needs.'

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1988

**Source**

Irish Forestry

**Volume**

Vol. 45, No. 2

**Key Word**

planting stock, forest management, plant quality, ploughing, cultivation, ripping, moling, plant supply

**Abstract**

Two recent developments have helped to increase awareness among forest managers of the need for improved plant quality. Firstly, planting rates have increased significantly in recent years and, secondly, a change in cultivation practice which has meant that ripping and moleing techniques are now rapidly replacing conventional ploughing. Both these developments have led to a greater demand for the larger category of planting stock. However, it is difficult for a production unit, working in perhaps three-four year cycles, to respond rapidly to the new situation. With the new awareness on the quality and the need for care in the handling of plants, greater liaison between the producer and the consumer is essential.

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**Address of author**

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**Number**

91

**Author**

Griffin E.

**Title**

The use of herbicides in Irish State forests.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1986

**Source**

Irish Forestry

**Volume**

Vol. 43., No. 2

**Key Word**

herbicides, State forests, weedkiller, forest protection, herbicide applicators, herbicide application costs

**Abstract**

A brief account is given on the history of the use of herbicides in state forests. The differentiation into contact, translocated and residual herbicides is explained. This is followed by a description of the attributes of the main herbicides and quantities presently being used by the Forest and Wildlife Service and their recommended rates of use. The type of applicators used is also discussed. The cost per ha. of applying each type of herbicide is estimated, and it is concluded that their use is likely to increase significantly in the Forest and Wildlife Service over the next decade because of their cost effectiveness.

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**Location**

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**Number**

92

**Author**

Kofman P., Phillips H.

**Title**

Horse bunching of whole trees from thinning on flat and sloping terrain.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1986

**Source**

Irish Forestry

**Volume**

Vol. 43, No. 2

**Key Word**

thinning, horse bunching, productivity, terrain, harvesting, silviculture

**Abstract**

Productivity of horse bunching of whole trees from early thinnings was assessed by means of time studies, using a hand-held micro computer. Productivity which varied from 2.8 to 8.8 steres/hour was found to be dependent upon loadsize and terrain (A stere = cubic metre of loose chips). Productivity can be increased and costs reduced by adopting a herringbone felling pattern and by changing the pattern of unloading at roadside.

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pp 108 - 115

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**Number**

93

**Author**

Keogh R.M.

**Title**

Irish forestry and overseas development aid.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1986

**Source**

Irish Forestry

**Volume**

Vol. 43, No. 2

**Key Word**

development aid, overseas aid, deforestation, conservation, tropical forestry, environment

**Abstract**

The extent of deforestation in the tropics, and the consequent problems, are briefly described. It is estimated that the timber Ireland imports from the Ivory Coast represents 1% of the area deforested in that country annually. The extent of broadleaf planting to replace these imports is estimated. Recent years have seen a growing commitment by Ireland in the area of forest development in the tropics and a growing awareness among aid organisations of the importance of forestry in their projects. The author believes that the forestry profession in Ireland, in both the private and public sectors, has a central role to play within the overall framework of Ireland's aid programme.

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**Number**

94

**Author**

O'Brien D.

**Title**

A financial appraisal of Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

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**Date**

1986

**Source**

Irish Forestry

**Volume**

Vol. 43, No. 2

**Key Word**

Sitka spruce, *Picea sitchensis*, timber prices, economics, financial appraisal, structural timber, forest management, silviculture,

**Abstract**

An economic appraisal of a range of yield classes of Sitka spruce is presented. The effect of different assumptions of timber price, discount rate and grant structure is shown. The quality of Sitka spruce as a structural timber is discussed. It is concluded that the timber from crops now reaching clearfell age is of satisfactory strength. Windthrow can have a significant effect on the profitability of forestry. The adoption of a policy of not thinning can reduce this danger. A comparison is made between the return of forestry and agriculture. Forestry is shown to be more profitable than agriculture on a large proportion of the soils that are marginal to agriculture.

**Page**

pp 128 - 141

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**Address of author**

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**Number**

95

**Author**

Anon

**Title**

The other ingredient.

**Publisher**

Society of Irish Foresters

**Place**

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**Date**

1986

**Source**

Irish Forestry

**Volume**

Vol. 43, No. 2

**Key Word**

stinkhorn fungi, Phallus impudicus, plant diseases, forest pathogens, forest protection

**Abstract**

The origin of the name 'stinkhorn fungi' and its place in forest folklore is outlined. The fungi's life-cycle and its most common location are described.

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**Number**

96

**Author**

Harrington Rory

**Title**

Hybridisation among deer and its implications for conservation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1973

**Source**

Irish Forestry

**Volume**

Vol. 30, No. 2

**Key Word**

Red deer, hybridisation, conservation, Cervus elaphus scoticus, sika deer, Cervus nippon, species genetic integrity, wildlife, environment

**Abstract**

The danger to the genetic integrity of the Irish red deer, the only indigenous hoofed animal, through hybridisation with sika deer is outlined. This hybridisation is common near the Powerscourt estate in Co. Wicklow, but unknown in Kerry as yet. The extent of this hybridisation is estimated, and the morphological and colour characteristics, necessary to correctly identify hybrids, are described.

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pp 64 - 78

**Location**

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**Notes**

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**Address of author**

National Parks and Wildlife Service, OPW, 51 Stephens Green Dublin 2.

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**Number**

97

**Author**

Conroy M.J.

**Title**

The effect of 19th century stone drains on the growth of Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1973

**Volume**

Vol. 30, No. 2

**Key Word**

Sitka spruce, drainage systems, stone drains, gley soils, blanket peat, *Picea sitchensis*, silviculture, peatlands

**Abstract**

In Rossmore Forest, Co. Laois, poor tree growth occurred on blanket peat planted in 1952, while there was excellent tree growth on the poorly drained gley soils of the Castlecomer series. Within the poor stand parallel lines of relatively good tree growth occurred above stone drains installed in 1880. As a result of man's influence the depth of peat is considerably reduced in the immediate vicinity of the drains and roots penetrate to the base of the drains. Concentric ochreous mottles (noferrans) have developed around these root channels. The drains are largely ineffective as a drainage system although the individual drains are still running.

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**Location**

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**Number**

98

**Author**

OCarroll N., McCarthy R.

**Title**

Potassium supplied by precipitation and its possible role in forest nutrition.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1973

**Source**

Irish Forestry

**Volume**

Vol. 30, No. 2

**Key Word**

potassium, precipitation, mineral deficiency, foliar deficiency symptoms, soil nutrients

**Abstract**

Published data on potassium content of precipitation for eight Irish meteorological stations over a period of seven years were processed to give the quantities supplied. The overall distribution is concave, with lowest values in the central area and the highest on the west and northwest coasts. The average quantity supplied range from 1.6 to 11.7 kg K/ha per annum. It is suggested that this supply may be important in soils of low K content.

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pp 88 - 93

**Location**

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**Address of author**

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**Number**

99

**Author**

O'Flanagan L.P., Moloney J.M.

**Title**

Formica lugubris: a new county record.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1973

**Source**

Irish Forestry

**Volume**

Vol. 30, No.2

**Key Word**

Formica lugubris, wood ant, ecology, woodland natural history

**Abstract**

The occurrence of Formica lugubris Zett, the large wood ant, in South East Limerick is recorded.

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**Number**

100

**Author**

Ryan James G.

**Title**

National Programme for Science and Technology in Forestry and Related Products.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1983

**Source**

Irish Forestry

**Volume**

Vol. 40, No. 1

**Key Word**

science, technology, government programme, national science programme, forest products, state funding, forestry policy, timber properties, education, training, forestry development, technical services, timber processing, timber end uses

**Abstract**

This paper summarises the National Programme for Science and Technology as it relates to forestry and related products. The programme has identified a number of scientific and technical tasks which must be undertaken if the fast expanding forestry sector is to reach its potential. These tasks are: to determine the properties of Irish timber and to establish standards for its use; to assess the cost-effectiveness, and suitability to Irish conditions of available methods and technologies for timber harvesting; to expand the programme of education and training of forestry personnel through formal courses and an advisory and information service; to expand the technical services available to the timber processing industries, especially sawmilling; and to study cost-effective use of potential forestry land and the feasibility of alternative uses of forestry crops and their residues.

**Page**

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**Address of author**

National Board for Science and Technology, Shelbourne House, Shelbourne, Dublin 4.

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**Number**

101

**Author**

Murphy Wm., Gardiner J.J.

**Title**

Forest recreating economics.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1983

**Source**

Irish Forestry

**Volume**

Vol. 40, No. 1

**Key Word**

recreation economics, recreational facilities, forest amenities, benefit analysis

**Abstract**

This paper examines a method for evaluating the benefits of forest recreation using data collected in a pilot scale survey carried out in Portumna Forest Park in 1980. A consumer demand curve is constructed for the park and it is calculated that the annual monetary value of recreation facilities in the park is £5,670. This is greatly in excess of actual amounts collected at present in the park.

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**Address of author**

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**Number**

102

**Author**

Fry D.J.

**Title**

The effects of the growth regulators on shoot extension and leaf retention in Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1983

**Source**

Irish Forestry

**Volume**

Vol. 40, No. 1

**Key Word**

growth regulators, shoot extension, leaf retention, Sitka spruce, synthetic inhibitors, silviculture, *Picea sitchensis*, tree growth

**Abstract**

The effects of pre-budbreak soil applications of three growth regulating chemicals, with differing physiological properties, upon the subsequent shoot growth of Sitka spruce was investigated using four-year old potted plants. Applications of Gibberellic Acid (GA3) had a stimulatory effect on overall growth and apical dominance, but also resulted in premature senescence of the older needles. Applications of Abscisic Acid (ABA) had essentially the opposite effect. Chlorocholine chloride (CCC), a synthetic inhibitor of gibberellin biosynthesis, had a slightly inhibitory effect upon the extension of individual shoots, but also stimulated successful bud opening in the first whorl and therefore resulted in slight stimulation in overall growth. The results are discussed with relation to the role of endogenous regulators in controlling shoot extension.

**Page**

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**Address of author**

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**Number**

103

**Author**

Hendrick E., Pfeifer A.

**Title**

Climate, weather and forestry.

**Publisher**

AGMET Group

**Place**

Dublin

**Date**

1992

**Source**

Irish farming, weather and environment - Chapter 15. (Edited by T. Keane)

**Key Word**

weather, climate, frost damage, precipitation, temperature, rainfall, silviculture, forest management

**Abstract**

The influence which the various climatic conditions prevailing in Ireland have on tree growth is described. The effect of light duration and light intensity on terminal bud initiation and growth is outlined, and the most common forest species are divided into shade tolerant and light demanders. The role which frost plays in determining plant distribution and the most effective means of preventing damage caused by frost are explained. The most commonly planted tree species in Ireland are selected largely because they are particularly suited to high rainfall areas. The range of forest operations in Ireland, how they are affected by climate and weather and how the harmful effects can be removed or alleviated are described.

**Page**

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**Location**

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**Address of author**

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**Number**

104

**Author**

Rea T.

**Title**

Irish State forestry: government policy 1948 - 1959.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1985

**Source**

Irish Forestry

**Volume**

Vol. 42, No. 1

**Key Word**

State forestry, forestry policy, planting targets

**Abstract**

This article deals with the development of government forestry policy from 1948 to 1959. Before the February 1948 election the government had set a planting target of 10,000 acres per annum over a 50 year period. The intention was to extend the national forest area to a total of 700,000 acres, including the privately owned estate (85,000 acres). In November 1948 the new government adopted a policy of planting 25,000 acres per annum over a 40-year period. The latter programme represented new planting, i.e. 25,000 acres per annum on top of the then existing estate (about 170,000 acres).

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**Number**

105

**Author**

McNally A., Doyle G.J.

**Title**

Tree productivity models based on annual ring widths for contemporary and subfossil Scots pine in Ireland.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1985

**Source**

Irish Forestry

**Volume**

Vol. 42, No. 1

**Key Word**

tree productivity models, annual ring width, subfossil Scots pine, *Pinus sylvestris* L., tree growth, stem diameter

**Abstract**

Ring width series from *Pinus sylvestris* L. were used to compute empirical growth functions for a number of sites, including two subfossil pinewood sites. These empirical functions were corrected for non-proportionality of annual ring width and stem volume increment. Significant correlations between stem diameter and tree productivity on each site were observed. The trends evident in the productivity curves correspond with reported changes in pine productivity with age. A comparison of relative productivity on the sites sampled indicates that trees growing on mineral substrates achieve higher current annual production than trees growing on peat at all ages. The rate of increase is also greater, and maximum productivity is achieved in older trees on mineral soils. Minimum relative productivity occurred in subfossil pines which grew on a midland raised bog. The observed differences in productivity are primarily attributed to differences in soil nutrient status and drainage. It is suggested that productivity curves might be used in conjunction with information on stand density, and calibrated with quantitative productivity data to yield estimates of absolute stand productivity. This would be particularly useful in the study of subfossil woodlands where direct measurements are not possible.

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**Address of author**

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**Number**

106

**Author**

Rushton B.S.

**Title**

An analysis of variation of leaf characters in *Quercus robur* L. and *Quercus petraea* (Matt.) Liebl. population samples from Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1983

**Source**

Irish Forestry

**Volume**

Vol. 40, No. 2

**Key Word**

leaf characteristics, *Quercus robur* L., *Quercus petraea*, hybrids, oak, cluster analysis

**Abstract**

The levels of hybridity in 35 population samples of oak (*Quercus* spp.) from Northern Ireland were assessed using leaf characters analysed by principal components analysis and cluster analysis. Eight population types were recognised: 1. populations of pure *Q. robur* (two populations); 2. mixed populations with no hybrids and predominance of *Q. robur* trees (two populations); 3. predominantly pure *Q. robur* with a small number of hybrids (four populations); 4. predominantly pure *Q. robur* with a small number of *Q. petraea* and hybrid trees (five populations); 5. Approximately equal proportions of *Q. robur* and *Q. petraea* and hybrid trees (five populations); 6. mixed populations with a high proportion of hybrids (three populations) 7. Predominantly *Q. petraea* with a small number of hybrid and *Q. robur* trees (four populations); 8. predominantly *Q. petraea* with a small number of hybrid trees (six populations). It is argued that the level of hybridity (13.3%) observed is not substantially different from earlier surveys of the two species in England and Wales. The pattern of hybridisation suggests relatively ancient hybridisation although some populations showed evidence of more recent crossing. There was also evidence that some hybrids had been planted along with the parental species. Mixed populations predominated in the survey possibly owing to the inclusion of obviously planted stands. In some mixed populations, there was evidence of a mosaic with *Q. petraea* on the drier areas.

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**Address of author**

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**Number**

107

**Author**

Savill P.S.

**Title**

Land classification for plantation forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1983

**Source**

Irish Forestry

**Volume**

Vol. 40, No. 2

**Key Word**

land classification, land use, site productivity, agriculture, land allocation, environment, conservation

**Abstract**

The main purpose of land classification as a basis for deciding land use strategies, and the main approaches to it are discussed, including land capability and land unit classifications. The problems associated with evaluating the various options for the allocation of land are then described, especially in the context of conflicts between agriculture, forestry, conservation, etc. The various classifications used within forestry are discussed, including those based on site productivity, vegetation, soil, climate and multifactor classifications. Among the suggestions made for resolving conflict over land use are the development of more objective methods for allocation of land between agriculture, forestry, conservation and other uses, and an end to the divisive systems of agriculture and forestry education.

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**Number**

108

**Author**

Javadi Z., MacSiurtain M., Gardiner J.J.

**Title**

The effect of tree espacement upon wood density in Sitka spruce (*Picea Sitchensis* (Bong) Carr.).

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1983

**Source**

Irish Forestry

**Volume**

Vol. 40, No. 2

**Key Word**

tree espacement, wood density, Sitka spruce, spacing, silviculture, *Picea sitchensis*, regression analysis, ring width

**Abstract**

Wood samples were obtained from the Forest and Wildlife Service spacing trial 11/63 at Doneraile Forest Co. Cork in order to determine the effect of initial spacing on wood density and the relationship between ring width and wood density in a young Sitka spruce population. Tests on sample trees from 1.2m, 2.4m and 3.0m espacements showed that spacing had no effect on mean wood density. Simple regression analysis was used to examine the relationship between ring width and wood density. The correlation co-efficient between the two sets of data was  $r = -0.35$ . This indicated a weak negative association existed between wood density and ring width.

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**Number**

109

**Author**

McCarthy R., Keogh R.M.

**Title**

The potential contribution of Irish State forests to the supply of energy.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1983

**Source**

Irish Forestry

**Volume**

Vol. 40, No. 2

**Key Word**

energy-supply, Sitka spruce, national budget, economics, *Picea sitchensis*, forestry database, research, biomass

**Abstract**

This paper estimates what the energy-supply of a hypothetical conventional state forest of 360,000 ha. would be if it were totally composed of Sitka spruce, yield class 14 on a rotation of 50 years. The database is small and results are tentative. Nevertheless, it appears that a large forest estate might be able to supply an equivalent amount of energy as used by its potentially dependent forest industries. Whilst the annual supply of energy to the total national budget appears to be modest, the long term contribution would be accumulative because of the renewable nature of the source. It is felt that two aspects should now be examined: (1) the role dry matter might have in the country's forests, as an alternative measure to volume alone and (2) the approach research should adopt in relation to biomass investigations.

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**Address of author**

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**Number**

110

**Author**

Carey M.L., Barry T.A.

**Title**

Coniferous growth and rooting patterns on machine sod-peat bog (cutover) at trench 14, Clonast.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1975

**Source**

Irish Forestry

**Volume**

Vol. 32, No. 1

**Key Word**

peatland afforestation, bogs, peat soils, fertilisers, fertilisation, *Abies grandis*, *Pinus radiata*, *Picea abies*, *Thuja plicata*, *Picea sitchensis*, *Pinus sylvestris*, *Larix leptolepis*, root systems, root profiles, establishment, planting, rooting, peatlands

**Abstract**

This paper describes the results of a study of excavated root patterns for 13 conifers species after 18 years of growth. It is shown that growth of *Abies grandis*, *Pinus radiata*, *Picea abies*, *Thuja plicata*, *Picea sitchensis*, *Pinus sylvestris*, *Larix leptolepis* was better than the national average yield class. Most root profiles showed live roots at a depth of more than 50cm from the surface. Further downward growth is considered likely. Treatment with phosphorus is credited with achieving the improved growth rate on this site, and treatment with phosphorus and potassium at the time of planting is recommended.

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**Number**

111

**Author**

Hendrick Eugene

**Title**

The effect of cultivation method on the growth and root anchorage of Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 1

**Key Word**

soil cultivation, double mould-board, mole draining, root anchorage, root growth, Sitka spruce, *Picea sitchensis*, surface-water gley soils, drumlin, drainage method, clay soil, silviculture, root excavations, tree growth

**Abstract**

Tree pulling, using a hand winch, showed that 14 to 16 year old Sitka spruce trees, established on surface-water gley soils following mole drainage, had an average maximum turning movement almost double that of trees established on DMB plough ribbons. Root excavations showed that this was due to improved rooting depth and spread in the mole draining treatment. Mole draining gave better diameter growth than ploughing on drumlin slopes; on inter-drumlin flats it resulted in poorer growth. The minimum gradient for moleing is 4% at lower levels. Small depressions and large stones lead to ponding of water. The optimum depth is 400-500 mm. Collector drains to collect the water running into the moles are essential and should be 100 to 150 mm deeper than the moles.

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**Address of author**

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**Number**

112

**Author**

Fitzsimons Brendan

**Title**

Pruning conifers in Ireland

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 1

**Key Word**

knot area ratio, ring width, growth rate, timber grading, pruning, loading capacity, conifers, silviculture

**Abstract**

Although pruning was carried out extensively in the 1950s in Ireland, the cost controls introduced in the 1970s have meant that it is no longer a common practice. However, it has recently been suggested that the quality of Irish timber could be enhanced by pruning. The deleterious effects of knots on timber loading capacity is the principal reason for pruning softwoods. Of the coniferous species considered, lodgepole pine, Scots pine and Douglas fir will benefit most from pruning because of their utilisation as joinery timber. General purpose timbers, such as Sitka spruce and Norway spruce, will benefit less significantly. For both type of products the pruning strategy will be the same - the removal of branches as early as possible without reducing increment and the production of the maximum amount of clearwood. A pruning table is constructed in order to estimate the ages at which pruning operations would have to be carried out in order to obtain the 2.5 : 1 clearwood to knotty core ratio.

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**Number**

113

**Author**

Schaible R., Gawn L.J.

**Title**

Variation in timber strength of fast grown unthinned Sitka spruce in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 1

**Key Word**

physical properties, forest products, timber processing, stress-grading, Sitka spruce, *Picea sitchensis*, stress-grading, machine grading requirements

**Abstract**

Timber from six unthinned stands of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) of general yield classes ranging from 20 to 24 cubic metres/ha/year, and established at spacings of 1.5 to 2.0 metres, was machine stress-graded to determine the amount of timber sawn to structural sizes that attained BS 5268 strength classes (SC) 3 and 4. The stands were derived from seed from at least two North American sources. Although there were some differences between stands related to provenance, none was statistically significant. Within the range of conditions tested, yields of SC4 structural timber obtained varied between 24% and 57% of battens tested, the differences being primarily related to local yield class. Yields obtained of SC3 timber ranged from 36% to 69% of battens tested, and between 3% and 9% of battens did not meet the machine grading requirements of SC3 and SC4.

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**Address of author**

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**Number**

114

**Author**

Nieuwenhuis Maarten

**Title**

Operations research in forestry.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1989

**Source**

Irish Forestry

**Volume**

Vol. 46, No. 1

**Key Word**

operations research, linear programming, goal programming, dynamic programming, network analysis, computer simulation, efficiency, computer systems, geographic information systems

**Abstract**

This paper looks at the various applications of operations research techniques in forestry and forest industries. The most widely used mathematical models are: linear programming, integer programming, goal programming, dynamic programming, network analysis and computer simulation. The demand for improved efficiency, combined with multiple-use requirements, and the availability of computers, will result in a continuing increase of the use of operations research in natural science and resource managerial decision-making.

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**Address of author**

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**Number**

115

**Author**

Joyce P.M.

**Title**

Development of yield tables.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1982

**Source**

Irish Forestry

**Volume**

Vol. 39, No. 2

**Key Word**

yield models, site classification, forest management, yield class, marginal thinning intensity, stocking, yield studies, growth models

**Abstract**

The availability of Forestry Commission yield tables has influenced the development of forest management in Ireland particularly in the past decades. This article traces the development of yield studies in the Forestry Commission and outlines the recent publication of yield models for forest management. The author simplifies the construction of yield tables into a process with two stages site classification and the construction of yield curves for each site class. The growth models available to Irish forestry will be a guide to forest management for the future, but they should not be allowed to dictate it.

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**Number**

116

**Author**

Olufemi Omiyale, Joyce P.M.

**Title**

A yield model for unthinned Sitka spruce (*Picea sitchensis* (Bong.) Carr.) plantations in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1982

**Source**

Irish Forestry

**Volume**

Vol. 39, No. 2

**Key Word**

yield models, Sitka spruce, thinning, production forecast, growth function, Richards Growth Curve, stocking density, silviculture, *Picea sitchensis*

**Abstract**

Over the past few decades the construction of yield models has progressed from the graphical through mathematical and biomathematic approach. The development of biomathematical growth model for Sitka spruce plantations is described. It is suggested that this technique can serve as a basis for general yield model construction of plantation species in Ireland. The Richards Growth Function was used in conjunction with data available to generate yield models for unthinned Sitka spruce plantations in Ireland, the models being directly applicable to plantations ranging from 600 to 5,000 stems per hectare. It is shown that the initial espacement effects can be adequately depicted by the Richards Growth Function.

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**Number**

117

**Author**

Boyle K, Farrell E.P., Gardiner J.J.

**Title**

Harvesting: its effect on the physical properties of soils.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1982

**Source**

Irish Forestry

**Volume**

Vol. 39, No. 2

**Key Word**

harvesting, tractor harvesting, total porosity, soil damage, soil compaction, skidder harvesting, bulk density, total porosity, soil conditions, forest soils

**Abstract**

The objective of this study was to quantify the changes that occur in a moderately fine textured soil following harvesting by skidder. Bulk density, total porosity and organic matter content were measured along an extraction path used for thinning. The bulk density under the wheel ruts at 5 - 10 cm and 10 - 15 cm were significantly greater than the bulk densities of either a disturbed area or the area between wheel ruts. Total porosity was reduced at the 0-5, 5-10 and 10-15cm depths under the wheel ruts. These actual reductions in porosity compared to the undisturbed soil were 12, 32 and 16% respectively. Previous studies have recorded timber volume losses up to 15% as a result of soil compaction. To minimise damage on vulnerable sites, careful consideration should be given to the methods and timing of extraction.

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**Number**

118

**Author**

Irish Timber and Harvesting

**Title**

Advanced harvesting technology training at Coillte.

**Place**

Birr

**Date**

March/1995

**Source**

Irish Timber and Forestry.

**Volume**

Vol. 4, No. 1

**Key Word**

forest harvesting, training, harvesting machinery,

**Abstract**

Coillte has been running courses in the operation and maintenance of forest harvesting machinery for some years. The majority of the courses are held at the training centre in Mountrath Co. Laois, while some are held in the forests at suitable locations throughout the country.

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**Number**

119

**Author**

Ni Dhubhain A., Gardiner J.J.

**Title**

Farmers' attitudes to forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1994

**Source**

Irish Forestry.

**Volume**

Vol. 51, Nos. 1 & 2

**Key Word**

agriculture, farmers' attitudes, land use, afforestation, grant-aid, land conversion, land acquisition, forestry expansion, farm forestry, private forestry, grants, incentives

**Abstract**

The continued expansion of the national forest estate is dependent on farmers who may be willing to convert some of their land to forestry or to sell land for forest development. This paper presents the results of a survey of farmers carried out in 1992. This survey established the factors that influence a farmer's decision to plant trees, and determined farmers' attitude to forestry in general. The impact of the conversion of agricultural land to forestry on agricultural output and workload on the farm was also established. The vast majority of farmers surveyed remain uninterested in converting part of their farm to forestry. The survey also showed that farm forestry, to date, has had little impact on agricultural production. The lack of awareness among farmers regarding the level of financial incentives for farm forestry was also highlighted.

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**Address of author**

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**Number**

120

**Author**

Anderson C., Thomson K., Psaltopoulos D.

**Title**

Wood processing in the Irish Republic: a survey report.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1994

**Source**

Irish Forestry

**Volume**

Vol. 51, No. 1

**Key Word**

sawmills, output volume, processing capacity, timber products, timber markets, processing employment, rural economy, employment, economics, marketing, timber processing, competition

**Abstract**

This paper describes a recent survey of wood-processing plants in the Irish Republic. The objective of the survey was to investigate the relationship between these enterprises and the rest of the rural economy, either through the purchase of input from, and sale of output to, other rural sectors, or through the maintenance of rural employment. Although the small-sized segment of the sawmill sector represents a very high proportion of total number of plants, it accounts for a very low share of total processing capacity (5%). Because of their lack of competitiveness in the major markets, the ability to identify and manipulate target markets is crucial to the small-size categories of sawmills. Large sawmills appear in the survey results as modern, low-cost, export-oriented wood processors. Medium-sized sawmills account for a third of total processing capacity, and their capacity utilisation is marginally better than that of small sawmills. However, the medium-sized plants lack the competitiveness of the large plants and the flexibility of the small plants. The prospects of this sector do not seem very favourable because its market share may be penetrated by larger, more efficient processors.

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**Address of author**

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**Number**

121

**Author**

O'Sullivan Aidan

**Title**

The use of trees and woodland in early medieval Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

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**Source**

Irish Forestry

**Volume**

Vol. 51, Nos. 1 & 2

**Key Word**

medieval woodlands, forest history, landscape, forest products, timber use, archaeology, economics, pollen analysis, dendrochronology

**Abstract**

Trees and woodland are peripheral to the main concerns of medieval historical studies today. However, the importance of woodlands resources as an aspect of a complex economy in both rural and urban landscapes needs to be assessed. A reconstruction of the role of woodland in early medieval Ireland can best be carried out through a combination of historical, archaeological and dendrochronological evidence. Although pollen evidence indicates large scale clearance in woodland cover between the fifth and eight centuries A.D., placename and literary evidence provides a picture of extensive woodland cover. Cartographic evidence of the extent of woodland is also conflicting. The role of woodland as a valuable economic resource which could be owned, exchanged or managed in a variety of ways can be studied in the historical annals, saints' lives and early Irish law-texts. The exploitation of woodlands for pannage and wood-pasture and as a source of fruit and nuts, and the use of timber for underwood in building construction are examined. Another important use of woodland involved the growth, felling and conversion of large trees into timbers for making houses, trackways, waterfronts, watermills and a variety of other structures. The use of timber in the river waterfronts in early medieval Dublin is discussed in detail.

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**Notes**

available

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**Number**

122

**Author**

Kearney Brendan

**Title**

Changes in GATT and CAP-implications for Irish farming and land-use.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1994

**Source**

Irish Forestry

**Volume**

Vol. 51, Nos. 1 & 2

**Key Word**

Common Agricultural Policy, GATT, trade agreement, land acquisition, land prices, land use, agriculture reforms, marginal land, afforestation, CAP

**Abstract**

The recent CAP reforms, while emphasising the price/market issue, nonetheless represents a shift from price support to income assistance. The main beneficiary is the Irish beef sector which gains IR£ 60 million. The recent CAP reform market regime measures probably retard expansion in forestry in the short-term by increasing agricultural returns and raising land prices. It is not certain whether the rate of afforestation which has been achieved in recent years can be sustained and the future forestry expansion may present a more formidable challenge than earlier programmes.

**Page**

pp 37-44

**Location**

Coillte library

**ISBN**

0021 1192

**Notes**

Available

**Address of author**

**Number**

123

**Author**

Bulfin Michael

**Title**

Ireland - changes in agricultural policy and their impact on private forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1994

**Source**

Irish Forestry

**Volume**

Vol. 51, Nos. 1 & 2

**Key Word**

Farm forestry, private forestry, agricultural policy, CAP, land prices, land acquisition, forestry grants, wood processing, afforestation

**Abstract**

The CAP reforms have introduced a number of possibly conflicting schemes which impinge on forestry and other land uses. The level of new afforestation is influenced by the effects of these schemes on farmers' decisions to buy and sell land. An improvement in the quality of Coillte land acquisitions is likely while farmers are more inclined to afforest their own lands. Forestry expansion by farmer forestry will need incentives which are competitive - or somewhat more attractive - than those which allow a farmer to remain in agriculture.

**Page**

pp 69 - 79

**Location**

Coillte library

**Notes**

Available

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**Number**

124

**Author**

Rodgers M., Casey A., McMenamin C., Hendrick E.

**Title**

An experimental investigation of the effects of dynamic loading on coniferous trees planted on wet mineral soils.

**Publisher**

Cambridge University Press

**Place**

Cambridge

**Date**

1995

**Source**

Wind and trees. (Edited by M.P. Coutts & J. Grace)

**Key Word**

dynamic loading, wet mineral soils, silviculture, windthrow, tree, crop instability, roots

**Abstract**

Two field studies are presented on the in situ dynamic loading of mature coniferous trees planted on wet mineral soils. The studies consisted of examining the behaviour of a complete tree under natural wind loading and a

number of trees with truncated stems under forced dynamic loading. The test site has a history of tree instability and the mineral soil under the rootplates consists of a clayey silty sand. The rootplates of the tested trees were shallow and the main roots had an asymmetrical radial distribution about the tree stem centre. The dynamic loading caused an increase in soil pore water pressure, and in the forced loading test it led to hydraulic fracturing of the rootplate.

**Page**

pp 204 - 219

**Location**

Coford

**Notes**

Available

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**Number**

125

**Author**

Hendrick Eugene

**Title**

Submission by the Society of Irish Foresters to the strategy for the development of the forestry sector to the year 2015.

**Publisher**

Society of Irish Forestry

**Place**

Dublin

**Date**

1994

**Source**

Irish Foresters

**Volume**

Vol. 51, Nos. 1 & 2

**Key Word**

forestry development, Society of Irish Foresters, economic development, development strategy

**Abstract**

The author notes the welcome given by the Society of Irish Foresters to the initiative of the Dept. of Agriculture, Food and Forestry in undertaking a study to lead to a strategic plan for the forestry sector to the year 2015. He argues that an active, well regulated forestry profession is fundamental to the forestry sector over the coming two and a half decades. The society urges the adoption of national recognition for the role of the professional forester, through either regulation or legislation, in order to protect the public and the resource from non-qualified individuals. The dependence on a small number of species is noted, and the need to develop knowledge on the ecology of these species is stressed. The growth in private sector planting is welcomed, but there is a warning of the danger of increasing fragmentation. The author also offers recommendations for development in a number of other areas including the sawmilling industry, forest regulation, forest infrastructure and communications.

**Page**

pp 108 - 113

**Location**

Coillte library

**ISBN**

00121192

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield Dublin 4.

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**Number**

126

**Author**

Society of Irish Foresters

**Title**

Policy position statements.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1995

**Key Word**

forestry education, professional standards, species diversification, environment, conservation, research, forest policy, training

**Abstract**

The statements set out the position of the Society of Irish Foresters on a number of issues. Concern is expressed with the growing involvement of untrained personnel purporting to be professional consultants/contractors, and the publication of a list of foresters approved by the SIF is recommended. The importance of forestry in rural development is noted, and support is expressed for the current policy of promoting increased afforestation in order to guarantee a sustained level of benefits for the future. The statements recommend a controlled policy of species diversification while recognising that Sitka spruce will remain the principal species planted for the foreseeable future. The author emphasises the importance of developing a vigorous forest industry in such a way as to contribute to the quality of the environment. Investment is needed now in forest research in areas such as plantation establishment and management, forest regeneration, environmental aspects of forestry and the forest products sector.

**Page**

8p

**Location**

Coillte library

**Notes**

Available (Placed with Irish Forestry, Vol. 51, 1992)

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**Number**

127

**Author**

Irish Landowners' Convention

**Title**

Private forestry in the Irish Republic.

**Publisher**

Irish Landowners' Convention

**Place**

Dublin

**Date**

1956

**Key Word**

private forestry, rural development, State support, woodland maintenance, environment, private woodlands, woodland management, grants, subsidies, taxation

**Abstract**

Despite the fact that little official interest has been shown in private forestry, private woods are still the principal source of mature timber in Ireland. The establishment of a sound forestry industry must depend to a large extent on the whole-hearted support of the owners of private woodland. Two factors mitigate against the development and proper management of private woodlands in Ireland. Firstly, there has been little replanting in the past due to lack of confidence and, secondly, systems of taxation have put private woodland owners at a disadvantage compared to owners in other countries. Changes in the awarding of grants, in particular a decrease in the minimum spacing requirement for Sitka spruce planting and grants for planting of more difficult species, are needed. The state should give every encouragement to private owners to improve their woodlands and develop a comprehensive scheme for marketing all forest products.

**Page**

16p

**Location**

Coillte library

**Notes**

Available

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**Number**

128

**Author**

Eakin Geoffrey

**Title**

A comparative analysis of selected mechanical properties of home-grown and Canadian Sitka spruce.

**Place**

Newtownabbey

**Date**

1995

**Key Word**

imported timber, timber quality, Sitka spruce, Picea sitchensis, bending, strength properties, timber processing, forest products

**Abstract**

The purpose of this thesis was to compare imported Sitka spruce of Canadian with home grown timber in order to establish the potential of the latter. The following tests were carried out on 165 samples of Sitka spruce with moisture content of between 12 and 18 per cent: static bending; impact bending; comparative parallel to the grain; shear parallel to the grain; and cleavage. The results obtained are compared with the results of previous studies on Canadian timber. Analysis of the two sets of results show that in general the Canadian timber proved to be the strongest of the two varieties. In four out of the five tests the values for the imported timber exceed those obtained from the tests on the local variety. It is concluded that the inferior strength of the home grown timber is most probably due to its lack of density, with an average weight of 350 kg/cubic metre compared to the Canadian weighing in at an average of 430 kg/cubic metres.

**Page**

110p

**Location**

Dept. of Building Engineering, University of Ulster

**Notes**

Available (Thesis submitted for award of B.Sc. in Engineering, University of Ulster)

**Thesis**

B.Sc. Thesis, University of Ulster

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**Number**

129

**Author**

Anon

**Title**

A hard day's fight for the timber haulier.

**Place**

Birr

**Date**

1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 4

**Key Word**

timber haulage, hauliers, small businesses, timber haulage

**Abstract**

The report describes the timber haulage business run by Ted Stephenson in Co. Wicklow. The main difficulty

associated with the business is continuity of work. Long term contracts are not available and getting backloads for trucks is often impossible. Other difficulties mentioned include weight restrictions, insurance costs, limited driving hours, and the limited amount of grant aid for vehicles. These restrictions allow international competitors an unfair advantage in the Irish market.

**Page**

pp 6 - 7

**Location**

Coillte library

**Notes**

available

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**Number**

130

**Author**

Anon

**Title**

Coillte comes of age with record profits.

**Place**

Birr

**Date**

June / 1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 4

**Key Word**

Coillte Teoranta, Irish Forestry Board, economics, profits, timber processing, State forestry, semi-state companies, OSB, timber prices, timber trade, harvesting

**Abstract**

The annual report of Coillte Teoranta, the Irish Forestry Board, reveals that the company achieved a record profit of £10.83m in 1994. The main factors attributed for this success are an increase in log volumes sold and price increases of 33% for log prices. During 1994 Coillte planted 10,614 ha. of forest and produced 2.05 million cubic metres of logs. The volume of timber harvested increased by 38% to a record level of 760,000 cubic metres. Progress in a number of strategically important areas is also noted. These include the beginning of construction work on the Louisiana-Pacific Coillte Ireland Ltd. oriented strand board (OSB) factory in Waterford, in which Coillte has a 35% share. Chief Executive Martin Lowry also stressed the importance of environmental considerations in modern forestry management.

**Page**

pp 12 - 14

**Location**

Coillte library

**Notes**

available

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**Number**

131

**Author**

Roche Tom

**Title**

A holistic approach to forestry issues? Declaration of the European Union.

**Place**

Birr

**Date**

June/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 4

**Key Word**

conservation, biodiversity, developing countries, sustainable development, environment, European Union, FAO, EU, UN Committee on Forestry

**Abstract**

This article provides a summary of the European Union's response to the Twelfth Session of the Committee on Forestry's (UN) policy statement on sustainable forest development (Food and Agricultural Organisation, Rome, March 1995). The EU supports the harmonisation of criteria and indicators of sustainable management of forests, the certification of timber obtained from this source, and the setting up of an open-ended inter-governmental panel on forests under the aegis of the Commission for Sustainable Development.

**Page**

p 14

**Location**

Coillte library

**Notes**

available

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**Number**

132

**Author**

Anon

**Title**

Spotlight on Coillte General Manager.

**Place**

Birr

**Date**

June/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 4

**Key Word**

Coillte forests operations, forestry professionals, management structures, business organisation, finance, timber processing

**Abstract**

This article provides a brief account of the career and current responsibilities of Coillte General Manager, Michael Carey. On joining Coillte he became head of a Task Force which set about re-organising the company from forest level up. Given Coillte's commercial mandate, he feels the only way forward for the company is to copy international competitors and become actively engaged in the processing side of the forestry business.

**Page**

pp 16 - 17

**Location**

Coillte library

**Notes**

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**Number**

133

**Author**

Anon

**Title**

The case for the small contractor.

**Place**

Birr

**Date**

June/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 4

**Key Word**

forest contractors, forest haulage, hauliers

**Abstract**

The report deals with a small forest haulage contractor, Keith Shane of Co. Wicklow, who still uses a horse and several Ford Counties with Igland winches to haul timber.

**Page**

p 19

**Location**

Coillte library

**Notes**

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**Number**

134

**Author**

Anon

**Title**

Commercial forestry - a positive force for conserving wildlife?

**Place**

Birr

**Date**

June/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 4

**Key Word**

commercial forestry, wildlife, conservation, forest ecosystems, ecology, environment, wildlife, wildlife displacement

**Abstract**

Although afforestation has sometimes been responsible for displacing wildlife, several Ulster softwood plantations have provided sanctuary for small passerine birds and their natural predators. Access to open land for hunting on the forest fringes, secure roosting and nesting sites provided by the forest and an increase in prey species are all factors which have contributed to this situation. There is also evidence to suggest that a mosaic of mature plantations, growing crops, re-planted ground and newly felled sites provides a rich and vibrant habitat for a range of wildlife species.

**Page**

p 20

**Location**

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**Notes**

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**Number**

135

**Author**

Anon

**Title**

Coillte acquires new machinery agency.

**Place**

Birr

**Date**

May/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 3

**Key Word**

Coillte, forest machinery, Ponsse forwarder, thinning

**Abstract**

This article describes the new Ponsse forwarder machine introduced to Ireland by Coillte and now working in the Sligo/Leitrim area. It has a 10 ton capacity and has operated in both thinning and clearfell. Studies have shown output figures of 16 cubic metres per productive hour.

**Page**

pp 10 - 12

**Location**

Coillte library

**Notes**

available

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**Number**

136

**Author**

Society of Irish Foresters

**Title**

Foresters should be State registered.

**Place**

Birr

**Date**

May/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 3

**Key Word**

foresters, forestry professionals, Society of Irish Foresters, training, forest research, forest regeneration, forest consultancy

**Abstract**

The Society of Irish Foresters has expressed alarm at the rising number of untrained personnel purporting to be professional consultants or contractors in the forestry business. The Society wants all professional foresters in the country registered, and calls for increased investment in forest research in areas such as plantation establishment and management, forest regeneration, environmental aspects of forestry management, and the forest products sector.

**Page**

p 11

**Location**

Coillte library

**Notes**

available

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**Number**

137

**Author**

Anon

**Title**

It's a hard day's work in the forest.

**Place**

Birr

**Date**

May/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 3

**Key Word**

forestry contractors, forest haulage, hauliers, harvesting, transport

**Abstract**

This is a feature on William Houlihan, Chairman of the Irish Forestry Contractors' Association. The main difficulties associated with this business is the lack of continuity in contracts and the increasingly competitive nature of the work as more and more small contractors become involved. Travelling expenses and tax regulations are also cited as problems for the small-scale operator

**Page**

pp 12 - 13

**Location**

Coillte library

**Notes**

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**Number**

138

**Author**

Anon

**Title**

Stopping Britain's forests from blowing away.

**Place**

Birr

**Date**

May/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 3

**Key Word**

windthrow, Great Britain, European Union, wind damage, EU

**Abstract**

Over the last 25 years, Forestry Commission scientists have gained extensive knowledge on how to reduce the impact of wind and have summarised their findings in "Forests and Wind: Management to Minimise Damage, Bulletin 114."

**Page**

p 13

**Location**

Coillte library

**Notes**

available

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**Number**

139

**Author**

Anon

**Title**

Maintenance of new broadleaf planting.

**Place**

Birr

**Date**

May/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 3

**Key Word**

broadleaf planting, weed control, maintenance, pruning, silviculture, thinning, fertilisers, broadleaves

**Abstract**

A number of important areas of broadleaf maintenance are discussed. For trees under three years old, weed control is of primary importance in the maintenance programme. Advice is given on the most suitable place and times of application. Remedial pruning, use of fertilisers, and thinning are also discussed.

**Page**

pp 16 - 17

**Location**

Coillte library

**Notes**

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**Number**

140

**Author**

Anon

**Title**

Twice as much forest in the new E.U.

**Place**

Birr

**Date**

April/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 2

**Key Word**

European Union, EU, Scandanavian forests, timber processing, business planning, marketing

**Abstract**

The area of forest in the European Union has doubled from 45 to 90 million hectares with the accession of the new Member States, Sweden, Finland and Austria. According to a director of the Swedish Forest Industries Association, EU membership will allow the forest industries in these countries to contribute to decisions and planning within their main market area.

**Page**

p 13

**Location**

Coillte library

**Notes**

available

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**Number**

141

**Author**

Anon

**Title**

Campaign to increase forestry acreage.

**Place**

Birr

**Date**

April/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 2

**Key Word**

forest expansion, afforestation, forestry policy, State support, land use, land conversion, planning, forestry development

**Abstract**

The Minister for Agriculture Food & Forestry has announced a campaign aimed at planting an additional 90,000 hectares of forestry over the next three years, an increase of 26,000 hectares on the total for the past three years. According to the Minister there is an estimated 1 million hectares of suitable land available in Ireland which would produce a better economic return from forestry than from conventional agriculture. A 20-year strategic plan for the industry is currently being prepared by the Department.

**Page**

p 9

**Location**

Coillte library

**Notes**

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**Number**

142

**Author**

Anon

**Title**

£90 million door facing plant awaits planning permission.

**Place**

Birr

**Date**

April/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 2

**Key Word**

timber processing industry, Masonite, moulded door manufacturing, employment, environment, landscape, industrial waste, forest products

**Abstract**

Masonite Corporation of Chicago, one of the world's leading timber processors, and the inventor of hardboard, is seeking planning permission for a moulded door manufacturing facility in County Leitrim. The new plant will employ 300 people. The basic raw materials for the process are wood chips and saw dust. Masonite says it is committed to minimising any impact on the environment and £7m is being invested in emission controls. Waste water will be treated in a comprehensively designed waste water treatment system.

**Page**

pp 12 - 13

**Location**

Coillte library

**Notes**

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**Number**

143

**Author**

Coillte Research & Development

**Title**

Cable extraction of whole trees with roadside processing.

**Place**

Birr

**Date**

March/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 1

**Key Word**

cable extraction, skyline harvesting, roadside harvesting, economics,

**Abstract**

A trial into improved methods of skyline harvesting investigated the environmental and economic viability of whole tree harvesting with roadside processing. Whole trees were extracted by skyline to the roadside to be delimbed and crosscut by a processor. The most efficient system comprised of two skylines working to one processor. One extra man is employed to cut trees and help choke the loads. Output on an average rack of 300m., and extracting 0.2 cubic metres per load, results in approximately 150 cubic metres per week at a cost of £16.86 per cubic metre at roadside.

**Page**

pp 16 - 17

**Location**

Coillte library

**Notes**

available

**Address of author**

Sidmonton Place, Bray Co. Wicklow

---

**Number**

144

**Author**

Anon

**Title**

Rationalisation and consolidation required in sawmill sector.

**Place**

Birr

**Date**

March/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 1

**Key Word**

sawmilling, timber processing, forest products, competition

**Abstract**

Forbairt Director, Sean Donnelly has said that a major rationalisation and consolidation in the country's sawmilling sector is needed if the industry is to survive in the face of low-cost East European competition. The fundamental weaknesses of the industry are over-capacity and under-utilisation of assets. According to Donnelly, Forbairt is committed to helping the sawmill sector address the challenges and opportunities which confront it.

**Page**

pp 18 - 19

**Location**

Coillte library

**Notes**

available

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**Number**

145

**Author**

Anon

**Title**

The forest - a key resource in the third world.

**Place**

Birr

**Date**

March/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 1.

**Key Word**

deforestation, development, third world, developing countries, tropical forests, land clearance, environment, development aid

**Abstract**

Of the 20m hectares of rain forest which disappear each year, 10% is caused by exploitative forestry practice. Three-quarters of the destruction is carried out to clear land for agriculture. One remedial approach is to keep fellings at a lower level than growth, so that forest resources increase instead of being used up. An important part of developing a strategy for sustainable forestry is the transfer of knowledge to governments and individuals in the third world.

**Page**

p 14

**Location**

Coillte library

**Notes**

available

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**Number**

146

**Author**

Anon

**Title**

Medite doubles output.

**Place**

Birr

**Date**

Sept./1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 5

**Key Word**

Medite, pulpwood, timber processing, MDF, medium density fibreboard, forest products

**Abstract**

The Medite factory in Clonmel uses full pulpwood from forest thinnings and woodchips from sawmills to produce MDF (medium density fibre board). The company has recently announced a major expansion at the

plant which will double output and add jobs in the plant and also in the harvesting and transporting of the material it requires.

**Page**

p 5

**Location**

Coillte library

**Notes**

available

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**Number**

147

**Author**

Roundtree Freda

**Title**

Forestry training.

**Place**

Birr

**Date**

Sept./1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 5

**Key Word**

broadleaf forestry, Crann, training, forest management, forestry skills, silviculture, broadleaves

**Abstract**

The author, PRO for Crann, argues that the increase in the level of broadleaf forestry planting highlights the need for training in all areas of commercial broadleaf planting, maintenance, management and processing. It is important that the skills of older generations of woodworkers be passed on those who are now in training.

**Page**

p 7

**Location**

Coillte library

**Notes**

available

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**Number**

148

**Author**

Anon

**Title**

Forestry strategy until year 2015.

**Place**

Birr

**Date**

Sept./1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 5

**Key Word**

Forestry policy, planning, marketing, timber processing,

**Abstract**

A successful forestry strategy for Ireland must aim to develop niche markets for Irish products. Emphasis must be placed on quality in growing and processing, and a clear direction must be provided in regard to the species

mix and management practices that are likely to produce viable quantities of quality timber for suitable markets.

**Page**

p 20

**Location**

Coillte library

**Notes**

available

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**Number**

149

**Author**

McCarthy R., Carrol Grainne

**Title**

Nutrient cycling in the degenerate natural forests of Europe in relation to their rehabilitation.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research and Development. Research Report No 20/90 /  
EC. 4th Environmental R & D Programme. First Annual Report.

**Date**

1990

**Key Word**

forest rehabilitation, environment, European forests, degenerate natural forests, nutrient cycling, silviculture, soil nutrients, oak, pollution

**Abstract**

This is the report of the contribution of the Irish group to a research project involving teams from Ireland, UK, France, and Spain. The objectives of the study were to quantify the cycle of nutrients in analogous stands of oak throughout southern and western Europe, establish the extent to which nutrition is limiting the growth of any of the oak stands, and to compare the input of atmospheric pollutants in rainwater and mist at different sites. The field study site was at Glenealy forest Co. Wicklow. Samples of throughfall, stemflow and rainfall in the open were chemically analysed.

**Page**

9 p

**Location**

Coillte library

**Notes**

available

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**Number**

150

**Author**

Lim O.P.

**Title**

Processing pole survey programme by computer.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No. 18/90

**Date**

1990

**Key Word**

pole survey, computer applications, information technology, calculation of mean DBH

**Abstract**

This report describes the application of a computer program which was designed to eliminate manual calculations in the pole survey programme. The program is divided into two parts. The first part of the program is to find out the mean DBH for all the poles and together, using the mean height to derive the Mean volume from Booklet 39. Instructions on using the program are included.

**Page**

10 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research and Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

151

**Author**

Lynch T.

**Title**

Comparison of three spacing regimes.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No 17/90

**Date**

1990

**Key Word**

spacing, sawlog output, silviculture, planting

**Abstract**

This is a report on yield estimates from crops planted under a variety of spacing regimes. These regimes are: square spacing at 2m x 2m; rectangular spacing where lines are planted in pairs with 4 metres between each pair; rectangular spacing where lines are planted in threes with 4 metres between each unit of three lines. It was found that changes in rectangularity had a negligible effect in total production but a slight depression in diameter is incurred and this will decrease sawlog output.

**Page**

12 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

152

**Author**

Hendrick Eugene

**Title**

Stand modelling and mensuration programme 1991-1995.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No. 21/91

**Date**

1991

**Key Word**

stand modelling, mensuration, crop structure, computer models, silviculture, information retrieval, crop structure database

**Abstract**

The stand modelling and mensuration programme is divided into three main projects: the crop structure database, timber and standing volume measurement systems, and stand models. The emphasis to date has been mainly on data collection and the dissemination of results from individual experiments. With the recent installation of a new system for data collection, storage and retrieval however, the emphasis has changed to producing stand models and mensuration aids such as the recently produced assortment tables for Sitka spruce. The future direction of the programme is described together with milestones for delivery of output. The cost of the programme is currently estimated at £133, 500 per annum which is 50% funded by the Forest Service. This is expected to fall with further improvements in data collection methods. Key issues regarding the future direction of the programme are raised. Central to these is the future funding, maintenance and renewal of the crop structure database which is by far the most expensive part of the programme.

**Page**

24p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield Dublin 4

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**Number**

153

**Author**

Ward D.

**Title**

Bank vole to forestry plantations in the south-west.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No. 15/90

**Date**

1990

**Key Word**

bank vole, Clethrionomys glareolus, bark stripping, tree damage, forest pests, forest protection, wildlife, mammals, Sitka spruce, Picea sitchensis

**Abstract**

In recent years the bank vole, Clethrionomys glareolus has been causing damage through bark stripping, in young plantations of Sitka spruce in the area of Newcastlewest Forest, Co. Limerick. This report outlines the historical background to the problem and examines the progress to date in bringing together interested parties from the private and public sectors in forestry. The latest information available from relevant experts on the animal is summarised. The type of damage caused by the vole is described and the possible factors affecting incidence of damage are listed.

**Page**

10p

**Location**

Coillte library

**Notes**

available

**Address of author**

Sidmonton Place, Bray Co. Wicklow

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**Number**

154

**Author**

Murphy P.G., Pfeifer A.R.

**Title**

Wood density and branching characteristics of Sitka spruce provenances grown in Ireland.

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No 14/90

**Date**

1990

**Key Word**

wood density, growth rate, Sitka spruce, branching characteristics, silviculture, Picea sitchensis

**Abstract**

Assessments of wood density and branching characteristics of the Sitka spruce Ten Provenance Experiment at 12 years of age are analysed. Results indicate that wood density is negatively correlated with growth rate. Also, a positive correlation exists between density and latitude of seed origin. Provenances from Washington and North Oregon were found to have a faster growth rate but at a lower wood density than those from Alaska or British Columbia. The range of variation in wood density was, however, greater between sites than between provenances within a site. Size and numbers of branches were more influenced by provenance than site, with the southern provenances having a lower number of branches per unit length of stem.

**Page**

10p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

---

**Number**

155

**Author**

Lynch T.

**Title**

Stocking survey 1989: Region 3 - Cork.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No. 10/90

**Date**

1990

**Key Word**

overstocking, thinning, volume yields, stocking,

**Abstract**

The purpose of the survey was to determine to what forest stands in the region are overstocked and how much volume they might yield in thinning. Gross volume yield from each stand was calculated under three headings: 1. Thinning of 70% yield class on a 4, 5 or 6 year cycle depending on yield class in those stands sufficiently stocked to yield a thinning now; 2. Thinning 70% YC as above in addition to backlog volume to a maximum yield of 100 cubic metres/ha.; 3. Thinning 70% YC as above in addition to all backlog volume.

**Page**

22p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

156

**Author**

Lim O.P.

**Title**

Processing tariff data by computer.

**Place**

Bray

**Series**

Coillte Research &amp; Technology. Internal Report No. 9/90

**Date**

1990

**Key Word**

tariff data, data processing, information technology, computer programs, tariff system, forest management

**Abstract**

This report describes the operation of a computer program which has been devised to estimate volumes from tariffed data. Volume estimates are derived from the use of single regression lines for each tariffed lot. Levels of accuracy are indicated and guidelines given where additional sampling may be necessary. The program will be incorporated into the processing systems of all region and district offices. It is hoped to eliminate manual calculation of stand volume when using the Tariff System.

**Page**

12p

**Location**

Coillte library

**Notes**

available

**Address of author**

Sidmonton Place, Bray Co. Wicklow

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**Number**

157

**Author**

Ward D., Keane M.

**Title**

Harmful organisms in forestry production.

**Place**

Bray

**Series**

Coillte Research &amp; Technology. Internal Report No. 8/90

**Date**

1990

**Key Word**

forest pests, harmful organisms, fungal diseases, insects, forest protection, plant pathogens, forest protection, fungi, forest pathogens

**Abstract**

A list is presented of the most common organisms harmful to forest trees is presented. The importance of these in each stage of forestry production, from the nursery stage, through the younger stages and on to maturity, is discussed. Finally, the vulnerability of exotic conifers in monocultures is briefly examined.

**Page**

18p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

158

**Author**

Pfeifer A.

**Title**

Monterey Pine: tree improvement programme.

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No. 6 /90

**Date**

1990

**Key Word**

Monterey pine, breeding, silviculture

**Abstract**

This report briefly describes the progress of the Monterey pine breeding programme. The programme was initiated in 1979 with the aim of developing a breed that has good adaptability and resistance to disease in the Irish climate. As part of the programme, progeny and clonal trials were established and also various aspects of the species silviculture were investigated. Results from field trials are provided and recommendations made for future work.

**Page**

7p

**Location**

Coillte library

**Notes**

available

**Address of author**

Sidmonton Place, Bray Co. Wicklow

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**Number**

159

**Author**

Lynch T.J.

**Title**

Yield models for one or two thinnings.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report 5/90

**Date**

1990

**Key Word**

thinning, yield models, harvesting, yield forecasting, silviculture, stability

**Abstract**

Foresters are often unable to harvest a full series of thinnings from their crops due to localised difficulties such as instability. A thinning regime may be confined to one or two thinnings only. A series of yield models has been compiled to simulate curtailed thinnings and these are now part of the forecasting system along with published models for full and no-thinning.

**Page**

6p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidminton Place, Bray Co. Wicklow

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**Number**

160

**Author**

Hendrick E.

**Title**

Site preparation on surface water gleys.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No. 2/90

**Date**

1990

**Key Word**

surface water gleys, gley soils, tree stability, mole draining, cultivation, anchorage, silviculture, Sitka spruce, *Picea sitchensis*, drainage

**Abstract**

Most surface water gleys occur in well defined geographic areas of Ireland. Initially research was not considered a priority on these soils because of the satisfactory growth rates obtained. Tree stability was, however, soon recognised to be a problem and research was begun into this area. Mole draining is the technique that has shown the most promise. It has almost doubled the anchorage of Sitka spruce on three sites.

**Page**

9p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coford, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

161

**Author**

Pfeifer Alistair

**Title**

Sitka spruce IUFRO provenance trial - Rossmore 3/75.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No. 4/90

**Date**

1990

**Key Word**

provenance trials, growth rate, frost damage, forking, silviculture, Sitka spruce, *Picea sitchensis*

**Abstract**

The Sitka spruce IUFRO provenance trial Rossmore 3/75 is described and results to the end of the 9th growing season are summarised. There is a clear North-South trend in growth rate with the Alaskan provenances being the least vigorous. A 1 yield class difference occurred between the QCI and Washington sources. All provenances were more or less equally affected by Spring frost damage. The Oregon provenances were the most susceptible to forking by virtue of the fact that they were the tallest trees in the experiment.

**Page**

8p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

162

**Author**

Pfeifer A.

**Title**

Studies of provenance variation in conifer & hardwood species grown in Ireland.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No. 3/90

**Date**

1990

**Key Word**

seed sources, adaptability, provenance variation, forest productivity, provenance selection, seeds

**Abstract**

Seed source testing is a necessary part of success in the establishment and productivity of forest tree plantations. Since the 1950s studies have been undertaken in Europe and elsewhere on many dozens of species and thousands of sources. This report describes the provenance testing programme and the methodology it employs. A summary of results to date is presented together with a table of recommended provenances for both conifer and hardwood species. Future work required is discussed and also the relevance of EC survey missions to North West America. The importance of securing seed from home sources is emphasised.

**Page**

14p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

163

**Author**

Hendrick E.

**Title**

Proposed standard for site preparation for afforestation & reforestation on the major soil types.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No. 12/90

**Date**

1990

**Key Word**

site preparation, afforestation, reforestation, peat soils, gleys, acid brown earths, silviculture, peatlands

**Abstract**

The report sets out the procedure to follow in order to prepare sites for afforestation and reforestation. The following soil types are covered: blanket peat; carboniferous surface-water gleys; peaty gleys; podsolised gleys;

peaty podsols; and acid brown earths.

**Page**

8p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield Dublin 4

---

**Number**

164

**Author**

Lynch T.

**Title**

Field performance of container seedlings planted in 1988 and 1989.

**Place**

Bray

**Series**

Coillte Research & Technology. Internal Report No. 11/90

**Date**

1990

**Key Word**

containerised seedlings, nursery practice, field performance, planting, frost damage, vegetation control, Sitka spruce, Picea sitchensis, silviculture

**Abstract**

The report describes a survey of areas planted with containerised seedlings in 1988 and 1989. The survival of Sitka spruce seedlings was generally satisfactory. There were, however, several losses on exposed blanket peat and high elevation sites. Midland cutaway bog sites also had high losses associated with Spring frost. North coastal lodgepole pine performed poorly in containers. South coastal provenance survived well but no firm conclusions can be drawn until the end of the current winter. Treatment and site factors found to affect survival and plant vigour included elevation, soiltype, planting method, staff used, planting dates and vegetation presence, type and control. A series of recommendations are made regarding planting dates, methods and supervision, site suitability and plant quality standards.

**Page**

24p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

165

**Author**

Anon

**Title**

Creating a future wealth in forestry.

**Place**

Birr

**Date**

April/1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 3

**Key Word**

forestry policy, forestry development, timber processing, economics, private forestry

**Abstract**

This is a report of an address given by the Minister for Forestry and Rural Development, Mr. Liam Hyland, at the Irish Timber Growers Association seminar in March, 1995. A brief summary of the most important changes in the Irish forestry industry over the last decade is given, with particular attention given to the enormous growth in planting by the private sector. The central role which forestry has to play in the economic development of rural areas is stressed. The strategy being adopted by the government is to develop a framework for the integrated advance of the entire sector, from forest nurseries through growing and processing to timber end-uses and woodcraft.

**Page**

pp 6 - 8

**Location**

Coillte library

**Notes**

available

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**Number**

166

**Author**

Anon

**Title**

Opportunities and constraints to forest development.

**Place**

Birr

**Date**

April/1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 3

**Key Word**

forest development, timber exports, marketing, forestry policy, land use, production volume,

**Abstract**

This is the text of a paper given to the 1995 ITGA conference by Brian Hussey, Chief Executive of the Woodland Group. He warns that Ireland will have to work hard to succeed in an over-supplied European softwood market over the next twenty years. Home grown timber now has 60% of the construction timber market, and opportunities for growth lie in the export market. By the year 2000 the Irish harvest will have increased from its present 1.5m cubic metres to 3m cubic metres. Exports of construction wood will need to increase from 100,000 to 400,000 cubic metres, and from 170,000 to 600,000 for small wood products. The strengths that the Irish timber industry enjoys include a natural advantage in volume production per hectare and short rotations, availability of grants which makes investment attractive, a relatively integrated industry and high management standards in our woodlands. However, a continuing problem is the difficulty involved in obtaining suitable land for planting because of the poor image forestry has among landowners generally.

**Page**

pp 8 - 10, pp 22 -23

**Location**

Coillte library

**Notes**

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**Number**

167

**Author**

Carey M.L., Barry T.A.

**Title**

Coniferous growth and rooting patterns on machine sod-peat bog (cut-over) and trench 14, Clonsast.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1975

**Source**

Irish Forestry

**Volume**

Vol. 32, No. 1

**Key Word**

raised bogs, conifers, grey brown podsolic soils, larch, spruce, hemlock, cedar, pine, fir fossil stump, cut-over bogs, root penetration, silviculture

**Abstract**

Clonsast Bog, County Offaly is a raised bog on mainly calcareous till over carboniferous rock. Mechanical sod-peat extraction on the bog entailed the removal of the peat to a depth of 4.5 metres maximum from the cutting face. Thirteen conifers were assessed for growth and root penetration. These were; grand fir, Monterey pine, Norway spruce, western red cedar, Sitka spruce, western hemlock, Japanese larch, Douglas fir, Scots pine, Serbian spruce, hybrid larch and contorta pine. A wide range of conifers can grow on such bogs, and these have production rates above the national average for many species. Thirteen out of seventeen species had root penetration at or below 50 cm from the surface. Grand fir was most striking in that its roots penetrated deep into the under-lying mineral soil which is similar to the grey-brown podsolic soil-type.

**Page**

pp 18 - 29

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

---

**Number**

168

**Author**

Tottenham R., Joyce P.M.

**Title**

Sitka Spruce Yield Class 500?

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1975

**Source**

Irish Forestry

**Volume**

Vol. 32 No. 1

**Key Word**

yield class, Sitka spruce, gley soils, yield tables, *Picea sitchensis*,

**Abstract**

The potential yield class of a Sitka spruce crop at a loamy gley site in County Clare was assessed. Total production for yield classes 120 to 280 (hoppus) is plotted against age. A 50 % thinning was carried out in year 10. Graphically, the slope has fallen away subsequent to this thinning. It is expected to steepen again and at year 15 total production is expected to be 4,500 hoppus feet per acre, 400 m<sup>3</sup>/ha or yield class 500. Top height at 42

feet at 13 years is 50 % greater than the highest tabulated yield class for Sitka spruce at this age. The possibility of using yield tables from South African exotic conifers and their application to Irish conditions is briefly examined.

**Page**

pp 30 - 33

**Location**

Coillte library

**Notes**

Available

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**Number**

169

**Author**

Savill P.S., Dickson D.A.

**Title**

Early Growth of Sitka spruce on gleyed soils in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1975

**Source**

Irish Forestry

**Volume**

Vol.32, No.1

**Key Word**

Rock phosphate, fertilisers, gley soils, Sitka spruce, forest soils, tree establishment, Northern Ireland, silviculture, *Picea sitchensis*, fertilisation

**Abstract**

Until the late 1960's, practically all forest research in Northern Ireland dealt with the problems of Sitka spruce planted on oligotrophic peats. High elevation gley soils, however, cover 40 % of the forest area. The results of the existing experiments on gleyed soils are discussed along with classification problems of tree growth and fertilising practice on gleyed soils. Results from one eutrophic gley examined at Lisnaskea forest show that growth immediately after planting in plots which received no phosphate at planting is as good as growth in the plots which received rates up to 105 kg/ha P. 500 kg/ha CRP from time of planting for the poorest oligotrophic gleys is believed to be adequate and 250 kg/ha CRP is sufficient for mesotrophic sites.

**Page**

pp 34-49

**Location**

Coillte library

**Notes**

Available

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**Number**

170

**Author**

Gardiner J.J., Geoghegan M.J.

**Title**

The influence of fertiliser upon microbial activity in peat. I. Superphosphate and ground phosphate.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1975

**Source**

Irish Forestry

**Volume**

Vol.32, No.1

**Key Word**

fertilisers, fertilisation, microbial activity, soil microflora, nitrogen uptake, soil phosphorus, silviculture, forest soils

**Abstract**

The addition of phosphate improves the growth rate of forest trees on nutritionally impoverished peats. The presence of calcium in rock phosphate has been cited as the reason for increased foliar nitrogen concentrations in some experiments. Others have found no increase in growth response within trees while some have claimed a decrease in growth following calcium application as lime. In this experiment at Lullymore, County Kildare, it was found that, immediately after the mixing of peat with 2 phosphatic fertilisers, slight decreases in pH were found in all peat samples. The NH<sub>4</sub>-N content of the peat increased significantly following the addition of both fertilisers, GNAP and Superphosphate; the NO<sub>3</sub>-N content of peat samples remained constant. The rate of O<sub>2</sub> uptake by all treated peat samples decreased steadily over the 30 days of inoculation, thereafter the rate of decrease levelled off.

**Page**

pp 50-57

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Forestry, UCD, Belfield, Dublin 4

---

**Number**

171

**Author**

Gardiner J.J.

**Title**

The influence of fertilisers upon microbial activity in peat. II. Calcium and nitrogen.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1975

**Source**

Irish Forestry

**Volume**

Vol.32, No.2

**Key Word**

Soil microflora, soil bacteria, peat soils, fertilisers, soil nitrogen, soil pH, soil calcium, soil organic matter, peat decomposition, fertilisation, soil nutrients, silviculture, peatlands

**Abstract**

The objective of this study was to determine whether or not calcium and nitrogen had an effect on the microbial populations in peat thus leading to an increase in the rate of peat decomposition and nutrient recycling. At all levels of added CaCO<sub>3</sub> the pH of the peat samples increased steadily over the first four weeks of incubation, but in most cases it dropped slightly thereafter. There was a decrease in NH<sub>4</sub>-N amounts at higher levels of application and, after 40 days, nitrification of NH<sub>4</sub>-N became evident in some samples. Most samples showed a fall in total mineral nitrogen for the incubation period. Bacterial, but not fungal, numbers showed substantial increases after 80 days. Oxygen uptake for all peat samples was highest at the start of the experiment. When both calcium and nitrogen were added to the peat samples, pH increased steadily, the NH<sub>4</sub>-N and NO<sub>3</sub>-N accumulation was similar to adding CaCO<sub>3</sub> only. This was also the case with oxygen uptake, and there was a decrease in mineral nitrogen content along with large increases in bacterial, but not fungal, populations.

**Page**

pp 101- 114

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Crop Science Horticulture and Forestry, UCD, Belfield Dublin 4.

---

**Number**

172

**Author**

Condon L., OCarroll N.

**Title**

Notes on afforestation of open-cast mining site at Rossmore forest (Co. Carlow).

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1975

**Source**

Irish Forestry

**Volume**

Vol.32, No.2

**Key Word**

Site reclamation, mining, site cultivation, fertilisers, pH, species selection

**Abstract**

The site involved is an open-cast mining site of shaley rock which has been cultivated by ripping. The pH of the site ranges from 3.4 to 3.7 in the general area but readings from the soils in the area were shown to be as high as 7.0. Sites were selected as being acidic or alkaline and the species chosen for planting ranged from grand fir, lodgepole pine, alder, Sitka spruce to Douglas fir. After one growing season the area was still virtually vegetation free, but with some some clover and grasses present. Lodgepole pine and alder were performing well but the Douglas fir and Sitka spruce were not thriving. By the end of the second growing season grassy vegetation had increased and the sycamore, which had done well during the first growing season, had almost all died by the end of the second season.

**Page**

pp 115-117

**Location**

Coillte library

**Notes**

Available

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**Number**

173

**Author**

McAree D.T.

**Title**

Fomes annosus -a forest pathogen.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1975

**Source**

Irish Forestry

**Volume**

Vol.32, No.2

**Key Word**

Fomes annosus, Heterobasidion annosum, root rot, heart rot, polypore fungus, Oedocephalum lineatum, forest protection, basidiospore, hymenomycete, plant pathogens, butt rot, fungi, fungal diseases, basidiomycete, Heterobasidion annosum, forest pathogens

**Abstract**

Fomes annosus causes root and heart rot in living trees. Modern silvicultural practices have aided its spread and development. It is a typical hymenomycete pathogen. Basidiospores released from the sexual basidiocarp stage (which is perennial), when they alight on a suitable substrate, may lead to a renewal of the disease cycle. The conidial stage, Oedocephalum lineatum Bakshi, is also capable of stump infection. Disease losses occur as the fungus grows, via root contact from colonised stumps to living trees, where the pathogen causes a root and butt decay. Chemical treatment of the stumps has been the chief method of control used although stump inoculation with antagonistic micro-organisms has also been suggested as a control on the spread of the fungus.

**Page**

pp 118-128

**Location**

Coillte library

**Notes**

Available

**Address of author**

Forest Service, Leeson Lane, Dublin 2

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**Number**

174

**Author**

Moore D.G.

**Title**

The oceanic forest.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1976

**Source**

Irish Forestry

**Volume**

Vol.33, No.1

**Key Word**

thinning practise, Oceanic forest, rotation period, windthrow, Sitka spruce, selection thinning, Picea sitchensis

**Abstract**

The aim of the oceanic system is to grow the maximum volume of the most valuable timber in the shortest possible time whilst preserving stability throughout the rotation. The target volume for Sitka spruce is to grow 750 m<sup>3</sup>/ha. To do this, before operations start, the optimum stem of timber to be grown must be decided. When the amount of crown space required by each tree has been decided for optimum growth, the maximum number of stems which can be grown to the optimum volume on a given area of ground is calculated. The mathematical product of the number of trees multiplied by the individual volume gives the total standing volume of the crop at rotation. The crop must be established to ensure successful, rapid get away, dominants selected with elimination of crown competition to follow. The forest is left for twenty years after which it is clear-felled when the planned volume level has been attained.

**Page**

pp 4-15

**Location**

Coillte library

**Notes**

Available

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**Number**

175

**Author**

Dickson D.A.

**Title**

Effects of fertilising moribund pines on a granitic soil in Northern Ireland.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1976

**Source**

Irish Forestry

**Volume**

Vol. 33, No. 1

**Key Word**Fertilisers, foliar analysis, nutrient deficiency, lodgepole pine, granitic soils, silviculture, *Pinus contorta*, fertilisers, fertilisation**Abstract**

Data are presented on the responses of slowly growing 25 year old Scots and lodgepole pines to fertiliser application. The growth of both species increased quickly and markedly after the application of phosphate. The rate of growth increase in Scots pine was slower but longer lasting than in lodgepole pine and growth increased almost linearly up to the highest rate applied (67.5 kg P/ha as triple-superphosphate). In lodgepole pine there was no further increase in growth at rates above 46kg P per ha applied as superphosphate. Neither N applied as sulphate of ammonia nor K applied as muriate of potash affected the growth of Scots pine but in lodgepole applied N tended to increase and applied K to decrease growth. There was no growth response in either species to any of six trace-elements applied in addition to a compound N P K fertiliser. The foliar concentration of all elements determined except P were above the accepted deficiency levels. In the untreated trees foliar P concentration was low throughout the course of the experiment; applied phosphate significantly increased foliar P concentration but at the lowest rate of application (22.5kg P/ha as superphosphate) the concentration again approached deficiency level after seven years. It is concluded that treatment of such crops with phosphate is economically justified. Triple-superphosphate is an effective fertiliser but rock phosphate may be preferable on cost grounds.

**Page**

pp 16 - 28

**Location**

Coillte library

**Notes**available

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**Number**

176

**Author**

Ward Declan, Gardiner J.J.

**Title**

The influence of tracheid length and density in Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1976

**Source**

Irish Forestry

**Volume**

Vol. 33, No. 1

**Key Word**

stocking level, spacing, Sitka spruce, wood density, tree ring, tracheid length, early wood, latewood, wood properties, thinning, forest management, windthrow, forest establishment, silviculture, *Picea sitchensis*

**Abstract**

The influence of tracheid length and density in Sitka spruce upon wood properties has been demonstrated by several studies and it has been shown that there is a definite correlation between tracheid length and the tensile strength of paper. Wood density is the simplest index of the suitability of wood for many important uses. The effects of silvicultural treatments on tracheid length and wood density should be assessed in this context. Wood samples for all of the preliminary experiments described in this paper were obtained from a 37 years old stand of Sitka spruce in Knockrath Woodlands, Laragh, Co. Wicklow. The results of the experiment showed that spacing did not have a statistically significant influence on tracheid length, but it did have a statistically significant influence on wood density. It is demonstrated that mean density decreased with increased spacing. If it is true that both spacing and canopy closure have an effect on wood density, then it could be expected that this variation would normally disappear as the more closely spaced trees are thinned, or as the wider spaced trees close canopy.

**Page**

pp 39 - 56

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research and Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

177

**Author**

Lady Gregory

**Title**

Tree planting.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1976

**Source**

Irish Forestry

**Volume**

Vol. 33, No. 2

**Key Word**

forest history, forest products, silver fir, holly, apple, rowan, larch, Scots pine, beech, oak, literature

**Abstract**

In this commentary on the cultural and historical importance of timber and woodlands, the author discusses the increase in tree planting over the previous year in Ireland. The author points out how useful trees could be on the farm and notes that in England the pool of trees in hedgerows and clumps or by the road-side is greater than in enclosed woodlands. Planting from November to March and observation of species growing locally before selecting which species to plant are recommended. The damage caused by animal pests is dealt with. It is advised not to grow ash near tillage as it competes for nutrients over a wide area, whereas oak draws on nutrients deep in the soil. Apple trees are praised for both their economic and aesthetic value.

**Page**

pp 94 - 98

**Location**

Coillte library

**Notes**

available. (This article is a reprint from The Irish Homestead, February 12th and 19th 1898).

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**Number**

178

**Author**

Joyce P.M., Ardee Lord

**Title**

Knockrath Woodlands: a 20 year review.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1976

**Source**

Irish Forestry

**Volume**

Vol. 33, No. 2

**Key Word**

yield class, yield regulation, growing stock, Douglas fir, Scots pine, larch, oak, site indicator, native woodlands, Knockrath, *Pseudotsuga menziesii*

**Abstract**

The changes in growing stock and species composition of Knockrath woodlands have been monitored by repeated inventories over 20 years. The article describes the location and historical background of the wood and gives details of the growing stock. Growing stock has remained at an almost constant level since 1956, but there has been an increase in coniferous growing stock and a corresponding decrease in broadleaves. A weakness in the volume in the middle age groups shows a deviation from the ideal of a normal forest. Yield is regulated with a mean annual per ha. yield of 3.5 cubic metres. The mean annual production per ha. appears to be 3.5 cubic metres despite the fact that the average yield class for conifers is three times this figure.

**Page**

pp 99 - 104

**Location**

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**Notes**

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**Number**

179

**Author**

Kerr C.H.

**Title**

Forestry operations and the problem of noise.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1976

**Source**

Irish Forestry

**Volume**

Vol. 33, No. 2

**Key Word**

noise pollution, ergonomics, forest machinery, safety standards, chain-saw, audiometry, hearing loss

**Abstract**

Acoustic pollution in industrial situations is the subject of increasing debate. Hearing and psychological damage along with fatigue, communications impairment and lack of concentration may increase the chances of accidents in the workplace. The author discusses the effect of noise on the ear, the nature of noise and assesses the risk of injury in the forestry industry. Methods of controlling the noise levels of power saws and tractors are covered, and a table describing the noise levels of various forest machinery is included.

**Page**

pp 105 - 116

**Location**

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**Number**

180

**Author**

O'Driscoll J.

**Title**

Sitka spruce, its distribution and genetic variation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1977

**Source**

Irish Forestry

**Volume**

Vol. 34, No. 1

**Key Word**

*Picea sitchensis*, Sitka spruce, genetic variation, species distribution, genetics

**Abstract**

The present day range of Sitka spruce extends from latitude 61' in Alaska to 39' in California. Most commercial stands are estimated to be within 2.5 miles of the coast with maximum density on the Queen Charlotte Islands. Its elevation is from sea level to 300 metres. It generally exists in a maritime climate with precipitation of about 1,250mm, long frost-free periods and an absence of extreme cold. From Alaska to southern Oregon the growing season ranges from 200 to 300 days. Soils usually have high (up to 20% in upper horizons) organic matter. During the last glaciation period the northern limits of the species would have been under severe selection pressures compared to the southern provenances, the latter evolving under quite different circumstances. The effect of this would have been to greatly deplete the gene pool.

**Page**

pp 4 - 15

**Location**

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**Number**

181

**Author**

Purcell T.J.

**Title**

The distribution and productivity of Sitka spruce in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1977

**Source**

Irish Forestry

**Volume**

Vol. 34, No. 1

**Key Word**

Sitka spruce, distribution, productivity, yield class, *Picea sitchensis*, silviculture

**Abstract**

Since 1955 Sitka spruce has been the most widely planted species in Ireland. 45% of the total area of high forest now comprise Sitka spruce. Northern Ireland has 70% and the Republic of Ireland 41% of its total forest area under Sitka. More than 50% of the total area of the species is 10 years old or under and more than 80% is under 20 years. The mean yield class for Sitka spruce, derived from sample plots was 14.8 cubic metres/ha/annum. The latest State woodland indications are that the mean yield class is higher than 14.4. The mean yield class for private woodlands is 17 cubic metres/ha/annum.

**Page**

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**Number**

182

**Author**

Carey M.L.

**Title**

Nutritional disorders in Sitka spruce in the Republic of Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1977

**Source**

Irish Forestry

**Volume**

Vol. 34, No. 1

**Key Word**

nutritional disorders, mineral soils, nutrient deficiency, Sitka spruce, nurse species, site cultivation, silviculture, *Picea sitchensis*

**Abstract**

The main nutritional problems that are encountered in growing Sitka spruce (*Picea sitchensis* Bong. Carr) are associated with the three major nutrients, nitrogen, phosphorus and potassium. Although Sitka spruce can grow well even on the more impoverished sites, it often falls off markedly resulting in a checked condition after 6 - 7 years. The presence of *Calluna vulgaris* is a factor which often accentuates this problem. Oligotrophic peats of 2 - 5 metres depth which were drained, fertilised, rotavated and sown with a grass cover before planting with Sitka spruce are now believed to be attaining yield class 24 in East Galway. In general, soils derived from Old Red Sandstone that are required for afforestation are very impoverished. They are strongly podsolised and compacted, very acidic in reaction (pH 3.5 - 4.0), and extremely low in available nitrogen and phosphorus. The main soil factor limiting growth in fen-type peats is the level of potassium.

**Page**

pp 40 - 47

**Location**

Coillte library

**Notes**

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**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2

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**Number**

183

**Author**

McAllister J.S.V., Savill P.S.

**Title**

Effects of pig and cow slurry on the growth of Sitka spruce on oligotrophic peat and gleys soils in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1977

**Source**

Irish Forestry

**Volume**

Vol. 34, No. 2

**Key Word**

animal slurry, organic manures, Sitka spruce, Picea sitchensis, gley soils, nutrient deficiency, organic fertiliser, tree growth, foliar nutrients, water eutrophication, pollution, silviculture, fertilisation

**Abstract**

Two experiments were established at Lisnaksea Forest in 1967 to investigate the possible uses of organic manures on oligotrophic peats and gleyed soils in Northern Ireland. Total growth on oligotrophic peat over the period 1967-74 increased with increased rates of application of both pig and cow slurry. The plots treated with pig slurry did better with an average increase of 208% compared with untreated plots. Those treated with cow slurry had an average increase of 129%. On the oligotrophic gley, the pattern of response was rather different from the peat experiment because the crop was newly planted; growth increased up to 1970 in the untreated plots and thereafter fell off slightly. Though growth in the treated plots was consistently better than in the controls it did not differ very much up to 1969, but was markedly better from 1970 onwards. The authors conclude that while slurry can provide all the nutrient elements required to promote good tree growth, its use in forestry is likely to be extremely limited because of the high costs connected with transport and application.

**Page**

pp 77 - 84

**Location**

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**Notes**

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**Address of author**

Dept. of Agriculture, Dundonald House, Upper Newtownards Road, Belfast BT4 3 SB

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**Number**

184

**Author**

Booth Ian P.

**Title**

The production and use of tubed seedlings in Irish forests.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1977

**Source**

Irish Forestry

**Volume**

Vol. 34, No. 2

**Key Word**

tubed seedling, nursery practice, planting methods, site preparation, planting, bare-root stock, root pruning, silviculture, transplanting, containerised seedlings

**Abstract**

The production of transplants in small pots and balled roots eliminates transplanting shock in young stock. The author discusses a technique of raising transplants in peat/polythene rolls which was devised by the Finnish Forest Research Institute. Another method of producing and planting bare root stock involves using two-year plantable seedlings which are produced in seedbeds and root-pruned frequently. This yields a plant which has a larger crown than normal, and a compact root system. In the Forest and Wildlife Service trial described in this paper tubed seedlings were started in a 20m tunnel and moved outside for a minimum of two weeks to enable the seedlings to harden off before planting out. The plants which were kept inside for eight or ten weeks were of similar size and had an 80% survival rate, while those placed outside after five weeks suffered 75% losses. It is concluded that the cost of production and planting of tubed seedlings would be broadly competitive with that of bare-root planting stock.

**Page**

pp 91 - 98

**Location**

Coillte library

**Notes**

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**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2

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**Number**

185

**Author**

O'Connor Jerry

**Title**

Land drainage in Co. Clare.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1976

**Source**

Irish Forestry

**Volume**

Vol. 33, No. 2

**Key Word**

land drainage, indurated soil, peat soils, peatlands, water problems, land improvement

**Abstract**

The drainage of 32,000 ha. of land in County Clare between 1949 and 1976 led to an improved carrying capacity on these lands. Unfortunately an area of this drained land has been allowed to revert to its original state. In all about 60% of the soils of Clare (188,000 ha.) is suffering to a greater or lesser extent from excessive water problems. Impermeable soils, peatlands and a combination of both are the source of Clare's main drainage problems. A number of examples of land improvement and increased livestock carrying capacity achieved through drainage are cited. A major factor limiting future drainage work is the scarcity of specialised machinery including pipe laying machines and deep ploughs.

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**Number**

186

**Author**

Bagnall Una E., Gillmor Desmond A., Phipps Jacqueline A.

**Title**

The recreational use of forest land.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 1

**Key Word**

forest amenity, forest parks, land use, recreational forestry

**Abstract**

Forests are making an increasing contribution towards meeting the growing demand for outdoor recreation and this is compatible with timber production in the context of multiple use management. Development in the Republic of Ireland came late but there are now 9 forest parks and 350 other sites open to the public. The results of two surveys of visitor profiles, recreational use patterns and the opinions of users are presented, one relating to Lough Key Forest Park and the other to seven sites in Dublin and Wicklow. Use is mainly by family groups for walking in the forest environment and there is a high level of visitor satisfaction. The paper concludes with a consideration of topics relevant to forest recreation planning and development, including publicity and signposting, facility provision and the locational characteristics of sites.

**Page**

pp 19 - 34

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Geography, Trinity College Dublin 2

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**Number**

187

**Author**

Carey M.L., Farrell E.P.

**Title**

Production, accumulation and nutrient content of Sitka spruce litterfall.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 1

**Key Word**

soil nutrients, Sitka spruce, *Picea sitchensis*, nutrient recycling, litter decomposition, organic matter, fertilisers, mycorrhizae, silviculture, litterfall

**Abstract**

Litterfall measurement in three stands of Sitka spruce showed that on average 5,500 kg/ha was shed per annum. This contained 72 kg of nitrogen, 5 kg of phosphorus and 14kg of potassium. Because litter production exceeds decomposition large amounts accumulate. On average the litter layers had a D.M. content of 50,000 kg/ha containing 915 kg of nitrogen, 50 kg of phosphorus and 130 kg of potassium. The high figures for production and accumulation, and the variation between sites, appeared to be related to crop density.

**Page**

pp 35 - 44

**Location**

Coillte library

**Notes**

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**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2

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**Number**

188

**Author**

Gardiner J.J., O'Sullivan P.

**Title**

The effect of wide espacement on wood density in Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 1

**Key Word**

wood density, spacing, Sitka spruce, *Picea sitchensis*, planting espacement, silviculture

**Abstract**

This report gives some results of a study carried out in two stands of Sitka spruce (*Picea sitchensis* (Bong.) Carr) with very wide planting espacement, and shows the distribution of density variation in trees with artificially reduced crowns. The two stands were established at 2.4 m x 2.4m and 4.5m X 4.5m in 1954. No thinning, but consistent pruning has been carried out since establishment. Each of eight selected trees in each stand had a 5mm core taken at heights corresponding to 10%, 45%, and 60% of total height and also at breast height. The estimates for wood density from single cores at breast height were, in almost all cases, greater than from the 4 cores taken at various stem heights. The overall correlation coefficient for both stands was  $r = 0.934$ . This was found to be significant at the 1% level. There was also a significant difference (1%) in mean wood density between samples from trees at either espacement. The wood density at 4.5m x 4.5m was, at all heights, lower than at 2.4m x 2.4m espacement.

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**Location**

Coillte library

**Notes**

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**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Belfield Dublin 4

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**Number**

189

**Author**

Wilson J.H.

**Title**

The forest worker: aspects of selection and the consequences of a heavy work load.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 1

**Key Word**

forest workers, working conditions, health, safety, forest machinery, work skills

**Abstract**

Job analyses of forest workers suggest that more attention should be paid to aptitude testing in the selection process. The paper discusses this point and outlines a range of related texts. The particularly high level of physical effort required in much forest work is also discussed as are the effects of vibrations and jolting on the operators of forest machinery. It is concluded that in the interest of safety and satisfaction much could be done in testing prospective forest workers and in incorporating greater ergonomic awareness into the design of forest machinery.

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pp 52 - 59

**Location**

Coillte library

**Notes**

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**Address of author**

Dept. of Mechanical and Industrial Engineering, Ashby Institute, Queen's University, Stranmill Road, Belfast Northern Ireland

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**Number**

190

**Author**

OCarroll Niall

**Title**

The nursing of Sitka spruce 1. Japanese larch.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 1

**Key Word**

nurse species, intimate mixture, Sitka spruce, Lulu Island provenance, fertilisers, Japanese larch, lodgepole pine, mouldboard plough, tree spacing, height increment, growth check, silviculture, Larix kaempferi, Pinus contorta, Picea sitchensis

**Abstract**

In 1960 an experiment was begun to test the effects on Sitka spruce (*Picea sitchensis* (Bong) Carr) of nursing by lodgepole pine and Japanese larch (*Larix leptolepis*). The site was a podsolised gley derived from Old Red Sandstone with a thin layer of peat at Avondhu forest, Co. Cork. The site was dominated by *Molinia caerulea* and *Calluna vulgaris* prior to afforestation. A spot application of 85g of ground rock phosphate was carried out on the trees which were planted on single mouldboard Cuthbertson plough ribbon at 1.5m x 1.5m espacement. There were 5 treatments: control, pure Sitka spruce; spruce/larch intimate; spruce/larch bands; spruce/pine intimate; spruce/pine bands. All treatments were replicated three times in randomised blocks. There were no differences between treatments up to year 10. In the following 5 years there was a significant height increase of spruce mixed with larch over the other mixtures. Sitka spruce nursed by Japanese larch is now growing at a rate of 35cm per year. The rates for pure plots and spruce with lodgepole pines are 10cm and 15 cm per year, respectively.

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pp 60 - 65

**Location**

Coillte library

**Notes**

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**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2

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**Number**

191

**Author**

O Mochain Liam

**Title**

Belview O.S.B. plant.

**Place**

Birr

**Date**

Feb\1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 2

**Key Word**

Louisiana-Pacific Coillte, OSB, oriented strand board, timber processing, pulpwood, environment, building industry, timber technology

**Abstract**

This article gives the background to the establishment of the Louisiana-Pacific Coillte oriented strand board (OSB) plant at Waterford. OSB was pioneered by the American company and has become one of the most popular building products in the US. OSB is a reconstituted timber board which is produced in a process which involves shredding small diameter logs into rectangular strands which are pressed into a board at high temperature and pressure. The new plant, which will produce 350,000 cubic metres of OSB each year, is a crucial part of the development of the Irish forestry industry. OSB makes extensive use of forest thinnings. A large proportion of pulpwood which is currently being exported will be processed at the plant. It will be the first plant in Europe to use the new Regenerative Thermal Oxidisation control technology. A great deal of work has gone into minimising the environmental impact of the plant, and a sophisticated regenerative system is being installed which can recover and reuse over 90% of the heat energy used in the process.

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pp 6 - 10

**Location**

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**Number**

192

**Author**

Lyons John

**Title**

Oughterard project.

**Place**

Dublin

**Date**

Feb./1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 2

**Key Word**

chip production, timber processing, white chip, lodgepole pine, Pinus contorta

**Abstract**

The article details a trial on whole tree harvesting systems for the production of bark free white chip in Oughterard, Co. Galway. The process involved feeding debarked trees into a chipper, and feeding bark, needles and some branches into a hammermill to break them down into a fine mulch. The results of the trial show that the costs of harvesting and extraction are within reason but the chipper flail costs are double what they should be due to extremely high capital cost along with low productivity.

**Page**

pp 22 - 23

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research and Technology, Sidmonton Place, Bray, Co. Wicklow.

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**Number**

193

**Author**

O'Mochain Liam

**Title**

Timber processing in Ireland.

**Place**

Birr

**Date**

Feb./1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 2

**Key Word**

Woodfab, Smurfit, timber processing, marketing, forest products, structural timber, pallets, fencing, glulam, laminated timber, glulam

**Abstract**

Woodfab is part of the Smurfit Group of companies and employs over 500 people at three manufacturing plants in Ireland. Their product range includes structural timber, pallet and packing timber and fencing material. The company recently introduced to the Irish market glulam timber, designed to provide timber beams with wide span capabilities. Despite its prominent position in both the timber processing and forestry industries, Woodfab has endured severe trading and cost difficulties due to changes in raw material supply and market demand. The currency crisis of 1993 also threatened exports but the company has recovered strongly in recent

months.

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pp 24 - 26

**Location**

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**Number**

194

**Author**

Anon

**Title**

Plants & Seeds in unfair competition.

**Place**

Birr

**Date**

Jan/1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 1

**Key Word**

European Union, EU, competition, European Commission, Coillte, Committee of Forest Nurseries, COFN, Forest Service, EU law, trading practices, semi-state companies, private nurseries, forestry policy

**Abstract**

In 1992 the Committee of Forest Nurseries in the EC (COFN) decided to investigate the existing competition and trading practices in the EU forestry nursery market. The results of a survey of Member States of COFN showed that most countries felt there was unfair competition between state and private nurseries & seed companies. A brief summary of the report which COFN subsequently prepared and sent to the European Commission is included. This includes criticisms made against Coillte by private nurseries in Ireland. The Commission rejected the claims.

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pp 4 - 6

**Location**

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**Number**

195

**Author**

Heenan Denis

**Title**

Great rewards from broadleaves: Crann Seminar, Nov. 1993: 'The Growing and Utilisation of Broadleaves.'

**Place**

Birr

**Date**

Jan. /1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 1

**Key Word**

broadleaves, research, species selection, mixtures, Crann

**Abstract**

This a brief report of the seminar on broadleaves held by the South West Midlands Branch of Crann in Roscrea in Nov. 1993. During the seminar emphasis was placed on the need to increase research on the physiology of the tree, to select the best species for prevailing conditions and to determine the best mixture of different broadleaves and of broadleaves and conifers in a given site.

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**Location**

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**Number**

196

**Author**

Brennan Martin

**Title**

Coillte's forest parks.

**Place**

Ballina

**Date**

Jan./1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 1

**Key Word**

Forest parks, Coillte, forest amenities, tourism, conservation, forest recreation

**Abstract**

A brief description is given of each of Coillte's eleven forest parks, all of which formed part of former estates. The parks are managed as multipurpose forests where commercial timber production is combined with amenity and leisure activities. The best known of the parks are Killykeen in County Cavan and Lough Key in County Roscommon. The various archaeological and historical aspects of the parks are also dealt with.

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pp 22 - 23

**Location**

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**ISBN**

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**Number**

197

**Author**

Lyons John

**Title**

Developments in forest machine technology.

**Place**

Ballina

**Date**

Oct/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 10

**Key Word**

forest machinery, LPG forwarders, machine performance evaluation, harvesting technology, technological research and development

**Abstract**

To overcome its transportation problems Irish forestry must rapidly increase its level of mechanisation. Damage and waste result from wood owners inability to buy suitable forwarders. However, it is to Ireland's advantage that the most advanced technology is being introduced at the developmental stage in many Irish forests before work methods become entrenched. In the past few years a great variety of machines to cover a range of site types, tree sizes, load capacities, etc. has emerged. The advantages and disadvantages of using tracked base units with harvesting heads are examined. The author emphasises the importance of prompt R & D work on new technology and selecting and training operators. The most suitable approach to evaluating machinery is to study its performance in particular circumstances.

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pp 13 - 14

**Location**

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**Number**

198

**Author**

O'Mochain Liam

**Title**

Oaks link past, present and future.

**Place**

Ballina

**Date**

Oct/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 10

**Key Word**

Tree Council of Ireland, planting, broadleaves, forest amenities, history, archaeology, oak, Quercus petraea, Quercus robur

**Abstract**

A major project designed to boost Ireland's dwindling stock of oak trees was inaugurated at a ceremony in County Mayo this month. Under the auspices of the Tree Council of Ireland and with the support of sponsors, the Mitsubishi Electric Ireland Foundation, planting began of 10,000 oak trees on 7.5 acre site at Enniscoie House, near Crossmolina. The site was chosen for its suitability for planting, ease of maintenance and high future amenity value and it marked Mitsubishi's commitment to the Mayo 5000 celebrations.

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pp 16 - 17

**Location**

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**ISBN**

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**Number**

199

**Author**

Anon

**Title**

Robust woodland establishment.

**Place**

Ballina

**Date**

Oct./1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 10

**Key Word**

tree spacing, broadleaves, forest establishment, silviculture

**Abstract**

The decision on appropriate initial spacing is apparently simple, but yet has been the subject of intense debate among foresters since planting began. This paper considers broadleaved trees spacing on previously unplanted farm and woodland sites and stresses the importance of achieving rapid establishment.

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**Location**

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**ISBN**

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**Number**

200

**Author**

O'Mochain Liam

**Title**

New forestry grants: overall enthusiasm with some reservations.

**Place**

Ballina

**Date**

Aug/ 1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 8

**Key Word**

grants, private forestry, investment, European Union, EU, State subsidies

**Abstract**

The article details the reactions from the forestry industry, the farming community and research institutions to the proposed improved incentives for forestry. As part of the Government's new forestry programme, grants, varied by species and combination of species, will range from £1,300 per hectare for single species conifer afforestation on unenclosed land to £3,000 per hectare for oak and beech afforestation. It is intended that priority be given to farmers in the implementation of the programme.

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pp 17 - 20

**Location**

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**ISBN**

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**Number**

201

**Author**

Anon

**Title**

Managing small woods.

**Place**

Ballina

**Date**

Aug/ 1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 8

**Key Word**

small woods, forest management, broadleaves, wildlife, conservation, environment, thinning, natural regeneration, planting, establishment, harvesting, grants, renewing broadleaved woods

**Abstract**

Broadleaved woodlands only occupy 1.2% of the land of the country and many are now under threat. The article explains the variety of benefits that a well-managed woodland can yield. These include the production of timber for firewood, shelter for stock and crops, game and wildlife conservation and landscape amenity. Effective management of deciduous woods will include: replanting or rejuvenating specific areas; choosing the right trees and getting them established; managing the growing trees; and harvesting and marketing the timber. Advice is given on dealing with old and mature trees, re-stocking, thinning and natural regeneration.

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**Location**

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**Number**

202

**Author**

Anon

**Title**

'Forestry has been my life': an interview with Bernard Moloney.

**Place**

Ballina

**Date**

July/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 7

**Key Word**

Coillte, Forest Service, forestry history, forestry policy, administration, civil service, forestry management

**Abstract**

The subject of the article, Bernard Moloney, has been involved with forestry in Ireland since 1944, the year he entered the Forest Service. He served in several forestry management and training positions before being appointed Senior Inspector responsible for Forest Management throughout the country in the early 80s. Moloney describes the changes he has seen in the industry over the years, especially in regard to harvesting. He is critical of the composition of Coillte's board and argues that it should contain at least two silviculturalists. The main priorities now are to rationalise the timber processing industry and establish another processing plant to deal with pulp. He also warns of the dangers involved in relying too heavily on one species.

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**Number**

203

**Author**

Anon

**Title**

Coillte - exciting harvesting technology developments.

**Place**

Birr

**Date**

June/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 7

**Key Word**

forest machinery, harvesting technology, Coillte, excavators, harvesting heads

**Abstract**

Coillte has recently introduced a low cost clearfell machine. It consists of a Daewoo DH 130 Excavator with a Keto 150 Harvesting Head with a felling capacity of 55cubic metres/hour. Coillte are also agents for the Harvemeter Electronic System which is fitted to a range of Harvesting Heads, including Keto.

**Page**

pp 18 - 19

**Location**

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**ISBN**

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**Notes**

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**Number**

204

**Author**

Anon

**Title**

New national forest research council formed.

**Place**

Birr

**Date**

May/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 5

**Key Word**

COFORD, forest research and development, forestry policy

**Abstract**

COFORD, the new National Council for Forest Research and Development was launched last month at a reception in the UCD Industry Centre. The new Council, whose members represent all sectors of the industry - from seeds to sawmill - will promote and co-ordinate research in areas such as forest nursery stock, new harvesting equipment and techniques, the maximising of added value potential, and the study of environmental issues involving the forestry industry.

**Page**

p 4

**Location**

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**ISBN**

07917422

**Notes**

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**Number**

205

**Author**

Anon

**Title**

Woodplan: Woodplan programs are custom-made for forestry management.

**Place**

Ballina

**Date**

May /1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 5

**Key Word**

forestry management, computer programs, computer applications, information technology

**Abstract**

WOODPLAN consists of a suite of forestry management programs produced by Badenoch Land Management Ltd. based at Alvie Estate in Inverness-shire. The programs have been designed as an integrated package of modules each of which interacts with the others but can also be used as stand alone systems. They cover all aspects of forestry management including harvesting and marketing of timber, volume estimation and valuation, compartment records, financial budgeting and control, work scheduling, production forecasting and investment analysis. Prices range from over £5,000 for the fully comprehensive system to under £1,000 for a basic compartment records program.

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**Location**

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**ISBN**

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**Number**

206

**Author**

Gardiner John J.

**Title**

Physiological aspects of wood formation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 2

**Key Word**

tree tissue, tree physiology, wood formation, earlywood, latewood, botany, yield, timber quality, cell formation

**Abstract**

The various types of tissues in tree stems, the phloem, the vascular cambium and xylem, and the functions they perform are described. The terms earlywood (Springwood) and latewood (Summerwood) are used to distinguish the initially less dense from the subsequently denser wood form in a growing season. It is apparent that environmental factors play a decisive role in wood formation by their effect on tracheid diameter and wall thickness. Environmental effects on these cells properties are indirect. The direct effect is on the vegetative growth of the crown, the production site of substances that regulate tracheid diameter and photosynthesis which contribute to wall development. In short, crown attributes determine both timber yield and quality.

**Page**

pp 78 - 84

**Location**

Coillte library

**Notes**

available (Read at Symposium 'Wood for Industry in Ireland' , UCD, 7 April 1978)

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Belfield Dublin 4

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**Number**

207

**Author**

Gallagher L.U.

**Title**

Irish timber and the sawn wood trade.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 2

**Key Word**

timber trade, timber consumption, imports, timber supply, sawlog supply, sawmilling, wood processing capacity, machine stress grading, visual grading, timber processing

**Abstract**

The status of Irish timber is outlined in the context of world and European trade. 75M of the world's 1974 sawlog production of 389M cubic metres was consumed in Europe. Ireland's sawn timber consumption was 0.6M cubic metres. The small size of the industry means that changes of supply can have considerable effect on production. The present sawlog supply is given in relation to quantity and method of obtaining it. The

requirements of the market and some indications of the size and competitiveness of the home-grown sawn timber industry are presented. Softwood in construction accounts for 70% of the market. Visual grading rules tend to militate against selecting home-grown timber. Proper sawing, drying and grading of home-grown timbers is imperative. Most sawmills in Ireland have a throughput of less than 2,500 cubic metres. Capacity exceeds throughput generally, even in smaller mills. Investment and expansion will result in greater centralisation and greater haulage costs.

**Page**

pp 85 - 91

**Location**

Coillte library

**Notes**

available (Read at Symposium, 'Wood for Industry in Ireland, UCD, 7 April, 1978).

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**Number**

208

**Author**

Moriarty F.J.

**Title**

As the grower sees it.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 2

**Key Word**

forest productivity, marketing, timber quality, timber processing, private woodlands, market requirements, forest products

**Abstract**

The historical background to the development of Irish State forestry since the foundation of the state is outlined, and the low level of private involvement in forestry is noted. A table is provided which shows the pattern of species distribution and average production potential in State and private woodlands. The production of coniferous timber in State forests is expected to double by 1985 and quadruple by 2000 from present figure of approximately 0.5m cubic metres. Forecasts in market size classification for the state forests is given. Market requirements may force growers to consider changes in silvicultural management in matters such as spacing, thinning and pruning. In the past Irish timber acquired a poor reputation as a result of being mainly unseasoned, inaccurately dimensioned and poorly presented. However, there is every confidence that Irish timber can compete very favourably with imported products once these problems are overcome.

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pp 109 - 114

**Location**

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**Notes**

available, (Read at Symposium, 'Wood for Industry in Ireland', UCD 7 April, 1978).

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**Number**

209

**Author**

Savill P.S., McEwen J.A.

**Title**

Timber production from Northern Ireland 1980 - 2004.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 2

**Key Word**

Timber production, private forestry, State forestry, production forecasts, volume assortment, windthrow, peatland forestry, forest fire, peatlands

**Abstract**

There are 51,000 hectares of State-owned forests in Northern Ireland and about 13,000 hectares in private ownership which together represent 4.5% of the total land area. From the private forests it is estimated that for the foreseeable future, 10,000 cubic metres to 20,000 cubic metres of timber, predominantly hardwoods will be produced per annum. In State forests 62% of planting is Sitka spruce with 39% and 34% of forests on peats and gleys respectively. 73% of forests are managed without thinning. Timber quality is examined in the context of pruning, growth rates, form and decay. By the turn of the century, production of timber from Northern Ireland forests is predicted to increase to about 400,000 cubic metres per annum with Sitka spruce as the major species. 10,000 to 20,000 cubic metres may be acquired from private forests annually.

**Page**

pp 115 - 123

**Location**

Coillte library

**Notes**

available, (Read at Symposium, 'Wood for Industry in Ireland', UCD, 7 April, 1978)

**Address of author**

Forest Service, Dept. of Agriculture, Dundonald House, Belfast BT4 3SB

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**Number**

210

**Author**

Kidney George

**Title**

As the sawmiller sees it.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 2

**Key Word**

timber end-use, stress grading, timber processing, sawmilling, construction timber, timber quality, forest products

**Abstract**

The danger of supplying surplus low quality/value end-use timber to the detriment of higher value added quality timber is discussed with particular reference to house building. Irish whitewood (with the exception of some firs) saws and machines well and has perfect nailing and gluing qualities. The strength qualities of Irish Sitka and Norway spruces do not quite match the imported timbers. However, machine stress grading is seen as a useful tool which will aid the application of Irish timber to building construction use.

**Page**

pp 124 - 129

**Location**

Coillte library

**Notes**

available (Read at Symposium, 'Wood for Irish Industry', UCD, 7 April, 1978)

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**Number**

211

**Author**

Jackson Francis M.

**Title**

The pulpwood scene: supply position and market trends for panelboard, hardboard and pulp.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1978

**Source**

Irish Forestry

**Volume**

Vol. 35, No. 2

**Key Word**

timber supply, wood products, timber market, marketing, subsidies, transport costs, timber sales, forestry policy

**Abstract**

A brief assessment of the state of timber supply and demand on the world scene, in Europe and the Republic of Ireland is provided. Supply of pulpwood is generally adequate but each year shortages do occur, nonetheless, at some mills in Ireland. The sealed tender system is seen as harmful to the maintenance of supplies. Mills have been inefficient in harvesting supplies in periods of need when they were compelled to enter the harvesting area to carry out work themselves. Valuable round timber suitable for sawmillers has been lost through inefficiency. Transport costs and price/demands are analysed, as is the problem for Ireland of subsidised competition. Rationalisation and subsidisation of the industry, marketing and the social/financial priorities of the State with regard to the industry are also dealt with.

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pp 130 - 137

**Location**

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**Number**

212

**Author**

Hanan A.M.S.

**Title**

'Bolander's pine?.'

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 1

**Key Word**

Pinus contorta, Pinus contorta spp bolanderi, Bolander's pine, taxonomy, species identification, pine, botany

**Abstract**

The disputed taxonomy of a number of trees, believed to be Pinus contorta, growing in the grounds of Ashford Castle, Co. Mayo is discussed. The various subspecies of Pinus contorta are listed, and the characteristics of Pinus contorta spp bolanderi (Parl.) are described. While these resemble the characteristics of the trees at Cong in many respects, we must await the results of a number of site-trials before their identification can be confirmed.

**Page**

pp 3 - 6

**Location**

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**Notes**

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**Number**

213

**Author**

O'Carroll N. O., Muirgheasa N.O.

**Title**

The estimation of heart rot in standing crops: a note.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 1

**Key Word**

Sitka spruce, heart rot, Fomes annosus, Heterobasidion annosum, butt rot, root rot, plant pathogens, forest protection, Basidiomycete, fungal diseases, fungi, fungus, Picea sitchensis

**Abstract**

About an acre and half of 56 year old Sitka Spruce in Avondale Forest, Co. Wicklow, carrying 168 trees and believed to be heavily affected by Fomes annosus heart rot was scheduled for clear felling. Thirty-six of these trees, forming a random sample of the whole, was investigated in detail. The investigation suggests that the presence of markedly swollen butts is not related to the presence of heart rot.

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**Location**

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**Number**

214

**Author**

Loughnane J.B., Gallagher L.U.

**Title**

A note on damage caused to apples by storage in Thuja plicata boxes.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 1

**Key Word**

Thuja plicata, apples, forest pathogens, Penicillium, rot damage, fruit storage, fruit disease, fruit damage, plant pathogens, fungal diseases, forest protection, forest protection

**Abstract**

An experiment was set up to test the hypothesis that apples were damaged by fungus as a direct result of being stored in boxes made from Thuja timber. Results showed that rot caused by Penicillium fungus occurred in 39.3% of apples in mixed spruce and Thuja boxes, and in 54.9% of apples in Thuja plicata boxes. No damage was evident in Sitka spruce boxes.

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pp 17 - 18

**Location**

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**Notes**

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**Number**

215

**Author**

Society of Irish Foresters

**Title**

Pinus contorta in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 1a

**Key Word**

lodgepole pine, Pinus contorta, species selection, species provenance, yield tables, timber tests

**Abstract**

This an account of a symposium on Pinus contorta in Ireland held in Clonmel on 16 Feb. 1963. Mr. O.V. Mooney spoke on the origin, history and provenance of the species. It was discovered in 1805 and the first serious planting in Ireland was in 1918 in Ballyhoura Co. Cork. From 1920 on seed was imported from British Columbia and the Washington coast. The natural habitat of Pinus contorta stretches from the Yukon in Alaska, 2,400 miles south to California and reaches 1,000 miles inland to Wyoming, and 800 miles to Alberta. The variants of the species over this range are listed and their characteristics described. Mr. J O'Driscoll dealt with the methods being adopted to find the provenance best suited to growing conditions in Ireland. Mr. P.M. Joyce discussed growth and yield. He explained that although temporary sample plots was the least accurate method of obtaining information for yield tables, it had the advantage that years of preliminary plot treatment and measurement could be avoided. Planting records indicated that there was some 84,000 acres of Pinus contorta in Ireland.

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pp 22 - 28

**Location**

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**Number**

216

**Author**

Clear T.

**Title**

A review of twenty-one years of Irish forestry.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 2

**Key Word**

forestry policy, afforestation, forestry history, Society of Irish Foresters, State forests, private forests, legislation, Forestry Acts

**Abstract**

This paper traces the growth and development of forestry in Ireland using the papers published in the journal of the Society of Irish Foresters. The Society was founded during a very difficult time for Irish Forestry and the timber trade. The forestry policy of the new Coalition Government of 1948 received an enthusiastic welcome in the pages of Irish Forestry. In 1951 the Report of the F.A.O. Forestry Mission to Ireland was published. It recommended a commercial programme of 500,000 acres with planting to proceed at 11,750 acres per annum, and a social programme for soil conservation, stabilisation of employment in congested areas and the reclamation of idle lands. 1951 was the first year the planting figure of 10,000 acres was reached since State forestry began. The Forestry Act of 1956 helped to overcome some of the problems in acquiring land for forestry. In 1959 Thomas Clear was appointed to the Chair of Forestry in University College Dublin, a post which had lapsed at the time of the death of A.H. Henry in 1930. The author identifies the most remarkable feature of the period under review as the spectacular growth of State forestry. The area under State forest has grown from some 135,000 acres to around 375,000 acres. Gross state expenditure on forestry totalled £25m.

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**Location**

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**Number**

217

**Author**

Ryan Pierce

**Title**

The soils of Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 2

**Key Word**

soil formation, soil classification, soil types, soil distribution, geology, alluvial soils, brown earths, rendzina-like soils, grey brown soils, modified grey-brown podzolics, podzols, skeletal gleys, peats

**Abstract**

The relationship of Irish soils to the local geology is complicated by the fact that most soils have been derived, not from the local rock formations, but from the transported glacial drift which mantles them. The main climatic factor in Ireland is the rainfall-evaporation regime, and most of the soils tend to occur in the leached to podzolised categories. It is now apparent that the majority of Irish soils were formed initially under forest cover which in most areas was superseded by a gramineous cover with the usual modifications of soil profile. The Great Soil Groups of most common occurrence in Ireland are briefly described. Mineral soils fall into two broad groups - the zonal podzolised soils and the intra-zonal gleyed soils. Other soils which are considered in this paper are organic soils or peat both zonal and intra-zonal and azonal alluvial soils. A schematic soil map outlining the occurrence of the dominant great soil groups in different regions is included. However, until the survey, classification and mapping of soils is more advanced it is not possible to delineate accurately the distribution of our very complex soil pattern.

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pp 46 - 60

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**Number**

218

**Author**

Mitchell A.F.

**Title**

The improvement of forest trees by selection and breeding.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 2

**Key Word**

tree improvement, tree breeding, natural selection, artificial selection, hybrids, tree seed-orchards, species selection, vegetative propagation, silviculture, seeds

**Abstract**

The various stages involved in selecting individual trees for breeding are explained. After selection a special techniques of vegetative propagation is employed and seed-orchards are established. Brief summaries of the objects of tree-breeding and the principles involved in the selection of parent trees are included. It is concluded that the establishment of seed orchards enables the few really outstanding trees growing in any country to be used as the progenitors of all the crops planted, and provides the material for raising a succession of improved cultivars.

**Page**

pp 61 - 68

**Location**

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**Number**

219

**Author**

Black T.M.

**Title**

The resin canals of *Pinus contorta* Loudon.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 2

**Key Word**

*Pinus contorta* Loudon, lodgepole pine, resin canals, species identification, provenance distinction

**Abstract**

The purpose of the investigation was to attempt to: (1) clarify the position regarding the number of resin canals found in the leaves of *P. contorta* Loudon and var. *latifolia* Engelm, and ; (2) find some feature of the resin canals which may be used to distinguish different provenances of the species. Examination of the needles of nine provenances growing at Millbuie Forest, Easter Ross, Scotland, revealed the existence of primary and secondary resin canals which have not been previously observed in the species. These two main types may be further subdivided according to the length and position of the resin canals in the needles. The occurrence of some of the different types of resin canals in the provenances indicates that there are large areas within the natural distribution of *P. contorta* Loudon in which many resin canal characteristics are uniform. It also appears to be the case that it is possible to distinguish individual provenances within these areas by the occurrence of other resin canal characteristics, although further work is required before a satisfactory key can be devised.

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pp 69 - 85

**Location**

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**Number**

220

**Author**

Society of Irish Foresters

**Title**

Annual Study Tour.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 2

**Key Word**

Society of Irish Foresters, Glen of Imaal, Boherboy, Slievenamon Forest, Cahir Forest, Glen-of-Aherlow, Cong Forest, Ashford, windthrow, Castlecaldwell Forest, Ballintempo Forest, Cootehill Forest

**Abstract**

On the first day of this study tour of May 1963 the group examined Sitka spruce and Douglas fir plantations in the Glen of Immal, the later not in good condition possibly because of the introduction of Japanese larch into the plantation 30 years earlier. The retention of some of the original oak stems at Ballynockan Property of Slievenamon forest was blamed for the susceptibility of its Sitka spruce plantation to fungal disease. The high quality of Norway spruce in the stand at Cong Forest, and other locations, was explained by the fact that Norway spruce in Ireland was usually planted on old estate woodland where land was good.

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pp 94 - 110

**Location**

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**Number**

221

**Author**

Society of Irish Foresters

**Title**

Excursion to Glennasmole

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 2

**Key Word**

land acquisition, land use, land purchase, Society of Irish Foresters, Glennasmole, land classification

**Abstract**

The purpose of the Society of Irish Forester's visit to Glennasmole, Co. Wicklow was to consider the question of land assessment and classification. The procedure for land acquisition involves accurate identification of the land required, obtaining full information of the rights held by other users of the land and the classification of the land into site types.

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**Location**

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**Number**

222

**Author**

Society of Irish Foresters

**Title**

Excursion to Ossory Forest.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 2

**Key Word**

Society of Irish Foresters, Ossory Forest, windthrow, felling, rotation, spacing

**Abstract**

This is an account of the Society of Irish Foresters' visit to Ossory Forest in July, 1963. Matters discussed included the necessity of early felling due to windblow danger and the various factors involved in the rotation for the maximum benefit. The feasibility of different initial spacings, and the possible advantage of wider initial planting with corresponding lower costs, and perhaps subsequent protection from a more stable crop were also discussed.

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pp 113 - 115

**Location**

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**Number**

223

**Author**

Society of Irish Foresters

**Title**

Excursion to Clonast Bog.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 20, No. 2

**Key Word**

pollen analysis, peat-structure, geology, Society of Irish Foresters, peatlands

**Abstract**

The purpose of the Society of Irish Foresters' visit to Clonast Bog in July, 1963 was to study the subject of peat-structure and pollen analysis. The principle of pollen analysis was explained by Dr. Neil Murray. From the mid-1920s pollen analysis has been the dominant method for investigating late Quaternary vegetational and climatic development. Pollen grains formed one of the most extraordinary resistant materials in the organic world. Dr. Murray explained the findings of two borings in peat and showed how they could provide knowledge of previous vegetation in the area.

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**Location**

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**Number**

224

**Author**

Society of Irish Foresters

**Title**

Excursion to Gougane Barra.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 30, No. 2

**Key Word**

National Forest Park, Gougane Barra, Society of Irish Foresters, Co. Cork

**Abstract**

This is an account of the Society of Irish Foresters' visit to Ireland's first National Forest Park in Gougane Barra, West Cork. The area which comprises the Department of Forestry property consists of 340 acres of which 238 are classed plantable and now carry crops of Norway spruce, *Pinus contorta*, Sitka spruce, European larch and *Abies grandis*.

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pp 118 - 119

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**Number**

225

**Author**

Society of Irish Foresters

**Title**

Excursion to Johnstown Castle.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1963

**Source**

Irish Forestry

**Volume**

Vol. 30, No. 2

**Key Word**

Agricultural Institute, Society of Irish Foresters, Johnstown Castle

**Abstract**

In September 1963 the Society of Irish Foresters organised a visit to the Agricultural Institute at Johnstown Castle, Co. Wexford. The estate at the castle has approximately 1,000 acres of which 350 acres is woodland and 30 acres amenity. The woodlands themselves are mostly conifers particularly Scots pine and were all planted circa 1890. The paper contains a brief account of the group's examination of various stands in the woodland.

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pp 119 - 120

**Location**

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**Number**

226

**Author**

O'Brien T.

**Title**

Twenty-first Anniversary Dinner Address.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 21, No. 1

**Key Word**

Society of Irish Foresters, state forestry, forestry policy, Department of Lands

**Abstract**

This is the text of the address delivered by T. O'Brien to the Society of Irish Foresters at the Society's twenty-first anniversary dinner. The speaker refers to the origins of the Society during wartime and the various excursions and tours organised by it over the years. The advances in State Forestry since the Society was founded are also detailed. The provision of employment to 5,000 people in rural areas is one of the achievements of the State's forestry programme. It is concluded that forestry will in the future be one of the really significant assets in the country's economic advance.

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**Number**

227

**Author**

McCracken Eileen

**Title**

The Irish timber trade in the seventeenth century.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 21, No. 1

**Key Word**

forest history, timber trade, seventeenth century forestry, staves, shipbuilding, timber imports, timber exports, forestry policy, economic history

**Abstract**

The uses which were made of standing woods in the seventeenth century are examined. The native timber was mainly used in the making of staves for barrel, in shipbuilding and in the construction of house frames. The difficulties in transporting timber are described and the locations associated with each type of timber production

and the chief ports from which timber was exported are noted. The government tried to place restrictions on the enormous export of staves in the early seventeenth century. However, by 1700 the greater part of the Irish woods had been cut. It is not possible to say how many staves were exported during the century but figures are available for some years. It is estimated that hundreds of thousands of staves were exported from Londonderry woods before 1613. An intensive search for oak suitable for shipbuilding began in the Southwest around the 1670s. The cutting of woods reserved to the crown was forbidden by Charles II for any purpose but shipbuilding. The ban on the export of live cattle boosted the provisions trade in the same decade and the demand for staves for the home market grew rapidly. The prices of timber in various parts of Ireland at different times during the century are compared.

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**Location**

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**Number**

228

**Author**

O'Driscoll J.

**Title**

A tree improvement programme for *Pinus contorta*.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 21, No. 1

**Key Word**

*Pinus contorta*, lodgepole pine, tree improvement, seed stands, Seed orchards, seed selection, provenance selection, silviculture, seeds

**Abstract**

The importance of good quality seed has been recognised by forestry managers in recent years, but of equal importance is the selection of the correct provenance. This is especially true with *Pinus contorta*. Soon after the first imports of *Pinus contorta* seeds it became apparent that the coastal provenances were the ones best suited to Irish conditions. The problem to be solved now is how to perpetuate these good stands. The most suitable method is the establishment of seed orchards in conjunction with a seed stand programme. This programme is divided into three phases. (1) Selection of Plus trees. In examining the trees for selection there are four important considerations: vigour and relative position in the crop; stem form; crown form; and branch form. (2) Establishment of the seed orchard. There are four parts to this stage: selection of site; preparation of site; layout of area; and grafting. (3) Progeny testing. The simplest form of this test is the one parent test. Here seed is collected from the parent plus trees and sown in the nursery. The resultant development of the seedling can be watched and any inferior characteristics noted. However, a more reliable form of test is where controlled pollination is carried out in the orchard. The procedure followed is to collect pollen from a number of clones represented in the orchard and use it to pollinate the developing female flowers.

**Page**

pp 21 - 29

**Location**

Coillte library

**Notes**

available

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**Number**

229

**Author**

McDonncadha Myles

**Title**

Cable extraction of whole trees with roadside processing.

**Publisher**

Coillte Research & Development

**Place**

Bray

**Series**

Coillte Research & Development. Information Note No. 4

**Date**

1994

**Key Word**

cable extraction, harvesting, roadside processing, skyline harvesting

**Abstract**

A trial into improved methods of skyline harvesting investigated the environmental and economic viability of whole tree harvesting with roadside processing. Whole trees were extracted by skyline to the roadside to be delimbed and crosscut by a processor. The most efficient system comprised of two skylines, working to one processor. One extra worker is employed to cut trees and help choke the loads. Output on an average rack of 300 metres and extracting 0.2 cubic metres per load results in approximately 150 cubic metres per week at a cost of £16.86 per cubic metre at roadside.

**Page**

2p

**Location**

Coillte library

**Notes**

Available

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**Number**

230

**Author**

Society of Irish Foresters

**Title**

Meeting at Omagh.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 21, No. 1

**Key Word**

Society of Irish Foresters, forestry policy, economics, silviculture, sawmilling industry, forestry industry

**Abstract**

At a meeting of members of the Society of Irish Foresters in Omagh, Feb. 1964 Mr. R. Busby of the Northern Ireland Forest Service spoke on the theme of 'Present Silviculture and Management in Relation to Future Requirements.' He explains how the old skills of the silviculturalist must be refined to take pressing economic considerations into account. While shortages of timber may occur in the future, it is unlikely that the timber producer will benefit directly as more resources are invested in substitution of other materials. The importance of minimising production costs and building a flexible and mobile labour force are stressed. Mr. S. Cambell

stated that there was a growing awareness of the need to think of forestry as an industry. This awareness will increase as the area of our plantations at the harvesting stage increases, reflecting the great potential benefit it can present to the structure of our national economy. The speaker stated that while the native sawmilling industry was steadily improving in its ability to meet demand for sawn timber of high quality, the lack of a sufficient and sure supply of suitable sawlogs was a major factor limiting desirable development in scope.

**Page**

pp 37 - 41

**Location**

Coillte library

**Notes**

available

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**Number**

231

**Author**

Johnston D.R.

**Title**

Potential and economic aspects of forestry on marginal and submarginal land.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 21, No. 2

**Key Word**

marginal land, land use, economics, rural economy, rural development, marginal forestry, marginal agriculture, peatlands, bogs, heath

**Abstract**

The type of marginal land with which this article is concerned comprises raised bog, blanket bog and degraded heaths with varying thickness' of peat. The author acknowledges that it is difficult to justify economically the employment of manpower and capital in working marginal land. The difficulties involved in making meaningful comparisons between the profitability of forestry and industry, and between marginal forestry and marginal agriculture are considered. When considering the profitability of forestry on marginal land, four broad factors are important: the volume production; the cost of production; the length of the production cycle; and the price received for the product. The use of marginal land for forestry cannot be justified on purely economic grounds, so governments must be influenced by other considerations such as avoiding dependence on imported timber. Of even greater importance is the social effect that a growing forestry sector can have on a rural economy which would otherwise be incapable of supporting a growing population.

**Page**

pp 49 -57

**Location**

Coillte library

**Notes**

available

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**Number**

232

**Author**

Attwood E.A.

**Title**

Problems of forestry development in Ireland.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 21, No. 2

**Key Word**

forestry development, forestry policy, forestry economics, land use, agriculture, agricultural policy

**Abstract**

The author identifies three main aspects of the problems of forestry development in Ireland, especially regarding poor land areas. In considering the question of how forestry policy should be judged, both at a national and regional level, five different criteria can be distinguished - the creation of employment, import-saving, the generating of economic growth and finally the recreational and tourist opportunities. The second main aspect is the application of these criteria to the task of deciding what is the optimum use of individual pieces of land. The main problem associated with this process lies in estimating the returns per acre from farming and from forestry. The third aspect is the actual rate of development of forestry in the western counties of Ireland in recent years and its effects as a stimulant to economic growth in that area.

**Page**

pp 58 - 62

**Location**

Coillte library

**Notes**

available

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**Number**

233

**Author**

O'Muirgheasa Niall

**Title**

The pattern of annual growth in basal area of Sitka spruce, Norway spruce and *Pinus contorta*, in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 21, No. 2

**Key Word**

basal area, Sitka spruce, Norway spruce, *Pinus contorta*, silviculture, *Picea sitchensis*, *Picea abies*, lodgepole pine

**Abstract**

This report details a study designed to provide data as to the annual cycle of basal area growth of the principal conifers in Ireland. The study was initiated in the Spring of 1961. The species chosen for investigation were Sitka and Norway spruce and *Pinus contorta*. The prime object of the investigation was to obtain a graph of the accumulating percentage growth over the growing season for these species. It was hoped to obtain some information as to whether such factors as region, species, age, quality class, or the position of the tree crown in the canopy, were of practical significance in the volume increment cycle.

**Page**

pp 63 - 73

**Location**

Coillte library

**Notes**

Available

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**Number**

234

**Author**

Kavanagh J.D.

**Title**

An insight into arterial drainage.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 21, No. 2

**Key Word**

engineering, arterial drainage, marginal land, silviculture

**Abstract**

The author traces the development of arterial drainage policy from the mid 1800s. The process involved in modern drainage, beginning with a survey of the channel required to drain a designated area of land by OPW engineers, is described. In the next stage all the relevant survey data is plotted on squared paper. The design procedure, and the measures which need to be taken to estimate the design flood level are then explained. The final stage involves examining all the channels surveyed and deciding which are to included in the scheme.

**Page**

pp 74 - 85

**Location**

Coillte library

**Notes**

available

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**Number**

235

**Author**

Society of Irish Foresters

**Title**

Twenty-second Annual General Meeting

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 21, No. 2

**Key Word**

forestry policy, afforestation, marketing, competition

**Abstract**

The article contains the text of the President's address to the Twenty-second Annual General Meeting of the Society of Irish Foresters. The speaker notes the considerable advances that have been taken by the forestry

industry since the early years of the Society. The current state of the industry and its contribution to employment and the economy generally is assessed.

**Page**

pp 86 - 94

**Location**

Coillte library

**Notes**

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**Number**

236

**Author**

Kilpatrick C.S.

**Title**

Public response to forest recreation in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 1

**Key Word**

forest parks, amenities, forest recreation, Tollymore Forest Park, Northern Ireland forestry, tourism, forest use

**Abstract**

For one week in July 1964, 50% of the people visiting Tollymore Forest Park were given a questionnaire to complete. About one third of the forms were returned. This paper is an analysis of the results. Forest recreation is seen to be an activity mainly for family parties with all ages participating fully except the over 65s. Its greatest appeal is for the urban, industrialised or office worker and its least appeal is for the farmer or rural dweller. The effective range of a forest park appears to be only 40 miles as only 6.5% of visitors travelled beyond that ring.

**Page**

pp 3 - 15

**Location**

Coillte library

**Notes**

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**Number**

237

**Author**

Fraser A.I.

**Title**

The uncertainties of wind-damage in forest management?

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 1

**Key Word**

wind-damage, windthrow, uprooting, stem breakage, spacing, thinning, ploughing, drainage, forest management, wind-tunnel experiments, silviculture

**Abstract**

The main concerns of foresters when considering the problem of wind-damage to trees are uprooting of spruces on poorly drained soils, and stem breakage on free draining soils. Recent tree-pulling investigations and wind tunnel experiments have given some indications of trees' resistance to both these forms of damage and some data on the forces which can be applied to trees. This data can then be used to find the critical wind velocity for any size of tree. When the frequency and velocity of gales in a given place is known, it will be possible to predict the size that a crop will reach before being blown over. This information then helps establish a base line against which the likely benefit from silvicultural treatments such as spacing, ploughing, draining and thinning can be judged.

**Page**

pp 23 - 30

**Location**

Coillte library

**Notes**

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**Number**

238

**Author**

Society of Irish Foresters

**Title**

Day excursion to Delgany Forest 25th April, 1964.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 1

**Key Word**

Society of Irish Foresters, Delgany Forest, mixtures, mixed stands

**Abstract**

This is an account of a Society of Irish Foresters day excursion to Delgany Forest in April 1964. The main points of interest were a stand of *Pinus radiata* and a stand with hardwoods in a matrix of conifers, the mixture being: *Picea abies*, *Thuja plicata* and *Castanea sativa*. The forester, T. Moloney, explained the difficulties involved in maintaining such cultures.

**Page**

pp 33 - 35

**Location**

Coillte library

**Notes**

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**Number**

239

**Author**

Society of Irish Foresters

**Title**

Day excursion to Abbeyleix Demesne 11th May, 1964.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 1

**Key Word**

Society of Irish Foresters, Abbeyleix Demesne, pest damage, red squirrel

**Abstract**

This is an account of the Society of Irish Foresters' excursion to Abbeyleix Demense in May, 1964. The most interesting feature of the estate is the ancient pedunculate oak woodland with trees over 300 years old, believed to be one of the very few remnants of the native woodland of the Central plain. The red squirrel has caused considerable damage in young Scots pine.

**Page**

pp 35 - 36

**Location**

Coillte library

**Notes**

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**Number**

240

**Author**

Society of Irish Foresters

**Title**

Excursion to Castlehane 14th June, 1964

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 1

**Key Word**

Society of Irish Foresters, Castlehane, felling

**Abstract**

This is an account of the Society of Irish Forester's excursion to Castlehane in June, 1964. The first plot visited consisted of oak and elm. A third species, Japanese larch, had been originally planted as a nurse tree with the oak and elm but has been removed. Other plots visited consisted of Norway spruce, and a hardwood plot of sycamore and oak. Different opinions were offered regarding the optimum extent of felling. The suggestion that clearfelling should be avoided because it would allow rampant growth of ground vegetation was regarded by some as an economic luxury.

**Page**

pp 36 - 40

**Location**

Coillte library

**Notes**

available

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**Number**

241

**Author**

Society of Irish Foresters

**Title**

Day excursion to Newport Forest 12th July, 1964.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 1

**Key Word**

Newport Forest, Society of Irish Foresters

**Abstract**

This is an account of the Society of Irish Foresters' visit to Ballyhourigan Property of Newport Forest in July 1964. This is the oldest property of this forest and contains crops in all development stages from recent plantings to mature timber.

**Page**

pp 40

**Location**

Coillte library

**Notes**available

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**Number**

242

**Author**

Humphreys Ian C.

**Title**

An investigation into the variation in strength of fast-grown Sitka spruce in Northern Ireland.

**Place**

Belfast

**Date**

1991

**Key Word**

strength properties, timber strength, timber quality, Sitka spruce, *Picea sitchensis*, silviculture, stress grading, timber processing

**Abstract**

This study examines the correlation between timber strength in Sitka spruce and a number of factors. Sample trees were cut into logs, which were then converted into battens, kiln dried, and stress graded. Results from 14 unthinned and 6 thinned plots are presented in relation to the effects of spacing, growth rate, branch size and number, juvenile wood and density on the load bearing capacity of the timber. The single most important factor in determining timber strength was initial plant spacing (in unthinned stands). Closer spacing produced stronger timber. Initial spacing varied from 1330 to 5920 stems per ha. The amount of juvenile wood present in the batten was also related to strength, and 88% of battens with no juvenile wood reached strength class 4. Other significant factors were density (+ve) and ring width (-ve). Branch size and number were generally negatively correlated with strength. Linear progression models demonstrated that eight factors accounted for 99% of the variation in strength observed in the 14 unthinned plots. The three most important of these, which explained over 90% of the variation, were initial plant spacing, basal area and density. From the results obtained it is

concluded that maximising timber strength will require a reduction in individual tree growth rate to reduce the juvenile core and ring widths and to increase timber density. This will increase the number of branch whorls but the closer spacing will result in the production of relatively small branches.

**Page**

213p

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available (Contrator: Forest Service, Northern Ireland Dept. of Agriculture)

**Address of author**

Food and Agricultural Chemistry Department, Queen's University, Newforge Lane, Belfast, Northern Ireland BT9 5PX

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**Number**

243

**Author**

Society of Irish Foresters

**Title**

Illustrated lecture at Galway Saturday, February 22nd, 1965: Investigation of former woodland growth at Clonast Bog.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1964

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 1

**Key Word**

pollen analysis, peat, pollen analytical research, peatlands

**Abstract**

This is a summary of a talk given by Dr. Neil Murray in Galway, February 1965, based on his 1957 Ph.D thesis. This study was carried out with a view to tracing the sequence of events leading to the overwhelming by peat of the forests or woods which once grew on the mineral soil in the Clonast area and also any subsequent colonisation of the peat by trees. A brief description of the history of pollen analysis and the methods used in pollen analytical research is given. Inferences can be drawn regarding the vegetational cover of the landscape from information on pollen concentration in an area.

**Page**

pp 42 - 45

**Location**

Coillte library

**Notes**

available

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**Number**

244

**Author**

Jackson J.S.

**Title**

Illustrated Lecture - Dublin 27th February, 1965: The geology of the Irish countryside, its relation to soils and its effects on forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No.

**Key Word**

geology, karst limestone, soil types, forest establishment

**Abstract**

The history of geological study in Ireland as it relates to analysis of the soil is briefly outlined. The lecture included a study of geological phenomena and landforms which sought to explain the karst limestone of the Burren, the coalfields of Castlecomer and the lakes of the mid-lands.

**Page**

pp 45 - 46

**Location**

Coillte library

**Notes**

available

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**Number**

245

**Author**

Society of Irish Foresters

**Title**

Review: Report of the Minister of Lands on forestry for the period: 1st April, 1962 to 31st March, 1963.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 1

**Key Word**

Department of Lands and Forestry, forestry policy, State forestry, planting policy, afforestation

**Abstract**

This review outlines the main features of the report presented to the Minister of Lands on Forestry. The total productive area acquired for State forestry purposes during the year was 23,446 acres. There were 24,271 acres of new planting and 437 acres of reforestation. Sitka spruce retained its dominant position accounting for 44% of all planting, Pinus contorta was second with 24.9% (down from 30.4% in the previous year). The damage caused by fire and the exceptionally cold weather during the period is assessed. The success of the Private Planting Scheme is noted.

**Page**

pp 47 - 49

**Location**

Coillte library

**Notes**

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**Number**

246

**Author**

Kerr C.H.

**Title**

Pomeroy Forestry School

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 2

**Key Word**

Pomeroy Forestry School, forestry training, education, Northern Ireland Forestry Service, Ministry of Agriculture

**Abstract**

Pomeroy House and Estate, extending to over 400 acres, was acquired by the Forestry Division of the Northern Ireland Ministry of Agriculture in 1960 for the establishment of a regional training centre. The principal object of the school is to provide workers and junior supervisors with a basic knowledge of silviculture and a practical training in the proper care and use of tools and machines, the latest forest operational techniques and the important aspects of labour relations.

**Page**

pp 54 - 57

**Location**

Coillte library

**Notes**

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**Number**

247

**Author**

Ward Declan

**Title**

Fomes - current disease management strategy.

**Publisher**

Coillte Research & Development

**Place**

Bray

**Series**

Coillte Research & Development. Information Note No. 7

**Date**

1994

**Key Word**

Heterobasidion annosum, root rot, butt rot, forest protection, Fomes, fungal diseases, forest pathogens, fungicides, stump treatment

**Abstract**

Stump treatment with urea solution is the best available method of preventing infection with Fomes. The solution must be applied to all exposed areas of each stump immediately after felling. The ammonia gas released during treatment is lethal to the Fomes spores, and the high nitrogen level introduced to the stump surface creates a favourable environment for non-pathogenic fungal spores which compete with the Fomes.

**Page**

2p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow

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**Number**

248

**Author**

Gallagher Leonard U.

**Title**

Is our approach to forestry research adequate?

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 2

**Key Word**

Forestry research, American research, European research, scientific writing, communications, education, forestry training

**Abstract**

The original motivating forces in European and American research are outlined. The concepts of basic and applied research are defined and discussed. The methods of handling research and research problems are discussed with particular reference to points of difference between the Irish and American approaches and the significance of the fundamental approach. Aspects of communication are discussed, with pointers on standardisation in scientific writing, and the need for better communications with the public at large.

**Page**

pp 92 - 109

**Location**

Coillte library

**Notes**

available (Text of a paper read at a symposium on 'Aspects of American Forestry of Interest to Ireland' at Pomeroy Forest School, Northern Ireland, April 22nd, 1965).

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**Number**

249

**Author**

Society of Irish Foresters

**Title**

Day excursion to Shelton Abbey

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 2

**Key Word**

Pinus contorta, lodgepole pine, research, Shelton Abbey Nursery, Society of Irish Foresters

**Abstract**

This is an account of the Society of Irish Foresters' visit to Shelton Abbey Forest Nursery in May, 1965. A brief summary on the lodgepole pine provenance study at Shelton is given, with particular reference to the search for provenances suitable for Irish conditions.

**Page**

pp 119 - 120

**Location**

Coillte library

**Notes**

Available

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**Number**

250

**Author**

Society of Irish Foresters

**Title**

Annual study tour in the Cavan district from June 1st to June 3rd.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1965

**Source**

Irish Forestry

**Volume**

Vol. 22, No. 2

**Key Word**

research

silviculture

**Abstract**

This is a summary of the Society of Irish Foresters' study tour to County Cavan in June 1965. Sites visited included Ulster Plantation Compartments 19 and 20, Cootehill Forest, Castlepollard Forest, Mullaghmeen, Killesandra Forest, Gortinaul and the Agricultural Institute Research Station at Ballinamore.

**Page**

pp 120 - 129

**Location**

Coillte library

**Notes**

available

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**Number**

251

**Author**

Gardiner J.J.

**Title**

Nutrient status of boglands and their microbiology with regard to afforestation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1966

**Source**

Irish Forestry

**Volume**

Vol. 23, No.1

**Key Word**

bogs, peat, soil nutrients, soil chemistry, drainage, spacing, ploughing, climate, peatlands

**Abstract**

The presence of mineral nutrients, microbiological activity and the organic chemical composition of various peat types are compared. A more important aspect than the actual presence of nutrients in peats is the availability of these nutrients to crops. Tests reveal that all the potassium, two thirds of the calcium and magnesium and only the inorganic phosphorus can be regarded as freely available. Nitrogenous material in peat is almost unavailable. The various available methods for enhancing nutrient availability are discussed. The problem of draining peat for afforestation purposes is considered. The nature of the peat, its permeability and local climatic conditions each have an important bearing on the optimum depth and spacing of drains. The author concludes from the results of various experiments that for successful establishment of plantations on peat some form of drainage and an application of phosphate is necessary.

**Page**

pp 5 - 13

**Location**

Coillte library

**Notes**

available

**Address of author**

Department of Crop Science, Horticulture and Forestry, UCD, Belfield Dublin 4

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**Number**

252

**Author**

Rishbeth J.

**Title**

Wood destroying fungi.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1966

**Source**

Irish Forestry

**Volume**

Vol. 23, No. 1

**Key Word**

wood pests, *Rhizina undulata*, *Stereum sanguinolentum*, *Polyporus schweinitzii*, *Armillaria mellea*, *Fomes annosus*, *Peniophora gigantea*, forest protection, plant pathogens, fungal diseases, *Fomes annosus*

**Abstract**

The fungi which are dealt with in this article have as their main natural function the decomposition of woody tissues, involving the destruction of both cellulose and lignin. The most important of these species as far as woodlands are concerned is *Fomes annosus*. The most common source of infection of standing trees is from stumps containing the fungus. Among the forest activities that may lead to its appearance are the felling and replanting of a conifer stand, and the cutting of trees during weeding or cleaning. Experience has shown that protection from infection may be achieved by stump creosoting, which is most effective in uninfected or lightly infected stands, and treatment with ammonium sulphate which rapidly kills *Fomes*. The best chemical protectant is sodium nitrite. A competitor of *Fomes*, *Peniophora gigantea*, exerts a limited natural control over stump infection by *Fomes*.

**Page**

pp 14 - 21

**Location**

Coillte library

**Notes**

available

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**Number**

253

**Author**

O'Carroll N.

**Title**

Growth check of Norway spruce and Scots pine due to potassium deficiency.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1966

**Source**

Irish Forestry

**Volume**

Vol. 23, No. 2

**Key Word**

growth check, Norway spruce, Scots pine, Phragmites peat, moisture deficiency, nutrients, nutrient deficiency, potassium deficiency, silviculture, tree growth

**Abstract**

A condition of checked growth associated with chlorotic foliage of Norway spruce and Scots pine on Phragmites peat appeared at first examination to be due to moisture deficiency. Detailed investigation did not support this hypothesis, but foliar analysis and, to a lesser extent, soil analysis pointed to potassium deficiency. The appearance of the trees was quickly improved by applications of sulphate of potash.

**Page**

pp 36 - 41

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2

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**Number**

254

**Author**

Cooper R., Roche L.

**Title**

The international forestry scene: environmental and wood supply issues.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1991

**Source**

Irish Forestry

**Volume**

Vol. 48, Nos. 1 & 2

**Key Word**

environment, wood supply, deforestation, biodiversity, tropical forest resources, timber trade, import requirements, EC, EU, wood exporting, manufacturing, sawmills, timber processing

**Abstract**

Deforestation rates in the tropic continue to increase and recent estimates show an annual rate of deforestation of

17 million ha. World concern about the loss of biodiversity and adverse climate change are beginning to have an effect on timber production in a number of major exporting countries. Future supplies of timber to world markets from natural tropical forests are likely to decline. Future increases in industrial wood supplies will be drawn principally from plantations in developed countries. Despite a growth in wood production in Western Europe, imports of forests products will continue to increase offering growing export opportunities for Ireland. While Ireland is disadvantaged in some respects vis-a-vis a number of large wood-producing nations, it also enjoys several advantages. These include: EC protective tariffs; lower freight and delivery costs; stable exchange rates with trading nations; and low investment costs resulting from a well developed infrastructure. A careful review of these advantages in wood products manufacture and export opportunities must be made in developing strategies for the expansion of the Irish wood products industries.

**Page**

pp 1 - 12

**Location**

Coillte library

**ISBN**

00211192

**Notes**

available (Paper presented to the Annual Symposium of the Society of Irish Forestry, April 1991).

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**Number**

255

**Author**

O'Brien Tim

**Title**

Private forestry in Ireland: recent developments and future directions.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1991

**Source**

Irish Forestry

**Volume**

Vol. 48, Nos. 1 & 2

**Key Word**

private forestry, land use, farmers, Western Package, Forest Premium Scheme, grants, Teagasc, environment, banks, investors, investment, species diversification, education, incentives, agriculture

**Abstract**

Before the introduction of a realistic grant system in the early 1980s there was little interest in the development of private forestry. The enormous increase in private planting during that decade is recorded and is explained by the introduction of the Western Package, the four year fixed price package and the lead given by financial institutions. The single greatest challenge to the future development of private forestry is the need to sell the idea to farmers and investors. Teagasc have a key role to play in the extensive educational campaign which will be required to overcome this obstacle. It is hoped that the Forest Premium Scheme will encourage more farmers to invest in forestry in the future. Other challenges include the need to counter criticism from the environmental lobby, diversification of species and maintenance of standards.

**Page**

pp 13 - 22

**Location**

Coillte library

**ISBN**

00211192

**Notes**

available (Paper presented to the Annual Symposium of the Society of Irish Foresters, April 1991).

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**Number**

256

**Author**

Schaible R.

**Title**

Growth potential of poplars in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1991

**Source**

Irish Forestry

**Volume**

Vol. 48, Nos. 1 & 2

**Key Word**

poplar planting, *Populus trichocarpa*, *P. deltoides*, Northern Ireland, CTMP, pulp wood production

**Abstract**

The development of poplar planting in Northern Ireland is described. Results from an experiment comparing five cultivars (clones) planted in 1977 are presented and briefly discussed. Clones derived from *P. trichocarpa* are recommended as the most reliable and productive until more information becomes available. It is recommended that commercial poplar planting should be initially restricted to sheltered sites below 100m elevation. Soil pH should preferably exceed 5.0. It is suggested that, using *P. trichocarpa*, a timber yield of 24 cubic metres/ha/year could be achieved on suitable sites over a 15 year rotation.

**Page**

pp 23 - 31

**Location**

Coillte library

**ISBN**

0021 - 1192

**Notes**

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**Address of author**

Forest Service, NI Dept. of Agriculture, Dundonald House, Newtownards Rd. Belfast

---

**Number**

257

**Author**

Kilpatrick D.J., Seaby D.A.

**Title**

Climate and leader length variation.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1991

**Source**

Irish Forestry

**Volume**

Vol. 48, Nos. 1 & 2

**Key Word**

climate, annual leader growth, air temperature, annual leader length fluctuations, silviculture, tree growth

**Abstract**

Fluctuations in annual leader growth were observed in stands of several species of pine, particularly Scots and some provenances of lodgepole. The work described in this paper was carried out with the objectives of establishing whether leader length fluctuations were related to climate in Northern Ireland and, if so, to devise a procedure for adjusting observed leader length to compensate for fluctuations in climate. Analysis of data showed that there is a clear effect due to temperature summations in a combinations of both the current and the previous season for pines, while for spruces, only the temperature summation in the previous season is statistically important. A method of adjusting observed leader length to compensate for the effect of climate is demonstrated. The usefulness of this method for assessing fertiliser response or possible damage due to pests and diseases is discussed.

**Page**

pp 32 - 45

**Location**

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**ISBN**

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**Notes**

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**Address of author**

NI Dept. of Agriculture, Dundonald House, Newtownards Rd. Belfast

---

**Number**

258

**Author**

Schaible R., Dickson D.A.

**Title**

Effects of drainage intensity and planting position on the growth and nutrition of second rotation Sitka spruce on shallow peat.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1990

**Source**

Irish Forestry

**Volume**

Vol. 47, No. 1

**Key Word**

peat, peatlands, bogs, Sitka spruce, drainage, planting position, restocking, foliar nitrogen, silviculture, *Picea sitchensis*

**Abstract**

This paper presents results from an experiment which was laid down following clearfelling in Cam Forest, Co. Londonderry, in 1972. The object was to investigate the effects of drainage at different intensities, and mounding, before replanting on the growth of Sitka spruce on shallow peat. The previous crop of Sitka spruce had been felled prematurely after 36 years. The results of the experiment showed that growth was significantly enhanced by drainage at 10m and 5m intervals, compared to an undrained control treatment, and by planting on mounds of soil compared with planting directly into uncultivated soil. Foliar nitrogen concentration was significantly lower in undrained plots 16 years after planting. The physical or nutritional condition of the peat does not appear to have improved by the first rotation crop.

**Page**

pp 19 - 27

**Location**

Coillte library

**ISBN**

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**Number**

259

**Author**

Whiteside Jim

**Title**

Forestry, the 1990s and beyond.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1990

**Source**

Irish Forestry

**Volume**

Vol.47, No. 1

**Key Word**

forestry policy, conifer plantations, public image, environment, conservation, land use, recreation, education, public relations, public criticism, ecology

**Abstract**

The creation of large-scale plantations by both public and private forestry organisations has attracted public criticism during the past decade. The forest industry must be able to counter this criticism by presenting a package of multiple land uses. These should embrace recreation, conservation, sport, all the many compatible uses of land while it is growing a timber crop in an environmentally sensitive manner. Foresters should seek to become identified with good environmental management.

**Page**

pp 28 - 31

**Location**

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**ISBN**

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**Notes**

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**Address of author**

Forest Service, NI Dept. of Agriculture, Dundonald House, Newtownards Rd. Belfast

---

**Number**

260

**Author**

Hendrick E.

**Title**

A bog flow at Bellacorrick Forest Co. Mayo.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1990

**Source**

Irish Forestry

**Volume**

Vol. 47, No. 1

**Key Word**

Bog flow, blanket peat, ploughing, peat strength, bog topography, drainage, collector drains, flooding, peatlands

**Abstract**

Bog flows refer to slides where peat from lower, softer layers becomes semi-liquid and flows out from under the underlying firmer, less humidified top layer. A bog flow occurred in mid-July, 1988 at Sheskin property, Bellacorrick forest which affected an area of 2.4ha. of blanket peat planted with lodgepole pine. Over much of the area the bog was completely removed down to a basal, greasy peat layer. The lower, softer layers flowed over this material and carried the upper, firmer layers downslope. This pattern is very familiar to other bog flows which have occurred in the same region. It is suggested that the exceptional weather of May, June and July contributed to the flow together with the lack of collector drains which left the peat soft and saturated. These factors together with a topography which predisposed the bog to movement, initiated the flow. Collector drains placed at sufficient depth and intensity should be sufficient to prevent similar occurrences.

**Page**

pp 32 - 44

**Location**

Coillte library

**ISBN**

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**Address of author**

National Council for Forest Research and Development, Agriculture Building UCD, Belfield Dublin 4

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**Number**

261

**Author**

MacKenzie R.F.

**Title**

Some factors influencing the stability of Sitka spruce in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1974

**Source**

Irish Forestry

**Volume**

Vol. 31, No. 2

**Key Word**

windthrow, windthrow creep, forest soils, site fertility, exposure, altitude, silviculture, Sitka spruce, *Picea sitchensis*

**Abstract**

This paper is based on the results of a survey conducted with a view to identifying and evaluating those site factors which pre-disposed stands to risk of wind damage. The survey was carried out in Northern Ireland between 1965 and 1969. The survey gathered information on eight groups of factors which were thought might influence the degree of risk of windthrow. These factor groups are: stand management, the most important factor of which is windthrow creep which is the gradual increase in extent of a windthrow area that occurs from year to year; soil type; the influence of slope; the influence of aspect; the influence of altitude; and the influence of solid geology. Other factors examined are the relationship between site fertility and windthrow, and the relationship between exposure and windthrow. The application of statistical tests to the data derived from the survey shows that significant relationships exist between the factors examined and windthrow.

**Page**

pp 110 - 129

**Location**

Coillte library

**Notes**

available. (Paper delivered at Wind Risk Symposium, Pomeroy, Co. Tyrone, 1st - 3rd May, 1974).

---

**Number**

262

**Author**

Ward Declan

**Title**

The large pine weevil - current pest management strategy.

**Publisher**

Coillte Research & Development

**Place**

Bray

**Series**

Coillte Research & Development. Information Note No. 8

**Date**

1994

**Key Word**

pine weevil, Hylobius abietis, insect pests, forest protection pest management

**Abstract**

The large pine weevil is the most significant insect pest in Irish forestry. It causes damage by feeding on the bark and underlying tissue of young trees. Current management strategy consists primarily of chemical protection with the insecticide lindane. Plants are dipped before planting and may also need to be sprayed during the second growing season.

**Page**

2p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidminton Place Bray, Co. Wicklow

---

**Number**

263

**Author**

O'Cinneide M.S.

**Title**

Quantitative assessment of the relative importance and cooperative effects of factors influencing forest stability.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1974

**Source**

Irish Forestry

**Volume**

Vol. 31, No. 2

**Key Word**

windthrow, bedrock, soil type, slope, altitude, exposure, aspect, environmental variables, Automatic Interaction Detection model, silviculture, forest soils

**Abstract**

This paper attempts to assess the relative importance of environmental variables such as bedrock, soil-type, slope, altitude, exposure and aspect to windthrow processes. The various difficulties in artificially simulating these processes are examined including choosing a suitable field study area and analytical difficulties. Conventional multivariate models are not considered suitable for this type of study. Therefore the Automatic Interaction Detection (AID) model, which was specifically designed for this type of analysis, is employed. The

data was analysed using a series of 14 binary splits. The analysis suggests that altitude is strongly related to windthrow, with plantations on middle slopes (138 - 274 m) being exceptionally vulnerable. Aspect is the next most significant variable with plantations on north, northeast and east slopes having heavy wind damage. Soil-type is ranked next in importance; most of the windthrow being associated with gley soils. Finally, age of plantation is significantly related to incidence of windthrow, with damage peaking in 20-39 years age-group.

**Page**

pp 135 - 144

**Location**

Coillte library

**Notes**

available (Paper delivered at Wind Risk Symposium, Pomeroy, Co. Tyrone, 1st-3rd May, 1974).

---

**Number**

264

**Author**

Gallagher G.J.

**Title**

Windthrow in State forests in the Republic of Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1974

**Source**

Irish Forestry

**Volume**

Vol. 31, No. 2

**Key Word**

wind damage, gales, weather, climate, thinning, silviculture, windthrow

**Abstract**

The author gives a brief account of the incidents of storm damage recorded in State Forests since the beginning of the century. The overall picture is one of frequent and often extremely severe gales of an intensity likely to cause some damage each year. The various factors contributing to wind damage are examined. These are: climate; site factors such as elevation, topography and soil type; and silvicultural practices, especially thinning. The ratio of volume blown per unit area of productive forest 22 years and over averages 0.62. This ratio can serve as a guide for forecasting purposes.

**Page**

pp 154 - 167

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Leeson Lane Dublin 2

---

**Number**

265

**Author**

Harrington Rory

**Title**

The hybridisation of red deer and sika deer in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1974

**Source**

Irish Forestry

**Volume**

Vol. 31, No. 2

**Key Word**

red deer, sika deer, hybridisation, gene contamination, species diversity, environment, wildlife

**Abstract**

A brief account of the background to and extent of hybridisation of red deer and sika deer in Northern Ireland is given. The author warns that the red deer of North-western Ireland could be lost just as those of Co. Wicklow were lost through incipient hybridisation.

**Page**

p 168

**Location**

Coillte library

**Notes**

available

**Address of author**

National Parks and Wildlife Service, Office of Public Works, 98 The Quay, Waterford.

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**Number**

266

**Author**

Mooney O.V.

**Title**

Scots pine - the forgotten species of Irish Forestry?

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1986

**Source**

Irish Forestry

**Volume**

Vol. 43, No. 1

**Key Word**

Scots pine, forest history, plantations, estate planting, *Pinus sylvestris* L., ancient woodlands

**Abstract**

The author briefly describes the gradual extinction of the Scots pine in Ireland and its re-introduction during the period of estate and demesne development in the seventeenth and eighteenth century. The expansion of Scots pine continued under the planting programme of the State Forestry Service from 1903, but stopped abruptly after 1950. The cause of this decline is attributed the unsatisfactory returns from existing plantations, the slowness of the species' growth compared to Sitka spruce and the limited provenance available. Recent stands established with modern techniques of ploughing, fertilising and from select seed sources have shown promise with yield class levels consistently between 12 and 14. The versatility of Scots pine as opposed to other species, and its value as a construction timber are given as reasons for its increasing popularity.

**Page**

pp 7 - 14

**Location**

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**Number**

267

**Author**

Ni Dhubhain Aine

**Title**

Forestry and rural employment.

**Publisher**

Avebury

**Place**

Aldershot

**Date**

1993

**Source**

Rural development in Ireland: a challenge for the 1990s. (Edited by Michael Murray &amp; John Greer)

**Key Word**

rural development, rural employment, social fabric, private forestry, farmer forestry, agriculture, rural communities, downstream employment, timber processing

**Abstract**

The spectacular rise in planting rates over the last number of years has had and will continue to have various impacts on rural areas. These impacts must be identified and the expansion of the forestry sector planned in such a way as to minimise the negative impacts, such as the displacement of agriculture and the disruption of farming communities, and maximise the positive impacts. The role of forestry in providing employment and consequently helping to maintain the rural fabric is assessed. Studies show that downstream employment accounts for over 80% of the total employment generated from domestic sawn timber. The effect of future expansion in forest production in terms of employment is assessed and what this will mean in terms of income for rural areas is estimated. Negative impacts of forestry, many resulting from the centralised nature of decision-making for both State and private forestry, are examined. Finally the development of co-operative forestry is considered.

**Page**

pp 85 - 96

**Location**

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**ISBN**

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**Notes**

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**Address of author**

Dept. of Forestry, Agriculture Building, UCD, Belfield, Dublin 4

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**Number**

268

**Author**

Bulfin Michael

**Title**

Determining the role of private forestry on highly productive forest sites in agriculturally disadvantaged areas.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1987

**Source**

EEC DG XII European R &amp; D Programme: Wood as a renewable raw material.

**Key Word**

private forestry, agriculturally disadvantaged areas, marginal land, wet mineral lowland soil associations, rural development, agricultural income, grants, subsidies, Adequate Annual Income, farm forestry

**Abstract**

This survey examines the potential for forestry on five, wet mineral lowland Soil Associations totalling one million hectares 14.3 % of the land of the Republic of Ireland. Average production for all plots (unweighted) was Yield Class 20.3 cubic metres/ha/annum and was YC 20.8 and YC 19.0 for mineral and peat plots respectively. Weighted Yield Classes were somewhat higher at 21.1, 22.0 and 21.4 for all, for mineral and for peat plots respectively. 90% of all plots were YC 14 or above and over 80% are over YC 18. The factors which contribute to very low Yield Classes can be readily identified. Thus it is possible to say that the wet mineral lowland soils in the west of Ireland are highly productive for forestry. Rotations should be around 30-35 years. In the rural areas dominated by wet mineral lowlands, income from agriculture is estimated, using static price assumptions, to be less than half the potential income from forestry and would fall to a third if a 1% increase in timber prices is assumed. The key element in promoting the development of farmer forestry is the provision of Adequate Annual Income. If forestry is to be an alternative land use then the support system for forestry must at least equal those currently aiding agriculture. Other supports include: planting grants, an active advisory service, a co-operative structure to promote and co-ordinate planter groups and demonstration farm forests.

**Page**

xlvi, 215p

**Location**

Teagasc library

**Notes**

Available

**Address of author**

Teagasc Kinsealy Research & Development Centre, Malahide Road, Dublin 17

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**Number**

269

**Author**

O'Hegarty Derry

**Title**

Investing in forestry in Ireland: a practical guide.

**Publisher**

Touche Ross/Celtic Forestry

**Place**

Dublin

**Date**

1988

**Key Word**

private forestry, investment, economics, taxation, grants, subsidies, incentives

**Abstract**

The purpose of this booklet is to outline briefly the structure of the forestry industry in Ireland, to identify the reliefs and incentives available to prospective investors and industrialists and to suggest ways of optimising the return on investment. The various grant schemes available for private afforestation are examined including the Western Package Scheme, funded jointly by the EC and the Irish exchequer, and exchequer funded grant schemes. The various forms of taxation on private woodlands are also explained.

**Page**

51p

**Location**

Teagasc library

**Notes**

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**Number**

270

**Author**

Jones Melvyn

**Title**

Coppice wood management in the eighteenth century: an example from County Wicklow.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1986

**Source**

Irish Forestry

**Volume**

Vol. 43, No. 1

**Key Word**

semi-natural woodlands, Watson-Wentworth estate, coppice woods, coppice management, forestry history, timber trade, silviculture, coppicing

**Abstract**

The extent and commercial significance of semi-natural coppice woods in Ireland in the past are far from clear and relatively little detailed analysis of coppice management using primary sources has been undertaken. Employing a collection of documents relating to the Watson-Wentworth estate in Co. Wicklow, coppice wood management in the first half of the eighteenth century is analysed. Evidence is presented which shows that during that period coppice woods covering more than 800 hectares were managed in a fairly sophisticated way, resulting not only in the preservation of important semi-natural woods but also in the production of a wide range of commercial products. The woods made an important contribution to the income of the estate, generated local employment, developed trading links over a surprisingly wide area and provided a renewable supply of raw materials for a number of important manufacturing industries.

**Page**

pp 15 - 31

**Location**

Coillte library

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**Number**

271

**Author**

Fitzsimons B., Luddy W.B.

**Title**

Growing ash for hurleys.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1986

**Source**

Irish Forestry

**Volume**

Vol. 43, No. 1

**Key Word**

ash, *Fraxinus excelsior* L., hurley production, optimum butt size, butt quality, timber end use, silviculture

**Abstract**

Ash is the most valuable of all home-grown timber, and it is the only broadleaf tree which it is possible to grow profitably in Ireland at the prices currently prevailing. It is the most abundant of native tree species and occurs throughout the country. However, demand for ash hurleys still outstrips supply. This paper describes an investigation into the growing of ash specifically for the hurley market. A system for growing ash for hurley production is outlined. It is estimated that the optimum size of butt is in the region of 28-32cm DBH. Four quality classes are identified based on stem size and form. A variety of silvicultural systems for ash are

examined for profitability and compared with likely returns from Sitka spruce on the same sites.

**Page**

pp 32 - 55

**Location**

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**Number**

272

**Author**

Ward Declan

**Title**

The damaging influence of the bank vole in Irish forestry.

**Publisher**

Coillte Research & Development

**Place**

Bray

**Series**

Coillte Research & Development Information Note No. 9

**Date**

1994

**Key Word**

bank vole, Clethrionomys glareolus, forest protection, forest fauna

**Abstract**

The bank vole causes damage to young coniferous trees by stripping the bark and feeding on the underlying cambium. Damage is often slight but frequently mortalities may occur. Detail are provided of a survey carried out in a forest in county Limerick in 1990. Results obtained from this survey and from a later experiment suggest that removal or suppression of vegetation cover around trees would help to reduce the incidence of damage.

**Page**

2p

**Location**

Coillte library

**Notes**

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**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co. Wicklow.

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**Number**

273

**Author**

Irish Farmers' Monthly

**Title**

Forestry co-ops set the pace.

**Publisher**

Irish Food Publishers

**Place**

Dublin

**Date**

July/1994

**Source**

Irish Farmers' Monthly

**Key Word**

Western Forestry Co-op, marginal land, agriculture, farmers, land use, private forestry, West of Ireland.

**Abstract**

According to Ray Gallagher, Manager of Western Forestry Co-op there is at present great deal of enthusiasm among farmers for forestry. The Co-op was set up in 1985 to provide farmers with the encouragement, support and services required to enable them to afforest the marginal areas of their farms. Its primary aim is to make forestry an instrument of rural development.

**Page**

pp 19 - 20

**Location**

UCD Library

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**Number**

274

**Author**

Irish Food Publishers

**Title**

Farmers first in forestry.

**Publisher**

Irish Farmers' Monthly

**Place**

Dublin

**Date**

July/1994

**Source**

Irish Farmers' Monthly

**Key Word**

land use, marginal land, farming, Irish Farmers Association, agriculture, land purchase, IFA, private forestry

**Abstract**

The dramatic increase in private forestry in Ireland over the last 10 years is noted. At present private planting accounts for 50% of the total, with farmers accounting for 75% of the private total. The IFA is generally supportive of forestry but a spokesman argues that more attention needs to be paid to the issue of social environment when planting. The IFA have called for the establishment of a Land Use Authority to regulate the contentious area of land purchasing.

**Page**

pp 21 - 26

**Location**

UCD Library

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**Number**

275

**Author**

Ryan Willie

**Title**

Meath farmers oppose forestry.

**Publisher**

Irish Food Publishers

**Place**

Dublin

**Date**

March/1994

**Source**

Irish Farmers' Monthly

**Key Word**

land use, agricultural land, farming, broadleaf planting, afforestation, private forestry, land acquisition, broadleaves

**Abstract**

Farmers in Summerhill, Co. Meath have expressed concern over the planned afforestation of most of a 700-acre local farm. All forestry developments exceeding 200 ha. require planning permission. Only hardwoods are to be planted on the site which is top quality arable land. Total grant aid, if approved, would amount to £608,000, and an annual premium of £26,000. The land was bought up in small lots over a period of 20 years and is owned by a non-resident German national.

**Page**

pp 7 - 9

**Location**

UCD Library

**Notes**

Available

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**Number**

276

**Author**

Byrne Dermot

**Title**

The tax position of timber contractors.

**Place**

Ballina

**Date**

June/1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 4

**Key Word**

tax, taxation system, timber contractors, harvesting, self-employed forest workers, payments to contractors, timber industry

**Abstract**

The author gives a brief overview of the new taxation system for timber contractors. Under new regulations all payments to timber contractors will have 35% income deducted at source. In order to pay the contractor gross the payer must be in possession of a C47 certificate from the Tax Office.

**Page**

pp 4 - 5

**Location**

Coillte library

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**Number**

277

**Author**

Anon

**Title**

Crann's South Leitrim Project, year 2.

**Place**

Ballina

**Date**

June\1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 4

**Key Word**

Crann, pilot tree project, Leitrim, broadleaves, Forest Service, Operational Forestry Programme

**Abstract**

This is an account of the second phase of a Pilot Tree Project undertaken by Crann in the South Leitrim area. Funding for the project, which is seeking to integrate broadleaves in the local economy, came from the Forest Service through the Operational Forestry Programme.

**Page**

pp 10 - 11

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**Number**

278

**Author**

Anon

**Title**

COFORD launches a programme for forestry research and development: 'Pathway to Progress.'

**Place**

Ballina

**Date**

June/1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 4

**Key Word**

COFORD, National Council of Forestry Research and Development, STRIDE, forestry policy

**Abstract**

COFORD, the National Council of Forest Research and Development which was formed as part of Measure 1 of the Stride Forestry Sub Programme, has launched its 'Pathway to Progress Plan' for development of the forestry industry's research programme.

**Page**

p 14

**Location**

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**Number**

279

**Author**

Anon

**Title**

Forestry and land use.

**Place**

Ballina

**Date**

June/ 1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 4

**Key Word**

land use, Coillte, broadleaf planting, broadleaves, forestry policy

**Abstract**

The issue of acquiring land for broadleaf planting and recent government statements on this matter are discussed. Coillte are committed to a policy of diversification and mixing conifers and broadleaves, but concentrate on acquiring marginal, rather than arable land. The company has also called for the development of a land use strategy for forestry.

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p 16

**Location**

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**Number**

280

**Author**

Anon

**Title**

Improved afforestation grants & premia.

**Place**

Ballina

**Date**

June/1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 4

**Key Word**

CAP reform, Forestry Scheme, EU, European Union, forestry grants, private forestry, farmers, land use, grant aid, Forest Premium Scheme, afforestation

**Abstract**

The Forestry Scheme, under which the Forestry Grants and Premia have been introduced, is part of the measures introduced as a part of the reform of the Common Agricultural Policy. The various regulations and procedures involved in the awarding of grants to farmers and others involved in private forestry are summarised.

**Page**

p 17

**Location**

Coillte library

**Notes**

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**Number**

281

**Author**

Anon

**Title**

Coillte Teoranta's 1993 recovery.

**Place**

Ballina

**Date**

June/1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 4

**Key Word**

Coillte, timber trade, timber market, log trade, timber exports

**Abstract**

Improved trading conditions with stronger demand and better log prices in Europe in the last third of 1993 has helped Coillte to achieve a remarkable £2.8m profit turnaround last year. At the publication of the group's annual report and accounts earlier this year, Coillte recorded a profit of £1.68m and an increase in asset value by £34.3m to £778m in 1993.

**Page**

p 20

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**Number**

282

**Author**

Anon

**Title**

UAOS - 70 years meeting the needs of rural communities in Northern Ireland.

**Place**

Ballina

**Date**

April/1994

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 3

**Key Word**

UAOS, Ulster Agricultural Organisation Society Limited Northern Ireland Forest Service, Forestry Co-ops, farming, farm forestry

**Abstract**

With the support of the Northern Ireland Forest Service the Ulster Agricultural Organisation Society Limited is promoting the development of Farm Forestry Co-ops in Northern Ireland.

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**Location**

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**ISBN**

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**Number**

283

**Author**

O'Mochain Liam

**Title**

Minister speaks out.

**Place**

Ballina

**Date**

Sept/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 9

**Key Word**

forestry policy, Forestry Grants Programme, environment, timber processing industry, OPW, EC Environmental Protection Programme

**Abstract**

In this interview the Minister of State at the Department of Agriculture with special responsibility for forestry, Liam Hyland, discusses various aspects of government policy including the new Forestry Grants Programme, the development of the timber processing industry and the designation of land as Areas of Scientific Interest and as Areas of Natural Heritage by the Office of Public Works.

**Page**

pp 4 - 5

**Location**

Coillte library

**ISBN**

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**Number**

284

**Author**

Anon

**Title**

Coillte chief in focus.

**Place**

Ballina

**Date**

Sept/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 9

**Key Word**

Coillte, forestry policy, timber processing industry

**Abstract**

In this interview the Chief Executive of Coillte, Mr. Martin Lowery, discusses various issues concerning the company's operations including land availability, rationalisation in the timber processing industry and the role of forestry in rural development.

**Page**

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**Location**

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**ISBN**

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**Number**

285

**Author**

Anon

**Title**

Coillte - Nokka/Keto . . . a real thinning team.

**Place**

Ballina

**Date**

Sept/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 9

**Key Word**

harvesting machinery, Coillte, thinning, silviculture

**Abstract**

The performance of the Finnish Nokka harvester on Coillte's forestry plantations is assessed.

**Page**

pp 16 - 17

**Location**

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**Number**

286

**Author**

Anon

**Title**

Getting started in farm forestry.

**Place**

Ballina

**Date**

Sept/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 9

**Key Word**

private forestry, farmers, EU, grants, land use

**Abstract**

The increased EU-sponsored grant and premium package has made farmers more aware of the opportunities open to them in the forestry sector. The various steps involved in starting a private plantation are considered and advice is given to farmers considering becoming involved in forestry.

**Page**

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**Location**

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**ISBN**

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**Number**

287

**Author**

Bowen Maeve

**Title**

Farmers welcome a co-operative approach to forestry.

**Place**

Ballina

**Date**

Sept/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 9

**Key Word**

farmers' attitude, land use, private forestry, grants

**Abstract**

The results of a survey on farmers' attitude to and knowledge of forestry is assessed. The survey was carried out in the Laois/Offaly area and showed that farmers had little information on forestry. However, most respondents expressed interest in forestry if they could be supported by a co-operative.

**Page**

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**Location**

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**ISBN**

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**Number**

288

**Author**

Fitzpatrick Sean

**Title**

The case for Claremorris OSB mill.

**Place**

Ballina

**Date**

April/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 4

**Key Word**

OSB, timber processing, Claremorris, lodgepole pine

**Abstract**

The author, on behalf of a number of local groups and organisations, explains why Claremorris, Co. Mayo is the best location for the proposed new Oriented Strandboard mill.

**Page**

pp 8 - 9

**Location**

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**ISBN**

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**Number**

289

**Author**

Keane Michael

**Title**

Establishment of larch and Douglas fir.

**Place**

Ballina

**Date**

April/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 4

**Key Word**

soil cultivation, survival experiments, stock type, rip, scarify, scrap mound, transplanting, planting, silviculture, forest soils

**Abstract**

Two experiments, the first examining the effects of different soil cultivation treatments and the second looking at various combinations of planting time and stock/type treatment, were carried out on two species, Douglas fir and Japanese larch. The survival results show that cultivation (either mounding or scarifying) increased survival (average 83%) over planting without cultivation (average 53%). Of the two cultivation treatments examined, mounding gave better survival rate than scarifying (89% v 77%). There was little difference in results between the standard graded stock and stock that went through various cultivation/planting treatments. Containerised stock performed much better with an average survival rate of 82%. With the combination of treatments, all stock types gave survival rates of 80%+ on the mounding treatment, with the containerised stock giving approximately 90% survival on the mounding. The containerised stock almost doubled in height growth during its first growing season.

**Page**

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**Number**

290

**Author**

Anon

**Title**

'Fomes' - current disease management strategy.

**Place**

Ballina

**Date**

April/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 4

**Key Word**

disease management, Heterobasidion annosum, Fomes annosus, butt-rot, fungal diseases, fungus, basidiomycete, plant pathogens, forest protection

**Abstract**

Conifer root and butt-rot is the greatest identified disease threat to Ireland's coniferous forests. It is caused by the fungus, Heterobasidion annosum, formerly Fomes annosus and commonly known as fomes. The only possible way of eradicating an infection of fomes from a stand is to remove all stumps and roots. Stump treatment and other aspects of disease management strategy are outlined.

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**Location**

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**Number**

291

**Author**

Anon

**Title**

I.T.G.A. calls for national forestry strategy.

**Place**

Ballina

**Date**

April/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 4

**Key Word**

Irish Timber Growers Association, EC Commission, Structural Funds, forestry policy, Operational Programme for Forestry, ITGA

**Abstract**

The Irish Timber Growers Association's proposals to the government and the EC Commission on the second phase of EC Structural Funds 1994 - 1997 are set out. Areas covered in the proposal include: the Second Operational Programme for Forestry; the Improvement of Woodland Sub-programme; forest roads; environmental impact studies; research; and back-up farm forestry measures. A central recommendation is the establishment of a National Forest Strategy which is seen as being essential for the development of the forestry sector.

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**Location**

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**Number**

292

**Author**

Ward Declan

**Title**

The green spruce aphid - an enemy of Sitka spruce.

**Place**

Ballina

**Date**

March/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 3

**Key Word**

parasitic pests, insects, green spruce aphid, Sitka spruce, leaf damage, Elatobium abietinum, forest protection, Picea sitchensis

**Abstract**

The green spruce aphid, *Elatobium abietinum*, is a greenfly which feeds by inserting its mouthparts into the underside of spruce needles and sucking out the nutrient rich sap. The life-cycle of the aphid, the extent of its resistance to cold and the type of defoliation it causes are described.

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p 13

**Location**

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**ISBN**

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**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co. Wicklow

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**Number**

293

**Author**

McManmara Sean

**Title**

Wild and wonderful west.

**Place**

Ballina

**Date**

March\1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 3

**Key Word**

Coillte, wildlife, deer, natural regeneration, Galway Forestry Region

**Abstract**

An account of the operation of the Galway Region, the largest of Coillte's forestry regions is given. Deer culling, the use of natural regeneration and various environmental issues are among the subjects covered.

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pp 17 - 18

**Location**

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**Number**

294

**Author**

Dooley William, Dooley Brendan

**Title**

Coolatin controversy.

**Place**

Ballina

**Date**

July/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1. No. 4

**Key Word**

Coolattin Wood, conservation, environment, oak, Quercus, natural woodlands

**Abstract**

The background to the proposed felling of oak trees in Coolatin Estate in Co. Wicklow is summarised, and the difficulties facing Wicklow County Council in attempting to preserve part the remaining woodland are explained. By 1987 Tomnafinnoge, comprising about 160 acres, was the only wood in Coolattin which had not been felled. Preservation orders were placed on the remaining woodland, the only example of natural Irish Oak woodland left in the country. The positions of the various parties involved in the controversy, including those of the present owners, the Department of Energy and conservationists are outlined.

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**Number**

295

**Author**

Whiteside Jim

**Title**

'Enjoy the quiet peacefulness of the forest.'

**Place**

Ballina

**Date**

July/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 4

**Key Word**

Northern Ireland forest parks, recreation, environment, forest facilities, tourism, wildlife, woodlands, conservation

**Abstract**

The author provides a brief description of the recreational facilities available in the following Northern Ireland forest parks: Tollymore; Glenariff; Gosford; Gortin Glen, Drum Manor; and Parkanaur.

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p 13

**Location**

Coillte library

**Notes**

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**Address of author**

NI Forest Service, Dundonald House, Upper Newtownards Road, Belfast BT4 3SB

26/03/96

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**Number**

296

**Author**

Rafferty Peter

**Title**

Pulpwood exports - why?

**Place**

Ballina

**Date**

July/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 4

**Key Word**

Coillte, export market, paper, timber trade, pulpwood

**Abstract**

A brief account of Coillte's export market for pulpwood is given.

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p 22

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**Number**

297

**Author**

Davies Chris

**Title**

Forest and woodland landscapes.

**Place**

Ballina

**Date**

July/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 4

**Key Word**

private forestry, visual impact, environment, landscaping, new plantations

**Abstract**

The author deals with the issues of environmental and visual impact raised by the rapid increase in private planting in recent years, especially on farms. Advice on planting, species mixing and landscaping is given.

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p 23

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**Number**

298

**Author**

Davies C.H.

**Title**

Trees on development sites.

**Place**

Ballina

**Date**

August/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 5

**Key Word**

landscaping, tree planting, environment, visual impact, planning

**Abstract**

The author looks at the issues associated with tree planting and the landscaping of development sites.

**Page**

p 12

**Location**

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**Notes**

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**Number**

299

**Author**

McEwen John

**Title**

Forest harvest - wood production from Northern Ireland State Forests.

**Place**

Ballina

**Date**

August/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 5

**Key Word**

Northern Ireland State forests, timber processing, forest development, forestry policy

**Abstract**

The author provides a brief summary of the development and present condition of forestry in Northern Ireland. The recent growth in the saw-milling industry and the destinations of Northern Ireland forest products are also examined.

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pp 15 - 16

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**Number**

300

**Author**

Goodhue Derek

**Title**

The control of forest insects: 1. - General introduction.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1966

**Source**

Irish Forestry

**Volume**

Vol. 23, No. 2

**Key Word**

insects, pests, insecticides, biological control, insect damage, pest control, insect control, forest protection, entomology

**Abstract**

This article outlines a general plan for insect pest control. The importance of recording and reporting all instances of insect damage is emphasised. The problem of controlling insect pests is considered in relation to the main types of economic damage caused by pests: the death of a tree; damage to the tree; or delay in rotation. Insecticides appear to be the most practical method of control, but there are a number of disadvantages associated with their use. The identification of a chemical substance in the tree which either attracts or repels damaging insects offers the forester a powerful means of controlling pests. The use of predators and parasites to reduce the size of a pest population has, on occasion, proved very effective. Other methods aim to interrupt the sexual cycle of the insect pests.

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pp 42 - 47

**Location**

Coillte library

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**Number**

301

**Author**

Clear T.

**Title**

Thinning of young conifer stands.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1943

**Source**

Irish Forestry

**Volume**

Vol. 1, No. 1

**Key Word**

thinning, silviculture, tree spacing, commercial thinning, Scots pine, Novar principal, larch, Douglas fir, spruce, Corsican pine, timber end use, thinning yield, silviculture

**Abstract**

The forester's main goal in planting trees and tending woods is to produce high quality timber that can compete with imported supplies: this means that timber ought to be knot-free, uniform in growth, strong and of fine appearance. This is achieved by close spacing of trees at planting. After the thicket stage is reached, crown development is an important consideration. Thinning is aimed at maintaining stem numbers in order to suppress side-branches. A light thinning of suppressed, or dying, trees can be carried out along with the freeing of crowns of more dominant trees. Especially in the case of spruces, larches and Corsican pines, the current recommendation is that as heavy as possible thinning ought to be done. The timing of thinning and the intensity required is dealt with along with some rules of thumb for deciding thinning intensity. In the near future it is expected that thinning programmes will be greater than the planting programme thus emphasising the need for greater knowledge of thinning procedure. Price is critical for profitable thinning yields but the development of the practice of commercial thinning may be detrimental to the final crop.

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**Location**

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**Notes**

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**Number**

302

**Author**

Verling P.

**Title**

Use of rippers as an alternative to Clark plough.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1967

**Source**

Irish Forestry

**Volume**

Vol. 24, No. 1

**Key Word**

rippers, Old Red Sandstone, indurated soils, soil aeration, ripping, silviculture, ploughing, ploughs

**Abstract**

A double mould-board-type plough was introduced to a first planting site in 1959. Planting in the furrow of the sod turned proved to be more successful than planting on the side. The lodgepole pine planted on this Old Red Sandstone site was not greatly affected by the increase in weed competition. The plough consisted of the usual long tyne, 15" to 20", to which were attached two wings. The rippers were used to determine the extent of the fracture in the ORS hardpan and to observe the conditions for planting. Removal of Calluna and furze was done by rotary slasher and by burning, the latter being less obstructive to the ripper. Drainage is not considerably increased by the ripping and no drying-out of the up-turned soil occurs with this method. It is possible, as a result of ripping, to dig between the fractures with a spade. This would indicate that thorough and complete breakage of the pan and aeration of the soil has taken place allowing free movement of moisture and roots through the fractured medium without exposing the soil to the elements.

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pp 75 - 76

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**Number**

303

**Author**

McNamara M.

**Title**

A Preliminary Report on the Re-afforestation etc. of Ireland by W. Howitz, Forest Conservator.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1967

**Source**

Irish Forestry

**Volume**

Vol. 24, No. 2

**Key Word**

forest policy development, Irish forest history, species selection, protection forest, land use

**Abstract**

This report was completed for the Gladstone government by Dr. Daniel Howitz, a Danish forester, who visited Ireland twice in 1883. He concluded that 5 million acres of Ireland was more suitable for forestry than for any other land use. He recommended that 3 million acres along the Atlantic sea-board should be afforested to provide shelter, with a further 1 million being planted in the country's river basins to prevent periodic flooding of fertile valleys and to control run-off. He believed that 100,000 acres per annum was an appropriate planting target. The use of experimental nurseries at various west of Ireland locations, and the use of flying nurseries to make up for short-falls in the number of new plants needed each year are discussed. Timber species from the western parts of North America were recommended for planting. Howitz also suggested that a committee of forestry with a professional experienced forester as secretary be established to fix planting areas and nursery locations.

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**Location**

Coillte library

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**Number**

304

**Author**

O'Flanagan L.P.

**Title**

A note on *Formica rufa* (wood ant).

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1967

**Source**

Irish Forestry

**Volume**

Vol. 24, No. 2

**Key Word**

wood ant, forest fauna, forest insects, biological control, forest protection

**Abstract**

The wood ant is a localised species which inhabits woodland in the southern half of Ireland with the exception of a localised occurrence in County Armagh. Observations from a number of nests transferred from County Tipperary to County Wicklow show that the Wicklow colony shifted their nest a number of times over a four

month period from April to August in 1967. The site finally chosen was open to both the south and the east making maximum use of available sunlight. The possible use of the wood ant in pest control is also discussed.

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pp 86 - 88

**Location**

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**Number**

305

**Author**

Curran P.L.

**Title**

Potential and actual dry-matter production in Irish forests.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1968

**Source**

Irish Forestry

**Volume**

Vol. 25, No. 1

**Key Word**

biomass production, dry matter, organic matter, photosynthesis, radiant energy, solar radiation, respiration, plant pigment, leaf surface, light absorption efficiency

**Abstract**

The roles of energy and mass in the process of photosynthesis are explained, and the radiant energy absorption efficiency of chlorophylls A and B and carotenoid pigments in plants are examined. Daily inputs of total radiation in the growing season and in the dormant season for trees, and photosynthate loss in temperate forests are discussed. Upper yield limits for dry matter are discussed, and a comparison is made between actual and potential dry matter yields. In Ireland, for an annual crop with a growing season of 140 days, potential yield is about 30 tons/acre. This represents about 4.4 % utilisation of total incident radiant energy or 10 % utilisation of visible light. The components of photosynthesis, the characteristics of light-intercepting surfaces and the distribution of assimilate within the crop are discussed. The conversion of available light in Ireland per year to net photosynthetic product is about 47 tons of organic matter per acre. In closed canopy situations maximum production falls to about 12 tons of dry matter per acre per annum.

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**Location**

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**Number**

306

**Author**

Gardiner J.

**Title**

Why forest microbiology ?

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1968

**Source**

Irish Forestry

**Volume**

Vol. 25, No. 1

**Key Word**

peatlands, microbiology, soil micro-flora, micro-organisms, mycorrhizae, soil nutrients, peatland forestry, fertilisers, forest pathogens, forest protection, tree diseases, bacteria, fungal diseases, fungi, peatlands

**Abstract**

The science of microbiology and the role which it plays in forestry is considered. The success of efforts to increase growth and maintain soil nutrient levels through the application of mineral fertilisers is dependent upon soil microflora, an integral element in normal woodland community nutrient recycling processes. The role of bacteria on plant surfaces and symbiotic, or near-symbiotic, plant/fungi and plant/bacteria relationships are discussed. The mycorrhizal fungi and their role in nutrition of trees, especially on difficult Irish sites, are described. Forest pathogens such as *Fomes annosus* and *Armillaria mellea*, and their control with species such as *Peniophora gigantea* and the *Trichoderma viride* fungus, are examined.

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pp 26 - 37

**Location**

Coillte library

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**Address of author**

Department of Crop Science, Horticulture and Forestry UCD, Belfield Dublin 4

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**Number**

307

**Author**

McCracken Eileen

**Title**

Samuel Hayes of Avondale.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1968

**Source**

Irish Forestry

**Volume**

Vol. 25, No. 1

**Key Word**

forestry history, forestry policy, estate forestry, Avondale, arboriculture, silviculture, botany

**Abstract**

Samuel Hayes was a barrister and an MP in the Irish Commons from 1783 to 1790 and he was also involved with the Volunteers. In 1785 he was responsible for amending an act of 5 and 6 George 111 entitled 'An act for encouraging the cultivation and better preservation of trees'. In 1792 the Dublin Society appointed him to a committee to select a suitable site for a botanic garden. His interest in planting trees and in antiquities is discussed and there is a description of the Avondale estate in county Wicklow. When Hayes died in 1795, he bequeathed Avondale and his farm in Glenmalure to Sir John Parnell, the great-grandfather of Charles Stewart Parnell.

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pp 38 - 41

**Location**

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**Notes**

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**Number**

308

**Author**

O'Driscoll J.

**Title**

Pinus contorta in Ireland - a forester's guide to provenance identification.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1968

**Source**

Irish Forestry

**Volume**

Vol. 25, No. 2

**Key Word**

lodgepole pine, tree identification, Pinus contorta, basal sweep, taxonomy, morphology, silviculture

**Abstract**

This article examines the coastal, Lulu Island and inland provenances of lodgepole pine. The following are the topics covered: stem morphology; basal sweep; nodal swelling; crown of tree; number of growing points per branch; branch angle; inter-nodal branches; needles colour and their length; retention and appearance; flowering; growth-form; and stability. The range of the species is from Yukon to southern California, along the western coastal zone of North America and into the east from Alberta to Montana, New Mexico and South Dakota. Soil and climatic environments over its range are described. There is a discussion on the differences in phenotypes and on the development of specific nomenclature.

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pp 57 - 67

**Location**

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**Notes**

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**Number**

309

**Author**

De Brit G.

**Title**

Evaluating forest disease problems.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1968

**Source**

Irish Forestry

**Volume**

Vol. 25, No. 2

**Key Word**

forest protection, group dying, butt rot, root rot, Rhizina undulata, Fomes annosus, forest diseases, forest economics, heart rot, Fomes annosus, fungal diseases, fungi, plant pathogens

**Abstract**

The author suggests that forest managers may be somewhat reluctant to accept the value of investment in forest disease prevention or control because it is not seen to have a positive effect on timber production. It is emphasised that the economic evaluation of a disease must be based upon a thorough biological evaluation. The manner in which existing and potential forest disease problems are evaluated is described. *Rhizina undulata* is used as an example of an existing problem and *Fomes annosus* as an example of a potential problem. The emphasis is placed upon disease prevention rather than cure. An understanding of the biology of the pathogen is essential in order to prevent disease establishment. In the final analysis, it is concluded, the forest manager does earn a return on investment in disease prevention measures.

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pp 68 - 80

**Location**

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**Notes**

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**Number**

310

**Author**

Mitchell A.

**Title**

Some Monterey trees in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1968

**Source**

Irish Forestry

**Volume**

Vol. 25, No. 2

**Key Word**

Monterey pine, bishop pine, Monterey cypress, tree growth, *Pinus radiata*, *Cupressus macrocarpa*, *Pinus muricata*

**Abstract**

Three species native to the Monterey peninsula in California, Monterey pine, Monterey cypress and bishop pine, were introduced into Ireland during the nineteenth century. In this study, measurements of over 2,400 specimens were taken and details of girths and heights for trees at many locations are provided. The branching habits of trees and the crown forms in western England, eastern Ireland and western Ireland are compared. It is observed that the trees thrive in Ireland's climate and that they are not ideally suited to the dry Californian and Mexican environments in which they were left isolated after the last Ice Age. It is suggested that they would thrive alongside Sitka spruce and *Thuja plicata* on the Olympic peninsula.

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pp 80 - 83

**Location**

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**Number**

311

**Author**

Gallagher G.J.

**Title**

The thinning of Sitka spruce - two experiments.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1969

**Source**

Irish Forestry

**Volume**

Vol. 26, No. 1

**Key Word**

thinning, Scottish eclectic system, mean annual increment, experimental design, Sitka spruce, basal area, thinning type, silviculture, *Picea sitchensis*

**Abstract**

This paper reviews the initial effects of three thinning intensities and two types of thinning on Sitka spruce crop growth. Main crop basal areas and volumes are depressed by very heavy thinning intensities in the early years after first thinning but recovery is recorded after the fourth year. Main crop diameter increment is significantly greater with very heavy thinnings which also yield higher thinning volumes. Little difference is recorded between low and eclectic thinning though there is a suggestion that main crop growth is greater with the former. First thinning produce from the eclectic method is greater in tree size and volume yield though indications are that this difference will disappear in time. Results indicate that thinning intensity does affect increment and tree size within stands. Sitka spruce is a tolerant and flexible crop in respect of thinning intensity and the removal of 30 % volume ,or basal area, is quite safe with losses in increment incurred at intensities of 40 %, or more. The recovery powers of spruces in the post-thinning situation is noted. This takes four years in Ireland, which is quite rapid. It is concluded that low thinning intensities are best for production, and it is doubtful whether the work involved in selection for eclectic thinning is warranted by the increase in thinning size.

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**Location**

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**Notes**

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**Address of author**

Forest Service, Leeson Lane, Dublin 2

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**Number**

312

**Author**

Mitchell A.F.

**Title**

The Wellingtonia in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1969

**Source**

Irish Forestry

**Volume**

Vol. 26, No. 1

**Key Word**

giant sequoia, Wellingtonia, estate woodlands, forestry history, California, redwoods

**Abstract**

The natural range of this species, which is also known as the giant sequoia, is the western side of the Sierra Nevada on the eastern border of mid-California. It was more widespread 30 million years ago, in the Eocene period, and was even found on what is now the island of Great Britain. It is a wind-firm tree, tolerant of

exposure but has been often damaged by lightning. In 1853 it was introduced into Great Britain at Perthshire, Scotland and at Exeter in England. There is a record of a planting in Coolattin in county Wicklow in 1855. Many large trees in Ireland are remarked upon: one tree at Powerscourt is 130' high and 23' 5" in girth and another is 140' hgh and 16' 11" in girth.

**Page**

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**Location**

Coillte library

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**Number**

313

**Author**

Barry T.A.

**Title**

Origins and distribution of peat-types in the bogs of Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1969

**Source**

Irish Forestry

**Volume**

Vol. 26, No. 2

**Key Word**

blanket bog, raised bogs, peat bogs, Ice Age, glaciation, fen land reed swamp, phragmites, climatic change, post-glacial vegetation, sphagnum moss, von Post scale, peatlands

**Abstract**

Two bog-types (raised-type and blanket-type) and one sub-type (high-level blanket bog) are distinguished. Their geographic distribution in Ireland is displayed on a map which also indicates levels of rainfall and altitude. A summary of the distribution-in-depth of the main generic peat-types is given, three blanket- types and five raised-type bogs. The story of peat and bog formation since the retreat of the ice is told in eight illustrations. The origin of the peat bogs during the following periods is discussed: the late-glacial and pre-boreal periods from 12,000 BC To 7,000 BC and the development of post-glacial vegetation; the boreal period from 7,000 BC to 5,000 BC; the Atlantic and sub-boreal periods from 5,000 BC to 500 BC; the sub-Atlantic and recent periods from 500 BC to the present time. These last periods saw the development of the raised-type and blanket-type bogs.

**Page**

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**Location**

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**Number**

314

**Author**

McCracken Eileen

**Title**

The Society of Irish Foresters, 1942-68.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1969

**Source**

Irish Forestry

**Volume**

Vol. 26, No. 2

**Key Word**

professional foresters, forestry organisations, forestry education, forestry journals, Society of Irish Foresters

**Abstract**

An account of the activities of the Society of Irish Foresters during its first twenty six years is given. There are two grades of membership: grade one for forestry inspectors, university graduates and head foresters; grade two for foresters, forest fore-men and students. A very limited honorary membership also exists. In the past, officials were chosen as President, vice-President, secretary, treasurer, business editor, and editor. The society had a patron in the first year but this office was subsequently dropped. Financing of the Society is mainly by members' subscriptions, but also from donations and the sales of journals to non-members. Private individuals and groups giving donations are mentioned. Education, symposia, the society's journal, lectures, study tours and day excursions along with other activities are also covered.

**Page**

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**Location**

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**Number**

315

**Author**

O'Flanagan L.P., Bulfin M.

**Title**

Spruce growth rates on drumlin soils.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1970

**Source**

Irish Forestry

**Volume**

Vol. 27, No. 1

**Key Word**

drumlin soils, soil induration, forest productivity, Sitka spruce, growth rate, Norway spruce, soil moisture, Picea sitchensis, Picea abies, marginal land, agriculture, land use

**Abstract**

The history of the formation of the drumlins in Leitrim and west Cavan is explained. Soils are described as drumlin or inter-drumlin soils. The former are classified according to the slope on any given part of the drumlin, the latter are those which are segregated on the basis of the nature of the soil material developed. Most of the plantations in the areas covered by the 1968 Inventory of State Forestry were peats, peat gleys, brown podsolics and alluvium. 344 hectares (850 acres) of Norway spruce and Sitka spruce were grown on drumlin soils. The mean yield class for Sitka spruce is 21.4 and for Norway spruce this figure is 19.6. On drumlin sites at Drumhierney and Kilmaherna, Sitka spruce crops of 15 to 20 years showed a weighted yield class of 24.9. It is concluded that large-scale afforestation of the drumlin land would create more employment in an area of high emmigration and would also provide a high return on capital employed on these highly productive sites.

**Page**

pp 4 - 9

**Location**

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**Number**

316

**Author**

Joyce P.M.

**Title**

Dimensional control in the sawmill.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1970

**Source**

Irish Forestry

**Volume**

Vol. 27, No. 1

**Key Word**

statistical analysis, variation, sawmilling, control chart, timber processing

**Abstract**

Using statistical data, managers in sawmills can detect changes in processing activities and can take action to rectify these changes. Total variation in the products being manufactured is attributed to either small random fluctuations in the process or to identifiable causes such as problems with the plant, the material or the method of control. Using the mean and standard deviations of normal populations of measurement, it is possible to predict the proportion of observations which can be expected to occur within given limits: this is the basis of the control chart technique which is presented in this article. A practical example of the use of range in setting up control charts is given and a control chart for averages and one for range is presented. The successful use of control charts depends upon their ability to show up attributable causes of variation in the production process. Control limits, when selected, should, if possible, be tied in with some consideration of the costs involved.

**Page**

pp 10 - 22

**Location**

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**Notes**

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**Number**

317

**Author**

Carey M.L., Hammond R.F.

**Title**

The soils beneath the midland peats.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1970

**Source**

Irish Forestry

**Volume**

Vol. 27, No. 1

**Key Word**

peat soils, mineral soils, soil improvement, raised bogs, marl, silty clay-loam, soil development, land use, planning, peatlands

**Abstract**

Examination of the mineral soils beneath the Irish midland peat bogs, an area comprising some 36,000 acres, shows that most are derived from limestone boulder till of varying degrees of profile development.

Incorporation of peat into these mineral soils as an ameliorative undertaking is discussed. Soil formation is affected by: the physical and mineralogical constitution of the parent material; past and present environment; and length of time over which environmental processes have proceeded. The two broad groups of soils examined are either derived from glacial drift or from superficial sands, silts, clays and marls over this drift. There is considerable variation in both the mineral soils beneath the midland peats and the over-lying peat. Information on the mixing of the peat with the mineral layers, especially regarding soil aeration, aggregation, changes in organic matter levels and soil microflora activity, is required before afforestation.

**Page**

pp 23 - 36

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

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**Number**

318

**Author**

Convery Frank

**Title**

Forestry and Irish economic and social development.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1970

**Source**

Irish Forestry

**Volume**

Vol. 27, No. 2

**Key Word**

forestry policy, cost benefit, social policy, economic development, economic policy, timber processing industry, environment, forestry investment

**Abstract**

The present and future role of forestry in Ireland's social and economic life is discussed. The contribution of forestry to the realisation of national development objectives are described with the emphasis on the benefit side of the cost-benefit equation. Forestry production will affect alternative production in agriculture, housing, road construction and house building etc. There has not been an assessment of the effects of forestry on water conservation, erosion prevention, and the influences on climate and upon wildlife. The environmental aspects of forestry are, however, becoming increasingly important.

**Page**

pp 52 - 67

**Location**

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**Notes**

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**Number**

319

**Author**

Mooney O.V.

**Title**

The Augustine Henry Memorial Grove - a record

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1970

**Source**

Irish Forestry

**Volume**

Vol. 27, No. 2

**Key Word**

forestry education, forestry history, estate forestry, botany, plant collecting, forestry training

**Abstract**

This article provides a short biographical note on Augustine Henry. In 1900, after a number of years service as a medical officer in the British Chinese Customs, Henry began studying forestry at Nancy in France. In 1907 he became Reader in Forestry at Cambridge and in 1913, on returning to Ireland, he became Professor of Forestry at the Royal College of Science for Ireland. The memorial grove at Avondale was to be composed of plants associated with Henry but, due to the non-availability of these and the length of time needed to obtain them, this idea was not entirely feasible. The mix of species is random, and there are no South American species represented. A table of trees present with their number and scientific name is provided along with some dimensional details of some named species.

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pp 81 - 86

**Location**

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**Notes**

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**Number**

320

**Author**

McCormack Art, O'Leary Tomas

**Title**

Classification of landscape sensitivity for visual impact assessment of forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 1

**Key Word**

landscape, amenity forestry, visual impact assessment, landscape policy, land use, forest aesthetics, planning laws, environmental impact assessment, forest design, image database, forestry policy, environment

**Abstract**

Relatively little research has been carried on the visual impact of forestry on the landscape, but this is critical to future land use and landscape policy. The visual sensitivity of the landscape, where forestry is permitted, needs to be determined and a visual impact assessment carried out to provide an understanding of forest aesthetics in relation to that landscape. The article deals with public attitudes and concerns towards forestry and with

planning requirements, visual sensitivity levels, forest design, aesthetics, landscape quality, visual simulation of proposals, visual and vector-based data and visual impact assessment.

**Page**

pp 1 - 12

**Location**

Coillte library

**Notes**

Available

**Address of author**

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**Number**

321

**Author**

Cooney Gabriel

**Title**

Forestry and the cultural landscape.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 1

**Key Word**

landscape, archaeology, Forestry Operational Programme, tourism, environmental impact assessment, rural environment, cultural heritage

**Abstract**

Afforestation will be the single most important agent of rural landscape change in Ireland in the 1990s. At the same time the value of another resource, the cultural heritage, is seen as essential to the development of our tourist industry. This paper outlines the impact of afforestation policies on the cultural landscape, in particular our archaeological heritage. It analyses the key issue of the nature and management of that heritage which is not as widely understood as it might be. Finally, it suggests that a more sensitive approach would not only protect this heritage, but would lead to a better understanding of the role of woodland as an integral part of the historic rural environment.

**Page**

pp 13 - 20

**Location**

Coillte library

**Notes**

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**Number**

322

**Author**

McCarthy R.

**Title**

Monitoring forest condition in Ireland (1988 - 91).

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 1

**Key Word**

*Picea abies*, *Picea sitchensis*, forest health, green spruce aphid, *Elatobium abietinum*, Sitka spruce, Norway spruce, noble fir, lodgepole pine, defoliation, leaf chlorosis, foliar analysis, exposure, insect damage, nutrient deficiency, forest protection

**Abstract**

The existence of forest decline in Ireland is questioned. Damage levels are low in spruces and negligible in lodgepole pine and noble fir according to an assessment carried out from 1988 through to 1991. This European Community/Forest Service-funded project observed the vitality status of a range of 878-995 trees in 47 plots nationwide. Norway and Sitka spruces, lodgepole pine and noble fir were the species studied. Altitude, position within the forest and insect damage, particularly by *Elatobium abietinum*, the green spruce aphid, were critical in increasing forest damage susceptibility. However, there was an improvement in the damage situation generally over the period from 1988 to 1991.

**Page**

pp 21 - 34

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

323

**Author**

O'Halloran John, Giller Paul S.

**Title**

Forestry and the ecology of streams and rivers: lessons from abroad?

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 1

**Key Word**

dry deposition, wet deposition, foliar absorption, geology, soil, aquatic ecology, afforestation, water quality, water yields, soil chemistry, atmospheric pollution, fresh-water habitats, forest soils afforestation, environment, river ecology

**Abstract**

The interaction of water-flow and forestry in upland regions is examined. Afforestation on poorly buffered soils can have profound effects on the ecology of aquatic systems. Cultivation and a tree's canopy will also affect the water budget, yield and stream hydrographs. Ecologically, in well-buffered soils, there will be less significant changes due to afforestation than expected. By European standards, Irish soils are well buffered and atmospheric pollution is lower, so extrapolation from information in foreign reports may not be appropriate. Much work needs to be carried out in Ireland on the nature of changes that are to be found in fresh-water systems in ecologically sensitive areas which are afforested.

**Page**

pp 35 - 52

**Location**

Dublin

**Notes**

Available

**Address of author**

Dept. of Zoology, UCC, Lee Maltings, Prospect Row Cork

---

**Number**

324

**Author**

Farrell E.P., Cummins T., Boyle G.M., Smillie G.W., Collins J.F.

**Title**

Intensive monitoring in forest ecosystems.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 1

**Key Word**

atmospheric pollution, soil chemistry, forest ecosystem, forest protection, freshwater ecosystems, scavenging effect, throughfall, stemflow, leaf litter, soil water, precipitation, forest soils

**Abstract**

Four sites were monitored for pollution inputs and effects. These sites were located at Ballyhooly, Brackloon, Cloosh and Roundwood forests. Results for three years at Ballyhooly and for one year at each of the other forests were obtained. There is significant pollution at Roundwood. At Ballyhooly, ammonium has a potentially damaging long-term effect. The marine influence causes large inputs of sodium and chlorine ions, especially at Brackloon and Cloosh. At Roundwood nitrogen inputs are increased to a point where degradation of the ecosystem is likely to occur. High salt inputs at the western sites, Cloosh and Brackloon, may cause acidification of adjoining freshwater ecosystems. While it is well known that trees have the ability to intercept atmospheric pollutants, the alteration of ecosystems which can occur carries an inevitable risk of environmental damage. There is a need for long-term observation before management strategies to deal with the deleterious effects of pollutants can be developed.

**Page**

pp 53 - 69

**Location**

Coillte library

**Notes**

Available

**Address of author**

Department of Environmental Resource Management, UCD, Belfield Dublin 4

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**Number**

325

**Author**

Giller P.S., O'Halloran J., Hernan R., Roche N., Clenaghan C., Evans J., Kiely G.K., Morris P., Allott N., Brennan M., Reynolds J., Cooke D., Kelly-Quinn M., Bracken J., Coyle S., Farrell E.P.

**Title**

An integrated study of forest catchments in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 1

**Key Word**

aquatic ecosystems, marine deposition, dry deposition, soil chemistry, soil microinvertebrates, water chemistry, fish distribution, stream hydrology, geology, acidification, afforestation, environment

**Abstract**

The interaction of forestry and aquatic ecosystems was monitored at study areas in Connemara, Wicklow and Munster by a national research group, AQUAFOR. It is concluded that the marine ions sodium, chloride, magnesium and sulphate dominate the atmospheric input, particularly in the west. Dry deposition of these ions can also be high and acid episodes, pH less than 4.0, occur on granite and softwater catchments. However, only a proportion of the country ought to be prone to acidity problems associated with plantation forestry. Micro-invertebrate diversity tended to be lower in afforested sites on sensitive geologies in the east and in the west. In the south, however, micro-invertebrate diversity reflected stream water chemistry rather than the type of land use. In Wicklow, altitude and afforestation levels affect fish distribution. In the south, fish densities were higher than elsewhere. Afforestation there did have deleterious effects on the densities but not in the conditions of fish. Catchment characteristics/unit hydrograph methods of stream flow computation are reliable in the south.

**Page**

pp 70 - 88

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Zoology, UCD, Belfield Dublin 4

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**Number**

326

**Author**

Keane M.G.

**Title**

The effect of climate change on Irish forests.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 1

**Key Word**

climate change, seed origins, species selection, silviculture, climate model, atmospheric carbon dioxide, growth response, global climate, seeds

**Abstract**

Any climatic changes that are projected for Ireland within the next forty years will influence not only the tree crops being planted today, but also many of the trees and forests already growing here. Rising temperatures and carbon dioxide levels could alter the productivity of our forests, both directly and indirectly. Included here are changes in the rates of photosynthesis, water-use efficiency, photosynthate allocation and damage from injurious agencies. Many of the projected responses of trees and forests are difficult to predict, however, as our current climate models are inexact and the forest level response is unknown. Irish forestry is currently going through a major transition and future effects of climate change may well superimpose on even greater changes brought about more by socio-economic reasons than by climatic influences. Nevertheless, Irish foresters and the Irish

forest industry cannot afford to be complacent.

**Page**

pp 89 - 98

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

327

**Author**

Bulfin Michael, Cullinan Enda F., Tynan Suzanne

**Title**

The development of an Indicative Forest Strategy with specific reference to Co. Clare.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 1

**Key Word**

Geographic Information Systems, forest strategy, land use, geoprocessing, computer application, information technology, Indicative Forestry Strategy

**Abstract**

This paper provides an account of the Indicative Forestry Strategy being undertaken by the forestry research department of Teagasc. The IFS is to provide a scientific basis with which future policy decisions about potential forestry sites can be assisted. The strategy is Geographic Information System-based and the data and structure of the strategy allows for broadleaved, conifer, amenity and farm forestry to be examined. A wide range of spatial and non-spatial types of information are included such as edaphic, topographic, financial, biological and meteorological data. These data and their related database details are subjected to a series of geoprocessing techniques to produce thematic datasets which include yield class, wind-throw hazard classification, soil - species suitability, water resource sensitivity and economic evaluation of potential land uses. The resulting information can then be displayed, manipulated and interrogated in an inter-active fashion to answer more complex user-defined queries relating to various possible scenarios.

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p 98

**Location**

Coillte library

**Notes**

Available

**Address of author**

Teagasc, Kinsealy Research and Development Centre, Malahide Road Dublin 17

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**Number**

328

**Author**

Farrell E.P., Boyle G.

**Title**

Peatland forestry in the 1990s. 1. Low-level blanket bog.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1990

**Source**

Irish Forestry

**Volume**

Vol. 47, No. 2

**Key Word**

blanket peat, peatland forestry, Sitka spruce, *Picea sitchensis*, yield class, forest investment, peatland ecosystems, land use, landscape, water quality, environment, peatlands

**Abstract**

The afforestation of blanket peatland, the principal peatland type in forestry, commenced in the 1950s. Production in these forests has greatly exceeded expectations. Current yield class estimates of Coillte Teoranta forests on blanket peatland give a mean Yield Class of 13.3 for Sitka spruce. However, investment in blanket peatland forestry cannot be expected to yield returns that compare favourably with those obtainable on good mineral soils. Treeless blanket peatlands are a characteristic feature of western Ireland. Their conversion to plantation forestry greatly disturbs the peatland ecosystem and, if carried out on a sufficiently large scale, will profoundly alter the landscape of our western counties. In view of the marginal economic returns which can be expected from forestry investment on blanket peats, it may be in the national interest to reduce incentives for the afforestation of the western peatlands.

**Page**

pp 69 - 78

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield Dublin 4

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**Number**

329

**Author**

Little D.J., Farrell E.P., Collins J.F., Kreutzer K., Schierl R.

**Title**

Podzols and associated soils in semi-natural oak woodlands: a preliminary report.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1990

**Source**

Irish Forestry

**Volume**

Vol. 47, No. 2

**Key Word**

podsol, soil association, oak woodlands, soil formation, site indicator, brown podsol, soil profile, cation exchange capacity, soil iron complex, base saturation, exchangeable cation, soil analysis, forest soils

**Abstract**

In a survey of semi-natural Irish woodlands on podsolised soils, fourteen sites were chosen for intensive site investigation, morphological observation and analytical assessment. Historical data yield two important facts relevant to soil formation processes: firstly, all sites have been disturbed to a greater or lesser degree; and, secondly, most sites appear to have supported *Pinus sylvestris* before it became extinct. Both of these factors would almost certainly have led to the export of bases, curtailed re-cycling and alteration of the chemical content of the woodland floor. When these factors are considered, along with climate, parent material etc., it is

difficult to determine whether or not podsolisation was initiated under a dominant oak stand. These materials are located on siliceous parent materials and annual precipitation values exceed 1,000mm. Soil analyses confirm that the soils are highly acidic, very infertile and are very low in clay content. They tend to be free-draining coarse sandy or fine silty soils with low cation exchange capacity values.

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pp 79 - 89

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield, Dublin 4

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**Number**

330

**Author**

Whiteside Jim

**Title**

Are foresters to blame for the denigration of a beautiful tree?

**Place**

Ballina

**Date**

March/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 3, No. 3

**Key Word**

environment, Sitka spruce, Picea sitchensis, wildlife, conservation, forest habitats, afforestation, landscape, air pollution

**Abstract**

Although environmentalists have expressed concern over the extent of conifer, especially Sitka spruce plantations, the author argues that not only is this species of great commercial value but it also plays an important role in maintaining ecological balance by removing many harmful chemicals from the air and reducing acidification of waterways. While it is true to say that monocultural forests do not as yet provide significant shelter for wildlife, the author points out that trees were planted on land which was already impoverished. New species can colonise the forests and foresters have learned much about integrating plantations with the local environment since the early stages of forest development.

**Page**

pp 20 - 21

**Location**

Coillte library

**ISBN**

07917422

**Notes**

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**Address of author**

Northern Ireland Forest Service, Dundonald House, Upper Newtownards Road, Belfast BT4 3SB

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**Number**

331

**Author**

Breathnach Pacelli

**Title**

New standards in forestry training.

**Place**

Ballina

**Date**

Feb/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

Coillte, training, safety, forest machinery, Machine Operator Training Centre

**Abstract**

Coillte's Machine Operator Training Centre in Mountrath was opened in 1984 to train forest workers in harvesting skills, especially in the use of chainsaws and forwarders. Since then, the training base has expanded into the regions each of which has their own Training and Safety Officer. Other matters discussed include the introduction of a new Certification of Forestry Training in Ireland, the operation of the National Proficiency Tests Council and safety in the workplace.

**Page**

pp 4 - 5

**Location**

Coillte library

**Notes**

Available

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**Number**

332

**Author**

Whelan Donal P.

**Title**

The Irish Timber Growers' Association.

**Place**

Ballina

**Date**

Feb/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 3

**Key Word**

Irish Timber Growers Association, private woodlands, private forestry

**Abstract**

The role of the Irish Timber Growers Association, the representative body of private woodland owners, in developing and expanding the private forestry sector is described. The objectives of the organisation are outlined and its relations with the government departments and the European Commission are explained.

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pp 6 - 7

**Location**

Coillte library

**ISBN**

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**Notes**

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**Number**

333

**Author**

Kerrigan John

**Title**

The market for Irish Timber: uncertain but may be better?

**Place**

Ballina

**Date**

Feb/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

economics, timber processing industry, exchange rates, exports, timber market, log prices, sawmills, forest products

**Abstract**

The main influences affecting the timber market at present are identified as: market demand; exchange rate fluctuations; and log prices. The current situation regarding each of these influences and future prospects are analysed.

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pp 8 - 9

**Location**

Coillte library

**ISBN**

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**Number**

334

**Author**

Murray Joseph

**Title**

Investigation of the drying defects in home grown timber (Sitka spruce).

**Place**

Newtownabbey

**Date**

1991

**Key Word**

drying defects, timber drying, Sitka spruce, Picea sitchensis, timber processing, forest products

**Abstract**

This thesis investigates the drying defects associated with home grown Sitka spruce. The drying process was observed at a major drying facility, and the movement of the timber during drying was monitored during seasoning allowing correlations to be made with specific drying defects. The results of these observations demonstrate that home grown Sitka spruce is prone to warping defects upon drying such as cup, bow and twist.

**Page**

126p

**Location**

Dept. of Building Engineering, University of Ulster

**Notes**

Available (Thesis submitted for award of B.Sc. in Building, University of Ulster)

**Thesis**

B.Sc. Thesis, University of Ulster

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**Number**

335

**Author**

Rountree Freda

**Title**

Trees for profit - the case for ash, sycamore and cherry.

**Place**

Ballina

**Date**

Feb/1993

**Source**

Irish Timber and Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

timber trade, timber market, ash, sycamore, cherry, hardwood timber, broadleaves

**Abstract**

The economic viability of ash, sycamore and cherry planting is considered. The reasons for the undeveloped state of the Irish hardwood industry and trends in the hardwood market are examined.

**Page**

p 20

**Location**

Coillte library

**Notes**

Available

**Address of author**

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**Number**

336

**Author**

Gibson James

**Title**

The timber industry in Northern Ireland

**Place**

Buckinghamshire

**Date**

1991

**Key Word**

State forestry, private forestry, forest development, afforestation, timber processing, sawmilling, forest products, timber trade, imports, exports, timber marketing, timber end use

**Abstract**

This is an account of the development and current state of the various sectors of Northern Ireland's timber industry. The role of State forestry in developing this industry is described, and the effectiveness of forestry policy is assessed. The success of two of Northern Ireland's sawmills in securing markets at home and in the U.K. is noted, and the establishment of a new pulp mill is examined. The use of home grown timber in these industries has been increasing and accounted for 28% of the total timber consumed in Northern Ireland in 1985. A total of 280425 cubic metres of sawn softwood was imported into Northern Ireland in 1989. Of the total consumed within the construction industry only 1% was home grown timber.

**Page**

120p

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available (Thesis submitted for the award of B.Sc. in Timber Technology from Buckinghamshire College of Higher Education)

**Thesis**

B.Sc. Thesis, Buckinghamshire CHE

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**Number**

337

**Author**

Anon

**Title**

Non-graded timber - a major problem.

**Place**

Ballina

**Date**

Aug/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 5

**Key Word**

timber grading, timber standards, timber processing industry, timber trade, exports, forestry policy, structural timber, construction trade, Standards specifications, forest products

**Abstract**

The response of the Minister for the Environment, Mr. Michael Smith, to the use of non-graded timber in the construction industry is outlined. The current standard, as developed with support from Eolas, is SR - 11 and sawmills are regularly inspected to ensure that this standard is being maintained. A brief description of the terms of compliance with this standard is provided by Sean Wiley of Eolas, the Irish Science and Technology Agency.

**Page**

pp 29 -30

**Location**

Coillte library

**Notes**

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**Number**

338

**Author**

Whiteside Jim

**Title**

Clearfelling - a sensitive issue?

**Place**

Ballina

**Date**

Nov/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 8

**Key Word**

landscape, State forestry, clearfelling, education, environment, visual impact

**Abstract**

The author looks at the problems foresters face when dealing with the issue of clearfelling. An important aspect is the education of the public in all aspects of the forest industry, especially the realisation that trees are an agricultural crop and eventually need to be harvested. A brief explanation of the manner in which the rotations involved in forest operations is included.

**Page**

pp 18 - 19

**Location**

Coillte library

**Notes**

Available

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**Number**

339

**Author**

Evens Justin, Roundtree Freda

**Title**

Investigating hardwoods on the farm.

**Place**

Ballina

**Date**

Nov/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 8

**Key Word**

farm forestry, species selection, provenance selection, planting stock, forest nurseries, private forestry

**Abstract**

The authors offer advice on planting stock selection to those interested in starting a farm forestry enterprise. The importance of choosing the most suitable species and provenance and closely inspecting the stock on offer in nurseries is stressed.

**Page**

pp 26 - 28

**Location**

Coillte library

**Notes**

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**Number**

340

**Author**

Malone Margaret

**Title**

More than just a map.

**Place**

Ballina

**Date**

Sept/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 6

**Key Word**

Forest Institute for Remote Sensing Technology, satellite imagery, landcover information, mapping, satellite maps, Geographic Information Systems

**Abstract**

The Forest Institute for Remote Sensing Technology (FIRST), based in UCD, makes satellite imagery using American Landsat and French SPOT satellites. UCD First can provide the most up to date landcover information on Ireland with up to 20 X 20m resolution in colour, and satellite maps at a variety of scales. The service is being used at present by private foresters and farmers.

**Page**

pp 11 - 13

**Location**

Coillte library  
**Notes**  
available

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**Number**

341

**Author**

Kerrigan John

**Title**

Timber supplies for the Irish sawmilling industry '92 - '97.

**Place**

Ballina

**Date**

Sept/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 6

**Key Word**

timber processing industry, rationalisation, timber trade, timber supply, sawmilling, forest products

**Abstract**

The author examines the prospects of the Irish sawmilling industry for the rest of the decade, and explains what changes will be needed over the next few years in order to accommodate a predicted doubling in forest output by 1999. The short-term prospects are not good as there are too many mills providing an over-capacity in the processing area. A large volume of timber needs to be withdrawn from the industry to restore market balance, and rationalisation in the processing sector is inevitable.

**Page**

p 28

**Location**

Coillte library

**Notes**

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**Number**

342

**Author**

Hume H.D.

**Title**

New '93 passport for plants and trees.

**Place**

Ballina

**Date**

Sept/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. No. 6

**Key Word**

European Community, European Union, EU, plant trade, imports, exports, plant passport, trade, plant health regulations, European markets, forest protection

**Abstract**

The proposed changes to the existing EC system of plant health controls (framework directive number 91/683/EEC, amending directive 77/93/EEC) are examined. The emphasis will switch from border controls to controls at production level in order to certify plants which will be free to be sold on the home market and throughout the EC without additional inspection or formality. An identification to be called a plant passport will

accompany all plants to identify the grower and origin. The various formalities which are involved in securing these passports are outlined.

**Page**

pp 33 - 34

**Location**

Coillte library

**Notes**

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**Number**

343

**Author**

Bulfin Michael

**Title**

Forest systems for farms.

**Place**

Ballina

**Date**

May/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1. No. 2

**Key Word**

forestry systems, short rotation forestry, agroforestry, shelterbelts, amenity forestry, community forestry, Teagasc, farm forestry, land use, agriculture

**Abstract**

The author examines the various forest systems which may be of practical interest to individual farmers or landowners. Besides conventional forestry the systems include short rotation forestry (SRF), agroforestry, shelterbelts, and amenity and community forests. Agroforestry offers farmers a gradual introduction to forestry, it diversifies land use and adds a new enterprise to the farm.

**Page**

p 18

**Location**

Coillte Library

**Notes**

available

**Address of author**

Teagasc, Kinsealy Research and Development Centre, Malahide Road Dublin 17

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**Number**

344

**Author**

Gallagher Ray

**Title**

Co-operative farmer forestry and rural development.

**Place**

Ballina

**Date**

May/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 2

**Key Word**

wet mineral soils, Western Forestry Co-operative, afforestation, co-operative farmer forestry, rural development, rural communities, agriculture, land use, marginal land

**Abstract**

Research has shown that wet mineral soil, which comprise over 1 million hectares of land in the west of Ireland, is highly productive for the growing of trees. However, surveys have indicated a very high level of hostility towards forestry from West of Ireland farmers, partly resulting from historical antipathy and partly from the insensitive purchasing policies of forestry agencies. The co-operative movement has sought to encourage a more positive approach and to involve rural communities in forestry development. The Western Forestry Co-operative programme is part of this programme.

**Page**

p 22

**Location**

Coillte library

**Notes**

available

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**Number**

345

**Author**

Anon

**Title**

Rural development through forestry.

**Place**

Ballina

**Date**

March/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 1

**Key Word**

Operational Programme for Rural Development, recreational forestry, forest nurseries, training, plant production, forestry grants, European Community, European Union

**Abstract**

The details of forestry measures under the EC supported Operational Programme for Rural Development have recently been published by the Minister for Energy, Mr. Robert Molloy. The new schemes introduced under this programme relate to: planned recreational forestry, which aims to encourage the establishment of mainly broadleaf forest areas and parklands; forest nurseries, designed to encourage investments in unique and innovatory plant production techniques; back-up farm forestry services; and training facilities.

**Page**

p 5

**Location**

Coillte library

**Notes**

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**Number**

346

**Author**

Anon

**Title**

Attractive grant increases for forestry.

**Place**

Ballina

**Date**

March/1992

**Source**

Irish Timber and Forestry

**Volume**

Vol. 1, No. 1

**Key Word**

grants, subsidies, forestry policy, Common Agricultural Policy, agriculture, private forestry, European Commission, European Union

**Abstract**

The Minister for Energy, Mr. Molloy, recently announced the following increases in grants for forestry: £2,000 per hectare for broadleaves - up from £1,200; and £1,000 per hectare for conifers on land which was previously unenclosed for agricultural purposes - an increase of £100.

**Page**

p 2

**Location**

Coillte library

**Notes**

available

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**Number**

347

**Author**

Murray N.

**Title**

Report on mechanical preparation of derelict woodland for planting.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1959

**Source**

Irish Forestry

**Volume**

Vol. 16, No. 1

**Key Word**

derelict woodlands, lop and top removal, briars, reforestation, forest machinery, woodlands management, silviculture

**Abstract**

The author, woodlands manager for Kells Ingram Farm in Drogheda, describes how an area of derelict woodland was prepared for replanting. All lop and top and briars on the site were removed mechanically and left in piles for burning. The problems involved in using heavy machinery in difficult conditions and in burning waste are also described.

**Page**

pp 20 - 21

**Location**

Coillte library

**Notes**

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**Number**

348

**Author**

O'Carroll N.

**Title**

Needle fusion in *Pinus contorta* in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1959

**Source**

Irish Forestry

**Volume**

Vol. 16, No. 1

**Key Word**

fused needle disease, forest protection, needle fusion, *Pinus contorta*, lodgepole pine, tree diseases

**Abstract**

The disorder known as fused needle disease of pines manifests itself most obviously in the failure of the needles to elongate, or even at times to emerge from the sheath. The condition was first identified in Ireland in 1958 in a stand of *Pinus contorta*. Research has shown that marked improvement can be obtained in affected crops by the application of phosphatic fertilisers, by direct and continuous feeding with carbohydrates via cut roots and by the application of litter. Recent observations suggest that the disorder is caused by a water deficiency at a critical stage of growth.

**Page**

pp 22 - 23

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2

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**Number**

349

**Author**

Mooney O.V.

**Title**

The development of the Eucalypts in Irish conditions.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1960

**Source**

Irish Forestry

**Volume**

Vol. 17, No. 1

**Key Word**

*Eucalyptus globulus*, *Eucalyptus muelleri*, *Eucalyptus radiata*, *Eucalyptus viminalis*, *Eucalyptus dalrympeana*, Eucalypts, exotic species, silviculture, shelter belts

**Abstract**

This article records the growth of measurable stands and single trees that have survived from the plantings of numerous eucalypt species in Counties Dublin and Wicklow. A limited number of these species can be grown successfully in Ireland and some of them can out-produce any other tree species for which data ARE available. The importance of climatic factors, especially minimum temperature, in limiting the number of eucalypt species that can be grown in Ireland is examined. The eucalypts are particularly vulnerable in the nursery stages and even some hardy species can be killed by quite ordinary frosts. The utilisation of the tree, in particular its use as fibre board, is also examined. *Eucalyptus* can withstand wind and grows exceptionally fast. It can therefore be recommended as a shelter belt tree over a range of mineral soils, apart from heavy wet soils and peaty sites.

**Page**

pp 3 - 20

**Location**

Coillte library

**Notes**

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**Number**

350

**Author**

Gallagher G.

**Title**

An assessor's observations on Irish conifer crops.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1960

**Source**

Irish Forestry

**Volume**

Vol. 17, No. 1

**Key Word**

Sitka spruce, *Picea sitchensis*, Douglas fir, *Pseudotsuga menziesii*, *Pinus sylvestris*, Scots pine, silviculture

**Abstract**

The performance of a number of conifer crops in Ireland is assessed. Scots pine, the only native species, has not done particularly well since being re-introduced into Ireland and there are startling differences in quality class among twenty to thirty year old plantations. Sitka spruce appears to be well suited to Irish conditions, the most promising areas being those where it is planted on moist hillsides yielding quality class 1 crops. The condition of various stands of Douglas fir, Norway spruce and Japanese larch are also examined.

**Page**

pp 21 - 26

**Location**

Coillte library

**Notes**

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**Number**

351

**Author**

Ryan Pierce

**Title**

Soil survey in Ireland with particular reference to forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1960

**Source**

Irish Forestry

**Volume**

Vol. 17, No. 1

**Key Word**

agricultural research, Institute of Agriculture, soil survey, land use, soil analysis, soil characteristics, forest soils

**Abstract**

The agricultural research programme formulated by the Institute of Agriculture includes as a fundamental primary project a complete survey of Irish soils. This survey is being made to determine and record the more stable, slow-to-change characteristics of soils, the similarities and differences among soils, their distribution and extent, and their behaviour under different cultural treatments. The various elements of modern soil survey and classification and the procedures involved in conducting surveys are described. There is a pressing need for a soil survey in Ireland because of the great variety in Irish soil types compared to those of other countries. While trees can be grown economically over a wide range of soil types, including land unfit for agricultural use, in many cases it is the soil that determines the economic feasibility of planting an area.

**Page**

pp 26 - 36

**Location**

Coillte library

**Notes**

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**Number**

352

**Author**

Woods R.P.

**Title**

Potentialities of home-grown timber.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1960

**Source**

Irish Forestry

**Volume**

Vol. 17, No. 2

**Key Word**

timber trade, timber processing, grading, seasoning, imports, forest products

**Abstract**

The author refers to his experience in English forests in offering advice to Irish foresters on how best to exploit the potential of their own plantations. It is argued that home-grown timber should prove suitable for all the various uses to which imported material is put, but it must be properly graded, seasoned and manufactured.

**Page**

pp 49 - 52

**Location**

Coillte library

**Notes**

Available (Lecture delivered before the Eighteenth Annual General Meeting of the Society of Irish Foresters, 19th March, 1960)

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**Number**

353

**Author**

Mooney O.V.

**Title**

Some notes on shelter belts in Irish coastal regions.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1960

**Source**

Irish Forestry

**Volume**

Vol. 17, No. 1

**Key Word**

coastal region shelter belts, Monterey pine, Monterey cypress, Lawson cypress, Austrian pine, shore pine

**Abstract**

The author selects Monterey pine and Monterey cypress as the two species which perform best as shelter belt trees. Other species which provide useful cover are Austrian pine, Lawson cypress and shore pine. Broadleaved trees are not effective shelter belt trees unless mixed with conifers as marginal rows or belts. Advice is also given on the optimum width of belts, positioning and spacing of trees in shelter belts.

**Page**

pp 53 - 56

**Location**

Coillte library

**Notes**

available

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**Number**

354

**Author**

Condon Liam

**Title**

The progress of deep peat afforestation in the North-west.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1961

**Source**

Irish Forestry

**Volume**

Vol. 18, No. 1

**Key Word**

deep peat afforestation, soil types, drainage, cultivation treatment, soil fertility, peat classification, blanket bogs, peatland, deep peat soils, peatlands

**Abstract**

The observations recorded in this article are based on a study, begun in 1952, of plantations laid down on the blanket bog regions of south-west Sligo and west and north-west Mayo. A description of the predominant peat types in the area and the major vegetation communities is included. Information is provided on other factors which can influence the suitability for planting of deep peat soils including moisture content, pH, mineral content, climate, exposure and elevation. The land is divided into five sub-classes which are arranged according to plantability. Various treatments to increase the yield from each class are recommended. Growths of 12 inches to 15 inches per annum are normal on sub-classes 1 and 2, 6 ins. to 10 ins. on sub-class 3, and 2 ins. to 3 ins. on sub-class 4. Three main adverse factors were encountered in establishing crops on these various sub-classes: lack of drainage, which can only be overcome when due attention is paid to the manner in which water is held in the different peat types; lack of fertility, which can be rectified by the application of artificial fertilisers; and lack of silvicultural precedent.

**Page**

pp 3 - 18

**Location**

Coillte library

**Notes**

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**Number**

355

**Author**

O Flanagan L.P.

**Title**

A comparison of methods used in obtaining current annual increment.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1961

**Source**

Irish Forestry

**Volume**

Vol. 18, No. 1

**Key Word**

annual increment, Norway spruce, Picea abies, stem analysis, leader growth tables, silviculture

**Abstract**

In the course of a limited investigation carried out on a Norway spruce stand near Lough Key in Co. Roscommon, current annual increment was evaluated by four different methods. Stems were entered in quarter-girth classes and a mean basal tree (7.24 ins. b.h.q.g.) calculated for the whole sample area, the plots being treated collectively. Two trees 16% from either end of the quarter girth distribution of all the plots were also picked, these turned out to be 5.75 ins. and 8.25 ins. b.h.q.g. The following methods were applied: stem analysis, which was used on five trees; Schneider' Formula applied to the 16% trees; Schneider's Formula applied to mean basal area trees; and leader growth tables. There was no significant difference in results.

**Page**

pp 19 - 23

**Location**

Coillte library

**Notes**available

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**Number**

356

**Author**

Barry T.A.

**Title**

Field photography and the forester - a personal approach.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1961

**Source**

Irish Forestry

**Volume**

Vol. 18, No. 1

**Key Word**

photography, forest records, field-work records

**Abstract**

The author compares the relative advantages of black and white and colour photography in recording field-work. It is predicted that, in forest record work, colour pictures will be widely used to show the progress of

growth in plantations and vegetation changes over a period of time. Various aspects of photography are briefly dealt with including light, focus depth, prevailing weather conditions and camera accessories.

**Page**

pp 23 - 29

**Location**

Coillte library

**Notes**

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**Number**

357

**Author**

Parker R.E.

**Title**

The problems of peatland forestry - An introduction.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1962

**Source**

Irish Forestry

**Volume**

Vol. 19, No. 1

**Key Word**

peatland forestry, soil nutrients, ombrogenous bogs, peat decomposition, bog vegetation, Calluna, climate, peatlands

**Abstract**

For the purposes of this study peatland is defined as land on which there is a superficial layer of organic matter within which the roots of the vegetation that it carries are entirely or almost entirely confined. The various factors which contribute to making peat soils less suitable for planting than other soils are considered. The carbon/nitrogen ratio of the soil's organic matter is of particular importance. The manner in which nutrients are supplied to, and lost from, the living vegetation of an ombrogenous bog is described. After planting, further nutrients become available to young trees from the decaying bog plants they have displaced, and from the increased peat decomposition which is caused by increased microbial activity. However, decomposition can destroy the peat itself as a suitable rooting medium. The effect of the competition of bog vegetation, especially Calluna, on a tree's ability to take-up nitrogen and other nutrients in the soil, and the various corrective measures available to combat nutrient deficiency, are examined. The results of draining and planting a number of very wet ombrogenous bogs in Northern Ireland are considered. It is noted that peatland forests are particularly susceptible to adverse climatic conditions because of their peculiar soils.

**Page**

pp 4 - 14

**Location**

Coillte library

**Notes**

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**Number**

358

**Author**

Dickson D.A.

**Title**

The indicator value of vegetation in relation to the afforestation of peatland in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1962

**Source**

Irish Forestry

**Volume**

Vol. 19, No. 1

**Key Word**

growth indicators, peatland vegetation, classification of vegetation, competition, soil nutrients, *Calluna vulgaris*, peatland afforestation, peat types, silviculture, peatlands

**Abstract**

In the first part of this paper the following considerations affecting the use of vegetation as an index of site potential for tree growth are discussed: the difficulty involved in describing and classifying geographically separate areas of vegetation; the relationship between peatland vegetation and environment; and tree growth in relation to vegetation type. The second part deals with an investigation into the relationship between the vegetation and nutrients of the peat in three forest areas of Northern Ireland. From this it seems that the peatland in Northern Ireland can be divided into three broad categories on the basis of vegetation and total nutrient content of the peat. The differences between these categories are likely to be significant for tree growth. Within each category the establishment of trees and their early growth seems likely to be determined by the severity of the competition between the natural vegetation and the trees. From this aspect, successful establishment appears to be inversely proportional to the vigour of species such as *Cullana vulgaris*. Although there is considerable variation in peat nutrient content between the vegetation types in each category, this may not be significant for early tree growth in view of the relatively large amounts of nutrients supplied as fertiliser.

**Page**

pp 14 - 32

**Location**

Coillte library

**Notes**

available

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**Number**

359

**Author**

Binns W.O.

**Title**

Some aspects of peat as a substrate for tree growth.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1962

**Source**

Irish Forestry

**Volume**

Vol. 19, No. 1

**Key Word**

deep peat, peatlands, bogs, potassium, phosphorus, soil nutrients, peat soils

**Abstract**

Investigations at 12 deep peat sites in Scotland and northern England have suggested that the need of conifers for additional phosphorus and potassium may be estimated from the total P and K contents of the upper layers of the peat. Concentration of these two nutrients in the surface layers, attributed to recycling by the natural vegetation, indicates that although deep rooting may improve stability it will probably not benefit trees much nutritionally. Mineralization of nitrogen, more rapid under deep than under shallow plough ridges, appears to be responsible for faster growth of young pine and larch on deep ridges. The deficiency of potassium at the sites studied is confirmed by a comparison of the maximum amounts of nutrients immobilized by conifers with the

amounts present in the peat.

**Page**

pp 32 - 55

**Location**

Coillte library

**Notes**

available

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**Number**

360

**Author**

McConaghy S.

**Title**

The effects of fertiliser treatments on the growth and composition of Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1962

**Source**

Irish Forestry

**Volume**

Vol. 19, No. 1

**Key Word**

fertilisers, tree growth, Sitka spruce, Picea sitchensis, nitrogen, phosphate, fertilisation, silviculture, soil nutrients

**Abstract**

A series of experiments was carried out to determine what affect the application of nutrients had on preventing check in Sitka spruce seedlings transplanted into peat. It was shown that the addition of nitrogen containing materials had little positive effect when placed around the planting holes, but bone meal containing both nitrogen and phosphate had a significant positive effect. The results of a separate experiment showed that trees had practically no growth in the absence of phosphate, and the application of nitrogen alone had a deleterious effect. It is concluded that phosphate is the most important factor limiting growth in the early years, and higher levels of phosphate than are normally supplied may be worthwhile. Also, the position of placement of phosphate, relative to young tree roots, must be carefully considered.

**Page**

pp 56 - 59

**Location**

Coillte library

**Notes**

available

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**Number**

361

**Author**

Parker R.E.

**Title**

Factors limiting tree growth on peat soils - an investigation into the nutrient status of two peatland plantations.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1962

**Source**

Irish Forestry

**Volume**

Vol. 19, No. 1

**Key Word**

foliage analysis, nutrient deficiency, microbial decomposition, bog vegetation, peatlands, peat soils, soil nutrients, peat nutrients, silviculture

**Abstract**

The application of the technique of foliage analysis to two representative peatland plantations in Northern Ireland has permitted the firm diagnosis of nitrogen deficiencies and the less firm diagnosis of deficiencies of phosphorus and potassium. It is suggested that the correlation between the N and P contents of the tree foliage, and the correlation between these and tree height over the whole tree height range, is determined by the rate of microbial decomposition of organic matter in the peat soil. It is also suggested that the rate of this decomposition is the main factor limiting tree growth on these sites. The results for K are consistent with the hypothesis that at the time of planting a high proportion of the site K is contained within the living bog vegetation. The analysis of the peat soils has indicated the marked depletion of peat nutrients (N,P, and K) by tree growth associated with a current fall in growth rate of the larger trees on one site. The peat on this site has a much higher Ca content; the possible significance of this is discussed.

**Page**

pp 60 - 81

**Location**

Coillte library

**Notes**

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**Number**

362

**Author**

McVean D.N.

**Title**

The establishment of alder on peatland and its possible role in afforestation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1962

**Source**

Irish Forestry

**Volume**

Vol. 19, No. 1

**Key Word**

peatland afforestation, deep peat soils, bogs, drainage, ploughing, plantation layout, forest establishment, peatlands

**Abstract**

This paper outlines the progress made to date in peat afforestation in Northern Ireland. A brief description is given of the type of ploughing machinery used. A new system of layout was adopted in 1953. There have been a number of changes introduced to the original planting methods. Intense pre-draining is no longer carried out, and there have also been changes in the method of deep-ploughing used. Greater use will be made of natural barriers, such as streams and main drains, as compartment boundaries. Other developments include an increase in road intensity and fire breaks. The problem of growth check is described and the current methods used to alleviate it are explained.

**Page**

pp 84 - 101

**Location**

Coillte library

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**Number**

363

**Author**

Joyce P.M.

**Title**

A survey of thinning and pruning studies.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1962

**Source**

Irish Forestry

**Volume**

Vol. 19, No. 2

**Key Word**

pruning, thinning, crown thinning, mechanical thinning, stem thinning, silviculture

**Abstract**

This article begins with a brief overview of a number of thinning and pruning experiments in South Africa and the United States. Pruning is an essential operation following wide spacing or heavy thinning to avoid the production of coarse knotty timber. Thinning is carried out to improve the stand, either for hygienic purposes or the concentration of increment on the best stems in the stand. Thinning may be broken down into a number of types or methods e.g.: (i) stem or low thinning; (ii) crown thinning; (iii) selection thinning; (iv) mechanical thinning. Thinning grades may be described either qualitatively, e.g. the removal of dead and dying, suppressed, sub-dominants, whips and defective co-dominants and dominants, or numerically i.e. the reduction of the number of stems per acre to a certain number. The effect of stocking on growth is considered under four headings: (1) effect on height growth; (2) effect on diameter growth; (3) effect on form; (4) effect on basal area and volume. Two experiments designed to investigate the differences between methods are described.

**Page**

pp 127 - 139

**Location**

Coillte library

**Notes**available

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**Number**

364

**Author**

McCracken A.R., Dawson M.

**Title**

Clonal responses in Salix to Melampsora rusts in short rotation coppice plantations.

**Publisher**

Paul Parey

**Place**

Hamburg

**Date**

March/1992

**Source**

European Journal of Forest Pathology

**Volume**

Vol. 22, No. 1

**Key Word**

fungal diseases, fungus, Salix, clonal variation, forest protection, coppice, genetic variation, Melampsora,

Northern Ireland, silviculture, coppicing, genetics

**Abstract**

The appearance of *Melampsora* spp. rust on a range of *Salix* spp. clones used for short rotation coppice was recorded. The progress of the disease and its subsequent effect on leaf fall was also recorded. Rust pustules from all the clones described was examined using the Stereoscan Electron Microscope. This revealed no differences in uredospore architecture which could be consistently related to host.

**Page**

pp 19 - 28

**Location**

Coillte library

**ISBN**

03001237

**Notes**

available

**Address of author**

Plant Pathology Research Division, Dept of Agriculture for N. Ireland, Dundonald Hse. Belfast BT4 3SB

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**Number**

365

**Author**

Heslin M.C., Blasius C., McElhinney C., Mitchell D.T.

**Title**

Mycorrhizal and associated fungi of Sitka Spruce in Irish forests mixed stands.

**Publisher**

Paul Parey

**Place**

Hamburg

**Date**

March/1992

**Source**

European Journal of Forest Pathology

**Volume**

Vol. 22, No. 1

**Key Word**

Sitka spruce, *Picea sitchensis*, forest protection, mycorrhizae, lodgepole pine, *Pinus contorta*, Japanese larch, *Mycelium radialis*, *Larix leptolepis*, *Suillus grevillei*, Basidiomycete, fungi, *Lactarius rufus*, *Paxillus involutus*, nurse trees, *Oidiodendron* sp., mixed stands

**Abstract**

Identity of mycorrhizas and isolation of symbionts and associated fungi from Sitka spruce growing in pure and mixed stands with either Japanese larch or lodgepole pine are described and compared. More mycorrhizal types and sporocarps of the Agaricales were collected from mixed stands. Mycorrhizas of *Lactarius rufus*, *Paxillus involutus* and *Suillus* spp. were more prevalent on roots from mixed stands. The most common unidentified mycorrhizal type (type B) had features similar to synthesized mycorrhizas of two Basidiomycete isolates. *Suillus grevillei* and three unidentified types were associated specifically with Japanese larch. The main associating fungi were *Oidiodendron* sp. and *Mycelium radialis atrovirens*. The association of a 'nurse' tree with Sitka spruce provides a more diverse mycorrhizal flora, the majority of which are shared between the tree species.

**Page**

pp 46 - 57

**Location**

Coillte library

**ISBN**

03001237

**Notes**

available

**Address of author**

Teagasc Kinsealy Research and Development Centre, Malahide Road Dublin 17

---

**Number**

366

**Author**

Stanley Bill  
(Coillte Teoranta)

**Title**

Colour infrared aerial photography using a helicopter based system.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

European Community Programme on the Protection of the Community's Forests against Atmosphere Pollution.  
Project No. 93.60.IR.004

**Date**

1995

**Key Word**

helicopter based aerial photography, colour infrared photography, forest inventory, establishment surveys, forest condition surveys

**Abstract**

This project investigated a helicopter based aerial photography system for taking colour infrared (CIR) photographs that could be used to monitor forest ecosystem and to classify the condition of individual tree crowns. A Heliboom twin camera system was used to photograph a number of sites with both panchromatic and CIR film. The system was found to be flexible during the project and was also easy to install and operate. Good quality CIR aerial photographs were produced in weather conditions that were not suitable for taking CIR photographs using the conventional fixed wing based system. During changeable weather conditions the helicopter was able to hover or circle or even land temporarily until suitable conditions prevailed. When using its two cameras simultaneously to provide stereo overlap, the system was found to be most effective with scales of 1:1,500 or larger. At smaller scales the stereo effect diminished and it was necessary to provide forward overlap between sequential photographs. It is concluded that the system has the potential to provide good aerial photographs at large scales. These photographs can be used to obtain quantitative and qualitative measurements of individual trees from an early age. The system is capable of providing detailed information that can compliment and reduce the need for ground measurements in forest condition surveys, establishment surveys and forest inventory.

**Page**

58 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research &amp; Technology, Sidmonton Place Bray, Co. Wicklow

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**Number**

367

**Author**

Ward Declan

**Title**

Death of noble fir Christmas trees at Kilmacthomas, Comeragh Forest: an interim report.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology internal report

**Date**

1994

**Key Word**

forest protection, noble fir Christmas trees, fungal diseases, fungal pathogens, fungi, Phytophthora, soil analysis, foliage analysis

**Abstract**

In late 1992 a number of P/89 and P/90 noble fir Christmas trees were found to be dying. The progress of the problem in parts of the site is extremely rapid, particularly in trees which would normally be expected to be beyond their harvest date. An investigation into the cause of the problem began in November 1992. Although a fungal pathogen (Phytophthora species) was suspected, analysis failed to positively identify the presence of such an organism. It is concluded that the site is intrinsically a good one but, adversely affected by a set of problems. Among the issues which are being investigated are nutrition, drainage and the problem of rabbits. A system of Integrated Disease Management is advocated. It is recommended that: dead and badly affected trees be removed and burned; Ridomil 5G be introduced as a fungicidal tool; and at the end of the rotation, highly Phytophthora tolerant species and/or soil sterilisation be considered.

**Page**

22 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research and Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

368

**Author**

Thompson Dave, Hogan John, Dunne Seamus, Keane Michael, Ward Declan, Hamilton Annmarie,

**Title**

Top dying of Norway spruce.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology internal report

**Date**

1995

**Key Word**

top dying, Norway spruce, Picea abies, forest protection, Cucurbitaria piceae, forest pathogens, fungal diseases

**Abstract**

This report draws together the available information on top dying in Norway spruce and presents the findings of a survey of a Norway spruce stand in Knocktopher forest which showed growth decline over the past 8 - 10 years. Top dying is a problem reported mainly in Norway spruce in which current years's needles brown and die. In severe cases trees begin dying from the tips. This results in reductions in diameter growth and in extreme cases the entire tree dies. The occurrence is correlated with a combination of mild winters with high winds followed by a lack of soil moisture in the late spring and summer. The main conclusions from the report are: no obvious primary pathogens or insect pests are associated with the phenomenon of Norway spruce dieback; drought in late winter to early spring plays a role; seed origin is important; exposed edges of plantations suffered most; thinning can stimulate the onset of dieback; Norway spruce dieback was first recorded in Ireland in 1948; top dying does not result in the death of entire plantations. The decline in growth observed in a Norway spruce stand in Knocktopher appears to be a different phenomenon to top dying. The fungus Curcurbitaria piceae was found to be associated with the problem on this site.

**Page**

35 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

369

**Author**

Hyde Trevor

**Title**

The use of computer modelling to predict the surface finish when orthogonally cutting Sitka spruce.

**Place**

Newtownabbey

**Date**

1993

**Key Word**

surface finish, orthogonally cutting, computer modelling, sawmilling, Sitka spruce, Picea sitchensis

**Abstract**

This study involved using mathematical analysis of the orthogonal cutting process to predetermine the quality of surface finish attainable on Sitka spruce. This is an adaptation of the analysis devised by Franz (Analysis of the Wood-cutting Process, 1958). An analysis was provided for cutting parallel to the grain and for cutting against the grain to take account of the varying machining directions encountered in a commercial milling process. The two analyses were encoded into computer programmes and when implemented they allowed for the prediction of one of three distinct chip formations, each of which is associated with a particular quality of surface finish. The model was tested on sugar pine and white ash for which Franz had recorded tool force components and the chip formations which occurred in his experimental work. In initial tests this model only achieved 50% efficiency, but this was increased to 87% across a range of moisture contents by adjusting the chip length. This model also predicted almost all of the desired type II chip formations.

**Page**

184p

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available (Thesis submitted for award B.Sc. in Building Engineering, University of Ulster)

**Thesis**

B.Sc. Thesis, University of Ulster

---

**Number**

370

**Author**

Kula E.

**Title**

Grant-in-aid and profitability of private sector forestry in Ulster.

**Publisher**

Royal Forestry Society

**Place**

Letchworth, Herts.

**Date**

July/1991

**Source**

Quarterly Journal of Forestry

**Volume**

Vol. 85, No. 3

**Key Word**

Sitka spruce, forestry grants, forestry policy, profits, investment, costs, forestry management, economics,

agriculture, land use, subsidies, *Picea sitchensis*

**Abstract**

This paper examines the impact of recent changes in planting grants on private sector profitability in Northern Ireland and compares forestry rates of return with other forms of investment. The analysis is based on a case study of a 30 ha. Sitka spruce afforestation project in County Tyrone, based on a 30 year single rotation which includes a thinning regime - the yield class is estimated to be 22. The internal rate of return under the new Woodland Grant Scheme is estimated to be 5.5% in real terms. It is concluded that forestry is an excellent long-term investment and rates of return compare favourably with other forms of investment.

**Page**

pp 183 - 190

**Location**

Coillte library

**Notes**

available

**Address of author**

University of Ulster at Jordanstown, Newtownabbey, Co. Antrim

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**Number**

371

**Author**

Rushton B.S., Toner A.E.

**Title**

Wind damage to the leaves of sycamore (*Acer pseudoplatanus* L.) in coastal and non-coastal stands.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1989

**Source**

Forestry

**Volume**

Vol. 62, No. 1

**Key Word**

wind damage, sycamore, *Acer pseudoplatanus* L., leaf damage, leaf discolouration, leaf expansion

**Abstract**

Wind damage to the leaves of sycamore (*Acer pseudoplatanus* L.) trees was examined at five sites in Northern Ireland during June and September, 1986 by estimating the percentage of leaf area showing lesions, discolouration or actual loss of lamina surface. Levels of damage on individual leaves ranged up to 46.6% of the leaf area but few leaves had damage greater than 10%. Two sites showed relatively low levels of damage (about 2% of lamina damaged); one site was inland, and the other, although coastal, was well sheltered. The three other sites had damage in excess of 3.5% of the lamina area - the site with the highest levels of damage being the most exposed site and the one probably experiencing the greatest amount of turbulence. Most damage had occurred by June and there was little increase in damage levels between the June and September samples. However, there was evidence of premature loss of the most highly damaged leaves. Regression analysis indicated that at sites showing the highest level of damage, the most highly damaged leaves were the smallest. It is argued that in these cases the damage to the leaves is sufficiently high to prevent full leaf expansion. At sites where the overall damage levels were lower, there was either a non-significant relationship between percentage leaf damage and leaf area or a significant positive relationship. It is suggested here that the damage levels are not great enough to inhibit the expanding leaves reaching full size.

**Page**

pp 67 - 88

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Biology, University of Ulster, Coleraine, BT52 1SA, UK

---

**Number**

372

**Author**

Heslin M.C., Stuart M.R., O Murchu P.O., Donnelly D.M.X.

**Title**

Fomannoxin, a phytotoxic metabolite of *Fomes annosus*: in vitro production, host toxicity and isolation from naturally infected Sitka spruce heartwood.

**Publisher**

Paul Parey

**Place**

Hamburg

**Date**

1983

**Source**

European Journal of Forest Pathology

**Volume**

Vol. 13, No. 1

**Key Word**

*Fomes annosus*, *Heterobasidion annosum*, plant pathogens, fungus, forest protection, fungal diseases, root rot, butt rot, Sitka spruce, *Picea sitchensis*

**Abstract**

*Fomes annosus* (Fr.) Cooke [*Heterobasidion annosum* Fr.) Bref.] causes root and butt rot of conifers and is considered the most serious fungal pathogen in Irish forestry plantations. Sitka spruce is particularly susceptible. In this study both fomannoxin and sesquiterpene phytoxin fomannosin were produced by *Fomes annosus* isolate D3 in liquid culture when grown on malt extract or Raulin's synthetic media. Production of both metabolites was favoured by stationary incubation. Fomannoxin was produced by young actively growing hyphae, peak production coinciding with maximum mycelial yields. Fomannosin, on the other hand, reached peak concentration in the declining growth phase of the fungus. Three further dihydrobenzofurans, oxidation products of fomannoxin, were isolated from filtrates of ageing cultures and assigned structures. These compounds proved to be non toxic to *Chlorella pyrenoidosa*. Appreciable quantities of fomannoxin were produced by the fungus when grown on pulverised Sitka spruce heartwood. Fomannosin was not detected in these cultures.

**Page**

pp 11 - 23

**Location**

Coillte library

**ISBN**

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**Notes**

available

**Address of author**

Teagasc Kinsealy Research and Development Centre, Malahide Dublin 17

---

**Number**

373

**Author**

McKillop D.G., Kula E.

**Title**

The importance of lags in determining the parameters of a planting function for forestry in Ireland.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1987

**Source**

Forestry

**Volume**

Vol. 60, No. 2

**Key Word**

Common Agricultural Policy, European Union, EU, European Community, land use, agriculture, grants, private afforestation, subsidies, forestry policy

**Abstract**

Due to food surpluses, agriculture in its present form is now coming to a crossroads and farming communities throughout the EEC have been put under increasing pressure to diversify. In line with this general trend towards diversification, the Forest and Wildlife Service has endeavoured to increase the acreage under private afforestation in the Republic of Ireland. A knowledge of the responsiveness of private plantation owners to change in grant aid and the actual timescale involved in the reallocation of land towards forestry is therefore essential. A model was developed to provide this information. The optimal specification was log linear and included a system of distributed lag structures. The data sample covers the years 1948-1982, a total of 35 observations, and was tested against variables including land prices, timber prices, tax relief and grants available. The major finding of the study is that forestry uptake in Ireland is dependent upon grant aid with a resultant effect on afforestation over an eight year period.

**Page**

pp 229 - 237

**Location**

Coillte library

**Notes**

available

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**Number**

374

**Author**

McAdam J.H., Hayes P.

**Title**

Prediction equations of juvenile willow (*Salix viminalis*) growth.

**Publisher**

Royal Scottish Forestry Society

**Place**

Edinburgh

**Date**

1987

**Source**

Scottish Forestry

**Volume**

Vol. 41, No. 3

**Key Word**

*Salix viminalis*, willow, biomass, crop yield, tree growth, prediction equations

**Abstract**

To overcome the necessity of destructively harvesting willow stems to assess yields, a series of prediction equations of willow growth has been formulated using material from trials for biomass production in Northern Ireland. The equations were derived from a number of variables measured on one year old willow stems harvested in December and were tested on five occasions throughout the following season. Diameter at quarter stem height (D25) and % dry weight of the stems (DM) were most closely related to the dry weight of stems. The multiple regression correlation between dry weight and measured variables was higher when the data were transformed logarithmically. If the plant population density is known the need to destructively harvest to estimate the yield of the crop can be overcome.

**Page**

pp 202 - 211

**Location**

Coillte library

**ISBN**

00369217

**Notes**  
available

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**Number**

375

**Author**

Adams S.N., Dickson E.L., Quinn C.

**Title**

The amount of nutrient content of litter fall under Sitka spruce on poorly drained soils.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1980

**Source**

Forestry

**Volume**

Vol. 53, No. 1

**Key Word**

Sitka spruce, *Picea sitchensis*, green spruce aphid, *Elatobium abietinum*, litter fall, nutrients, silviculture, growth rate

**Abstract**

Litter fall was collected every 3 months for 4 years from 21 vigorous (yield class 18 - 20 cubic metres per ha.) and 16 less vigorous (yield class 10 -12) plots of Sitka spruce on gleyed soils in Northern Ireland. 44% of all litter fell between June and August, and litter fall was heaviest during years which had green spruce aphid attack. Both rate and quantity of litter fall was less and nutrient concentration was lower in the lower yield class plots. As the pool of organic matter and nutrients on the forest floor was greatest under trees of yield class 10 - 12, poor growth was associated with a slow organic matter and nutrient turnover.

**Page**

pp 65 - 70

**Location**

Coillte library

**Notes**

available

**Address of author**

Food Chemistry Research Division, NI Dept. of Agriculture, Belfast BT9 RPX

---

**Number**

376

**Author**

Doyle Michael, Hayes Sean, Hogan Phil, Keane Mick, Mulkern Jim, Shorten John

**Title**

How to ensure effective weevil control in Region 1.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Continuous Improvement Programme. Project 19.

**Date**

1995

**Key Word**

large pine weevil, *Hylobius abietis*, insect pests, Wheelie Dip, dipping, insecticide, forest protection, forest pathogens

**Abstract**

Large pine weevil (*Hylobius abietis*) is an insect pest which attacks and damages young trees in the first number of years after planting. In recent years weevil damage has been a major contributory factor in poor plant survival on many reforestation sites, and failure to address this problem correctly has resulted in expensive filling in, replanting and delayed crop establishment. Costs attributed to weevil damage in Region 1 are estimated to be up to £160/ha. Experience has shown that strict adherence to a regime involving dipping plants (pre-planting) in a lindane suspension and spraying during the first and second growing seasons where there is evidence of attack results in effective damage control. In practice, however, weevil control has been haphazard due to a number of reasons. The report favours the use of a portable dipping device called the Wheelie Dip, which will standardise dipping techniques, followed by monitoring and spraying only where required. Sprayers must be available in January as weevils will attack as early as February. Plants of less than 9mm root collar diameter are more susceptible to weevil damage. Planters should be provided with callipers, and plants falling below specification will not be used on high risk sites.

**Page**

12 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research and Technology, Sidminton Place, Bray Co. Wicklow

---

**Number**

377

**Author**

Lyons John, Donnellan Michael, O Sullivan Timmy,

**Title**

Report on tracked forwarders demonstration and test.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology internal report

**Date**

1994

**Key Word**

thinning, forest machinery, tracked forwarders, thinning forwarders, deep peat, peatlands

**Abstract**

As a result of widespread dissatisfaction with the performance of forwarders in thinning situations, a demonstration and test of five different types of tracked forwarder was organised on the same site to observe how they would perform in similar conditions. The following machines were tested: Farmi 3000; Farmi 5000; Teva Track; Norcar 490; and Nokka. It was found that all the machines were capable of extracting thinnings on deep peat if the site had been properly prepared and if the operation was carried out at the right time. Most rutting was associated with rack entrances or blocked drains. Depth of peat was not a major factor.

**Page**

25 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidminton Place, Bray Co. Wicklow

---

**Number**

378

**Author**

McCarthy Richard, O'Dea Philip  
(Coillte Teoranta)

**Title**

Nutrient cycling in degenerate natural forests of Europe in relation to their rehabilitation.

**Publisher**

Coillte Teoranta

**Series**

EC 4th Environmental R & D Programme Contract No. :EV4V-0170-C(MB) and STEP-CT90-0039/IRELAND.  
Final Report.

**Date**

1993

**Key Word**

nutrient cycling, oak, *Quercus petraea*, soil nutrition, forest rehabilitation, degenerate natural forest, environment, atmospheric pollution, broadleaves, litterfall, nutrient return, rainwater nutrients

**Abstract**

This study is part of a pan-European project on nutrient cycling in natural/semi-natural forests. The Irish part of this project was concentrated on long-established stands of deciduous oak (*Quercus petraea*) in Glenealy Forest, Co. Wicklow. In addition comparable studies were conducted in Norway spruce (*Picea abies*), the main objective being to compare evergreen and deciduous trees in terms of their use of nutrients. The inclusion of a conifer in the study was also considered to be important to determine any difference in response by both forest types to atmospheric pollutants and acid rain. The main findings of the study were that nutrition is not a limiting factor in the growth of oak at the Irish study site, and oak produced over twice as much biomass as Norway spruce (375 compared to 170 tonnes/ha). Nitrogen was the only major nutrient element in plentiful supply. Litterfall was an extremely important mechanism of nutrient return, with the scale of the returns in oak two-three times that in Norway spruce. Throughfall was a valuable source of nutrient enrichment, particularly for K and N. The input of nutrient elements by the rainwater was relatively high for nitrogen, potassium, calcium, and magnesium, and characteristically low for phosphorus.

**Page**

61 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

379

**Author**

Ni Dhubhain Aine, Lowe Richard, Keane Michael,

**Title**

An assessment of windthrow risk classification methods in Ireland.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology internal report

**Date**

1995

**Key Word**

windthrow hazard classification systems, storm damage, forest management, land acquisition, thinning, windthrow risk classification methods, silviculture

**Abstract**

In this study, seven windthrow hazard classification systems are described and used to classify 274 sub-compartments in three forests according to windthrow risks. The presence of windthrow in these sub-

compartments and the age at which this windthrow occurred is compared with the age at which the classification systems predict windthrow will occur. Contrary to expectations, the implementation of five of the systems was shown to increase thinning volume over the forecast period. Coillte's Land Acquisition Model, with some adjustment, is shown to be the system which most accurately predicts the occurrence of windthrow in these subcompartments. This model is based on the following variables: soil, slope, altitude, aspect, and location. Each of these factors is scored, the scores summed and sites classified into four stability classes on the basis of this score. Associated with each of these classes is a 'maximum attainable height' to which the stand is expected to grow before a clearfell situation arises.

**Page**

39p

**Location**

Coillte library

**Notes**

(Report prepared for the Forest Service, Department of Agriculture Food and Forestry), available

**Address of author**

Dept. of Crop Science Horticulture and Forestry, UCD, Belfield Dublin 4

---

**Number**

380

**Author**

Coggins Karl

**Title**

The manufacture of briquettes using forest residue.

**Place**

Dublin

**Date**

1993

**Key Word**

alternative energy, forest products, timber trade, briquettes, slash, environment, forest residue

**Abstract**

An alternative source of energy is the branches and needles left behind after commercial forest harvesting. This post harvest residue is internationally known as slash. Slash can be chipped and used directly in industry or it can be compacted into briquettes and burnt as domestic fuel. Once the particle size of slash chips has been reduced to less than 3mm and its moisture content brought down to less than 10%, it is possible to produce a well structured briquette which has a calorific value of 4,380 Cal/g. A factory designed to produce 800,000 units of briquettes (10kg per unit) would need to demand £1.81 per unit to break even. The cost is partly attributable to the cost of harvesting slash, £6.35/green ton, and the cost of haulage, £102,419/annum if the factory was located at Avonmore Co. Wicklow. While there is a market for this type of fuel, the harmful impact on the forest site after removal of slash, in terms of soil acidity and nutrient depletion, means that only the most fertile sites can be harvested. This factor, and the high costs involved in manufacturing this type of briquette probably prevents this new product from becoming a commercially viable enterprise in the short term.

**Page**

x, 145 p

**Location**

COFORD, Bolton St. College library

**Notes**

Available (Thesis. Submitted for the award of M.Sc. (Research), Bolton Street, Dublin Institute of Technology)

**Thesis**

M.Sc Thesis, Bolton Street, DIT

**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry Leeson Lane Dublin 2

---

**Number**

381

**Author**

McMenanin Conor Patrick

**Title**

An experimental investigation of the stability of Sitka spruce trees planted on a surface water gley soil.

**Place**

Galway

**Date**

1992

**Key Word**

Sitka spruce, stability, monotonic tests, tree loading tests, tree rocking device, soil analysis, geology, silviculture, forest soils, Picea sitchensis

**Abstract**

This study consists of an experimental investigation of the stability of Sitka spruce trees planted on a surface-water gley using a series of field and laboratory tests. The field testing consisted of monotonic and dynamic tree loading tests. The dynamic tree loading tests were performed using a tree rocking device. The monotonic tests were performed using a tree pulling system. An isolated tree was monitored during a storm. The magnitude of the dynamic loading on a tree during storm conditions was estimated from the storm monitoring results.

Laboratory tests were performed on soil samples obtained from the Castledaly site. The strength of the soil when subjected to monotonic loading was compared with the strength when subjected to repeated loading. The main conclusions of the study were: during dynamic loading high pore water pressures in the soil were generated, these caused hydraulic fracturing (liquefaction) of the soil and a subsequent failure of the root plate; the strength of soil subjected to repeated loading was much smaller than the strength of the soil subject to monotonic loading; the damping ratio increased with dynamic loading whereas the stiffness of the tree system reduced; and pore water pressure accumulates under conditions of natural storm loading.

**Page**

220 p

**Location**

COFORD

**Notes**

Available. (Thesis submitted for award of degree of Master of Engineering Science, University College Galway)

**Thesis**

M.Eng.Sc. Thesis, UCG

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**Number**

382

**Author**

Carey Peter

**Title**

An experimental study of soil stability in relation to windthrow in forests.

**Place**

Galway

**Date**

1993

**Key Word**

windthrow, soil stability, site preparation, double mouldboard, mole drainage, dynamic performance, loading tests, Sitka spruce, Picea sitchensis, silviculture, forest soils

**Abstract**

This study consisted of an examination of the stability of Sitka spruce trees planted on surface water gley soils. Two site preparation techniques, namely double mouldboard and mole drainage, were examined in the field to see if there was any variation in the stability of the trees due to planting methods. Dynamic loading of selected trees was achieved by using a mechanical device. Transducers and a high speed microcomputer were used to monitor the dynamic performance of the trees and rootplates. Laboratory testing was carried out to classify and to determine the strength of reconstituted soil from the test site. Monotonic and repeated loading tests were carried out on the soil in a triaxial and in a novel simple shear apparatus. Strengths obtained from monotonic tests were compared with those obtained from the repeated loading tests.

**Page**

190 p

**Location**

COFORD

**Notes**

Available (Thesis. A dissertation submitted to the National University of Ireland in fulfilment of the requirements for the degree of Master of Engineering Science)

**Thesis**

M.Eng.Sc. Thesis, UCG

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**Number**

383

**Author**

Evertsen J.A.

(Eolas. Forest Products Department)

**Title**

Lodgepole pine taskforce.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Report No. 2

**Date**

1987

**Volume**

Vol. 1

**Key Word**

lodgepole pine, Pinus contorta, timber market, joinery products, timber processing, imports, red deal, joinery manufacturing, timber preservation, gluing

**Abstract**

In this report potential high end-value outlets for lodgepole pine are identified, and the results of a preliminary investigation on its technical properties are given. The suitability of fast grown lodgepole pine material for joinery and the potential market for joinery products are investigated. The commercial considerations are: the availability of lodgepole pine; product quality criteria for joinery material, including glueing and holding properties; treatment with preservative and compatibility with various types of surface coatings; and trade statistics on joinery materials. The matters of most concern in the silvicultural and processing areas are: basal sweep and its amelioration through thinning; fungal infection of logs, especially blue stain infection; and the effects of rapid drying on the timber quality of fast grown material. It is concluded that home grown lodgepole pine, which is relatively fast growing, is suitable for use in the manufacture of joinery products. Home grown lodgepole pine is in a position to compete very favourably with imported Red Deal.

**Page**

128p

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

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**Number**

384

**Author**

Murphy G.

**Title**

A study on compression wood in three provenances of lodgepole pine.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service internal report

**Date**

1986

**Key Word**

compression wood, lodgepole pine, wood degrade, timber damage, Pinus contorta

**Abstract**

Compression wood is a type of degrade found in coniferous species which has a deleterious effect on many utilisation properties. It is normally formed in response to deviations of the stem from the vertical. The objectives of this study were: (1) to determine the amount of compression wood between and within three provenances of lodgepole pine (Long Beach, Hoodspout and Clearwater); (2) to determine the types of distribution of compression wood in the trees; (3) to preliminary examine if there is a direct genetic influence on the formation of compression wood; (4) to determine if there is a relationship between stem deviation and compression wood. The considerable variation between trees within each provenance probably means that the number of samples taken was inadequate to estimate precisely the true mean of the population. It is concluded that compression wood, especially in its severe form, is prevalent in juvenile wood and may make this wood unacceptable for sawlog. There was considerable change in direction throughout the length of the stems. Lean and stem deformations play a very important causal role in the formation of compression wood in all provenances.

**Page**

48p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2

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**Number**

385

**Author**

Joyce Padraic M.

**Title**

Interrelationships in forestry practice.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Date**

1985

**Source**

The influence of spacing and selectivity in thinning on stand development, operations and economy. Proceedings of the meeting of IUFRO Project Group P.4.02.02. Dublin, Ireland, 24 - 28 September 1984. (Edited by G. Gallagher)

**Key Word**

spacing, ploughing, planting, blanking, establishment, costs, finance, respacing, thinning

**Abstract**

This paper is concerned with the costs incurred at the beginning of the rotation, at the time of establishment, particularly costs which relate to spacing. Spacing influences the cost of the following establishment operations: ploughing; planting; beeting-up or blanking; and cleaning. The effect of spacing on the crop development phase and wood quality is also discussed. Other issues dealt with include respacing and thinning. The various risks involved in forestry production and the type of research that is needed to ensure that quality of the final product will continue to improve are examined briefly.

**Page**

pp 1 -4

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Belfield Dublin 4

---

**Number**

386

**Author**

Rollinson T.J.D.

**Title**

A comparison of selective and systematic respacing of Sitka spruce.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Date**

1985

**Source**

The influence of spacing and selectivity in thinning on stand development, operations and economy. Proceedings of the meeting of IUFRO Project Group P.4.02.02. Dublin, Ireland. 24-28 September, 1984. (Edited by G. Gallagher)

**Key Word**

pre-commercial thinning, Sitka spruce, selective respacing, systematic respacing, *Picea sitchensis*, silviculture

**Abstract**

Spacing affects not only the total volume production and the distribution of individual tree sizes in a stand, but also tree quality. Wide spacings generally lead to increased taper, larger branch size, and may lower the structural performance of the timber. Results of comparing selective and systematic respacing treatments are described. Selective respacing resulted in: (1) gains in volume production, basal area production and mean diameter, but the differences are not statistically significant at the 0.05 probability level; (2) increased mean height and a truncated lower end to the diameter distribution compared with the systematic treatment; (3) some gains in tree quality. Both the proportion of forked trees and the diameter of branches are smaller in the selective treatment. It is too early to conclude whether there will be significant long-term gains in yield, quality or stability by selective respacing.

**Page**

pp 22 - 26

**Location**

Coillte library

**Notes**

available

**Address of author**

Forestry Commission Research Station, Alice Holt Lodge, Farnham, Surrey UK

---

**Number**

387

**Author**

Gallagher G.J., Lynch T.J.

**Title**

Some recent results from spacing and respacing experiments.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Date**

1985

**Source**

The influence of spacing and selectivity in thinning on stand development, operations and economy. Proceedings of the meeting of IUFRO Project Group P.4.02.02. Dublin, Ireland 24-28 September, 1984. (Edited by G. Gallagher)

**Key Word**

spacing, respacing, Sitka spruce, lodgepole pine, crop development, *Picea sitchensis*, *Pinus contorta*, costs, silviculture

**Abstract**

Recent results from eight spacing and respacing experiments provide further information on crop development in Sitka spruce and coastal lodgepole pine from planting to thinning stage. Trends in all experiments, while predictable, are similar. There are marked increases across the diameter at breast height distribution, due to increased spacing in both species. This is equivalent to over 100% DBH increase in Sitka spruce and over 50% in lodgepole pine in some cases. Cumulative volume decreases with spacing although there is an increase in the larger size assortments. Volume loss will have occurred by thinning stage and will be in small size timber categories. The main effect of selecting final crop tree and 'topping' the remainder at early respacement is to reduce branch size.

**Page**

pp 27 - 37

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane, Dublin 2.

---

**Number**

388

**Author**

Fitzsimons B.

**Title**

Systematic thinning - management and research in the Republic of Ireland.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Date**

1985

**Source**

The influence of spacing and selectivity in thinning on stand development, operations and economy. Proceedings of the meeting of IUFRO Project Group P.4.02.02. Dublin, Ireland 24-28 September, 1984. (Edited by G. Gallagher)

**Key Word**

thinning, systematic thinning, selective thinning, Sitka spruce, *Picea sitchensis*, crop productivity, windthrow, silviculture

**Abstract**

Thinning policy was not clearly defined in Ireland until the late 1960s. Systematic thinning was introduced about this time. Its practice is now widespread in first thinning. Results from research plots indicate that differences in crop productivity arising from systematic thinning, compared to selective removals of the same intensity, are minimal. Removal of up to 50% volume in first thinning produces a significant but not serious loss in total volume production in Sitka spruce. The threat of windthrow is often the most important consideration when deciding on thinning policy. Preferred option frequently cannot be applied due to marketing considerations.

**Page**

pp 79 - 91

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2

---

**Number**

389

**Author**

Oh Peng Lim, Keane Michael G., Hendrick Eugene

**Title**

Crop structure experiments and permanent sample plots in the Irish Republic.

**Publisher**

Swiss Federal Institute for Forest, Snow and Landscape Research

**Place**

Birmensdorf

**Date**

1993

**Source**

Assesment of increment in permanent monitoring plots established to determine the effects of air pollution on forests: Proceedings of the Sopron workshop August 28 to September 1, 1993 Sopron, Hungary. (Edited by John L. Innes).

**Key Word**

crop structure, spacing, stand behaviour, silviculture, fertilisers, fertilisation, tree growth, thinning, pruning

**Abstract**

This paper summarises work carried out in Ireland in the area of crop structure research, encompassing stand behaviour in relation to initial spacing, respacing, thinning and pruning. Over 60 replicated experiments and 59 single plots have been established since the late 1950s. Altogether, a total of 29 spacing trials have been established in Sitka spruce and various provenances of lodgepole pine. Various spacing treatments ranging from 1.2 metres to 3.6 metres are included in these experiments. Many of the earlier spacing experiments have now become redundant. Some contained provenances which are no longer among the most commonly planted provenances, and fertiliser treatment applied to some trees, injudicious blocking and damage has contributed to confusing and contradictory growth patterns.

**Page**

p 29

**Location**

Coford

**Notes**

Available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co. Wicklow

---

**Number**

390

**Author**

Evertsen J.A., O' Brien D.

**Title**

The effect of thinning and initial spacing on wood quality determining properties in Sitka spruce.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Date**

1985

**Source**

The influence of spacing and selectivity in thinning on stand development, operations and economy. Proceedings of a meeting of IUFRO Project Group P.4.02.02. Dublin, Ireland 24 - 28 September, 1984. (Edited by G. Gallagher)

**Key Word**

thinning, initial spacing, Sitka spruce, wood quality, X-ray microdensitometry, wood density, silviculture, *Picea sitchensis*

**Abstract**

The effect of thinning and initial spacing on intrinsic wood quality determining properties is evaluated by X-ray microdensitometry of increment cores taken at breast height. In the application of thinning no significant differences in mean annual wood density in adult wood are detected. This may be a result of both the small number of replicates in the experiment and the relatively moderate intensity of treatments. Trends of reduced annual mean density are apparent in the more extreme treatments. These trends are however short lived. No other intrinsic wood properties that are examined, are significantly affected by thinning. No significant difference can be established in the mean annual density of the complete increment cores, for spacing ranging from 1.2m to 3.6m square. Analysis of individual growth years in the juvenile core, indicate reduced density with wider spacing in later years. Examination of the components of variance, indicate that 44% of the variation in wood density results from between trees and 29% from between treatments. Analysis of density uniformity (mean maximum density - mean minimum density) indicates a significantly greater annual density variation with wider spacing. This may have an adverse effect on wood quality. Mean annual ring width is highly significantly wider with wider spacing.

**Page**

pp 130 - 139

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

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**Number**

391

**Author**

Lynch T.J.

.

**Title**

Windblow damage in research plots.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Date**

1985

**Source**

The influence of spacing and selectivity in thinning on stand development, operations and economy. Proceedings of the meeting of IUFRO Project Group P.4.02.02. Dublin, Ireland 24-28 September, 1984. (Edited by G. Gallagher)

**Key Word**

cultivation, windthrow, wind damage, thinning, spacing, drainage, planting, respacing, silviculture

**Abstract**

This paper concentrates on the extent of windthrow and spacing in a total of 1,148 plots established by the Forest and Wildlife Service, beginning in the early 1950s. The primary purpose of research on these plots is to study the influence of a range of thinning treatments and initial planting spacings on crop growth and to build up a database for yield model construction. The greatest proportion of windthrow in the species studied, Sitka spruce and coastal lodgepole pine, occurred during the period after first thinning and prior to second thinning making this a particularly vulnerable period in the life of a crop. From an overall 349 plots established which received a thinning treatment, 115 (33%), were thrown. The following possible causes for such a high level of damage are examined: site; cultivation; drainage; choice of species; direction of planted lines; spacing; time of thinning; and intensity of thinning. It is shown that site cultivation and thinning type and intensity are the major causes of windthrow in plots. The windthrow risk can never be completely eliminated but can be reduced by judicious management.

**Page**

pp 144 - 152

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

392

**Author**

MacSiurtain Mairtin P.

**Title**

Towards stochastic yield models.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Date**

1985

**Source**

The influence of spacing and selectivity in thinning on stand development, operations and economy. Proceedings of the meeting of IUFRO Project Group P.4.02.02. Dublin, Ireland 24-28 September, 1984. (Edited by G. Gallagher)

**Key Word**

stochastic yield model, linear regression estimator, management tables

**Abstract**

The concepts of a stochastic model, a stochastic yield model, and the associated error percent per hectare are defined. In essence the term 'stochastic model' may be applied to any model which incorporates quantification of the variability about the fixed model at a specified level of confidence. An example of a simple stochastic model quantifying the relationship between volume and basal area of a sample of individual trees is presented. Volume estimates of the maincrop and thinnings are estimated using linear regression estimators for a Forestry Commission permanent sample plot. Examples of stochastic summaries of the permanent sample plot are presented to illustrate the concept of a stochastic yield model. Some of the likely advantages and disadvantages associated with stochastic yield models are briefly outlined.

**Page**

pp 153 - 162

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Belfield Dublin 4

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**Number**

393

**Author**

Beatty M.H.

**Title**

An examination of the growth enhancing claims of oceanic forestry.

**Publisher**

Forestry and Wildlife Service

**Place**

Dublin

**Date**

1985

**Source**

The influence of spacing and selectivity in thinning on stand development, operations and economy. Proceedings of the meeting of IUFRO Project Group P.4.02.02. Dublin, Ireland 24-28 September, 1984. (Edited by G. Gallagher)

**Key Word**

oceanic forestry, respacing, windthrow, wind damage, stem reduction method, thinning, Sitka spruce, *Picea sitchensis*, volume per unit area, forest economics

**Abstract**

A system of silviculture known as oceanic forestry has been claimed to improve the financial returns to forest investment compared with conventional management in high wind-risk areas of the British Isles. Trees treated by this stem reduction method are expected to achieve large sizes earlier than with conventional thinning treatment and exhibit increased rates of growth per hectare as a consequence of choosing trees selectively and maintaining continuous ground shade. Plantations so treated are also expected to be more windfirm. Data are presented from an experiment on Sitka spruce in Northern Ireland designed to test the theory that oceanic forestry increases the volume produced per unit area. No evidence from measurements of height and basal area was found to support the claim.

**Page**

pp 163 - 169

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Dept. of Agriculture, Dundonald House, Upper Newtownards Road Belfast BT4 3SB

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**Number**

394

**Author**

Broad L.R., Lim O.P.

**Title**

A stand based growth model for Sitka spruce.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Teoranta internal report

**Date**

1991

**Key Word**

stand based growth models, yield models, growth simulation, thinning, dynamical systems, growth prediction, Multivariate Bertalanffy-Richards Model, yield prediction

**Abstract**

Growth is defined as the range of change of yield with respect to time, the respective units of this definition being cubic metre/annum and cubic metre. The term growth models is used in a generic sense to refer to the modelling of either growth or yield and any of the associated stand variables such as stocking and basal area. Growth models are classified as either static or dynamic based on whether they predict the quantities of interest directly or predict their increments. Both static and dynamic models have as their basis a description of the forest system at any point in time, this is termed the state of the system. This report details the development of a class of stand-based dynamic growth models, the class of growth model best able to meet general demands in Ireland.

**Page**

30p

**Location**

Coillte library

**Notes**

available

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**Number**

395

**Author**

Lyons John, Murphy Liam

**Title**

Mechanical thinning of natural regeneration of Sitka spruce.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Teoranta internal report

**Date**

1994

**Key Word**

mechanical thinning, natural regeneration, Sitka spruce, Picea sitchensis, forest machinery, NOKKA harvester, respacing, silviculture, harvesting

**Abstract**

A trial to mechanically respace natural regeneration of Sitka spruce was carried out over a 13 week period from January to April 1994 in Glendalough Forest. A Pure 750 head mounted on a tracked NOKKA harvester base unit was evaluated in regeneration that had an average height of 2.5m, a stem diameter of 5cm and a density of up to 250,000 stems per hectare. Regeneration was respaced into small groups of 5 to 10 stems at 2m x 2m apart which will be reduced to single stems by motor manual methods. Results from the trial showed that respacing costs varied from £450 to £749 per hectare with a machine cost/working hour of £30.20. The machine tested was considered to be the most suitable that is available at present. However further improvements could be made and recommendations for modifications are given.

**Page**

9 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teoranta, Sullivans Quay, Cork

---

**Number**

396

**Author**

O'Dwyer Kieran  
(Department of Finance)

**Title**

The production and use of wood residues by the Irish timber industry.

**Publisher**

Department of Finance

**Place**

Dublin

**Date**

1984

**Key Word**

wood residues, timber industry, timber economics, timber processing, debarking, forest machinery, sawmill industry, roundwood, timber imports, pulpwood, timber supply, exports, sawmilling, timber end use

**Abstract**

The purpose of the study was to examine the production of wood residues by the Irish timber industry and the uses to which they are put. The aims were to provide information on the volumes of each type of residue

currently produced and to estimate future production in the light of changing market outlets and production processes. Of particular interest was the quality of residues and the question of their upgrading through the incorporation into sawmill processes of debarking machinery. The results of the study show that a small but increasing number of sawmills operate debarking machinery and are thus capable of producing higher quality, bark-free residues. The study shows that it can be economic for even moderately sized mills to install such machinery but that distance from residue markets is of central importance. Estimates of volumes of each type of residue are derived, the estimates being based mainly on the application of conversion yields to estimated future sales of roundwood.

**Page**

120 p

**Location**

Coillte library

**Notes**

available

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**Number**

397

**Author**

Forest and Wildlife Service

**Title**

The case for forestry.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1983

**Source**

Dublin

**Key Word**

forestry policy, forestry history, State forestry, afforestation, planting policy, wood production, timber processing, forest economics, Government expenditure, timber trade, imports, exports, wood industries, land use, prices, EEC, EU, wood products, timber products, recreation, amenities, wildlife, forest employment

**Abstract**

This report reviews the background to current Government forestry policy, the progress achieved to date, and the structure of the existing forest estate. The financial and social implications of State afforestation are assessed. The report goes on to select six alternative planting policies and subjects each alternative to an assessment of the national consequences as to wood production (and its effect on industrialisation), employment (both in the forest and in wood industry), future self-sufficiency in wood and wood products (including the balance of payments impact) and the National Exchequer (expenditure and revenue).

**Page**

vii, 76p

**Location**

Coillte library

**Notes**

available

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**Number**

398

**Author**

McOscair P.

(Forest & Wildlife Service)

**Title**

Avondale report. Part I.

**Date**

1979

**Key Word**

Avondale Forest Park, forestry history, forestry policy, training, forestry education, Avondale arboretum, planting records, pinetum

**Abstract**

This report provides an historical background to the establishment of Avondale Forest Park, a description of the park and an outline of its present functions. The park functions as: an arboretum; a research centre for testing new species under forest conditions; an estate of national historic interest; a training centre for foresters; an in-service training centre both within the Forest and Wildlife Service and the Government Services in general; and as an educational centre for selected groups of the general public. These different aspects of the Park's present-day role are covered in the report. The arboretum, lying in the proximity of Avondale house, is 17 ha. in size, within which 6.75 ha. has been developed as a pinetum. The balance contains the collection of broadleaved trees and shrubs. Details of plantings in the arboretum since 1917, and soil and climatic conditions on the estate are given.

**Page**

54p

**Location**

Coillte library

**Notes**

Available (Contains grid map of Avondale Arboretum)

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**Number**

399

**Author**

McOscair

(Forest & Wildlife Service)

**Title**

Avondale Report. Part II. The research plots.

**Date**

1979

**Key Word**

Avondale Forest Park, forest management, forest history, planting records

**Abstract**

This report contains a detailed record of forest plots established at Avondale Forest Park since 1905. The first wave of plots was established by 1913. From 1913 to 1955 an additional 16 plots were established covering a total of 7.8 ha. From 1915, when the school was closed, to 1936 when it re-opened little planting was done and only token maintenance was undertaken. A further 2.5 ha. were planted in 1940. The 14 year period from 1955 to 1969 was one of tending and maintenance of established crops. From 1969 to 1976 - sixteen plots were established on derelict sites from initial planting for a total area of 5.8 ha. An account is given of the present condition of the Avondale plots and recommendations for their future management.

**Page**

141p

**Location**

Coillte library

**Notes**

Available

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**Number**

400

**Author**

Forbes A.C.

**Title**

Some early economic and other developments in Eire, and their effect on forestry conditions.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1943

**Source**

Irish Forestry

**Volume**

Vol. 1, No. 1

**Key Word**

forest history, forestry policy, native forests, landscape, land use, experimental forestry, Celtic Ireland, Norman Ireland, grants, government subsidies, deforestation, estate woodlands

**Abstract**

Forestry and other land-uses in both Ireland and Europe are compared and contrasted. Climatic and topographic differences are central here. A historical account of how the original forest cover of Ireland may have declined is given. It is argued that this decline occurred over a period of greater length than the previously estimated three or four hundred years. The influence of the Normans, who arrived in the 12th Century, on the native landscape and their attitudes to the land is contrasted with the attitude of the native Gaels. Historical claims as to the extent of the native Irish woodland from the 15th to the 18th century are questioned. The establishment of demesnes in the 17th century and the effect that this development had on tree planting is examined.

**Page**

pp 6 - 15

**Location**

Coillte library

**Notes**

Available

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**Number**

401

**Author**

Petrie S.M.

**Title**

A plea for shelterbelts of broadleaved trees.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1943

**Source**

Irish Forestry

**Volume**

Vol. 1, No. 1

**Key Word**

shelterbelts, native hardwoods, pruning, agriculture, broadleaf trees, timber end use, broadleaves

**Abstract**

Broadleaved trees are particularly suitable for shelter belt purposes. However, they require careful and intensive management, and are therefore most profitable in small units. Softwoods of greater than 20 years are inefficient as shelter belts. They do not blend with non-montane landscapes and they are uneconomic in a forestry context. Obtaining planting stock of common broadleaved trees from all nurseries should not be difficult. Mast years, which occur every three to four years for species like oak, beech, ash, horse chestnut, elm and sycamore, give abundant crops of seed. Heavy stocks of the more adaptable conifers are required for the poor soil areas and high level sites. At sites where the more valuable indigenous broadleaves trees are appropriate, a superior form of shelter, a more pleasing appearance and an increase in hardwood timber stocks is attained and conifer planting should be avoided here.

**Page**

pp 16 - 19

**Location**

Coillte library

**Notes**

Available

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**Number**

402

**Author**

Meldrum J.A.K.

**Title**

Handling native timber.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1943

**Source**

Irish Forestry

**Volume**

Vol. 1, No. 1

**Key Word**

timber processing, timber handling, timber drying, wood moisture content, air temperature, humidity, wood density, kiln drying, timber stacking

**Abstract**

The move away from Baltic-sourced softwoods and their replacement by home-grown conifers has been problematic particularly with regard to wood moisture content. The subsequent attitude that native softwood timber is inferior to imported softwood is challenged on the basis of ignorance about how best to season the timber. Moisture content is of critical importance. It is advised that the removal of logs from the forest after felling should be as immediate as practicable. Drying of timber in piles and appropriate practise for this drying are explained. Stacking, drying time, moisture content, wet weight and species are examined in this context. Kiln drying is also dealt with. Other factors considered include: original and final moisture contents; timber density; thickness of stacks of timber; air temperature; atmospheric humidity; velocity of air currents; and the distance travelled by air currents through the timber-stacks, or piles, are considered to be important factors in seasoning and drying.

**Page**

pp 20 - 24

**Location**

Coillte library

**Notes**

Available

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**Number**

403

**Author**

Black (Prof.).

**Title**

The role of the forester in a changing world.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1967

**Source**

Irish Forestry

**Volume**

Vol. 24, No. 2

**Key Word**

forestry policy, foresters, forest management, sustained yield, forestry education, resource management, forest technology

**Abstract**

For whom the forester works, for what purpose and how well he does his job are essential considerations in understanding his role. The forester looks after the forest essentially as a societal resource. He must accept that the objects of management should also be those laid down both implicitly and explicitly by society. Multi-purpose management, greater public access to forests and secondary forest products are considered. Prevailing attitudes towards forest management are questioned. The emphasis ought to be on increasing timber sales and felling rates in periods of high timber prices/demand. The issue of forestry education is examined. A need for specialisation by some foresters is suggested. In conclusion, it is acknowledged that an increase in the accountability of foresters to the public is inevitable in the future as the pressures of more specialised resource management also increase.

**Page**

pp 65 - 74

**Location**

Coillte library

**Notes**

Available

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**Number**

404

**Author**

Gallagher P.H.

**Title**

Some aspects of soil classification.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 1

**Key Word**

soil classification, site vegetation, site indicator, geology, climate, edaphic processes, soil chemistry, leaching, soil fertility, podsol, brown earth, gley soils, land classification, soil profile

**Abstract**

This article looks at soil identification and development from a number of angles. The relationship of soil with geology is examined, specifically in an Irish context, with reference to a mid nineteenth century Irish Geological Survey of soils. Russian and European ideas on soil formation processes are mentioned. The Russian investigations have shown that, where there were sufficient differences in climate, the effects of climate super-imposed themselves upon local geologies in different ways. In Europe attention was concentrated on local geological factors to a great degree. It is concluded that, specifically with regard to Ireland, the climate factor can be super-imposed on geological material without completely obliterating the individual qualities of that material. The climatic factors exerting their influence on soil formation processes are dealt with, specifically temperature and humidity, as too are soil acidity and nutrient loss from leaching. The soil types podsol, brown earth, gleys and their hybrid types are discussed along with the importance of soils in land classification.

**Page**

pp 5 - 11

**Location**

Coillte library

**Notes**

Available

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**Number**

405

**Author**

Petrie S.M.

**Title**

Nisbet's observations on Irish forestry In year 1904.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 1

**Key Word**

forestry history, plantation forestry, native forests, oak coppice, thinning, Douglas fir, *Pseudotsuga menziesii*, forest condition, wasteland, land availability, forest economics, forestry education, land availability, land use, forestry policy

**Abstract**

This article is based on the observations of Dr. John Nesbit's 1904 "Report on the Woods, Plantation and Wastelands in the South Eastern Counties of Ireland". Some statistics regarding the extent of woodlands in Ireland from 1851 to 1902 are provided with little change noted in forest cover for this period, with 305,000 acres and 303,000 acres of cover for each of these years, respectively. A classification of woods into different types is provided. Over-thinning and the condition of coniferous woods are dealt with, with a specific note provided on the role of Douglas fir in Irish forests. Estimates of the plantable wastelands for the entire island of Ireland are given at 2,000,000 acres in 1885 and this is further discussed in the context of climate, soil and other site conditions. The national effects of large-scale planting and probable costs and revenues from various plantation types are examined. There is a discussion on the proposed organisation of a Forestry Department and on technical instruction in forestry.

**Page**

pp 12 - 18

**Location**

Coillte library

**Notes**Available

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**Number**

406

**Author**

Mooney O.V.

**Title**

Forest fires.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 1

**Key Word**

forest fires, turf cutting, brush burning, forest law, fire damage, fire prevention, wildlife protection, forest protection

**Abstract**

Increases in the incidences of forest fires have been accentuated by new sources of fire provided by large-scale montane turf cutting operations. From 1939 to 1943, 29,180 acres were planted, of which 2,482 acres were destroyed by fire. The burning of heather, furze and other vegetation is a known source of fires. Dry climatic conditions over the past decade in the Spring-time have contributed to the problem. Although The Game Preservation Act of 1930 prohibits burning from April 1st through to July 14th, burning continues regardless of season or weather and both during the day and at night. The advantages of burning are seen to be temporary and short-term. It is claimed that, by burning, the grazier or land-owner concerned is removing the fertility from which grazing vegetation arises. Fires also have damaging effects upon sod ditches, turf and fences. Damage is caused to avian habitats, nests and food supply as well as landscape colour effects. Fires are best dealt with by prevention and the natural wealth of the mountains is dependent upon this prevention.

**Page**

pp 19 - 23

**Location**

Coillte library

**Notes**

Available

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**Number**

407

**Author**

O'Beirne M.

**Title**

Notes on eucalyptus species at Avondale, Co. Wicklow.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 1

**Key Word**

Eucalyptus, exotic hard-wood, estate forestry, frost damage

**Abstract**

The Genus Eucalyptus is in the Order Myrtaceae and is native to Oceania. All are ever-green and, in some valleys, they may attain heights of 400 feet. The flower is comprised of only pistils and stamens and young plants are especially frost-tender for the first couple of years. In Ireland, provenances and species from warmer climates ought to be avoided. A number of species and their dimensions at Avondale are discussed and some information is given concerning the seed produced.

**Page**

pp 23 - 26

**Location**

Coillte library

**Notes**

Available

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**Number**

408

**Author**

Stewart David

**Title**

Afforestation in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

afforestation, State forestry, grants, forestry policy, forestry history

**Abstract**

During the war, one fifth of the afforested area, or at least 13,000,000 cubic feet of timber, was felled in Northern Ireland which has a total land area of 2 % in forestry. State afforestation from 1922 through to 1928 proceeded at a rate of 350 acres per annum and increased to 1,000 acres from then until 1940, but was then held back during the war. Areas acquired within the six counties of Northern Ireland for afforestation are outlined. The areas of woodland and plantations owned by the Ministry of Agriculture cover 20,000 acres. Details of some remnants of natural forests and their species composition are given. So too are details of exotic plantations, the principal species being Sitka and Norway spruces, Douglas fir, European and Japanese larches, Scots pine, Pinus murrayana, noble fir, grand fir and western hemlock. A grant scheme of £ 7, 10 shillings per acre should encourage the reforestation of recently clear-felled, private wood-land. Current plant prices are £2 per thousand.

**Page**

pp 54 - 56

**Location**

Coillte library

**Notes**

Available

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**Number**

409

**Author**

Anderson M.L.

**Title**

The importance of forestry in national planning.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

National planning, wood products, timber conversion, land use, forest block size, forest cover

**Abstract**

Timber is used as raw material in industry in three different forms: in the natural form: after chemical or mechanical break-up into smaller fibres and wood pulp which is ready for further processing; as a source of cellulose fibres and other wood components which are converted into certain synthetic compounds. The effects which land parcel size and availability of land have on the programme of forestry expansion are examined. The present land area acquired for forestry in Ireland is over 156,000 acres, of which 112,000 acres are satisfactory woods and plantations.

**Page**

pp 57 - 61

**Location**

Coillte library

**Notes**

Available

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**Number**

410

**Author**

Maher J.J.

**Title**

Road construction at Glendalough State Forest.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

road construction, forest roads, forest bridges, drains, soling, metalling, forest engineering, forestry infrastructure, transport, communications

**Abstract**

This article looks at road and bridge construction at Glendalough. A zig-zag cart track was the only possible road site in accessing young plantations on the upper sites of this glaciated glen. Three tasks had to be carried out: track widening; smoothing of sharp angles at turning points; and easing gradients at bends and super-elevation. The treatment of turns is described: the inward canting of a bend, 'super-elevation', is examined in this context. Embankment, drain and culvert construction along with soling and metalling and bridge building are also discussed.

**Page**

pp 61 - 65

**Location**

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**Notes**

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**Number**

411

**Author**

McMahon F.

**Title**

Sitka spruce in Irish Forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

Sitka spruce, *Picea sitchensis*, oceanic forestry, fog belts, climate, timber end use, thinning, timber volume yield, rooting, nursery practice, silviculture

**Abstract**

The importance of Sitka spruce to Irish forestry is described. The Irish climatic and edaphic characteristics are compared with those of the Sitka spruce natural range, and the nursery requirements with regard to spacing, lining-out and drainage and protection from frost damage are discussed. Planting of this species on the wetter site type is recommended. The use of alder as a nurse against frost damage is encouraged and the problems of check, aphid attack, leader breakage and poor rooting are outlined.

**Page**

pp 66 - 71

**Location**

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**Notes**

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**Number**

412

**Author**

Swords M.

**Title**

The use of home-grown timber for the manufacture of matches during the emergency.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

timber conversion, timber processing, timber end use, poplar, Scots pine, *Pinus sylvestris*, match making, forest products, forest products

**Abstract**

Before 1939, logs for domestic match production and finished matches were imported. During the second world war home-grown timber was used to make up for the loss of imports. There were limited supplies available of poplar, which is very suitable for the manufacture of matches, but ultimately the industry came to rely upon Scots pine. The use of other species for match production, such as lime, horse chestnut and Sitka and Norway spruces is also examined.

**Page**

pp 72 - 73

**Location**

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**Notes**

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**Number**

413

**Author**

Madden T.S.

**Title**

Observations on the results of cutting back naturally regenerated and planted ash at Donadea Forest.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

ash, Fraxinus excelsior, tree diseases, natural regeneration, coppice, coppicing, stem form, shoot growth, tree planting, plant health, plant vigour, silviculture

**Abstract**

This paper looks at the results of cutting back naturally regenerated and planted ash at Donadea Forest. In the year subsequent to cutting back, two to six straight shoots, which were disease free, had emerged from each stump which had been cut back during the previous year. In 1938, a Norway spruce/ash mixture was planted at another compartment in Donadea. The ash had out-grown the spruce and six of the ash trees which had been cut back because of bad stem form were examined. Three of these had not put forth any shoots and the other three stumps had put out crooked, deformed, diseased and practically horizontal shoots. The health, sturdiness and vigour of the ash natural regeneration is contrasted with the planted ash.

**Page**

pp 74 - 75

**Location**

Coillte library

**Notes**

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**Number**

414

**Author**

Schorman K.L.

**Title**

Revision of the State planting grant scheme.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 2, No. 2

**Key Word**

forestry grants, forestry legislation, forest history, forestry policy, State subsidies

**Abstract**

The 1930 forestry grant scheme allowed for the payment of £4 per acre. In 1944, because earlier schemes had failed to deliver on more extensive planting rates, the government extended its assistance by raising the grant level to £10 per acre for planting carried out last Winter or in subsequent seasons. The economic demands of these grant allocations mean that the minimum width of any planted site must be at least two chains. The shortage of fencing wire, rabbit netting and transplants is noted. Further governmental assistance in the form of import duty imposition on seedlings and transplants is intended to aid the domestic nursery trade.

**Page**

pp 75 - 76

**Location**

Coillte library

**Notes**

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**Number**

415

**Author**

Leslie Shane

**Title**

National Parks in State forests.

**Publisher**

Society Of Irish Foresters

**Place**

Dublin

**Date**

1946

**Source**

Irish Forestry

**Volume**

Vol. 3, No. 1

**Key Word**

National parks, amenity forestry, national heritage, State forests, recreation

**Abstract**

The national parks system of the United States, Scotland and England, and their relevance to the development of an Irish national park are examined. The author comments on the preserved remnants of the great natural forests of North America and the logging damage and destruction which he has observed.

**Page**

pp 3 - 9

**Location**

Coillte library

**Notes**

Available

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**Number**

416

**Author**

Quirke Denis A.

**Title**

Forest pathology.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1946

**Source**

Irish Forestry

**Volume**

Vol. 3, No. 1

**Key Word**

forest pathology, insects, fungal diseases, forest pathogens, Rhyacionia buoliana, pine shoot tortrix moth, Prays curtisellus, ash bud moth, Hylobius abietis, large pine weevil, Chionopsis salicis, willow scale, poplar scale, Armalliria mellea, honey fungus, Fomes annosus, Heterobasidion annosum, heart rot, Dasyscypha calycina, larch canker, Nectria ditissima, beech canker, ash canker, Ascomycetes, Basidiomycetes, Deuteromycetes, Lepidoptera, Hymenoptera, Hemiptera, Diptera, Coleoptera, forest protection, entomology

**Abstract**

The main causes of disease in forests are examined, including insects and mites, fungi and bacteria. The various pathogens causing root, butt and heart rot, bark damage, leaf/foilage consumption and distortion, shoot die-back, shoot and bud burrowing and galls are identified. Notes are provided on the following insect pests: pine shoot tortrix moth, ash bud moth, large pine weevil, green spruce aphid, willow and poplar scale. The following fungal pathogens are also examined: Fomes annosus, Armillaria mellea, larch canker, beech and ash canker, and a number of other less important diseases.

**Page**

pp 10 - 25

**Location**

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**Number**

417

**Author**

FitzPatrick H.M.

**Title**

Roadside trees.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1946

**Source**

Irish Forestry

**Volume**

Vol. 3, No. 1

**Key Word**

landscaping, urban forestry, ornamental trees, estate forestry, plant protection

**Abstract**

The origins of urban trees and the practise of landscaping in France, England and Irish demesnes are examined along with the aesthetic benefits of trees on the urban landscape. With roadside planting, trees must take second place to the primary function of roads. Over-head cables, buses and lorries affect the siting of trees. Tree protection from water shortage due to low infiltration rates beneath tarmacadam/asphalt/concrete surface and protection from vandalism is commented upon.

**Page**

pp 26 - 28

**Location**

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**Notes**

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**Number**

418

**Author**

Deasy J.J.

**Title**

Some notes on coastal afforestation in Co. Wexford.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1946

**Source**

Irish Forestry

**Volume**

Vol. 3, No. 1

**Key Word**

coastal forestry, soil stability, maritime pine, Scots pine, Corsican pine, Monterey pine, forest protection, forest pests, drainage, site cultivation, fertilisers, experimental forestry, nursery practice, amenity forestry, afforestation, Pinus sylvestris, Pinus nigra, silviculture

**Abstract**

A historical note is given on the State afforestation of a tract of sand dunes at Curraclloe, County Wexford, in 1931. Scots pine and Corsican pine were planted on bracken covered sites and a Corsican pine/Scots pine mixture was selected for stable, non-bracken covered sites. Corsican pines were planted on less fixed terrain. Some maritime pine was planted on stable, sea-ward side troughs. Details of direct sowing of 36 acres of maritime pine in 1931-32 at Curraclloe are given. A manurial experiment, involving nitro-chalk, semsol and basic slag is outlined. In the year of sowing, the manure was applied to every second row but the seedlings did not seem to have benefited. Another experiment for planting seedling types is outlined. Seedlings wrenched, balled and lined out in October suffered least losses. Those not wrenched but balled and lined out in October suffered heaviest losses.

**Page**

pp 29 - 39

**Location**

Coillte library

**Notes**

Available

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**Number**

419

**Author**

Department of Lands. Forestry Division

**Title**

Report of the Minister For Lands on forestry for the period from 1st April, 1961 to 31st March, 1962.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1962

**Key Word**

land acquisition, plantation establishment, forestry policy, forest management, harvesting, timber marketing, wildlife conservation, disease control, forest protection, amenity forestry, State forestry, private forestry

**Abstract**

The total productive area acquired for State Forestry purposes during the year was 25,719 acres. The total area planted was 25,317 acres, exceeding the target figure of 25,000 acres. The area recorded as thinned during the year was 10,008 acres, producing 3.4 million cubic feet. The volume of material sold in the year was 7.3 million cubic feet, of which 86% was sold standing to timber merchants. The average weekly number of men employed directly on forestry work by the Department of Lands was 4,803.

**Page**

52p

**Location**

Coford library / Coillte library

**Notes**

Available

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**Number**

420

**Author**

Department of Lands. Forestry Division

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1958 to 31st March, 1959.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1959

**Key Word**

land acquisition, plantation forestry, forestry policy, forest management, harvesting, forest protection, amenity forestry, State forestry, private forestry

**Abstract**

The total productive area acquired by the State for forestry was 25,244 acres, the highest level to date. The planting target of 22,500 acres for the year was met. The total area thinned in the year was 7,776 acres, of which timber merchants thinned 4,212 acres. The volume of sales declined compared with the previous year when a large volume of windthrown material was marketed. The average weekly number of men employed directly on forestry work during the year was 4,673. During the year the private planting grant was doubled to £20 an acre and an intensive public relations campaign was launched to secure more private planting. Gross expenditure in the year totalled £2,079,99; income totalled £316,134.

**Page**

27p

**Location**

Coford library / Coillte library

**Notes**

Available

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**Number**

421

**Author**

Department of Lands. Forestry Division

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1953 to 1st April, 1957.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1957

**Key Word**

private felling, grant scheme, forestry legislation, forestry policy, statistics, land acquisition, plantation establishment, forest management, harvesting, timber marketing, forest game, wildlife conservation, disease control, forest pests, forest protection, amenity forestry, forest education, State forestry, private forestry

**Abstract**

In 1956/57 the rate of planting of State forests increased to 17,400 acres, the highest level of planting so far achieved, and a new planting target of 25,000 acres per annum was established. The Forestry Act, 1956, became law in February 1956. The primary object of the Act is to facilitate the acquisition of land for forestry. More than 83,000 acres of land were acquired for forestry by the State during this period. The number of forest centres increased from 160 to 173. There was a substantial increase in the volume of material becoming available as a result of thinning operations. Total production during the period was over twice that for the preceding period and almost five times that for the period 1945/49.

**Page**

56p

**Location**

Coford library / Coillte library

**Notes**

Available

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**Number**

422

**Author**

Seirbhis Foraoise agus Fiadhulra.

**Title**

Report to the Minister for Energy on the Forest and Wildlife Service 1984.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1984

**Key Word**

forest development, forestry policy, State forestry, private forestry, conservation, environment, forestry management, forest research, education, training, finance, costs

**Abstract**

The Forest and Wildlife Service is responsible for State forest development and management and the encouragement of private forestry. It is also responsible for wildlife (flora and fauna) conservation and the promotion of game development. Among the topics discussed in this report of the FWS' activities are plantation management, inventory of woodlands, forest protection and plant health, genetics research and arboriculture.

**Page**

66p

**Location**

Coillte library

**Notes**

available

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**Number**

423

**Author**

O'Muirgheasa Niall

**Title**

Forest and Wildlife Service policy for Slieve Bloom.

**Publisher**

Midlands Regional Development Organisation

**Place**

Dublin

**Date**

1983

**Source**

Proceedings of Conference on Development Programme for Slieve Bloom Mountains held in County Arms Hotel Birr, Co. Offaly on Friday 27th May 1983.

**Key Word**

afforestation, Forest and Wildlife Service, State forestry, marginal land, rural development, economic development, forestry policy, land use, marginal land

**Abstract**

The author estimates that at least 85% of the Slieve Bloom area's 36,000 ha can be classified as marginal land. The progress of State forestry development in the area is traced, and an assessment of the existing forest estate is provided. This assessment looks at age structure, timber stock and revenue from timber products. The policy of the Forest and Wildlife Service in the area is outlined and the economic value of forestry in the Slieve Blooms is assessed.

**Page**

pp 31 - 50

**Location**

Forest Service, Leeson Lane, Dublin 2

**Notes**

available

**Address of author**

Forest Service, Leeson Lane, Dublin 2

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**Number**

424

**Author**

Seirbhis Foraoise agus Fiadhulra

**Title**

Report of the Minister for Fisheries and Forestry on the Forest and Wildlife Service 1983.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1983

**Key Word**

forest development, forestry policy, private forestry, forestry management, wildlife conservation, environment, education, training, finance, costs

**Abstract**

The Forest and Wildlife Service is responsible for State forest development and management and the encouragement of private forestry. It is also responsible for wildlife (flora and fauna) conservation and the promotion of game development. The management topics dealt with in this report include the following: land acquisition; provision of planting stock; plantation establishment; crop management; marketing and conservation. Research topics discussed include an inventory of State woodlands, genetics, site productivity and soil nutrition.

**Page**

51p

**Location**

Coillte library

**Notes**

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**Number**

425

**Author**

Seirbhis Foraoise agus Fiadhulra

**Title**

Report of the Minister for Fisheries and Forestry on the Forest and Wildlife Service 1982.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1982

**Key Word**

forestry policy, forest development, State forestry, forestry management, silviculture, conservation, environment, forest research, education, finance, costs, economics, marketing, land acquisition

**Abstract**

The Forest and Wildlife Service is responsible for State forest development and management and the encouragement of private forestry. This account of the activities of the FWS covers a number of forestry

management, silvicultural and research topics. Among the specific items discussed are plantation establishment, provision of planting stock, woodlands inventory, forest protection and genetics.

**Page**

51p

**Location**

Coillte library

**Notes**

available

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**Number**

426

**Author**

Curran Eugene

**Title**

An economic study of timber production on deep peat: a re-evaluation of the 1977 Forest and Wildlife Service Report.

**Place**

Bray

**Series**

Coillte Teoranta internal report

**Date**

1993

**Key Word**

forest economics, timber industry, timber production, deep peat, peatland, lodgepole pine, timber quality, forestry policy, grants, imports, sensitivity analysis, environment, peatlands

**Abstract**

This report involved an examination of the areas of deep peat in Mayo, Offaly, Longford and Donegal that were planted by the FWS in 1977. These included areas of blanket peat and raised peat. Both peatland types were planted with south coastal lodgepole pine. Four sites were re-measured and assessed: (1) Mulrany, Co. Mayo; low-lying blanket peat, (2) Lettercran, Co. Donegal; blanket peat, (3) Athlone, Co. Offaly; raised peat, (4) Granard, Co. Longford; raised peat. The results showed that the quality of the timber was very poor and that the yields were lower than expected. All the sites were shown to be producing timber at a loss. However, the new proposed grant scheme could change this loss into profit, if planting were continued on these sites. The results of a study of the sawmill industry showed that import substitution could be achieved if continuous supplies of high quality lodgepole pine timber were available. Environmental, social and economic aspects will require greater attention. The overall outcome of the report is that the peatland areas examined in this study are largely unsuitable for forestry and site selection for lodgepole pine needs greater attention.

**Page**

70 p

**Location**

Coillte library

**Notes**

Available (Report prepared for the Forest Service (Department of Agriculture, Food and Forestry), under the EC funded Forestry Operational Programme, 1989 - 1993) available

**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2

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**Number**

427

**Author**

Dail Committe on Public Expenditure

**Title**

The 21st Report of the Dail Committee on Public Expenditure: A review of State expenditure on the Forest and Wildlife Service.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1986

**Key Word**

Forest and Wildlife Service, State forests, forestry policy, public expenditure, State investment, public accounts, management, politics

**Abstract**

The findings of the Committee on expenditure on forestry were based on the report of its Business Advisory Panel. A series of meetings were held with officials of the Forest and Wildlife Service, and submissions received from the full range of interest groups in forestry. The Committee found that, although output from the State's forest had increased considerably in recent years, it was still substantially behind the forecast set jointly by the Forest and Wildlife Service and the IDA in their strategy for the development of the timber industry. But the major growth in output resulting from the accelerated planting programme of the 30s will take place before the end of the century and will treble today's output. It was also found that the interface between the FWS and the timber industry was unsatisfactory and that relations were not conducive to a constructive partnership or to dealing satisfactorily with substantial impending growth. The Committee found that, while the report of the Review Group on forestry was generally supportive of the FWS, it concluded that there was an urgent need for a change of structure. There was considerable variation in expert opinion on the present value of the national forestry estate and of the means used by the Review Group to determine its value.

**Page**

40p

**Location**

Forest Service, Coillte library

**Notes**

available

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**Number**

428

**Author**

Seirbhís Foraoise agus Fiadhulra

**Title**

Report of the Minister for Energy on the Forest and Wildlife Service 1986.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1986

**Key Word**

forest development, forestry policy, conservation, wildlife, marketing, forest management, forest research, finance

**Abstract**

The Forest and Wildlife Service is responsible for the management and development of the State forest estate and the encouragement of private forestry. It is also responsible for wildlife (flora and fauna) conservation and the promotion of game development. The following topics are discussed in this annual report of the FWS: crop management; marketing and sale of timber; genetics research; forest inventory, soils and site productivity; forest protection; plant health; and arboriculture.

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35p

**Location**

Coillte library

**Notes**

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**Number**

429

**Author**

Seirbhis Foroise agus Fiadhulra

**Title**

Report of the Ministry for Energy on the Forest and Wildlife Service 1985.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1985

**Key Word**

forest development, State forestry, private forestry, conservation, environment, forestry management, forest research, finance, marketing, costs, forestry policy, wildlife

**Abstract**

The Forest and Wildlife Service is responsible for State Forest Development and management and the encouragement of private forestry. It is also responsible for wildlife (flora and fauna) conservation and the promotion of game development. In this annual report of the FWS the following forestry management issues are examined: land acquisition; plantation establishment, crop management; marketing and provision of planting stock. The following research topics are covered: inventory of State woodlands; genetics; crop structure; wood quality; forest protection and plant health; arboriculture.

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63p

**Location**

Coillte library

**Notes**

available

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**Number**

430

**Author**

Coppins D.

**Title**

Financing of roadmaking machinery for the Forest and Wildlife Service.

**Place**

Dublin

**Date**

1982

**Key Word**

Forest and Wildlife Service, State forests, roadmaking machinery, forest roads, engineering, transport, vehicles, construction

**Abstract**

The purpose of the study was to determine the method of financing roadmaking machinery for the Forest and Wildlife Service which imposes the least cost on the Exchequer, without conflicting with overall FWS policy. Five possible options were identified and the costs which each is likely to impose on the Exchequer were estimated. The options were buy, lease, hire (on a rate/hour basis), contract hire and 'turnkey' contracts. Taking identified major adverse influences, particularly on hire, into account, financial and other comparisons indicate that a machine-category related mix of hire and buy imposes least cost on the exchequer.

**Page**

120p

**Location**

Dept. of Agriculture Library

**Notes**

available (Thesis submitted for award of Master in Science, Dept. of Statistics, Trinity College, Dublin 2)

**Thesis**

M.Sc. Thesis, UCD

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**Number**

431

**Author**

Forest and Wildlife Service

**Title**

Report of the Minister for Fisheries and Forestry on the Forest and Wildlife Service 1979.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1979

**Key Word**

Forest and Wildlife Service, land acquisition, State forestry, forestry policy, forest protection, forestry research, conservation, environment, administration

**Abstract**

The rate of acquisition of land continued to be unsatisfactory during 1979. A total of 3,368 hectares was acquired. In the section on planting stock provision details on seed collection and procurement, and poplar and eucalypt cultivation. The total area planted in 1979 was 8,214 ha. The work of Work Study and Method Study staff is described. The volume of timber sold was less than in the previous year. Field work on Phase 1 of the Inventory of State Woodlands was completed during the year. A total area of 105,000 ha. planted between 1958 and 1968 was assessed. There are brief notes on a number of projects being undertaken by the Research Branch including provenance experiments, the evaluation of basal sweep in lodgepole pine, and a major experiment on the effects of nitrogen fertiliser on the growth of checked Sitka spruce. Summaries of work on forest pathology, entomology, plant health, and pesticides are included in the section on forest protection.

**Page**

52p

**Location**

Coillte library

**Notes**

available

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**Number**

432

**Author**

Forest & Wildlife Service

**Title**

Report of the Minister for Fisheries and Forestry on the Forest and Wildlife Service 1978.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1978

**Key Word**

Forest and Wildlife Service, State forestry, forestry policy, forest development, silviculture, forest management, forestry research, education, recreation, conservation

**Abstract**

The total area of forest established during the year was 8,893 ha. 7,219 ha. of land were acquired. Details are provided on seed collection and seeds sown in nurseries. Four new forests were established during the year bringing the total number of State forests to 243. The market for sawlog was buoyant and prices remained fairly steady. Details of timber sold according to size are provided. Field work on Phase 1 of the Inventory of State

Woodlands continued during the year. The total area completed was 204,000 ha. Summaries are given on the work of the Research Branch in the following areas: crop structure and biometrics; spacing; thinning; wood quality; soil and nutrition; plant pathology; entomology and weed control. In the field of provenance research, main emphasis was placed on the analysis of three IUFRO experiments - Sitka spruce, Douglas fir and grand fir. Other projects undertaken by the Research Branch include a study to determine whether basal sweep in lodgepole pine was due to environmental or genetic causes.

**Page**

52p

**Location**

Coillte library

**Notes**

available

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**Number**

433

**Author**

Seirbhís Foraoise agus Fia-Dhulra

**Title**

Report of the Minister for Fisheries and Forestry on the Forest and Wildlife Service 1977.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1977

**Key Word**

forestry policy, State forestry, forest development, land acquisition, plantation establishment, timber marketing, forest inventory, forest research, genetics

**Abstract**

The Forest and Wildlife Service is responsible for State forest development and management and for the encouragement of private forestry. It is also responsible for wildlife conservation and for game development. This report on the activities of the Service during the previous year deals with issues associated with State forest development, including land acquisition and plantation establishment, and with management of State forests, including crop management, harvesting and marketing of timber. There are also sections on conservation and forest research and inventory.

**Page**

49p

**Location**

Coillte library

**Notes**

available

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**Number**

434

**Author**

Seirbhís Foraoise agus Fia-Dhulra

**Title**

Report of the Minister for Fisheries on the Forest and Wildlife Service 1976.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1976

**Key Word**

forest development, forestry policy, forest management, conservation, forest research, silviculture forest protection, genetics, biometrics, harvesting

**Abstract**

The Forest and Wildlife Service has responsibility for State forest development and management and the promotion of private forestry. The Service is also responsible for the conservation of wildlife (flora and fauna) and for game development. This report summarizes the activities of the FWS during 1976. Specific areas covered include State forest development, land acquisition, timber marketing, game development, genetics research and forest protection.

**Page**

50p

**Location**

Coillte library

**Notes**

available

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**Number**

435

**Author**

Kelly Daniel L.

**Title**

Native woodland in western Ireland with special reference to the region of Killarney.

**Place**

Dublin

**Date**

1975

**Key Word**

native woodlands, forest flora, phytosociology, forest history, floristics, acidophilous woodlands, basophilous woodlands, hygrophilous woodlands, game management, silviculture, forest climate, forest geology, forest geomorphology, *Quercus petraea*, sessile oak, woodland conservation, forest regeneration, sampling methods

**Abstract**

A general account is provided of the vegetation of the surviving native woodland. A single wood in each vice-county was selected for study. Field work centred on making detailed inventories of sample sites (relevés). The accumulated data were analysed by two methods: The Braun-Blanquet phytosociological table and Principal Coordinates analysis. A tri-polar distribution of woodland types was discerned: Acidophilous, basophilous and hygrophilous, which correspond to three major associations described by Braun-Blanquet and Tuxen. Narrower phytosociological groupings are also distinguished and detailed environmental data are also presented. A short study of the ecology and taxonomy of *Quercus* sp. in Ireland is presented. A brief historical account traces the descent of the present-day woodland from the primeval forest of 5,000 years ago. The native woodland of the Killarney area is described in more detail. The studies of Turner and Watt are supplemented by a wider account of the oak woods on sandstone. The woods on the limestone area are here described for the first time. These include the unique yew wood on limestone pavement, and extensive tracts of wet 'carr' woodland. Detailed edaphic data are presented for the major woodland types. An account is presented of the historical records relating to the Killarney woods; past human interference is shown to be extensive. Problems in management of woodlands for conservation are dealt with and there is a study on the regeneration of *Quercus petraea*, based largely on experimental work at Killarney. Over-grazing by sika deer is found to be the primary obstacle to regeneration.

**Page**

v, 372 p

**Location**

Coillte library

**Notes**

Available. (A thesis submitted for the Degree of Doctor of Philosophy of the University of Dublin).

**Thesis**

Ph.D. Thesis, TCD

**Address of author**

Dept. of Botany, Trinity College Dublin 2

---

**Number**

436

**Author**

Hannan Mark J.

**Title**

The influence of forests and forestry on the behaviour of mammals.

**Place**

Dublin

**Date**

1986

**Key Word**

deer, forest wildlife, forest fauna, squirrel, rabbit, bark stripping, plant protection, forest pests, forest protection, forest habitats, browsing, wildlife habitat

**Abstract**

In County Wicklow lateral cover was identified as the most significant factor governing deer utilisation of land. Pellet-group numbers also indicated that open spaces, ride-lines and free running water were attractive to deer. The influence of physical site features such as aspect and slope was negligible. Deer caused damage to between 35 and 51 % of trees examined in areas planted since 1968. Most damage was observed in very young plantations while very little was observed in thicket. Browsing was the most common form of damage generally but at one site stripping was the most common form. Deer, squirrel and rabbit populations were present on 53, 83 and 93 %, respectively, of forests surveyed. The extent of the damage caused by rabbits and squirrels is described and compared with damage caused by deer. Fragmentation of the forest did not influence the activity of rabbit and squirrel populations, but did reduce deer populations. Forests where clear-felling since 1968 reported greater mammalian activity while forests with a high roading intensity reported lesser activity by mammals.

**Page**

265 p

**Location**

Coillte library

**Notes**

Available.(A thesis presented for the degree of Master of Agricultural Science at University College, Dublin, October 1986)

**Thesis**

M.Ag.Sc. Thesis, UCD

---

**Number**

437

**Author**

Elkhalifa K.F.

**Title**

A computer interactive dendrological key based on vegetative characteristics of tree species in Khartoum area of the Sudan.

**Place**

Dublin

**Date**

1986

**Key Word**

tropical forestry, forest management, vegetation type, native tree species, tree species identification, computer applications, information technology, FORTRAN, vegetative characteristics, dendrological key

**Abstract**

The study aims to facilitate easy identification of the Sudanese tree species. First the climate, topography and soils of the Sudan are briefly outlined. A review of classification and identification of tree species with special reference to the Sudan follows. A key to Irish tree species was studied as a prerequisite to the development of the Sudanese key. The Irish key was reduced into a simple dichotomous form and consequently computerised in a non-standard FORTRAN code. Khartoum, which lies between the desert in the North and the savannah in the

South, was the area selected for study. Extensive use was made of colour photographs of thirty tree species in the area. Field photographs as well as indoor slides were taken to show the vegetative characteristics of the species. Using taxonomic literature and the photographic data, a key which identifies eight families, twenty genera and thirty species was developed. The key was coded in standard FORTRAN in the mainframe computer system at University College Dublin. In addition, the key programme was transferred to a micro-computer so that it could be used with micro-computers in the Sudan.

**Page**

148 p

**Location**

Coillte library

**Notes**

Available. (A thesis presented to the National University of Ireland for the Degree of MSc (Agric).

**Thesis**

M.Ag.Sc. Thesis, UCD

---

**Number**

438

**Author**

Lyons John

**Title**

Low ground pressure (LGP) small scale harvesting machines.

**Publisher**

Coillte Research & Development

**Place**

Bray

**Series**

Coillte Research & Development Information Note No. 10

**Date**

1994

**Key Word**

thinning, harvesting, forest machinery, low ground pressure machines, LGP, small scale harvesting machines

**Abstract**

The development of the use of low ground pressure machines in the the thinning of soft sites is described. The difficulties encountered in using various machines over the past seven years are outlined

**Page**

4p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidminton Place, Bray Co. Wicklow

---

**Number**

439

**Author**

Rea T.

**Title**

Economics of private tree planting.

**Publisher**

Irish Society of Agronomy and Land Use

**Place**

Dublin

**Date**

1979

**Source**

Irish Society of Agronomy and Land Use. Symposium: Tree Planting on the Farm, Blessington 1979

**Key Word**

private forestry, economics, costs, accounting, investment appraisal, yield tables, Net Present Value, cash flow, expenditure

**Abstract**

This paper examines the actual expenditure and income implications of a private forestry investment. Management yield tables, which are essential for the construction of a projected cash flow in forestry, enable a forecast to be made of wood production by size of average tree and by actual year, throughout the rotation. Thus, using current prices for wood of different sizes it is possible to construct a stream of expected revenue. The impact of discounting, a method of weighting so that sums of money spent or received in different years may be added together or compared, is particularly severe in forestry projects because of the lengthy deferral of the bulk of the revenue. The appraisal method demonstrated in this paper, Discounted Cash Flow, requires the investment to be evaluated in terms of: (a) Net Present Value (i.e. discounted revenue less discounted expenditure) and; (b) Internal Rate of Return (or financial yield).

**Page**

pp 14 - 20

**Location**

Coillte library

**Notes**

Available

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**Number**

440

**Author**

O'Carroll Risteard Niall

**Title**

Studies on fertilisation, soil cultivation and planting techniques in their effects on growth and yield of forest crops.

**Place**

Dublin

**Date**

1972

**Key Word**

fertilisers, plant nutrition, soil cultivation, planting techniques, forest crop growth, forest crop yield, drainage, growth rate, potassium, forest soils, phosphorus deficiency, mineral nitrogen fertilisation, nitrogen fixing species, copper application, silviculture

**Abstract**

A number of experiments in forestry covering a wide range of subject matter were initiated between 1958 and 1968. Seventy seven experiments are described and results discussed. The experiments covered soil cultivation, drainage, planting techniques and various aspects of the fertilisation of forest crops. It appears that little increase can be achieved through modification of existing cultivation, drainage or planting techniques. On western blanket peat and soils derived from Old Red Sandstone the primary growth limiting factor is phosphorus deficiency, while potassium deficiency plays that role on the reedswamp peats of the midlands. There are indications that potassium deficiency will develop as a significant factor at least on western peats. No worthwhile responses to mineral nitrogen fertilisation were achieved, although auxiliary nitrogen-fixing species may have a part to play on mineral soils. Broadcast application of phosphate fertiliser at or before planting time has been shown to be as good as, and in some cases better than, the traditional spot application to the immediate surroundings of individual trees, even in the early years, and fertilisers can apparently be applied to established crops equally efficiently at all time of the year. Growth responses to copper fertilisation have been demonstrated on western blanket peat, apparently for the first time in trees under out-planted conditions, but further research is needed on the extent of the deficiency and the rates of copper application required to correct it.

**Page**

152 p

**Location**

Coillte library

**Notes**

Available. (Thesis. A dissertation submitted for the Degree of Philosophiae Doctor in the National University of

Ireland.)

**Thesis**

Ph.D. Thesis, UCD

**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane Dublin 2

---

**Number**

441

**Author**

McFadden William G.

**Title**

The performance of timber windows under static pressure.

**Place**

Newtownabbey

**Date**

1991

**Key Word**

window joints, air permeability, watertightness, forest products, timber processing, window frames, timber end use

**Abstract**

The aim of this project was to find ways of increasing the resistance of window joints to both air and rain penetration. Tests carried out on a standard timber window resulted in a classification of [4] for air permeability and a grade of 50 Pa for watertightness. This was the highest possible classification for air permeability, but the lowest for watertightness. These tests also proved that a standard timber window is not 100% effective against air and rain penetration. Out of all the modifications which were carried out, a drip across the top of the window produced the best improvement in performance. When 1100 Pa of pressure was exerted on the window, which was the highest pressure the test rig could cope with, there was no major leakage. This means that instead of a classification of 50 Pa the modified window would obtain one of 300 Pa which is the highest possible grade. However, the introduction of a gap around three sides of the opening frame proved to be less effective.

Although initial leakage was recorded at 100 Pa, the same as the standard window, mass leakage was recorded as soon as 150 Pa of pressure was exerted on the window. This compares with 400 Pa for the standard window.

**Page**

126p

**Location**

Dept. of Building and Environmental, University of Ulster

**Notes**

Available. ( Thesis. Submitted for the Award of B.Sc. in Building from University of Ulster)

**Thesis**

B.Sc. Thesis, University of Ulster

---

**Number**

442

**Author**

Quinn William E.

**Title**

The response of pole-stage Sitka spruce (*Picea sitchensis* (Bong.) Carr) crops to fertiliser application on drumlin soil.

**Place**

Dublin

**Date**

1978

**Key Word**

Sitka spruce, fertilisation, drumlin soils, fertilisers, silviculture, *Picea sitchensis*, soil nutrient, silviculture

**Abstract**

The subject of this thesis is the response of pole-stage Sitka spruce crops to fertiliser application.. In the first of

two sections the properties of drumlin soils are examined. The two stands in which the experiments were laid down in 1969 are described and an account of the experimental design used, and details of the type and levels of fertilisers applied are presented. The parameter chosen originally for measuring response to fertiliser application (basal area increment) is discussed. Statistical analyses of results to-date indicate that there has been no significant response to fertiliser application. Finally the experimentation and results are critically analysed under the headings of experimental design, fertilisers applied, assessment method and conclusions. The second section re-examines the fertiliser experiments. The procedures followed and details of the measurements taken are outlined; the data is analysed and treatments are compared by height, upper-stem diameter, form factor and volume production. Finally, the significance of the results, which show no significant difference between treatments and certain limitations of the experimental design and procedures adopted are presented.

**Page**

95 p

**Location**

Coillte library

**Notes**

Available. (Thesis. A dissertation submitted for the Degree of Master Agricultural Science in the National University of Ireland.)

**Thesis**

M.Ag.Sc. Thesis, UCD

---

**Number**

443

**Author**

Brosnan John Joseph

**Title**

Rhododendron ponticum (L) as a forest weed in the British Isles.

**Place**

Dublin

**Date**

1977

**Key Word**

Rhododendron ponticum, forest pests, forest weeds, ecology, weed control, herbicides, foliar herbicides, environment

**Abstract**

Since its introduction in the mid-eighteenth century, *Rhododendron ponticum* has spread extensively throughout the British Isles particularly within light-canopy woodlands. It has become a serious weed to both commercial forestry and woodland conservation. The first part of this dissertation reviews the literature on the biology, spread and control of *Rhododendron ponticum*. Methods of control covered range from early hand-cutting techniques to the mechanical and herbicidal control favoured at present. The second part of the dissertation describes an investigation into aspects of the penetration of the herbicide 2, 4, 5 - T into the leaf of *Rhododendron ponticum*. The experimental results are presented in tabular and graphical form. Each experiment is discussed and conclusions drawn. Penetration occurs through the cuticle and is not substantially affected by the stomata. There is a greater herbicide penetration through the abaxial than adaxial leaf-surface. Penetration is greater through the leaves of laboratory grown plants than through the leaves of plants grown in an open environment. Semi-mature leaves (about two years old) proved more susceptible to herbicide penetration than did either younger or older leaves. Surfactants can aid penetration, experimentally Tween 20 enhanced both adaxial and abaxial foliar penetration. The greater the period of continuous light following 2, 4, 5 - T application, the more penetration is enhanced.

**Page**

136 p

**Location**

Coillte library

**Notes**

Available. ( Thesis. A dissertation presented in partial fulfilment of a Master of Science degree, Brunel University.)

**Thesis**

M.Sc. Thesis, Brunel University

---

**Number**

444

**Author**

Fennessy John

**Title**

A critical review of the EEC Forestry Development Scheme - (Regulation No. 1820/80).

**Place**

Dublin

**Date**

1986

**Key Word**

afforestation, land use, private forestry, finance, investment, EC, EU, EEC, Western Package, agriculture, economics, European Union, grants, subsidies

**Abstract**

The purpose of this study was to examine the progress of the forestry element of the Western Package. The advantages of an afforestation programme are assessed and its benefits outlined. The return on investment in agriculture is compared with that in forestry, and the results are compared with the situation in other European countries. The suitability of forestry as a land use on marginal agricultural land is examined. A general examination of private forestry includes financial projections and investment appraisal. An in-depth study is made of the Western Package Forestry Scheme and its progress is assessed. Factors which obstruct the scheme are isolated and examined, and various approaches to dealing with these obstacles are suggested .

**Page**

105 p

**Location**

Coillte library

**Notes**

Available. (Thesis. Submitted as part of Bachelor of Arts in Public Administration, Institute of Public Administration.)

**Thesis**

B.A. Thesis, IPA

**Address of author**

Coillte Research &amp; Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

445

**Author**

Cahill Declan

**Title**The preservation of sawn Irish Sitka spruce (*Picea sitchensis* (Bong.) Carr.).**Place**

Limerick

**Date**

1990

**Key Word**Sitka spruce, *Picea sitchensis*, timber preservation, wood moisture content, refractory timber, timber end use, standards, wood permeability, wood density, fungal pests, insect pests, non-chemical preservation, chemical preservatives, timber processing**Abstract**

Wood preservation is one of the ways of extending the service life of sawn timber. This study reviews the Irish timber industry and considers areas in the domestic and export market where preservation may be needed. The wood preservation industry in Ireland is examined and the changes which are likely to occur in the future are outlined. The various methods and constraints of treating timber are discussed. The behaviour of Irish sawn Sitka spruce and imported whitewood when preservative treated are examined. Double vacuum and pressure treatment processes revealed that Irish Sitka spruce absorbed far higher levels of preservative than the imported

whitewood. A similar trend was found with the pressure treatment with copper/chrome/ arsenic preservative (CCA). The CCA penetration, both lateral and longitudinal, was deeper in the Irish timber. End-grain penetration of organic solvent and CCA preservatives was higher in the Irish timber. The adverse influence of higher moisture on CCA uptake and penetration in Sitka spruce was established. It is shown that current treatment schedules are not suitable for Sitka spruce and new or modified schedules need to be developed for Irish material. The baseline exposure tests indicate that Sitka spruce absorbs more moisture than the imported spruce.

**Page**

350 p

**Location**

Coillte library

**Notes**

Available. (Thesis submitted to University of Limerick in accordance with regulations as fulfilment for the Master of Technology Degree, July 1990.)

**Thesis**

M.Tech. Thesis, UL

**Address of author**

Forbairt. Forest Products Dept., Glasnevin Dublin 9

---

**Number**

446

**Author**

Pfeifer Alistair R.

**Title**

A quantitative inheritance study in lodgepole pine (*Pinus contorta* Doug. Ex Loud.).

**Place**

Dublin

**Date**

1981

**Key Word**

lodgepole pine, *Pinus contorta*, tree genetics, genetic variance, genotypic correlation, phenotypic correlation, genetic gain, tree breeding, clone orchards, dominance variation clone, control crossing, forest nurseries, nursery stage

**Abstract**

The study reports on the nursery stage of a long term project designed to investigate the inheritance of economic traits in lodgepole pine (*Pinus contorta* Doug. Ex Loud.). A system of mating was used to permit the estimation of genetic variances on the basis of covariances of maternal and paternal half sib families. Six seedling traits were assessed and estimates of additive and dominance variance associated with the traits were obtained. The latter was found to be of greater importance. Male and female narrow sense heritability estimates were calculated for each of the traits and the female heritabilities were greater than the male estimates. Both, however, were low, the highest being the female heritability of 55 % for height at the end of the first growing season. The low heritabilities necessitate the use of progeny testing to identify individuals of superior breeding value but these cannot be recognised from their phenotype alone. Negative phenotypic and genotypic correlations were found to exist between the vigour and stability traits. The implications of this are discussed in relation to selection and testing procedures. Genetic gains obtainable from several breeding strategies were calculated for four of the traits. The greatest gains could be achieved by the use of two clone orchards for the traits that showed high dominance variation.

**Page**

v, 88 p

**Location**

Coillte library

**Notes**

Available. (Thesis. A dissertation submitted for the Degree of M.Agr.Sc. In the National University of Ireland.)

**Thesis**

M.Agr.Sc. Thesis, UCD

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

447

**Author**

MacCarthy, Richard Gerard

**Title**Soil acidity as a factor in the growth of *Pinus taeda* L. (Loblolly pine).**Place**

Raleigh, N.C.

**Date**

1971

**Key Word**

soil chemistry, liming, tree growth factor, phosphorus, fertilisers, foliar analysis, soil analysis, nutrient deficiency, site indicators, soil aluminium, forest soils

**Abstract**

Liming and phosphorus application to the organic soils of Hoffman forest both increased height growth of loblolly pine as singly and in combination. Foliar and soil chemical analysis explain the large differences in the tree's growth. Significant linear correlations also exist between tree height and the content of P in loblolly pine and *Lyonia*. Critical levels of P and percentage base saturation in the soil and P of foliage of both species of plants furnish two classes of loblolly pine with widely contrasting yields. The main factor militating against good growth of loblolly pine on these soils are available P deficiency and high exchange acidity of the soil. The use of *Lyonia* as a site indicator is justified. Foliar analysis shows that it reflects the problems for loblolly growth especially in regard to soil P availability. Predictor values for both *Lyonia* and Loblolly pine needles' critical P levels are equal. Loblolly pine was more tolerant of Al than most agronomic crops, probably because of superior adaptation to high acidity over an extended period. Differential tolerance to exchangeable Al was found among loblolly pine from two sources in the organic soils. Seedlings from both sources were tolerant of exchangeable Al in the mineral soil but optimum growth in this soil was less than that in either of the unlimed organic soils. Upper level Piedmont seedlings were tolerant of a high percentage Al saturation. The height growth of the seedlings from the lower Piedmont seed source in the organic soils was not increased when the Al saturation was decreased below 34 %. A greater amount of Al was extracted by 1 N KCl from the organic soils than the mineral soils, but height growth was also higher in the organic media. There was no relationship between growth and the Al concentrations of seedlings grown on the different soils. Growth of the seedlings from the lower Piedmont seed source in the Ponzer soil and from the upper Piedmont seed source in the Dare soil was limited in spite of luxury amounts of Ca and P in the tissues of the seedlings.

**Page**

vii, 51 p

**Location**

Coillte library

**Notes**

Available. (Thesis submitted to the Graduate Faculty of North Carolina State University at Raleigh on partial fulfilment of the requirements for the Degree of Doctor of Philosophy, Department of Soil Science, Raleigh, North Carolina.)

**Thesis**

Ph.D. Thesis, Carolina S.U.

**Address of author**

Coillte Research &amp; Technology, Sidmonton Place Bray Co. Wicklow

---

**Number**

448

**Author**

MacCarthy Richard G.

**Title**

Soils of Killakee Forest, Rathfarnham, Co. Dublin.

**Place**

Dublin

**Date**

1967

**Key Word**

forest soils, soil series, site classification, soil mapping, soil classification, clay mineral, drainage, site indicators, geology

**Abstract**

The objects of the study were (1) to identify and classify the soils into definite units; (2) to determine the important pedogenic characteristics of the soils, with special reference to forestry; (3) to plot on maps the soil units and boundaries. After a reconnaissance survey in the Autumn of 1965, a detailed survey of the soils was carried out the following year. The profiles representative of the soils of the area were selected for description and analysis. The soils were classified on the basis of their morphology, genesis and associated properties. Six Series, based on parent material differences, were identified and these were in turn divided into Members according to the degree of leaching and profile development. Finally, the Members were divided into Varieties, which were based on the degree of drainage impedance. Ten Varieties were identified and mapped. In addition, an effort was made to assess the suitability of the soils for different enterprises, purely for purposes of soil comparison. Four soil suitability classes have been recognised. In summary, the soils are medium textured, with low percentage base saturations and acid reactions. Podsolisation is prevalent, with the leaching of free iron extreme in some cases. On the whole, organic matter content is high, particularly in the surface horizons. With the exception of magnesium and, in some cases, potassium, the soils are all low or very low in available nutrients.

**Page**

viii, 134 p

**Location**

Coillte library

**Notes**

Available.(Thesis for Degree of Master of Agricultural Science in University College Dublin)

**Thesis**

M.Agr.Sc. Thesis, UCD

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

449

**Author**

Dillon James

**Title**

A study of the sociological and technological aspects of afforestation on drumlin soils.

**Place**

Dublin

**Date**

1970

**Key Word**

gley soils, drumlin, rural sociology, rural development, wet mineral soils, cooperative forestry, afforestation scheme, agriculture, amenity forestry, thinning practice, spacing, tree stability, marginal land, windthrow, root development, fertilisers, forest technology

**Abstract**

The sociological and technological aspects of afforestation on drumlin soils are discussed in three parts:- (1) Introduction to the drumlin region; (2) Forestry and its development; (3) Research in forest crop nutrition. (1) The location of the drumlin belt and the climatic conditions of the area are reviewed. The topography of the region and its origin are described and considerable attention is given to the soil and its problems. (2) It is in the light of these findings that the question of alternate land-use has arisen. An examination of the present forestry position in selected drumlin counties reveals that a very small proportion of the total planted area is on the high-yielding mineral soils. A case is made for forestry as an alternative land-use system on wet mineral soils of the drumlin region. Afforestation schemes involving the State Forest Authority and private persons are noted. The private afforestation schemes mentioned are based on schemes operating in France under the auspices of the French Forestry Fund. Agriculture research recommends the abandonment of agriculture in most of the soils of County Leitrim. Brief mention is given to the economic aspects of agriculture and forestry on drumlin soils. (3) Very little research has been carried out into the nutritional problems of forest crops on wet gley soils. Two

fertiliser experiments which were laid down in 1969 on pole-stage Sitka spruce crops are described and analyses of results presented. After almost two growing seasons no significant responses were obtained.

**Page**

100 p

**Location**

Coillte library

**Notes**

Available. (Thesis. Presented in the Faculty of Agriculture, University College, Dublin for the Degree of Master of Agricultural Science.)

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

450

**Author**

Carey M.L.

**Title**

Nutrient cycling and forest fertilisation in Sitka spruce (*Picea sitchensis* (Bong.) Carr).

**Place**

Dublin

**Date**

1977

**Key Word**

Sitka spruce, *Picea sitchensis*, nutrient cycling, fertilisers, dry matter, litter production, litter accumulation, nitrogen, phosphorus, liming, potassium, silviculture

**Abstract**

This study was designed to examine the influence of fertilisation on the release of nutrients from the forest floor of semi-mature crops of Sitka spruce. Nutrient mobilisation was measured in a series of incubation experiments. The significance of the transformations occurring were put in the context of the nutrient budget through measurement of litterfall, forest floor accumulation, crop biomass and their nutrient contents. Litterfall measurement in three stands showed that on average 5,500 kg/ha was shed per annum. This contained 72 kg of nitrogen, 5 kg of phosphorus and 14 kg of potassium. Because litter production exceeds decomposition, large amounts accumulate. On average the litter layers had a D.M. Content of 50,000 kg/ha containing 915 kg of nitrogen, 50 kg of phosphorus and 130 kg of potassium. The high figures for production and accumulation and the variation between sites appeared to be related to crop density. The incubation experiments showed that the addition of rock phosphate to the forest floor increased the release of nitrogen by 25 %. The total quantity of nitrogen released was approximately 27 kg/ha. Lime application had a negative effect in this regard. Nitrogen application did not affect the mineralisation of forest floor nitrogen. Although lime and nitrogen appeared to increase the release of phosphorus their effects were inconsistent. The maximum quantity of phosphorus released was equivalent to 4 - 5 kg/ha. All treatments caused a release of potassium, the amount involved not exceeding 8 kg/ha. The uptake of nitrogen, phosphorus and potassium by a 33-year-old crop was determined by destructive sampling of eight trees. Extrapolation of their nutrient contents to the total crop gave estimates of 79 kg/ha/annum for nitrogen, 4 kg for phosphorus and 15 kg for potassium. That showed that the quantities released from the fertilised forest floor were small in relation to the nutrient uptake patterns.

**Page**

xi, 140 p

**Location**

Coillte library

**Notes**

Available. (Thesis. A dissertation submitted for the Degree of Philosophiae Doctor in the National University of Ireland.)

**Thesis**

Ph.D. Thesis, UCD

**Address of author**

Coillte Teoranta, Leeson Lane Dublin 2

---

**Number**

451

**Author**

O'Reilly Joseph

**Title**

Fomes annosus.

**Place**

Dublin

**Date**

1980

**Key Word**

forest pathogens, forest pests, forest diseases, Fomes annosus, Heterobasidion annosum, Basidiomycete, fungal diseases, Picea sitchensis, Sitka spruce, parasite, saprophyte, root rot, Fomes metabolites, forest protection, biochemical analysis

**Abstract**

Fomes annosus (syn. Heterobasidion annosum Bref.) is a Basidiomycete fungus which is capable of attacking several species of conifers and causing limited damage to hardwoods. The fungus behaves as either a parasite or a saprophyte and is spread by root contact with a tree or tree stump already infected or by aerial infection caused by basidiospores. The disease causes root rot and ultimate death of the root system. Fomes annosus is one of the few Basidiomycetes that causes death of the host cell, probably by the secretion of a toxin or toxins. The thesis is divided into four sections: Metabolites isolated from Fomes species in general; a description of the isolation and synthesis of the metabolites from the fructifications obtained at the base of a Picea sitchensis; a discussion of the metabolites of three different strains of Fomes annosus; and, finally, there is a study of the effects of two metabolites of Fomes annosus on 30 month old Picea sitchensis seedlings. As a result of the examination of in vivo and in vitro samples of Fomes annosus eleven metabolites were isolated and identified. The structure of the quinone, 6-methyl-alpha-dehydrolaphchone was determined as was that of fomajorin S. Racemic fomannoxin was prepared to confirm the structure of the dihydrobenzofuran, (+)-fomannoxin. The structure of 7 alpha, 8 beta, 11-trihydroxydrimane was established from the analysis of spectral data and X-ray studies. The structures of the remaining compounds, fomajorin D and 5-formyl-3-hydroxy-2-isopropenyldihydrobenzofuran were determined. Biosynthetic studies indicated that only the "C5 unit" of fomannoxin is acetate derived. It has been shown from bioassay studies that (S)-(+)-fomannoxin is the likely toxin produced by Fomes annosus.

**Page**

232 p

**Location**

Coillte library

**Notes**

Available. (Thesis submitted for the degree of Doctor of Philosophy in Chemistry at the National University of Ireland.)

**Thesis**

Ph.D. Thesis, NUI

**Number**

452

**Author**

Meagher Fionnuala

**Title**

The implication of forestry for rural planning.

**Place**

Dublin

**Date**

1981

**Key Word**

rural planning, estate forestry, forest history, State forestry, forest products, forest planning, agriculture, landscape, conservation, amenity forestry, energy, rural development

**Abstract**

This dissertation argues that Irish planners should exert a more positive influence on the countryside and that, in order to do this, they require adequate information about available rural resources and the relationship between them. Forestry is identified as a multidimensional resource which is, at present, at a cross-roads in its development in the Republic. The study describes the background to Irish forestry and its present administration. The principal contributions of forestry are identified as economic, recreational and conservational. The various perspectives on the forest resource are subsequently linked with the relevant planning powers in each case and forestry is then considered in the wider context of contemporary rural Ireland. This is the background for an investigation of the relationship between forestry and four other land uses in the Glendalough area of Co. Wicklow. The selected land uses are: landscape, conservation, agriculture and recreation. On the basis of the study findings, the policy implications for Glendalough are drawn out. Finally, the cases for and against planning control of forestry are made and directions for the future recommended.

**Page**

x, 150 p

**Location**

Coillte library

**Notes**

Available. (A thesis submitted to the Department of Regional and Urban Planning at University College, Dublin, in partial fulfilment of the requirements for the Degree of Master of Regional and Urban Planning.)

**Thesis**

Master of Regional and Urban Planning Thesis, UCD

---

**Number**

453

**Author**

Forest and Wildlife Service

**Title**

Analytical study of State forest undertaking. Interim Report on Afforestation Programme.

**Place**

Dublin

**Date**

1974

**Key Word**

afforestation, forest land acquisition, reforestation, financial costs, financial benefits, social cost, social benefit, State forestry, land use

**Abstract**

In June 1972 the Forest and Wildlife Service decided to undertake an analytical study of State forestry. The report is an interim one, designed for limited circulation. It covers part of the proposed full study. It is concerned with the programme of afforestation, i.e. the first planting on land acquired for forestry. Present policy is to plant 10,000 hectares per annum on land on which the average yield class is not less than 14 cubic metres per hectare per annum. Later reports will cover the implications of the management of the existing forest estate, the economics of alternative afforestation programmes and reforestation. This report makes an assessment of the stream of costs and benefits, financial and social, implicit in the current afforestation programme, and expresses these costs and benefits in present worth terms. The examination is restricted to the effects generated within the lifetime of one rotation only.

**Page**

xxi, 175 p

**Location**

Coillte library

**Notes**

Available.

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**Number**

454

**Author**

Gallagher L.U.

**Title**

Present and future timber needs.

**Publisher**

Irish Society of Agronomy and Land Use

**Place**

Dublin

**Date**

1979

**Source**

Irish Society of Agronomy and Land Use. Symposium: Tree Planting on the Farm, Blessington 1979.

**Key Word**

timber processing, forest products, timber market, exports, timber supply

**Abstract**

The current supply of timber on both world and Irish markets is discussed. The areas in which pulpwood and sawlog are used as raw material are described. Pulpwood is used in the manufacture of paper, fibre board, chipboard and pallets, and sometimes for round and split fencing. Small sawlogs are usually converted to pallet boards and boxwood. The current market for these products in the U.K. and Europe is assessed. In the domestic structural timber market Irish timber is producing 20-25% of requirements, and there is room for considerable expansion. The possibility of a future world shortage in timber is assessed. Given Ireland's capacity to increase its timber acreage it is in a good position to become a strong timber exporter, having first achieved self-sufficiency in the home market.

**Page**

pp 1 - 13

**Location**

Coillte library

**Notes**

Available

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**Number**

455

**Author**

O Sullivan Patrick

**Title**

The influence of initial espacement and thinning regime upon wood density in Sitka spruce (*Picea sitchensis* (Bong.) Carr.).

**Place**

Dublin

**Date**

1976

**Key Word**

espacement, thinning, wood density, Sitka spruce, *Picea sitchensis*, timber quality, silviculture

**Abstract**

This study investigates the influence of two important silvicultural treatments of Sitka spruce, viz. initial espacement and thinning regime, on wood quality. It has been definitively established that density is the most convenient index of wood quality. Hence, in this work, the effects of silvicultural treatments on wood quality are assessed by reference to the changes they induce in wood density. Experiments showed that the overall wood density of a tree could be determined from a single 'pith to bark' core, taken at breast height. In an assessment of the influence of initial espacement and thinning regime on wood density, the results indicate that trees planted at the wider initial espacement (3.6 m X 3.6 m approx.) have a significantly lower wood density than those planted at the closer initial espacement (2.4 m X 2.4 m) and that heavy and moderate thinning regimes have the effect of producing significantly less dense wood than a light thinning regime. No significant difference was detected between the wood produced in heavily and moderately thinned plots.

**Page**

122 p

**Location**

Coillte library

**Notes**

Available. (A minor thesis presented in the Faculty of General Agriculture for the Degree of Master of

Agricultural Science).

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

456

**Author**

Ramsbottom Suzanne

**Title**

Springback and springforward in glue-laminated Irish Sitka spruce.

**Place**

Limerick

**Date**

1994

**Key Word**

forest products, glulam, microlaminate, timber strength, compression, laminate stabilisation, bending limits, wood plasticising, dielectric heating, timber processing, timber properties

**Abstract**

Micro-laminates of wood when glued together produce a glulam structure. Glulams presently used in furniture construction are limited by the presence of springback and springforward of the component. Springback results from a recovery from the compression, an unfavourable performance, springforward results from various shrinkage coefficients leading to dimensional changes. The idea is to alleviate these problems by stabilising the laminates chemically, thermally or by treating after consolidation. The object of the present work was to investigate the factors which may contribute to deformation of the bend in order to eliminate springback and springforward. This involved making a prototype of the component, analysing and manufacturing procedure and the variable factors including the thickness of (i.e. number of laminates in) the component, radius of curvature at the 90 degree bend and moisture content. The bending limits and shrinkage coefficients at various moisture contents of both radially- and tangentially-cut samples were also examined. Moisture is a cheap and effective way of plasticising the wood within the component, especially with the prompting of heat (e.g. via dielectric heating). A compromise that balances the demands of heat, moisture, pressure and adhesive to optimise the stress-less deformation of wood would improve this aspect of glulam performance.

**Page**

xii, 110 p

**Location**

Coford library

**Notes**

Available. (Submitted in part-fulfilment of the requirements for M.Sc. in Materials Science.)

**Address of author**

Dept. of Material Science University of Limerick, Plassey Technological Park, Limerick

---

**Number**

457

**Author**

Clinch Paul G.

**Title**

The spatial pattern of State afforestation in County Wicklow.

**Place**

Aberdeen

**Date**

1985

**Key Word**

State forestry, afforestation, forest spatial pattern, forest distribution, land use, site productivity, forest spatial distribution, forest fragmentation, silviculture

**Abstract**

The spatial pattern of State afforestation in the Republic of Ireland is fragmented and dispersed. The aim of this

work is to discover how significant are the economic effects of this pattern, with a particular view to seeing whether there are any implications for future land acquisition policy. The forests of County Wicklow (the county with the longest history and the highest percentage area of State forestry) are examined as a test case using methods drawn from quantitative geography and from forestry. The evolution and structure of the forest pattern in Wicklow are described quantitatively, the pattern being examined both as a whole and in terms of its component parts. It is found that site productivity is highest in the most fragmented forests. It is also found that there is a continuing trend towards consolidation. An economic model is then constructed and applied to the different forest patterns in order to compare their relative levels of economic efficiency. Results of these analyses confirm the greater cost of running a fragmented as opposed to a consolidated forest but also show that when, as is usually the case, site productivity is higher in the fragmented forest then the resulting higher revenues will more than off-set the increased running costs. In other words, site productivity has a stronger influence on forest economics than has the spatial pattern. The concluding recommendation is that an accompanying high degree of fragmentation should not usually deter the State from giving preference to better sites when acquiring land. This course will be more profitable, even in the short term, and in the long term the trend towards consolidation, provided every effort is made to ensure that it is maintained, will help to alleviate the disadvantages of fragmentation.

**Page**

xxix, 412 p

**Location**

Coillte library

**Notes**

Available (A thesis presented for the Degree of Philosophiae Doctor at the University of Aberdeen.)

**Thesis**

Ph.D. Thesis, University of Aberdeen

---

**Number**

458

**Author**

Ward Declan

**Title**

The influence of tree spacing upon tracheid length and density in Sitka spruce (*Picea sitchensis* (Bong.) Carr.).

**Place**

Dublin

**Date**

1975

**Key Word**

Sitka spruce, *Picea sitchensis*, exotic conifer, tree spacing, silvicultural treatment, wood property, tracheid length, wood density, wood formation, wood variation, silviculture

**Abstract**

The north-west American tree species, Sitka spruce (*Picea sitchensis* (Bong.) Carr.) is the most important exotic conifer in Irish forestry. Until now, most research on this species has been concerned with improving growth rate with consequent increases in yield through such practices as fertilisation. Little is known of the variation patterns within the tree and of its response to various silvicultural treatments at a basic wood structure level. This investigation therefore sets out to assess the effects of tree spacing at 2.4 m X 2.4 m (8' X 8'); 3.6 m X 3.6 m (12' X 12'); and 4.57 m X 4.57 m (15' X 15') upon two properties: tracheid length and density. The literature is reviewed with regard to the formation of wood, causes of variation within wood and the systematic variation patterns observed within and between trees for the two wood properties under consideration. There are various methods of sampling and equipment suitable for use in taking small wood samples outlined in the review. Results are presented for 'within tree' variation for both wood properties. Experiments show that a 5 millimetre diameter increment borer could be successfully utilised to extract cores, for tracheid length assessment, at 35 degrees to the vertical axis of the tree. Finally, results indicated that tree spacing did not have a statistically significant effect upon tracheid length, while a significant decrease in wood density was recorded from the closest to the widest spacing.

**Page**

97 p

**Location**

Coillte library

**Notes**

Available. (A thesis presented in the Faculty of Agriculture. University College, Dublin in part fulfilment for the Degree of Master of Agricultural Science.)

**Thesis**

M.Agr.Sc. Thesis, UCD

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

459

**Author**

Blehein Kevin

**Title**

Afforestation and rural development.

**Place**

Dublin

**Date**

1977

**Key Word**

rural development, farm forestry, land use, Common Agricultural Policy, GATT, agriculture, forest policy, education, farm income, private forestry, European Union

**Abstract**

This thesis examines afforestation and rural development. The purpose of the study is to (i) indicate the contribution that afforestation can make to rural areas and (ii) to examine why farmers are not planting more land. The importance of policies which influence the choice of additional or alternative farm enterprises are examined. The influence of farm structure on the development of forestry is examined and the potential return from afforestation on various land types are indicated. A survey of farmers indicates the importance of: (i) the need to have clearly defined, non-competing policies between forestry and agriculture; (ii) the need to recognise that present forest policies favour the larger farms and the need to revise these; (iii) the need to provide more education and information for farmers on forestry; (iv) the need to review the payments of social welfare to farmers; and (v) the need to integrate forestry into the farm as an additional farm activity.

**Page**

144 p

**Location**

Coillte library

**Notes**

Available. (Thesis submitted to Department of Economics, University College, Galway for award of Degree of Master of Rural Development.)

**Thesis**

M. Rural Dev. Thesis, UCD

---

**Number**

460

**Author**

Omiyale Olufemi

**Title**

A Growth and yield model for unthinned Sitka spruce (*Picea sitchensis* (Bong.) Carr.). Plantations in Ireland.

**Place**

Dublin

**Date**

1982

**Key Word**

growth model, yield model, tree spacing, stocking density, growth characteristics, stand development, von Bertalanffy model, computer simulation, biomathematical growth equation, yield table compilation, polynomial regression, thinning, growth rate

**Abstract**

The objective of this study was to develop bio-mathematical growth and yield models for Sitka spruce (*Picea sitchensis* (Bong.) Carr.) established at different initial spacings in the Republic of Ireland. Spacing of trees at plantation establishment has a profound effect on the growth and development of a stand. Therefore, an extensive review of the effects of initial spacing on a variety of growth characteristics is undertaken. The various techniques available for modelling the growth and yield of single trees and stands are also reviewed. The growth model chosen for use in this study is that of Von Bertalanffy (1938, 1951, 1957) as modified by Richards (1959). The method used to fit the data to the Richards function is that of Stevens (1951). Because of the detailed computational procedures involved in fitting Richards's function to data by the Stevens method, a computer package consisting of four programmes is developed for this study. The first three computer programmes are used in the construction of the bio-mathematical growth equations. The main programme then computes and generates yield tables for a range of stocking densities. The result of the two statistical procedures used to test the accuracy of the constructed model showed that the predictive ability of the model is adequate. The technique developed in this study for yield table compilation is strongly recommended to replace the polynomial regression method of yield table construction where the biological processes of tree growth are not given due consideration.

**Page**

xvii, 199 p

**Location**

Coillte library

**Notes**

Available. (A thesis submitted to the Faculty of Agriculture of the National University of Ireland for the Degree of Philosophiae Doctor.)

**Thesis**

Ph.D. Thesis, UCD

---

**Number**

461

**Author**

Durand J.F.

**Title**

The evolution of State forestry in Ireland (and comparison with certain other countries).

**Place**

Dublin

**Date**

1969

**Key Word**

State forestry, social forestry, experimental forestry, forestry policy, peatland forestry, Congested Districts Board, Land Commission, forest history, estate forestry, exotic conifers, woodland conservation, economic development, peatlands

**Abstract**

The interest of the State in afforestation was raised in 1890. Determined and costly efforts at afforestation were made over several years, initially by the Irish Land Commission and followed by the newly constituted Congested Districts Board. During the early years of this century, wanton clearance of timber from estate woodlands was allowed to continue unchecked and neither vendor nor incoming owner-tenant could manage the woods. Again pressures developed tending to cause intervention by the State to improve woodland conditions. State interest in afforestation at the time was supported by social and political as well as economic interests. From that time the story of State forestry in Ireland is one of continued expansion, at a rate showing the influences of political decisions, particularly in the mid-thirties under Fianna Fail and in the fifties under the 1st and 2nd coalition governments. Rising rates of interest on capital have tended to remove the demonstrably valid economic arguments in favour of afforestation in the early years, but social aspects which were evident have perhaps been re-inforced. The history of afforestation in Northern Ireland is similar. Some interesting comparisons are made between the encouragement of plantations of exotic tree species here and the situation in New Zealand, which is also committed to an export programme based on such plantations.

**Page**

iii, 410 p

**Location**

Coillte library

**Notes**

Available. (Thesis. Submitted for Ph.D. Degree, National University of Ireland at University College, Dublin.)

**Thesis**

M.Agr.Sc. Thesis, UCD

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**Number**

462

**Author**

Kelly Christopher Paul

**Title**

Performance of tree species in the John F. Kennedy Park.

**Place**

Dublin

**Date**

1977

**Key Word**

growth patterns, spruce, fir, beech, oak, girth increment, height increment, tree growth

**Abstract**

This thesis is intended as a baseline study of the performance of certain tree species in the John F. Kennedy Park. The aims are to record growth patterns for these species growing in this particular locality and to establish a base from which future studies of these and other species can be made. Measurements of height and girth carried out at intervals during 1974 - 1975 are shown in graph form. Arising from the results obtained are recommendations for further studies and lines which these might follow are also given.

**Page**

iv, 63 p

**Location**

Coillte library

**Notes**

Available. (Thesis. Presented in the Faculty of Agriculture, University College, Dublin for the Degree of Master of Agricultural Science).

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

463

**Author**

McOscair P.

**Title**

Avondale Report

**Place**

Dublin

**Date**

1978

**Volume**

Vol. II

**Key Word**

weather data, estate forestry, planting data, mensuration data, arboretum, Avondale

**Abstract**

These are appendices to the Avondale Report. They consist of: (i) weather measurements (ii)a. List of arboretum specimens planted 1904 - 1914 and (ii)b. list of group planting up to 1917 (iii)a. measurements of all specimens (iii)b. arboretum grids (iii)c. grid map.

**Page**

260 p

**Location**

Coillte library

**Notes**Available

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**Number**

464

**Author**

McEvoy T.

**Title**

Some native Irish woodlands: an ecological study.

**Place**

Dublin

**Date**

1943

**Key Word**

native woodlands, forest ecology, forest history, woodland environment, forest ecosystems, sessile oak, natural regeneration, succession, siliceous woodland, calcareous woodland, environment, wildlife

**Abstract**

This thesis is an attempt to bring together in summary form the available information regarding the history and present condition of Irish native woodlands, particularly in so far as these affect their ecological status; and also to provide a general ecological account of the types of native woodland still extant. In regard to history, the references are for the most part scattered rendering it impossible to paint a detailed picture of our forest history. Ecological work on woodland is also very scanty. Killarney woods have been the object of intensive study but little or no material for comparison is available from other areas. This thesis attempts to provide some information regarding these ecologically-neglected types. It was impossible to give as much attention as desirable to purely scrub areas in which succession is best suited. It was necessary to confine attention to the larger areas of native woodland so that small isolated areas have been occasionally passed over. Areas known to have been planted, even though the natural dominant has been used, have been avoided, and almost all the woods studied are believed, on historical or ecological evidence, to be natural. It is thus been possible to get a clearer picture of the natural distribution of various tree species, especially of the oak and birches. Our present small area of native woodland represents the natural vegetation of the greater part of Ireland and is, therefore, of especial interest to the historian, the botanist and the forester. Its clearance and replacement on economic grounds by exotic conifers has been greatly accelerated in recent years and the present timber and fuel shortage has resulted in extensive felling and thinning. It seems desirable that representative areas of each type of natural woodland should be retained and the decision to demarcate and preserve such samples should be taken immediately. Plots of 5 to 10 acres, well distributed over the country, should be sufficient. They would be of value to the botanist as a site for natural vegetation; to the soil scientist as a locus for undisturbed soil profiles; and to the forester as controls by which he might assess the effects of exotic trees on soil conditions. The thesis looks in detail at the origin and status of native woodland, siliceous woodland types and calcareous wood-land types.

**Page**

107 p

**Location**

Coillte library

**Notes**

Available. (Thesis submitted to the NUI for the award of Master of Science)/

**Thesis**M.Sc. Thesis, NUI

---

**Number**

465

**Author**

McOscair P.

**Title**

Avondale Report.

**Place**

Bray

**Date**

1979

**Volume**

Vol. 1

**Key Word**

estate forestry, amenity forestry, forestry education, forestry training, arboretum, experimental forestry, forest history, exotic tree species, forest soils

**Abstract**

Avondale Forest Park lies 64 kilometres south of Dublin. Within the park boundaries all lands are the property of the State. Avondale is an arboretum with 70 years of growth behind it. It is also a research centre for testing new species under forest conditions of growth. The State's first forestry school was established in there in 1905. In more recent years it has been increasingly used for in-service training both within the Forest and Wildlife Service and the Government Services in general. It also fulfils the role of an educational centre for selected groups of the general public. The historical importance of the school and arboretum is assessed. A description of the arboretum is provided with details of early plantings, growth conditions, notable specimens, and recent work included.

**Page**

141 p

**Location**

Coillte library

**Notes**

Available.

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**Number**

466

**Author**

Fennell Thomas

(DIT College of Marketing and Design. Centre For Marketing Research)

**Title**

Trade reactions to Irish timber.

**Publisher**

Centre For Marketing Research

**Place**

Dublin

**Date**

1994

**Key Word**

timber end use, timber quality, imported softwoods, timber marketing, timber markets, timber organisations, timber technology, construction timber, standards, timber promotion

**Abstract**

The objectives of this research were to monitor reactions of timber specifiers to Irish timber products and to measure changes in reaction to Irish timber products subsequent to the television series "Our House" and the publication of "Irish Timber - use and Applications". Specifiers's reactions to Irish timber were monitored and the perceived advantages and disadvantages of softwood to architects, structural engineers, builders, joiners, retailers, distributors, timber frame manufacturers are assessed. The article goes on to deal with the suitability of softwoods for specific construction applications such flooring, stairways, timber frame housing and glulam. The performance of Irish softwood in these applications is compared with that of imported softwood. Summary evaluations of these softwoods are made, and the question of where the responsibility for the quality of Irish softwoods lies is discussed. There is an account of the awareness of new technologies, techniques, new products and standards, and a comment on the perceived effectiveness of support organisations and promotional campaigns. Future trends in the use of softwood timber are examined.

**Page**

55 p

**Location**

Coford library

**Notes**

**Number**

467

**Author**

Cranston Garteth

**Title**

An investigation into the use of small diameter Sitka spruce logs in the production of glued laminated timber.

**Place**

Newtownabbey

**Date**

1995

**Key Word**

structural timber, gluing, glued laminated timber, lamination, Sitka spruce, timber processing, forest products, Picea sitchensis

**Abstract**

The object of this study was to assess the suitability of home grown timber for use in laminations. The timber samples used all came from small diameter Sitka spruce (< 200mm). The study was divided into two main parts: an analysis of the dimensional stability of the timber samples; and performance testing of the samples fabricated into small beams. Distortion during drying did not hinder fabrication of the beams. Three beams of four laminations (38 X 89 mm) were manufactured to British Standard specifications. The beams were performance tested in an Instron testing facility. The total loads endured by each beam before failure were highly satisfactory. The average of the three beams at 29.3 kN comfortably exceeded the design load. It is expected that these results could be significantly improved in beams produced under factory conditions. It is recommended that further research should include work on better quality Sitka spruce and other home grown timber, and should attempt to analyse a much larger range of samples.

**Page**

120p

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available. (Thesis submitted for the award of B.Sc. in Building Engineering and Management)

**Thesis**

B.Sc. Thesis, University of Ulster

---

**Number**

468

**Author**

Donnelly Dervilla M.X., Cremin Peadar

**Title**

Secrets of a woodrot fungus.

**Publisher**

Irish Scientist

**Place**

Dublin

**Date**

1994

**Source**

Irish Scientist

**Volume**

Vol. 1

**Key Word**

Armillaria mellea, honey fungus, forest pathogens, basidiomycetes, forest protection, fungal diseases

**Abstract**

The role of woodrot fungi as bio-degraders is looked at with particular reference to the honey fungus, *Armillaria mellea*. It has been discovered that *Armillaria mellea* has the ability to produce anti-bacterial and anti-fungal compounds. Of these metabolite compounds, sesquiterpenes in particular has been associated with pathogenicity whilst others which are structurally similar act as a store for this primary toxin. The ability of a strain to convert these inactive metabolites to the more active toxin appears to determine its virulence. Several strains of different virulence, infesting different hosts, were examined in order to have as broad a view as possible of the pattern of sesquiterpene production within the *Armillaria* genus. The forester can thus be provided with a rapid method for determining the threat posed by an infestation using chemical markers rather than more indeterminate characteristics.

**Page**

19 p

**Location**

COFORD library

**Notes**

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**Address of author**

Department of Chemistry, UCD, Belfield, Dublin 4.

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**Number**

469

**Author**

Pfeifer Alistair

**Title**

From seed to sawdust.

**Publisher**

Irish Scientist

**Place**

Dublin

**Date**

Jan/1994

**Source**

Irish Scientist

**Volume**

Vol. 1

**Key Word**

Forest Service, Coillte Teoranta, forestry policy, geographic information systems, forest technology, forest health, forest protection, micropropagation, silviculture

**Abstract**

With a current afforestation programme of approximately 21,000 ha per annum, it is expected that about 10% of the land area of Ireland will be under forest cover by the end of the twentieth century. Many of the prescriptions for present day silvicultural methods are based on early research and development work done by the Forest Service, subsequently the Irish Forestry Board, Coillte Teoranta. Present research and development work focusses on issues such as greater forest tree species diversity; windthrow problems; yield model production; forest health with reference to atmospheric deposition and insect pests and diseases; and developing harvesting technologies for Irish forest conditions. The role which European Union programmes such as STRIDE, CREST and AIR play in advancing knowledge in the Irish timber industry is discussed. New technologies such as advanced propagation techniques, colour infra-red photography, diagnostic and analytical services combining the areas of soil science, entomology and pathology are an important part of forestry development.

**Page**

p 12

**Location**

COFORD library

**Notes**

Available.

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co.Wicklow.

---

**Number**

470

**Author**

Mulloy Fergal

**Title**

Forestry - a new economic force.

**Publisher**

Irish Scientist

**Place**

Dublin

**Date**

Sept/1994

**Source**

Irish Scientist

**Volume**

Vol. 2

**Key Word**

forest research, COFORD, forest economics, forestry policy, economic development, afforestation

**Abstract**

Forestry accounts for just under 8% of the total land area of Ireland but it may take 50 years before the European average of 24% is reached. Research is crucial to the long term sustainability of the forest resource. The issues of international competitiveness, sustainable employment and environmental harmony, and the manner in which they affect forestry-related research are examined. Product quality and uniqueness, and a responsible approach to ecological and environmental issues, are crucial to the future of forest resource exploitation. Industry, research and the Forest Service have jointly produced the document, 'Pathway to Progress - A Programme for Forest Research and Development' which outlines the various sectors of the industry which are supported by the National Council for Forest Research and Development.

**Page**

pp 5

**Location**

COFORD library

**Notes**

Available.

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4.

---

**Number**

471

**Author**

Hylands Richard Windsor

**Title**

The bonding of the cables of poststressed timber beam and a comparison of its performance with a similiar unbonded beam.

**Place**

Newtownabbey

**Date**

1978

**Key Word**

poststressed timber, cable bonding, energising, timber processing, gluing, adhesives, forest products, bond strength

**Abstract**

This study compared poststressed timber with unbonded and bonded cables. Characteristics of various adhesives were examined and strength tests carried out on epoxy resin using mono-wire and multiple-wire joints. A relationship was found between mean breaking force, glue line thickness and bond length for mono-wire joints, and test results showed that thin glue lines gave the strongest joints. A method of injecting adhesive into the

cables was developed to enable the successful construction of beams with bonded cables. Four beam types were designed, constructed and tested within and beyond the elastic range of the material, viz. and control beam, reinforced beam, poststressed beam with unbonded cables and one with bonded cables. A steel anchor-block with hardened gauge plate was used to transfer force from the tensioned cable to the compressed one during the energising operation. Calculations show the poststressed beams with unbonded and bonded cables to be capable of a permissible load of 2.27 and 2.85 that of a matched control beam and on average 1.81 and 2.21 times stronger at ultimate load respectively. The stiffness of a timber beam is increased after poststressing which is further improved by bonding the cables. The deflection parameters were identified and it was also shown that stiffeners make only a small contribution to the flexural rigidity of a beam. The adhesive tests and comparison between bonded and unbonded poststressed beams is new and recommendations for further research are given in each of these areas.

**Page**

325p

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available (Thesis submitted for award of Ph.D. , Faculty of Technology, Ulster College, Northern Ireland Polytechnic)

**Thesis**

Ph.D. Thesis, Northern Ireland Polytechnic

---

**Number**

472

**Author**

Collins Kevin D.

**Title**

Urban forestry in the republic of Ireland: A review and case study.

**Place**

Dublin

**Date**

1994

**Key Word**

urban forestry, amenity forestry, environment, conservation, community forestry, Planned Recreational Forestry Scheme, Geographic Information Systems, computer applications, vegetation survey, site plan, wildlife, forest end use, forest design, species selection, coppicing, high forest, operations scheduling, pest management, operations costs

**Abstract**

During the last decade, the attitude of the public towards trees had been influenced by a number of factors. Among these are: the environment; the increasing importance of the forestry sector in the national economy; and the activities of organisations such as Crann, An Taisce, the Tree Council of Ireland and ECO. Interest in urban forestry has grown considerably since its introduction into the Republic of Ireland, first in the form of the Crann sa Chathair project in 1987, and later with the development of the Forest of Limerick project within Limerick City. This study attempts to identify the problems involved with urban forestry in Ireland, and a detailed case study of the development of an urban forestry project in Finglas, County Dublin is presented. All species selected for use in Finglas Wood are physically suited to the natural site conditions, thereby ensuring that the primary objective of rapid establishment and initial growth is physiologically attainable. An attempt has also been made to ensure that the development of Finglas Wood takes place with gradual alterations to the site, in order to create the impression of a naturally developing feature of the landscape, and to reduce the risk of vandalism.

**Page**

xvi, 255p

**Location**

COFORD library

**Notes**

Available

**Address of author**

Department of Crop Science, Horticulture and Forestry, UCD, Belfield, Dublin 4.

---

**Number**

473

**Author**

Tree Council Of Ireland

**Title**

Building on our broadleaf heritage.

**Publisher**

Tree Council Of Ireland

**Place**

Dublin

**Date**

1995

**Key Word**

broadleaved woodlands, hardwoods, legislation, forest research, Tree Council of Ireland, conservation, forest heritage, broadleaf management systems, private woodlands, inventory, gene pool, geographic information systems, rural development, forest protection, environment, broadleaves

**Abstract**

In this report the Tree Council of Ireland outlines the need to adopt a new attitude towards the management of broadleaved woodlands. The aesthetic, conservation and landscape values of broadleaves are emphasised. The need to undertake appropriate research in tree improvement programmes to increase genetic diversity, improvement of wood quality, and resilience to climate change is stressed. The Tree Council of Ireland is in a unique position to act as a positive force for education and changing public perceptions in matters relating to trees and forests. The Council is particularly concerned with encouraging planting and sustained yield management, and the conservation of existing broadleaved woodland. There is a description of the present broadleaved woodland resource and an account of the principal of sustainable management.

**Page**

13p

**Location**

COFORD library

**Notes**

Available

**Address of author**

Royal Hospital, Kilmainham, Dublin 8.

---

**Number**

474

**Author**

Mulloy Fergal

**Title**

Forestry development: review of existing and prospective policies and implementation.

**Publisher**

University College Dublin Environmental Institute

**Place**

Dublin

**Date**

1992

**Source**

Environment And Development In Ireland: Proceeding of a conference held at University College Dublin from 9 - 13 December 1991. (Edited by J. Feehan)

**Key Word**

forestry history, forestry policy, forest grants, subsidies, forest development, Forest Operational Programme, EUROFORTECH, STRIDE, Forest Premium Scheme, Rural Development Operational Programme, INTERREG, State forestry, private forestry, Western Package, afforestation, forest decline

**Abstract**

This paper examines some historical aspects of forestry in Ireland, and reviews the relevant EC programmes which support Irish forestry development. There is a historical account of the decline in the native woodland cover following the passing of the 1871 Land Act. An enquiry, which commenced in 1907, provided the basis for a new beginning in relation to forestry practice in Ireland. A note is given on the progress of afforestation under the new State and on the condition of the private forestry sector which sporadically undertook plantings. Grant availability had little or no serious impact upon this sector until the late 1980's. The Western Package scheme and the effect it had on afforestation is described. The effects of the following EC supported schemes are assessed: the Forestry Operational Programme; EUROFORTECH; Forest Premium Scheme; Rural Development Operational Programme; INTERREG; and STRIDE.

**Page**

pp 340 - 347

**Location**

COFORD library

**ISBN**

1870089766

**Notes**

Available. Proceedings of a conference held at The University College, Dublin from 9 - 13 December, 1991.

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4.

---

**Number**

475

**Author**

Gardiner J.J.

**Title**

Forest production - quality or quantity?

**Publisher**

University College Dublin Environmental Institute

**Place**

Dublin

**Date**

1992

**Source**

Environment And Development In Ireland: Proceeding of a conference held at University College Dublin, 9 - 13 December 1991. (Edited by J. Feehan)

**Key Word**

timber quality, timber end use, timber products, forestry policy, landscape, amenity forestry, timber supply, timber demand, temperate forestry, species diversification, timber market, environment, economic development

**Abstract**

This paper examines the kind of demands will be placed upon forests in Ireland over the next rotation and describes the kind of forest which can best meet these demands. It is forecast that production from existing forests will easily supply the bulk of home markets and future expansion in production should focus on the development of an export trade. Providing that we can remain financially competitive, we should have few difficulties in exporting all the sawn softwood which we can produce to European standards. The author argues that any shift in policy should be towards the quality side rather than towards the maximisation of fibre production.

**Page**

pp 348 - 351

**Location**

COFORD library

**ISBN**

1870089766

**Notes**

Available.

**Address of author**

Department of Crop Science, Horticulture and Forestry of the Faculty of Agriculture, University College, Dublin.

---

**Number**

476

**Author**

Farrell E.P., Kelly-Quinn M.

**Title**

Forestry and the environment.

**Publisher**

University College Dublin Environmental Institute

**Place**

Dublin

**Date**

1992

**Source**

Environment and Development in Ireland: Proceedings of a conference held at University College Dublin, 9 - 14 December, 1991. (Edited by J. Feehan)

**Key Word**

environment, forestry history, forest ecosystems, peatland forestry, landscape, fisheries, soil acidity, water acidification, water chemistry, ecology, environment, peatlands

**Abstract**

This article looks at the interaction between forestry and the environment under the following headings: (1) visual impact; (2) ecological effects of plantations; (3) threatened ecosystems; and (4) aquatic ecosystems. Two major research projects studying the interaction of plantation forests and aquatic ecosystems, based in Wicklow, Connemara and in Munster, are described. The predominance of forest cover in a catchment is assessed and the effects on water quality, flow rates, invertebrate and fish populations are measured. At the Connemara location, where there is Sitka spruce on blanket peat, the acidity of the rainfall is moderately high, and soil water is more acid under the forest cover than on an open peatland site. Preliminary results at the Wicklow site show increased acidity and aluminium levels in a small number of catchments with extensive closed-canopy forestry. Increased acidity is episodic, occurring during spate conditions. In one study catchment in Wicklow in a Sitka spruce stand, early results show a significant level of pollution in the rainfall, although soil water is less acid in the forest than at a near-by open site. In Munster streamwater pH is in the range 6-7 with fish present at most sites during the Spring and Autumn with highest densities at agricultural sites. Fish condition was best at sites which were predominantly afforested.

**Page**

pp 353 - 357

**Location**

COFORD library

**ISBN**

1870089766

**Notes**

Available

**Address of author**

Department of Environmental Resource Management, UCD

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**Number**

477

**Author**

Nelson E. Charles, Walsh Wendy F.

**Title**

Trees of Ireland - native and natural.

**Publisher**

Lilliput Press

**Place**

Dublin

**Date**

1993

**Key Word**

forest history, forest lore, native woodlands, chieftain tree, sycamore, holly, alder, birch, hornbeam, hazel, elder, spindle tree, strawberry tree, Scottish laburnum, sweet chestnut, beech, sessile oak, pedunculate oak, horse chestnut, ash, Scots pine, alder buckthorn, buckthorn, wild cherry, hawthorn, rowan, mountain ash, whitebeam, wild pear, crab apple, aspen, white willow, yew, wych elm, Irish tree cultivars

**Abstract**

This book deals with both native Irish and naturalised tree species which grow in Ireland. Irish, English and scientific names in Latin are given along with some details of the trees involved. There are a number of heritage and cultural notes and information provided in the commentaries on each species. There are also pieces written on the literature of trees; history of trees in Ireland; propagation of trees; conservation and recording; and laws, letters and lore.

**Page**

vii, 247 p

**Location**

COFORD library

**ISBN**

1874675244

**Notes**

Available

**Address of author**

National Botanic Gardens, Glasnevin, Dublin 9.

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**Number**

478

**Author**

O'Brien Tim

**Title**

A good beginning: research and the STRIDE contribution.

**Publisher**

Coford

**Place**

Dublin

**Date**

1994

**Source**

STRIDE. Forestry Sub Programme. Workshop proceedings. Silver Springs Hotel, Cork 26th April 1994.

**Key Word**

afforestation, private forestry, broadleaves, afforestation, STRIDE technology, forestry research, forest management

**Abstract**

The current state of the afforestation programme in Ireland, and the cost to both the Irish State and the EU are assessed. The main problem in relation to broadleaved afforestation is identified as a lack of expertise among Irish foresters on how to produce quality hardwood timber. This problem is analysed under a number of headings: supply of good genetic quality plants; guidelines on species selection; programmes for vegetation management; and, advice on shaping and pruning. The author concludes that while the STRIDE programme is of immense value to Irish broadleaf development, immediate action is necessary to overcome the problems associated with a major broadleaf expansion.

**Page**

pp 10 - 14

**Location**

Coford

**Notes**

Available.

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**Number**

479

**Author**

Hickey Barth, Killen Lynn

**Title**

Farm forestry in Ireland - economic issues.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1986

**Source**

Economics and Rural Welfare Research Centre, 13th Annual Conference: The Changing Cap and its Implications. 2 December, 1986, Burlington Hotel, Dublin 4.

**Key Word**

farm forestry, private forestry, agriculture, soil associations, soil types, marginal land, comparative Net Annual Revenue, livestock farming, agricultural incomes, land use, economics

**Abstract**

European Commission initiatives in the forestry sector are motivated by the likely future shortage in timber, the need to diversify the rural economy, and to reverse the process of deforestation in parts of Europe. The types of land coming available for forestry are broken down by soil association. Returns from forestry and agriculture uses for each soil association are compared in terms of Net Annual Revenue per ha. The highest NAR shown for forestry at approximately £260 per hectare is based on yield class 22 on the Northern Wet Drumlin soils (soil associations 25 and 27). In the Mountain Hill and Blanket Peat areas the NAR from forestry is higher than the average return for livestock.

**Page**

pp 171 - 187

**Location**

Teagasc library

**Notes**

available

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**Number**

480

**Author**

Convery Frank J., Dripchak Kathleen

**Title**

Energy crops, forestry and regional developments in Ireland.

**Publisher**

Economic and Social Research Institute

**Place**

Dublin

**Series**

ESRI Paper No. 114

**Date**

1983

**Key Word**

energy crops, regional development, rural development, energy needs, coppicing, disadvantaged areas, marginal land, agriculture, farm forestry, grants, subsidies

**Abstract**

Two factors in particular, the increase in energy prices and the suitability of Irish climate and soils for tree growth, have led to a serious consideration of using wood energy crops to meet some of Ireland's energy needs. Such crops typically comprise hardwood species which are cut periodically, after which they resprout. This study had the following objectives: (1) To estimate net financial returns to agriculture, conventional forestry and energy crops on land which is marginal for farming; (2) To determine the regional impact of an energy crops/conventional forestry planting programme in the border counties of Cavan, Leitrim and Monaghan and in the western counties generally; (3) to specify the implications for energy policy and cross-border co-operation of

such a programme; (4) To examine the manner and extent to which private landowners could be interested in tree growing. The authors conclude that there is a strong case for converting to conventional forestry some of the marginal land in the western and border region. The following recommendations are made: conventional forestry and energy crops should be treated as complementary activities; demonstration projects for both should be developed on privately owned land; the market potential for energy crop output should be explored vigorously.

**Page**

166p

**Location**

Teagasc library

**ISBN**

0707000580

**Notes**

available

**Address of author**

UCD Environmental Institute, Richview, Clonskeagh Drive, Dublin 14.

---

**Number**

481

**Author**

Flanagan James

**Title**

The development of flame retardent wood-based products in sheet form and the significance of these developments for the Irish forest products industry.

**Place**

Dublin

**Date**

1971

**Key Word**

forest products, hardboard, prefabricated panel, industrial standards, flame retardant timber, chipboard, timber processing

**Abstract**

Like timber, hardboard is combustible and, when used in certain types of buildings, it must comply with fire regulations set out for these buildings. Wall and ceiling linings in public buildings must have a Class 1 flame spread. BS 476 is now being issued in separate parts. These describe, in detail, standards and tests for non-combustibility, combustibility, ignitability, fire propagation, surface spread of flame and fire resistance. This study describes a research project undertaken to see whether a satisfactory method for obtaining a Class 1 surface spread of flame on the board during its manufacturing stages could be developed. The application of flame retardant chemicals did not achieve the desired flame spread. A wet coating of asbestos, resulting in the formation of a dry asbestos coating 0.02" in thickness, did not prevent the underlayer, consisting of untreated fibres, reaching a critical temperature during the test and flames broke through the asbestos coating. A wet coating consisting of fifty parts of asbestos and thirty parts of pulp - both bone dry- was satisfactory when the wet coating was over-sprayed with flame retardant chemicals. Unlike hardboard, where large quantities of water are pressed out, chip-board is manufactured from chips which are dried to a pre-determined moisture content before pressing. The addition of flame retardant chemicals, in the dry condition, to the chips has been used for the commercial production of a fire-retardant board. The addition of a liquid solution to the chips required a rather high drying capacity. Better distribution and increased penetration by diffusion are gained.

**Page**

140 p

**Location**

UCD Forestry Department

**Notes**

Available. (A thesis presented in the Faculty of Agriculture, University College, Dublin for the Degree of Philosophiae Doctor).

**Thesis**

Ph.D. Thesis, UCD

---

**Number**

482

**Author**

Fitzpatrick H.M.

**Title**

Trees and the law.

**Publisher**

Incorporated Law Society of Ireland

**Place**

Dublin

**Date**

1985

**Key Word**

forest history, forestry policy, legal system, law, land ownership, land use, legal liability

**Abstract**

This book explains the association between trees and the Irish legal system. The author traces the history of the statutory provisions for afforestation and deals with the common law rights and liabilities of tree owners, illustrated by relevant case law.

**Page**

vii, 84p

**Location**

Teagasc library

**ISBN**

0902027263

**Notes**

available

**Number**

483

**Author**

Savill Peter Spafford

**Title**

Environment and soil factors affecting the growth of conifers in Northern Ireland.

**Place**

Belfast

**Date**

1977

**Key Word**environment, tree growth rates, climate, soil nutrients, Sitka spruce, lodgepole pine, *Picea sitchensis*, *Pinus contorta***Abstract**

Most of the forest estate in Northern Ireland lies at elevations exceeding 180 m and over 80% of the land is described as poor, or very poor, in quality. There is a large water surplus for most of the year in these areas and gale force winds are common. The majority of forest soils are surface water gleys and deep, peats with nutrient deficiencies, stability problems and poor growth typical in the forest crops here. Studies on deep peats and gleyed soils have shown that conventional deep drainage has a negligible effect on tree growth or water table levels. It is demonstrated that the development of root-plates is greatly restricted by the shallow ditches from which planting ridges or turfs are cut. Studies of Sitka spruce nutrition on oligotrophic peats have shown that crops will grow satisfactorily for 6 to 8 years if adequate phosphorus is supplied. After this stage the problem of nitrogen nutrition becomes severe. Nutritional problems with Sitka Spruce are not so serious on gleyed soils. Provenance experiments with lodgepole pine indicate that seed which originates from low elevations on the Oregon coast at about 44.2 degrees North is likely to produce the best adapted and most vigorous crops in the Northern Ireland environment. The position with Sitka spruce is less clear but Queen Charlotte Island provenances are likely to be better than those originating from further south than about 50 degrees as the latter may be too susceptible to damage by frost.

**Page**

198 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to the Faculty of Agriculture and Food Chemistry of The Queen's University of Belfast in fulfilment of the requirements for the degree of Philosophiae Doctor)

**Thesis**

Ph.D. Thesis, QUB

---

**Number**

484

**Author**

Harrington Rory

**Title**

Some aspects of the biology and taxonomy of the deer of the County Wicklow Region, Ireland.

**Place**

Dublin

**Date**

1979

**Key Word**

Cervus, deer species, red deer, sika deer, deer hybrids, forest fauna, wildlife, animal taxonomy, woodland habitats

**Abstract**

An examination of the physical characteristics of the Cervus deer in the Wicklow region showed that extensive hybridisation between the native species, Red deer (*Cervus elaphus* L.) and the exotic Japanese sika deer (*Cervus nippon* Temminck) was widespread. This method of examination was sufficient to show that no red deer remained but failed to indicate whether or not any Japanese sika deer remained. The phenomenon was examined further with a controlled breeding programme and an immuno-electrophoresis analysis of the sera of these and other Cervus deer in Ireland. Prerequisite work in developing capturing techniques and husbandry methods for captive and enclosed deer were undertaken. Particular emphasis was placed upon developing efficient capturing techniques using anaesthetics. The study was successful in determining the factors responsible for the initial hybridisation between red deer and Japanese sika deer and in indicating how this hybridisation continued. The taxonomic status of the Japanese sika deer and that of related sub-species from Asia were examined and suggestions made for their reclassification. A hypothesis explaining the evolution of Japanese sika deer and the origins of their related sub-species was also provided.

**Page**

160 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis Presented for the award Of The Degree of Doctor Of Philosophy at The National University Of Ireland).

**Thesis**

Ph.D. Thesis, UCD

**Address of author**

National Parks & Wildlife Service, Office of Public Works, 98 The Quay, Waterford

---

**Number**

485

**Author**

Kerr Peter

**Title**

Insect pests of trees in John F. Kennedy Park Arboretum And Forest Garden.

**Place**

Dublin

**Date**

1975

**Key Word**

entomology, forest pests, forest insects, insect taxonomy, forest protection, Coleoptera, amenity forestry, defoliating insect, forest pathogens

**Abstract**

This work is primarily intended as a base-line survey of the types of insect pests which had been recorded, or become established in the John F. Kennedy Park since planting commenced in 1966. The chief aims of this thesis are as follows: (1) to carry out a survey of the trees affected and to list their pests; (2) to assess the nature and extent of the injury caused by these insects; and (3) to report on the biology and habits of these insect pests. This work is not concerned with the details of control methods.

**Page**

x, 155 p

**Location**

UCD Forestry Department

**Notes**

Available.( Thesis submitted for Degree of Master of Science, , Trinity College, Dublin)

**Thesis**

M.Sc. Thesis, UCD

---

**Number**

486

**Author**

Coen Rosaleen D.

**Title**

Microbial activity in Sitka spruce.

**Place**

Dublin

**Date**

1978

**Key Word**

Soil microflora, soil fungi, soil microbes, Sitka spruce, Picea sitchensis, soil litter, nitrogen mineralisation, potassium, phosphorus, aerobic bacteria, cellulose decomposing microorganisms, Penicillium, Fomes annosus, bacteria, microbiology, forest soils

**Abstract**

This study of microbial activity in Sitka spruce concludes that the addition of CaCO<sub>3</sub> to the litter at normal field levels resulted in significant increases in oxygen up-take over 30 days incubation. After this time, however, the effect diminished. When the litter samples were amended with NH<sub>4</sub>-N, the rate of oxygen up-take in the litter was significantly depressed at all levels of application. Treatment of the litter samples with compound fertilisers depressed the rate of oxygen up-take. However, this effect was overcome after 80 days incubation. The addition of glucose to litter samples at concentrations of 0.5% and 1.0% significantly increased the rate of oxygen up-take. At lower concentrations, the increases were not significant. Re-addition of glucose resulted in a similar response. However, the increases were lower than after the first addition. Considerable release of ammonium nitrogen was found in litter samples incubated for 50 days at temperatures ranging from 12 degrees to 55 degrees. Litter samples incubated at 12 degrees showed intensive nitrogen mineralisation when the moisture content of the litter was increased from 143.5% to 631.0%. However, any reduction in moisture content of litter below 143.5% tended to depress the rate of mineralisation. The addition of CaCO<sub>3</sub> to the litter at normal field levels resulted in a decrease in NH<sub>4</sub>-N concentration of the litter and an increase on NO<sub>3</sub>-N content. The addition of nitrogen as (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> or as potassium (K<sub>2</sub>SO<sub>4</sub>) to the litter had little effect upon the amount of available nitrogen in the litter. However, the addition of phosphorus as GMP to the litter resulted in substantial increases in the amount of K<sub>2</sub>SO<sub>4</sub>-extractable nitrogen in the litter following 50 days incubation at 12 degrees. Very intensive sampling was necessary when examining microbial activity in Sitka spruce litter. The numbers of aerobic bacteria varied seasonally from 10m to 69m organisms per gramme of dry litter. On average, gram-negative organisms accounted for 39% of this total. The dominant, cellulose-decomposing micro-organisms in the litter were fungi and actinomycetes. The washing-box method was found to be the most useful for the isolation of a range of fungi from forest litter. Twenty one fungi, representing seven genera, were isolated from Sitka spruce litter using this method. A number of Penicillium species isolated from the litter samples were

shown to be capable of inhibiting the growth of *Fomes annosus* on malt extract agar. The effect of litter extracts upon the growth of two bacteria isolated from the litter was found to vary according to the method of extraction preparation. In general, cold water extracts gave slight inhibition of bacterial growth and growth was stimulated by the addition of hot water litter extracts to the basal medium.

**Page**

vi, 214 p

**Location**

UCD Forestry department

**Notes**

Available. (A thesis submitted to the Faculty of Science of the National University of Ireland for the Degree of Philosophiae Doctor).

**Thesis**

Ph.D. Thesis, NUI

---

**Number**

487

**Author**

Neenan M., Lyons G.

**Title**

The production of energy by photo-biological methods - EEC Solar Energy Research Programme 1975 - 1979.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Series**

An Foras Taluntais, Project No. 1268 in association with the Forestry Division of the Department of Fisheries and Forestry, First Report. E.E.C. Contract No. 055-76-ESEIR.

**Date**

1977

**Key Word**

biomass production, alternative energy sources, coppicing, woodfuel, short rotation forestry, energy crop

**Abstract**

The production of energy by photo-biological methods depends, essentially, on the efficiency of photosynthesis under field conditions. Two of the more important factors affecting photosynthesis are length of growing season and date of obtaining full canopy. A high Leaf Area Index early in the season is achieved by either growing a perennial species or using a pattern of planting such that all light is intercepted. A survey has been made of the plants listed in the British Flora and the results indicated that the most suitable plants were shrubs, or trees, which could thrive on relatively poor soils. Short rotation studies in the US show that yields of 10 - 12 t/ha per annum of dry matter could be obtained with American sycamore or poplar at high planting densities of about 1.2 m X 1.2 m and harvesting every 4 or 5 years (Coppicing). American sycamore is frost sensitive in European conditions. European trials have given positive results for willows and poplars, and there are on-going important *Salix*, *Alnus* and *Betula* trials. On the basis of these results, the best possibility for producing energy by photo-biological methods would seem to be from short rotation forestry. The main difficulty foreseen is the availability of land. EEC agricultural policies are designed to eliminate inefficient farming. Over a period of time this will result in more land going to forestry, or some similar activity. There is a considerable area of poor land which has not been taken up by forestry. Such land may become available for energy crops. The study shows that the profitability of energy plantations would be sensitive to the interest rate applied.

**Page**

146 p

**Location**

UCD Forestry Department

**Notes**

Available.

**Address of author**

Teagasc Research Centre, Oakpark, Co. Carlow

---

**Number**

488

**Author**

McNamara John Francis

**Title**

Socio-economic changes resulting from afforestation in County Donegal.

**Place**

Dublin

**Date**

1971

**Key Word**

social forestry, rural development, land use, amenity forestry, thinning regime, forest employment, economic development, regional development, afforestation

**Abstract**

The aims of this thesis were to study the social and economic changes brought about by afforestation in County Donegal, to analyse the changes that have recently taken place, and to consider the implications for the future. In particular an attempt is made to assess the effects of afforestation on employment, land use and on regional development. The potential role of forestry in future development is assessed, but this stage it involves a good deal of speculation.

**Page**

56p

**Location**

UCD Forestry Department

**Notes**

Available. ( Thesis presented in the Faculty of Agriculture, University College, Dublin for the Degree of Master of Agriculture Science).

**Thesis**

M.Ag. Sc. Thesis, UCD

---

**Number**

489

**Author**

McLoughlin John F.

**Title**

The impact of EEC policies on forestry in Ireland.

**Place**

Dublin

**Date**

1987

**Key Word**

forestry policy, private forestry, plant health, environment, landscape, Common Agricultural Policy, EEC, EC, afforestation

**Abstract**

EEC membership has had a negative impact on State forestry. The small contributions from FEOGA, ERDF, ESF, Research and Energy funds do not compensate for the increase in land prices for tree planting and the poor quality of the land that was available during the 70's. The 'pure' EC effects on labour costs are difficult to quantify because of the other influences in the economy. The private sector involvement in tree planting has been disappointing to date. It is expected to increase with the introduction of the new directive which gives an income for the first 15 years of tree planting. The absence of an income in the early years, together with a lack of tradition and knowledge of forestry, has been the greatest hindrance to forestry development in Ireland. The EC directive on plant health has helped to keep Ireland free from many of the disease and insect pests which are prevalent on forest trees throughout the world. There will be greater emphasis on the environment in the future and both private and public forestry will have to take better care of the landscape. What Ireland needs is an integrated programme like the scheme operated, at present, in the Mediterranean regions which would encompass all activities.

**Page**

109 p

**Location**

U.C.D. Forestry Department

**Notes**

Available. (Thesis submitted in partial fulfilment of the requirements for the Degree of Master of Public Administration at the Faculty of Commerce, University College, Dublin).

**Thesis**

M.P.A. Thesis, UCD

---

**Number**

490

**Author**

Murphy William M.

**Title**

An examination of methods for the economic evaluation of forest recreation.

**Place**

Dublin

**Date**

1984

**Key Word**

amenity forestry, forest recreation, recreation evaluation, travel cost method, cost approach method, economics

**Abstract**

This study examines various methods of economic evaluation by field testing six methods under Irish conditions. The study area is described and its suitability for recreational use discussed. Two approaches to visitor monitoring based on the method proposed by Schreuder et al. (1975) are outlined. Six methods for the evaluation of a recreation hour were field tested and these methods are described in this section. The methods employed included the Cost Approach, two Travel Cost methods, (one proposed by Trice and Wood (1958) and one by Clawson (1959) ), the Cost-less Choice Method and two bidding games (one of which indicated willingness to travel and the other willingness to pay an entrance fee). The criterion for selecting the most accurate method is out-lined. Results are presented for both the monitoring and evaluation studies. Results indicate that the stratified random sampling gives the most accurate indication of visitor usage. The results of field testing of the evaluation methods indicate that bidding games, which indicate 'willingness to pay', whether through travel costs, or entrance fees, are the most reliable estimates of the value of a visitor hour. There is an examination of the results, particularly those relating to the evaluation methods. These are discussed with particular reference to the economic theory on which they are based. The monitoring results are discussed in relation to their accuracy and ease of implementation.

**Page**

121 p

**Location**

UCD Forestry Department

**Notes**

Available. (A thesis submitted to the National University of Ireland for the Degree of Master of Agricultural Science).

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

491

**Author**

Williamson Gary P.

**Title**

Development of a timber allocation procedure.

**Place**

Dublin

**Date**

1991

**Key Word**

timber allocation, transport costs, timber supply, computer applications, forest operations research, Coillte Teoranta, State forestry, forest infrastructure

**Abstract**

Transport costs can contribute 15 to 25 per cent of the total timber raw material cost. Where the selling agent has a number of forest stands and either owns, or has contracts to supply, a number of wood processing plants, the efficient allocation of the timber supply becomes very difficult without the aid of computerised operations research techniques. The cost minimisation process consists of two steps. Firstly, the shortest route between each forest and each processing location must be determined. Secondly, timber supply must be optimally allocated to the mills using the shortest routes. A timber allocation procedure was developed to help optimise the allocation and transportation of Coillte Teoranta's annual timber supply. The first stage in the development of the procedure was to construct a road network of the national road system. The road network consists of all primary, secondary and regional roads in the Republic of Ireland. In total 245 forests, 68 mills and 8 port locations were linked into this road network. The resulting road network consists of approximately 7,600 links and 3,000 nodes. The procedure was developed around existing database packages currently being used by Coillte Teoranta personnel so as to minimise the data preparation required to use the procedure. The procedure consists of three stages; input, allocation and output. The timber supply and mill demands are segregated into ten product supply/demand categories, on the basis of assortment, species and/or average tree size. Each of the product supply categories is allocated separately. The results are then output to a database file, which facilitates interpretation of the results and production of summary reports. The developed procedure was used to optimally allocate Coillte's 1991 timber sales.

**Page**

vii, 123 p

**Location**

U.C.D. Forestry Department

**Notes**

Available. (Thesis presented to the Faculty of Agriculture, UCD in fulfilment of the requirements for the Degree of Master of Agricultural Science).

**Thesis**

M.Ag.Sc. Thesis, UCD

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray

---

**Number**

492

**Author**

Bonyad Sayed Amir Eslam

**Title**

A new multivariate methodology for forest classification and mapping using satellite remote sensing data.

**Place**

Dublin

**Date**

1995

**Key Word**

satellite remote sensing, forest inventory, spectral reflectance vectors, geographic information systems, GIS

**Abstract**

A new multi-variate methodology for forest classification and mapping using satellite remote sensing has been developed, applied and evaluated. Forest inventory for reliable classification results which meet recognised specifications is a prerequisite to the integration of satellite remote sensing into forest inventory systems in the Republic of Ireland. The new methodology, which is based entirely on multi-variate techniques, was designed to meet these requirements. This new multi-variate methodology includes three adaptations to the Bayes classification rule. These adaptations are: (1) that mean spectral reflectance vectors from unknown forest crop types are classified; (2) that a library of statistically significant purified reference mean vectors are identified; and (3) that a threshold probability of group membership be defined. The equivalence of two adapted Bayes rules for classification of unknown mean spectral reflectance vectors or unknown mean vectors has been demonstrated. The latter mean vectors arise after reducing the dimensions of the original p-dimensional feature

space by transformation of the 's' statistically significant eigenvector coefficient matrix to s-dimensional feature space. The new multi-variate methodology involves three main classification phases. Phase 1 involves testing the significance of the mean spectral reflectance vectors for each group using Wilks and Hotellings T tests. Phase 2 involves the generation of mean spectral reflectance vectors from the image to be classified using any method designed to produce spectrally homogeneous clusters, classes or polygons. Phase 3 involves aggregation of all classified mean vectors from Phase 2. The new multi-variate methodology was demonstrated using LANDSAT TM data for Clonaslee Forest and independently applied to classification and mapping of forests in the adjoining and combined Mountrath and Ballyfin Forests. The overall classification results were that 93.62% of the Sitka spruce, 90.97% of the lodgepole pine, and 147.16% of the Japanese larch have probability of group membership of 0.95 with respect to the Coillte Teoranta ground truth. This may be the first multi-variate methodology for classification and mapping for forests designed by foresters engaged in forest inventory.

**Page**

xii, 184 p

**Location**

UCD Forestry Department

**Notes**

Available. (A thesis submitted to the Department of Agriculture, UCD for the Degree of Philosophiae Doctor).

**Thesis**

Ph.D. Thesis, UCD

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**Number**

493

**Author**

Collins Kevin J.

**Title**

SAFASS (Simulation And Financial Analysis of Sitka Spruce) interactive decision making model for forest management.

**Place**

Dublin

**Date**

1987

**Key Word**

forest management, financial analysis, computer applications, SAFASS, decision making model, Sitka spruce, information technology, computer simulation, silviculture, Picea sitchensis

**Abstract**

This thesis describes the development of an interactive decision-making computer programme for forest management. The procedure involved the simulation of a one hectare forest of Sitka spruce under a range of management regimes, the generation of a cash-flow over the rotation and its subjection to a range of economic criteria. The name of the computer programme is SAFASS which stands for the Simulation And Financial Analysis of Sitka Spruce. The thesis is divided into two parts. Part one outlines the theory of decision making, yield models and financial analysis. It describes the procedure used to simulate yield models and the over-all development of the programme. Part two elaborates on the technical details behind the development of SAFASS including features of the polynomial equations generated and programming design. It also details the technical documentation which supports the programme. SAFASS will be a useful decision making tool for forest management in Ireland and the United Kingdom. It will enable a manager to carry out an in-depth financial analysis of the strategies available to him and to rank the results in order of economic merit. The programme is user-friendly, flexible and easy to operate. The interactive capability which has been built into the programme offers the operator the facility to modify the operations of SAFASS to match the site being analysed.

**Page**

x, 125 p

**Location**

UCD Forestry Department

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**Thesis**

M.Agr.Sc. Thesis, UCD

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

---

**Number**

494

**Author**

Ni Fhlaitheartaigh Nuala B.

**Title**

The productivity of poplar and willow clones as influenced by various edaphic and climatic factors.

**Place**

Dublin

**Date**

1991

**Key Word**

short rotation forestry, poplar, willow, biomass production, pulp wood production, tree nutrition, soil nutrients, foliar nutrient analysis, silviculture

**Abstract**

Short rotation forestry (SRF) is the growing of trees on rotations of two to ten years for the production of pulp wood or of biomass for energy. High quality agricultural soils are required to produce yields in excess of 12 dry tonnes per hectare. Sites that are of similar agricultural potential have produced significantly different yields under SRF. This study examines the factors which contribute to these yield differences. Soils from two sites, Kinsealy and Clonroche, were containerised and placed on capillary beds at both locations. Poplar cuttings were planted in these containers and also in field plots at these sites. Those in Clonroche soil had higher yields while the effect of location on yield varied. Yields were lower in the field than in the containers due to moisture deficits in the initial months. Early season temperatures (March and April) had a strong influence on the subsequent crop dry matter production. A soil pH greater than 5.1 in peat and between 6.1 and 7.1 in mineral soil was optimal for growth of *Populus trichocarpa* 'Fritzi Pauley'. The optimum pH was 6.8 in mineral soil and between pH 4.9 and 5.8 in organic soil for the growth of *Salix viminalis* 'Bowles Hybrid'. Phosphorus deficiencies did not occur in the establishment year in poplars and willows grown on good agricultural soils. The nitrogen availability to both species was a major growth determinant in soils of low nutrient status. On good agricultural soils, adding nitrogen at various levels and frequencies in the establishment year had very little effect on the growth of *Populus trichocarpa* x *deltoides* 'Beaupre'. The optimum establishment year mid-July foliar nitrogen concentration is 3.54% dry matter in *Populus trichocarpa* 'Fritzi Pauley', 3.75% in *Populus trichocarpa* x *deltoides* 'Beaupre' and 4.50% in *Salix viminalis* 'Bowles Hybrid'. Relative concentration (N = 100) in mid-July of N = 100, P = 7, K = 59, Mg = 5 and Ca = 58 are optimal for the growth of *Populus trichocarpa* 'Fritzi Pauley', relative concentrations of N = 100, P = 7, K = 52, Mg = 8 and Ca = 51 are optimal for *Populus trichocarpa* x *deltoides* 'Beaupre' and relative concentrations of N = 100, P = 7, K = 54, Mg = 3 and Ca = 27 are satisfactory for the growth of *Salix viminalis* 'Bowles Hybrid'.

**Page**

xxi, 393 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to the National University of Ireland as the requirement for the Degree of Doctor of Philosophy).

**Thesis**

M.Agr.Sc. Thesis, UCD

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**Number**

495

**Author**

Jordan Paul

**Title**

Production of provisional volume assortment tables for Sitka spruce (*Picea sitchensis* (Bong.) Carr.).

**Place**

Dublin

**Date**

1992

**Key Word**

volume assortment table, volume estimation, thinning volume, Sitka spruce, *Picea sitchensis*

**Abstract**

The general objective of this study was to construct stand volume assortment tables for three crop types of Sitka spruce grown under Irish conditions. The three crop types for which tables are required are: (1) crops thinned to marginal thinning intensity; (2) unthinned crops; and (3) widely spaced crops. The data used for the creation of such tables were a combination of height-diameter and stand table data supplied by Coillte Teoranta. The methodology developed firstly involved the stratification by DBH followed by the conversion of the height-diameter (m) data into height-cross-sectional area (m<sup>2</sup>) data. The data for each tree were then analysed using regression, with height as the independent variable and cross-sectional area as the dependent. Regression analysis produced an estimate of the intercept (A) and slope (B) for each tree at a particular diameter at breast height (DBH) class. The area beneath the fitted line was the volume for that tree. All A and B values within each DBH class were summed and an average A and B produced. Using algebra, the average A and B values of a particular DBH class were used to calculate the total volume and volume assortments. A master table of volumes for each crop type was created which contained the estimated volume and volume assortments in cubic metres (m<sup>3</sup>) for each DBH class. The error structure on these volume estimates was then calculated with the 95% confidence level being used throughout. All sampling errors were computed using estimated volumes and subsequently converted to percentages. This resulted in the production of single tree over-bark volume assortment tables with associated errors for the three crop types. Stand tables were then constructed for the three crop types based on empirical diameter distribution data provided by Coillte Teoranta and stratified by mean DBH class. The Master Tables for each crop type were weighted by the probability density function of each mean distribution to produce provisional stand over-bark volume assortment tables for Sitka spruce for each of the crop types with minimum length of 3.0 m. The methodology just outlined produced the required volume assortment tables. A methodology to create such an error structure was recommended and an example given. The amount of data provided only allowed reliable results to be calculated for crops which were thinned and of less than 32 cm DBH.

**Page**

x, 134 p

**Location**

UCD Forestry Dept.

**Notes**

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**Thesis**

M.Ag.Sc. Thesis, UCD

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Belfield, Dublin 4.

---

**Number**

496

**Author**

Duffy Aidan

**Title**

A fire weather index for Irish forests - a study on the use of weather variables in predicting fire occurrence.

**Place**

Dublin

**Date**

1985

**Key Word**

fire hazard, forest fires, forest protection

**Abstract**

The main objective of this project was to develop a system of predicting the risk of fire occurrence from the prevailing weather conditions. The correlations between the occurrence of fire on a given day and the level of a number of fires occurring was attributable to changes in weather variables. The amount of variation explained varied over time, being highest in the weeks of highest fire risk and lowest in weeks of lowest risk. Equations were drawn up relating weather to fire danger. Different equations were used for each 20 day period from 1st of

March to the end of May. After May the variation explained was too low for equations to be useful.

**Page**

125 p

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UCD Forestry Department

**Notes**

Available.( A thesis presented in UCD for the Degree of Master of Agricultural Science).

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

497

**Author**

Maile Nchemo

**Title**

Vegetative propagation of Eucalyptus Nitens (Dean and Maiden) Maiden using stem cuttings.

**Place**

Dublin

**Date**

1995

**Key Word**

vegetative propagation, Eucalyptus spp., rooting hormone, IBA, root cutting, rooting medium

**Abstract**

Eucalyptus nitens (Deane and Maiden) Maiden is an economically important Eucalyptus species with a broad natural range in Australia and has been identified as a priority fuel-wood plantation species in Lesotho. Unlike most Eucalypts, E. nitens is a shy seed bearer. The aim of this study was to investigate the feasibility of propagating Eucalyptus nitens Maiden using stem cuttings. Cuttings were taken seasonally from 11 year old E. nitens stand, New South Wales provenance during the period February 1994 until November 1994. Cuttings were also obtained from three-year-old stock plants of unknown provenance in September 1994 and March 1995. Rooting performance was evaluated under glasshouse conditions using a warm bench propagation unit with four types of media and rooting hormone to examine their effects on the rooting ability of E.nitens cuttings. Cuttings were prepared in factorial combination of four types of media and two hormone treatments (dipping in Seradix No.3 rooting powder containing IBA or not treated) with three replications of each treatment combination. In the first experiment, it was found that rooting potential did not differ significantly between media and that rooting hormone did not increase root formation. A peat: sand: vermiculite mixture was slightly better than these materials used alone. It is concluded that hardwood cuttings are difficult to root and it is not feasible to use mature hard-wood cuttings for the operational production of E. nitens stecklings. Adventitious root formation on cuttings of E. nitens was not effectively influenced by the application of IBA at the base of the stem cuttings. The number of roots to form on a rooted cutting was influenced by IBA application on Experiment I. However, for Experiment IV, with juvenile material, IBA did not affect the average number of roots per cutting. In experiment IV, rooting hormone had a negative effect on cutting rootability of juvenile material. For instance, 18% of the treated cuttings had rooted after 8 weeks compared to 42% of the untreated cuttings. Similarly, the mean number of roots per cutting did not differ significantly amongst different treatments. This inhibitory effect was probably due to high concentrations of IBA (0.8%) Because, in a follow up study, (Experiment V) 0.2% IBA Did not affect rooting adversely. When rooting media were assessed for the effects on the rooting process, the peat: sand: vermiculite mixture was significantly superior in both treated and untreated cuttings with 0.8% IBA. However, better rooting was obtained with juvenile material in March with sand and peat: sand: vermiculite 85% and 65%, respectively (0.2% IBA). Rooting of cuttings obtained from 11-year-old E.nitens decreased from February until November, 7% and 0%, respectively. Cuttings taken from 3-year-old stockplants rooted better regardless of the season collected. The average rooting obtained with juvenile material in September and March was 30% and 56%, respectively. E. nitens was successfully propagated by rooting juvenile stem cuttings. Hence, high rooting percentages were obtained with juvenile material under the same conditions with mature material which produced poor roots and, subsequently, died. The rooting of stem cuttings of E. nitens will, therefore, provide future supplies of planting stock and open the way to genetic improvement by clonal selection for yield and form.

**Page**

ix, 113 p

**Location**

UCD Forestry Department

**Notes**

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**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

498

**Author**

Ikojo Harold

**Title**

Mycorrhizal associations and the nutrition of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) in Ireland.

**Place**

Dublin

**Date**

1988

**Key Word**

mycorrhizae, Sitka spruce, *Picea sitchensis*, soil fungi, soil microflora, *L. laccata*, *T. terrestris*, *L. proxima*, *H. crustuliniforme*, basidiomycete, fungus, silviculture, forest soils

**Abstract**

The effectiveness of mycorrhizal associations in the nutrition of Sitka spruce was assessed by characterising the Sitka spruce mycorrhizas present in different sites. Furthermore, the effectiveness of these mycorrhizal types on peatlands and any differences between fungi in their effectiveness was also determined. In pursuit of these broad objectives, Sitka spruce populations in Glenealy, Aughrim and Gorey nurseries as well as Killakee Forest were sampled. This involved the macroscopic and microscopic examination of 2,000 root tips; categorisations into types and root isolations. Aseptically germinated Sitka spruce seedlings were transplanted into peat-filled containers inoculated with *L. laccata*, *T. terrestris*, *L. proxima* and *H. crustuliniforme* mycorrhizal cultures. The seedlings were glass-house grown for nine months. Important growth data, such as height, dry weight and nutrient content, were statistically analysed. The analysis of Sitka spruce roots showed that the seedlings were equipped with mycorrhizas at all sites, but nursery plants were not as mycorrhizal as the field plants. There were macroscopic differences in the over-all form between mycorrhizas in all sites. The microscopic features of the mycorrhiza surface hyphae were similar in most types. Clamp connections on the surface hyphae of most mycorrhizas showed that the fungus involved was a basidiomycete. The transplant nursery Sitka spruce types lacked clamp connections and rhizomorphs. The mycorrhizas formed in the nursery sites changed when planted into peat and were not effective. The isolates tested differed in effectiveness as ecto-mycorrhizal inoculum. All inoculated seedlings formed well-developed mycorrhizas, however, *T. terrestris* had the highest number of feeder roots colonised (89%). With the exception of *L. laccata*, isolates consistently improved seedling height over un-inoculated controls from the 4th to the 9th month. Although height stimulation by *T. terrestris*, *L. proxima* and *H. crustuliniforme* were not significantly different from the un-inoculated controls at 9 months, *T. terrestris*-inoculated seedlings, however, showed the best response. *L. laccata*-inoculated seedlings had significantly greater N and P concentrations than the other treatments did. *T. terrestris*- and *L. proxima*-inoculated seedlings had significantly greater N content than the other treatments had. Those inoculated with *T. terrestris* had a significantly greater P content than did other isolates. This study shows that mycorrhizas were formed at the nursery stage, but that they changed from one site to another. Basidiomycetes, which are reputedly the major class of ecto-mycorrhizal fungi, were absent in the supposedly critical transplant phase and mycorrhizas present were not effective. The performance of *T. terrestris* in height stimulation and *L. laccata* in nutrient up-take make the two fungi potential candidates for nursery inoculation of Sitka spruce.

**Page**

xv, 190 p

**Location**

UCD Forestry Department

**Notes**

Available. (A thesis submitted to the Faculty of Agriculture of the National University of Ireland for the Degree of Philosophiae Doctor).

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

499

**Author**

Gilliland John Patrick

**Title**

Widely spaced Sitka spruce: an analysis.

**Place**

Dublin

**Date**

1991

**Key Word**

Sitka spruce, Picea sitchensis, spacing, stand table, yield table, timber pricing, timber economics, silviculture

**Abstract**

This thesis looks at the role of Sitka spruce in Irish forestry and how it has developed up to the present day. It considers the effect of spacing on crop characteristics and how these effects can be quantified and tabulated into yield tables as well as looking at the economic implications of spacing. Two stands at 27 years of age (2.4 m and 4.0 m spacing) that have been unthinned are considered in detail and stand tables for both constructed and projected for 14 -16 years. Various price options and interest rates were applied to both spacing for the purpose of economic analysis and discounted values for all options calculated. No definite results as to which spacing level was the most profitable emerged, but a recommendation of a reduction of rotation length of approximately 20% of the rotation length of MMAI was made.

**Page**

119 p

**Location**

UCD Forestry Department

**Notes**

Available. ( Thesis presented in the Faculty of Agriculture, UCD for the Degree of Master of Agricultural Science).

**Thesis**

M.Ag.Sc. Thesis, UCD

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**Number**

500

**Author**

Mason Gary

**Title**

The influence of moisture content and milling conditions on the surface quality of homegrown Irish Sitka spruce.

**Place**

Newtownabbey

**Date**

1995

**Key Word**

surface quality finish, planing, Sitka spruce, Picea sitchensis, moisture content, feedspeed, timber processing, forest products

**Abstract**

This study examined the effect of the following variables on the surface quality finish of Irish home grown Sitka spruce: upmilling; downmilling; three moisture contents, 10%, 15%, and 20%; three feed speeds, 10, 20, 30 metres per minute; and three rake angles, 21, 22, 0.5, and 24 degrees. Because of the large number of combinations which can be created using these experimental parameters, a computerised factorial analysis package was used to predict the optimum set of variables in obtaining a quality finish without actually testing each individual combination. The results indicated each of the four variables were significant. The most significant variable in obtaining a quality finish was feedspeed slower than 10 metres per second. The other optimum variables were moisture content of greater than 20%, upmilling, and a rake angle of greater than 24

degrees. It was concluded that a feed speed greater than 10 metres per minute would not generate a surface finish acceptable for finished joinery irrespective of the other parameters under investigation.

**Page**

130p

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available (Thesis submitted for the award of the B.Sc. in Engineering, University of Ulster)

**Thesis**

B.Sc. Thesis, University of Ulster

---

**Number**

501

**Author**

Forest and Wildlife Service

**Title**

Report on forecast options including economic analysis of effect of shortening rotation.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Date**

1977

**Key Word**

production forecasting, State forests, inventory, crop surveys, economic analysis, rotation, silviculture

**Abstract**

In 1970 a forecast of forest production, which used data from an inventory of State woodlands (completed in 1968), was generated using a computer program written by the Land Commission's data processing section. In 1975 a more flexible program, that could allow some deviation from the 'normal' management strategy - including rotation length, thinning intensity and time of first thinning, was written by Crop Structure and Biometrics Section of the Forest and Wildlife Service. A series of forecast options have been generated using the newer program. These options have consisted of reduction of rotation length for all species by 0, 5, 10, 15 and 20% and also a forecast where Norway and Sitka spruce are reduced by 20% and lodgepole pine (coastal) by 30%. A number of forecasts have been run using the data from the 1968 inventory together with an increase in yield classes indicated in a 1976 survey of areas planted between 1958 and 1968. The original 1970 forecast is also given. These options based on three year averages are also shown in graph form. The report also contains an analysis of economic effect of shortening rotation.

**Page**

69 p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

502

**Author**

Forest and Wildlife Service

**Title**

Operation specification for ploughing and draining.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Date**

1979

**Key Word**

ploughing, drainage, operation specifications, costs, silviculture

**Abstract**

These operation specifications for ploughing have been introduced in order to bring about an increase in utilisation. This would have the advantage of : reducing ploughing costs; accomplishing the ploughing programme with a lesser number of units; and avoiding capital expenditure in purchasing replacement units, currently costing £18,000 each approx. It is essential that any factors militating against economic ploughing should be eliminated. Classification specifications and recommended treatments for the following categories of ploughing sites are given. 1. Topographic categories; flat areas and steep areas, and 2. Edaphically; peat and mineral. The various procedures involved in implementing the recommended procedures are outlined. Finally a number of possible alternatives to deep ploughing are outlined. These include moling, shallow agricultural ploughing, ripping and tunnel ploughing.

**Page**

20p

**Location**

Coillte library

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**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

503

**Author**

Department of Fisheries and Forestry. Analysis Section

**Title**

The construction and maintenance of forest roads; - a review of management procedures.

**Publisher**

Department of Fisheries and Forestry

**Place**

Dublin

**Date**

1982

**Key Word**

road construction, road maintenance, forest management, forest roads, road plans, road design, forest machinery, forest infrastructure

**Abstract**

This study reviews the procedures used to manage roadworks, including the drawing up of road programmes, the organisation of resources and the monitoring and controlling of progress and costs. It forms part of a general review of forestry road requirements and management procedures. This study is concerned mainly with the organisation of the road system, and the drawing up of a framework for the execution of the road programme and for monitoring and controlling the cost of road activities. Recommendations were made regarding the establishment of priorities for management roads, standardising the format of road programmes, planning roadworks monies and the design and drawing up of specifications for roadworks in individual sites.

**Page**

63p

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**Number**

504

**Author**

Hunt T.P.

**Title**

Report on Makeri - 331.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

(Forest and Wildlife Service Internal Report)

**Date**

1983

**Key Word**

forest machinery, felling, thinning, debranching, Makeri harvester, harvesting

**Abstract**

The report details the findings of a number of trials on the Makeri 331 harvester. This is a small easily manoeuvrable harvester with a dual function, felling/debranching head. The actual felling operation is performed by a hydraulically operated shears with a maximum butt diameter span of 25 cms. Delimiting is carried out by one fixed and two moving knives which are fed by means of spiked rollers. The trial results showed that the quality of the debranching varied from excellent to poor, depending on whether the trees were straight and finely branched or to what degree they were roughly branched forked or crooked. On all trees, which were not already brushed or self-pruned, the machine was unable to clean a short portion of the butt segment. Summaries of the results of trials on several other aspects of the harvester are also included.

**Page**

44p

**Location**

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**Number**

505

**Author**

Pfeifer A.

**Title**

Review of Sitka spruce seed sources.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Internal Report

**Date**

1983

**Key Word**

Sitka spruce, *Picea sitchensis*, seed sources, provenance field trials, seed selection, seeds

**Abstract**

Following the establishment of a series of field trials on Sitka spruce provenance in 1975, seed from 84 locations was collected systematically throughout the species natural range. The resulting plants form the basis of 9 field trials which are established on all major forest site types in the country. From the data obtained through these trials it is concluded that the most suitable provenance region for widescale planting of Sitka spruce in Ireland is the west coast of Washington. Home collected seed is better than imported seed only if the same origins are being compared. It is also concluded that the cost of seed forms a minute proportion of the total establishment cost of a plantation and should not be a deciding factor when considering sources.

**Page**

38p

**Location**

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**Notes**

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**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co.Wicklow.

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**Number**

506

**Author**

Ward Sean

(Department of Finance. Analysis Section)

**Title**

Review of policy on private forestry.

**Publisher**

Department of Finance

**Place**

Dublin

**Date**

1983

**Key Word**

private forestry, forestry policy, grants, State subsidies, afforestation, forest economics, investment

**Abstract**

The purpose of this study was to examine the role of private forestry in Ireland, the impact of existing policies on this sector and the possible impact of alternative policies. The various aspects of forestry policy including grants, tax incentives, advisory services and the relations between the private sector and financial agencies are examined. The part played by foresters and other investors, such as financial agencies leasing State forests is also described. The report concludes that there is no evidence to suggest that the implied private sector target of 2,500 hectares will be met. The most serious setback to afforestation is identified as the severe decline in the Forest and Wildlife Service's planting programme since 1979. The report's central recommendation is that from 1984-1988 inclusive the FWS lease approximately 1,000 hectares of 19 year old forests to interests in the private sector.

**Page**

150p

**Location**

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**Number**

507

**Author**

Breen Padraic

**Title**

The use and development of computer programs in forestry.

**Publisher**

University College Dublin. Department of Forestry

**Place**

Dublin

**Date**

1985

**Source**

Proceedings of 13th International Forestry Students Symposium: 'Forestry in Europe' held at University College Dublin, 3rd, 4th, 5th January, 1985.

**Key Word**

forestry computer programs, information technology, data processing, computer simulations

**Abstract**

Computers can be used in several areas of forestry which involve mathematical calculations or data processing. The advantages and disadvantages of using computers in forestry are examined. Guidelines are offered for developing computer programs specifically for use in forestry. The structural design of a simulation program is included.

**Page**

pp 30 - 35

**Location**

Coillte library

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**Number**

508

**Author**

Shaffrey Conor, Moran Michael

**Title**

Forestry: its impact on the landscape.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1985

**Source**

Proceedings of 13th International Forestry Students Symposium 'Forestry in Europe' held at University College, Dublin 3rd, 4th, 5th January, 1985.

**Key Word**

environment, landscape, ecological impact, afforestation

**Abstract**

The impact of forestry on the four main elements of the landscape is examined. Forestry has little control over the boundaries of the plot of land purchased, and forests often have harsh lines and geometric shapes across the landscape. In most cases form tends to be totally unsympathetic to the surrounding landscape. The effect of plantations on colour and texture is also examined.

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pp 69 - 72

**Location**

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**Notes**

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**Number**

509

**Author**

Stack David

**Title**

The future of forestry from an agricultural viewpoint.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1985

**Source**

Proceedings of 13th International Forestry Students Symposium: 'Forestry in Europe' held at University College

Dublin, 3rd, 4th, 5th January, 1985.

**Key Word**

agriculture, land use, afforestation, environment, landscape, forestry policy

**Abstract**

This paper briefly examines the different means of promoting forestry on the various types of agricultural land. The policy objectives which would favour the use of marginal land are discussed under the following headings: ownership; legislation; co-operatives and taxation. The steps needed to develop a programme of integrated farm forestry are outlined.

**Page**

pp 73 - 79

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**Number**

510

**Author**

Ferguson John M., Flood Donal T.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

The properties of Irish grown Sitka spruce (*Picea sitchensis*). Report No. 1. A sampling from Camolin Forest, Co. Wexford.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1966

**Key Word**

Sitka spruce, *Picea sitchensis*, timber properties, timber processing, timber industry, chemical properties, strength properties, mechanical testing

**Abstract**

The purpose of the series of reports, of which this report forms the first part, is to determine the characteristics of the principal species of tree in cultivation in Ireland. In this report data are given for a sample of Sitka spruce consisting of twelve trees, 44 years old, from Compartment No. 39, of Camolin property, Camolin Forest. Strength properties were measured by an internationally agreed system of testing small specimens of clear timber, of 2 cm section. The results of the tests showed that Irish-grown Sitka spruce had approximately the same strength properties as samples grown in other countries. The average figure for the modulus of elasticity of the Irish-grown sample is appreciably lower than that reported for the foreign grown samples. Allowances must be made for a degree of error resulting from the small size of the test specimens and other limiting factors. Other properties discussed include the presence of knots and the chemical properties of the timber.

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22p

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**Number**

511

**Author**

Dunleavy James A., Gallagher Leonard U., Flood Donal T.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

The properties of Irish-grown Sitka spruce (*Picea sitchensis*). Report No. 3. A sampling from Killarney Forest, Co. Kerry.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1968

**Key Word**

Sitka spruce, *Picea sitchensis*, shrinkage, chemical properties, physical properties, timber industry, timber strength, mechanical testing, timber properties, fungal diseases, fungi

**Abstract**

This is the third in a series of reports which describe the results of tests on the properties of Irish-grown Sitka spruce. The sample in this report was taken from Compartment 12, Muckross property, Killarney Forest, Co. Kerry. Three cross-sectional discs were used for studies on shrinkage, chemical constituents and possible fungal infection. Another disc was used to determine the moisture content and specific gravity, and a fifth to study growth rate, tracheid length, and the amount of latewood and compression- wood. A comparison is made of the properties of Sitka spruce from the three different parts of the country from which samplings were taken.

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41p

**Location**

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**Notes**

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**Address of author**

Forest Products Dept., Forbairt

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**Number**

512

**Author**

Dunleavy James A., Gallagher Leonard U., Flood Donal T.  
(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

The properties of Irish-grown Sitka spruce (*Picea sitchensis*). Report No. 2. A sampling from Aughrim Forest, Co. Wicklow.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1968

**Key Word**

Sitka spruce, *Picea sitchensis*, strength properties, mechanical properties, chemical properties, timber strength, timber industry, mechanical testing, timber properties, fungal diseases

**Abstract**

The system of mechanical testing used for this sampling of Sitka spruce from Coolgarrow property, Aughrim Forest Co. Wicklow was based on specimens of 2 cm square. Many of the logs in the consignment were found to have developed varying amounts of attack by fungus. Two cross-sectional discs approximately 2 in. thick were cut about 1.5' from the lower end of each log. One of the two discs taken for physical measurement was used for the determination of the specific gravity; the other was used for the measurement of rate of growth, amount of latewood, and variation in tracheid length. The results of the mechanical tests showed that the strength properties of the timber was not affected by fungal infection. The strength properties of the Aughrim sample in general are better than those of the earlier sampling from Camolin. As was the case with Camolin sample, it is shown that the designation of grade by visual assessment does not necessarily provide an indication of the strength of individual scantlings.

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**Number**

513

**Author**

Dunleavy James A., Gallagher Leonard U., Flood Donal T.  
(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

The properties of Irish-grown Sitka spruce. Report No. 4. A sampling from Glenmalure Co. Wicklow.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1968

**Key Word**

Sitka spruce, *Picea sitchensis*, timber industry, wood properties, timber properties, chemical properties, mechanical testing

**Abstract**

A consignment of Sitka spruce was taken from Compartment 35, Ballyboy property, Glenmalure Forest. The consignment contained samples from both dominant and co-dominant categories. Of the three discs removed from sample logs for testing, one was used: (1) for measurements of shrinkage; (2) for chemical determinations, and; (3) to check the possible presence of decay fungi. The remaining two discs were used for the examination of physical properties: one was used for the determination of moisture content, the amount of bark, and the specific gravity; the other for measurements of radial growth and tracheid length. The data obtained from these tests show that the strength properties of the Glenmalure sampling are somewhat lower than those for the Aughrim sampling (Report No. 2), while they are approximately equivalent to those of the sampling from Camolin. When the results of the mechanical tests are assessed, and the dominant trees are placed in order from the strongest to the weakest, there is a striking confirmation that increased strength is associated with a combination of higher density and close ring structure. It also appears that above a certain rate of increase in growth some loss of strength occurs.

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34p

**Location**

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**Address of author**

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**Number**

514

**Author**

Dunleavy James A., Gallagher Leonard U., Flood Donal T.  
(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

The properties of Irish-grown Contorta pine (*Pinus contorta* Dougl.) Report No. 1. A sampling from Bansha Forest Co. Tipperary.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1969

**Key Word**

lodgepole pine, Pinus contorta, physical properties, timber properties, chemical properties, timber processing, timber industry, mechanical testing

**Abstract**

The consignment which is studied in this report was taken from fourteen selected trees grown at Bansha Forest, Co. Tipperary. Four discs were cut from the butt end of each log. Two discs were used for shrinkage measurement. One disc from each set was used to determine moisture content, amount of bark, and specific gravity. The remaining disc was used to assess rate of growth, the amount of sapwood and, for two trees, the variation in mean tracheid length. The results of the study show that the mechanical properties of the sample are not inferior to mature Canadian timber examined. The mechanical properties of lodgepole pine, as shown by tests on small clear specimens, are somewhat better than those of Irish-grown Sitka spruce, and its working properties are also good. While the results for the chemical constituents indicate a somewhat higher content of extractives soluble in water and in organic solvents than was found in Sitka spruce, it is noteworthy that lodgepole pine is low in these extractives by comparison with other pines.

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**Number**

515

**Author**

Institute for Industrial Research and Standards. Forest Products Department

**Title**

The properties of Irish-grown Norway spruce. Report No. 1

**Publisher**

IIRS

**Place**

Dublin

**Date**

1969

**Key Word**

Norway spruce, Picea abies, wood properties, timber properties, chemical properties, physical properties, timber industry, mechanical testing

**Abstract**

Twelve trees were selected for this report on the properties of Irish grown Norway spruce from Dromana property, Cappoquin forest, Co. Waterford. Four discs were removed from the butt end of each log. These were used for studies on shrinkage, rate of growth, percentage of sapwood and bark, tracheid length, specific gravity, moisture content and chemical constituents. A further two discs from the log top were used to determine moisture content, specific gravity, percentage of sapwood and bark, and rate of growth.

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**Number**

516

**Author**

Institute for Industrial Research and Standards. Forest Products Department

**Title**

The properties of Irish-grown Douglas fir. Report No. 1.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1970

**Key Word**

Douglas fir, *Pseudotsuga menziesii*, physical properties, chemical properties, mechanical testing, timber industry, wood properties

**Abstract**

The eleven trees selected for this study on the properties of Irish grown Douglas fir were taken from Lower Killaduff property, Aughrim Forest, County Wicklow. Discs cut from the butt-end and base of the selected logs were used for studies on shrinkage, rate of growth, tracheid length, specific gravity, moisture content, percentage sapwood and bark and chemical constituents. Discs cut from the top of the logs were used to determine moisture content, specific gravity, amount of bark and rate of growth.

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**Number**

517

**Author**

Institute for Industrial Research and Standards. Forest Products Department

**Title**

The properties of Irish-grown Contorta pine. Report No. 2.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1970

**Key Word**

lodgepole pine, physical properties, timber properties, chemical properties, mechanical testing, *Pinus contorta*

**Abstract**

Seventeen trees were selected for this study into the properties of Irish-grown lodgepole pine from Skaghanagh property, Ballyhoura Forest, Co. Cork. Discs cut from the bottom and the base of sample logs were used for studies on shrinkage, rate of growth, percentage sapwood and bark, tracheid length, specific gravity, moisture content and chemical constituents.

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43p

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**Number**

518

**Author**

Purcell T.J.

**Title**

The availability of Irish timber.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1982

**Source**

IIRS. Opportunities for Irish Timber, 16 November 1982, Burlington Hotel Dublin.

**Key Word**

timber availability, sawmilling industry, timber processing, timber supply, forest production forecasting, timber trade, timber prices, import substitution, forest products, timber imports

**Abstract**

This paper provides a brief account of the availability of timber in Ireland at present, and estimates the amounts that will become available in the future. The existing forest estate is described in terms of ownership (State or private), distribution of species, inventories of growing stock and growth measurement, and sawlog supply. A series of tables shows the national and regional production forecast for sawlog (large and small) and pulpwood from thinnings and clearfelling on an annual basis for ten years (1983 - 92). The industrial, local and special markets for forest raw material are analysed. The methods of sale and the pricing of Irish timber are also examined. The extent of future import substitution is estimated. The two most important aspects of the projected supply from 1983 to 1992 are the amount of small sawlog becoming available, and the high proportion of large sawlog which will come from species with good finishing quality.

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16p

**Location**

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**Number**

519

**Author**

Gallahger L.U.

**Title**

Irish timber in the construction industry.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1982

**Source**

IIRS. Opportunities for Irish timber, 16 November 1982, Burlington Hotel, Dublin.

**Key Word**

timber industry, construction industry, standards, timber quality, timber processing, physical properties, mechanical properties, wood quality assessment, timber grading, timber products research, drying, timber frame construction

**Abstract**

The author provides an account of the research work carried out in the IIRS's Timber Department which has had as its main object assessing the mechanical, physical and chemical properties of Irish grown softwood timbers. Other aspects of the Department's research work include wood quality assessment, the development of a mechanical timber grader, and an investigation of drying techniques in relation to home grown timber. In 1977 the Forest Products Department of the IIRS initiated a quality control scheme for timber in house construction. The standards required of timber used in the Irish construction industry are described. Possible areas of expansion in the Irish timber market, in particular the use of M75 Grade Irish Sitka, are examined. Timber frame construction promises to be particularly lucrative market for producers of Irish timber products in the future.

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28 p

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**Number**

520

**Author**

Glennon P.

**Title**

Viewpoint of a timber processor.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1982

**Source**

IIRS. Opportunities for Irish Timber, 16 November 1982, Burlington Hotel, Dublin.

**Key Word**

timber processing, sawmilling industry, timber trade, imports, forest products

**Abstract**

The historical background to the present state of the Irish sawmilling industry is outlined, and a comparison is made of homegrown timber outlets in Ireland and the U.K. Recommendations to encourage greater use of home-grown timber include an end to the export of unprocessed logs, and the compilation of standing prices for timber on a flexible basis.

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6p

**Location**

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**Number**

521

**Author**

Cullen D.

**Title**

The IDA development strategy for the timber industry.

**Publisher**

Industrial Research and Standards

**Place**

Dublin

**Date**

1982

**Source**

IIRS. Opportunities for Irish timber, 16 November 1982, Burlington Hotel.

**Key Word**

timber processing, IDA, subsidies, grants, sawmilling industry, pulpwood, forest products

**Abstract**

In 1977 a the Industrial Development Authority established a working group to draw up a development strategy for the timber industry for the 1980s. The findings of the group's study are set out under two main sector headings - the pulpwood sector; and the sawmilling sector.

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13p

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**Number**

522

**Author**

Picardo V.

**Title**

Strength properties of timber.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1980

**Source**

IIRS. Stress Grading Workshop, 12-14 March 1980.

**Key Word**

timber properties, timber strength, strength tests, physical properties, mechanical tests, stress grading, forest products, timber processing

**Abstract**

The author emphasises the strength of timber in comparison to other materials, and argues that it is not sufficiently used in structural design. Tests for determining the strength properties of timber involve six strength tests: static bending; impact bending, compression parallel to grain; hardness; shear parallel to grain; and cleavage, and two tests of physical properties: moisture content; and nominal specific gravity. The factors influencing strength can be divided into two groups: (1) external factors comprising humidity and temperature, duration of load, depth of member; and (2) inherent factors comprising density, basic stresses, grade stresses and permissible stresses.

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16p

**Location**

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**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

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**Number**

523

**Author**

Wiley Sean

**Title**

Principles of stress grading.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1980

**Source**

IIRS. Stress Grading Workshop, 12-14 March, 1980.

**Key Word**

timber properties, timber strength, stress grading, British Standard Specification, timber quality, timber industry, forest products, timber processing

**Abstract**

Stress grading is the classification of timber into grades according to its strength. Timber is currently stress graded by one of two methods (1) visual stress grading, and (2) mechanical stress grading. The procedures and techniques involved in stress grading and mechanical grading are described. The British Standard Specification B.S. 4978, which has been adopted in Ireland, makes provision for both of these types of grading. In North America structural timber is graded to the National Lumber Grades Authority (NGLA).

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14p

**Location**

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**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

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**Number**

524

**Author**

Gallagher L.U.

**Title**

The background to stress grading.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1980

**Source**

IIRS. Stress Grading Workshop 12-14 March, 1980.

**Key Word**

stress grading, standards, timber strength, physical properties, mechanical properties, mechanical testing, timber specifications, timber grades, structural timber, visual grading, timber trade, forest products, timber processing

**Abstract**

This paper begins with a look at the historical development of grading. By the early twentieth century visual grading alone was seen to be inadequate for the requirements of building structures, and in the 1920s techniques were developed to investigate the physical and mechanical properties of timber, including strength. In the 1960s stress grading machines, which allowed the non-destructive testing of timber, were developed in the United States. In 1973 the BS.4978: 'Specification for Timber Grades for Structural Use' was published. This is becoming the standard for timber strength in several countries outside of the United Kingdom, including Ireland.

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10p

**Location**

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**Number**

525

**Author**

Gallagher L.U.

**Title**

Tree growth and the structure of wood.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1980

**Source**

IIRS. Stress Grading Workshop, 12-14 March, 1980.

**Key Word**

tree growth, wood structure, physical properties, timber quality, tree physiology, stress, strength, silviculture

**Abstract**

This paper provides a brief description of the variables which affect the quality of timber from a particular tree. The author begins with an account of the basic physiology of the tree and then examines the basic properties related to structure, including the orientation of cells in wood, the presence of knots, density and moisture. The effect that silvicultural treatment can have on the quality of wood is discussed.

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15p

**Location**

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**Number**

526

**Author**

Picardo V.

**Title**

Future of stress grading.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1980

**Source**

IIRS. Stress Grading Workshop, 12-14 March, 1980.

**Key Word**

stress grading, timber processing, timber industry, mechanical testing, visual grading, mechanical grading, standards, specifications, forest products

**Abstract**

The use of stress grading machines by timber processors is becoming more common. There are a number of mechanical stress graders available on the market and these can be divided into two categories, high speed machines and low speed machines. Most timber in Ireland is graded visually rather than mechanically, and at present there is no Quality Assurance Scheme for machine grading at present. There are four grades available however, namely GS and SS - which are obtainable both as visual and machine graded - M75 and M50 - which can only be done by machine. Research has shown that M75 grade Sitka spruce has the same grades stresses as European redwood and whitewood of M50 grade.

**Page**

10p

**Location**

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**Notes**

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**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

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**Number**

527

**Author**

Wiley Sean

**Title**

Quality control and application of grading.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1980

**Source**

IIRS. Stress Grading Workshop, 12-14 March, 1980.

**Key Word**

quality control, stress grading, standards, standard specifications, timber processing, mechanical testing, strength, physical properties

**Abstract**

The introduction of the British Standard BS 4978 - 'Timber Grades for Structural Use', has created the need for qualified stress graders in the Irish timber industry. In the United Kingdom quality control of stress grading machines is undertaken by the British Standards Institute. There are similiar procedures operating in Ireland where inspections are carried out by the IIRS. The application of grading in truss manufacturing, timber-frame construction and on building sites is examined.

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12p

**Location**

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**Notes**

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**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

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**Number**

528

**Author**

Coclough P.R.

**Title**

The timber industry in Ireland.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1980

**Source**

IIRS. Stress Grading Workshop, 12-14 March, 1980

**Key Word**

timber industry, wood imports, sawmilling, timber processing, timber trade, forest products, , timber end use

**Abstract**

The operations of both timber importers and homegrown timber merchants are examined. Importers can be divided into three categories: major importers; lesser importers; and manufacturers who bring in their own requirements to be further processed on their own premises. Figures are included for the quantity and value of each type of commodity of imported wood (1978 figures), the quantity and value of imported wood by country of origin (1978 prices), softwood import prices for 1966-77, and softwood consumption by industrial sectors (1975). The primary industries involved in the home grown timber industry are those involved in the manufacture of sawn goods, panel products and paper pulp. Downstream industries are the production of pallets, boxes and fence posts. The substitution of homegrown timber for imported timber will increase significantly with the development of the sawmilling industry.

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20p

**Location**

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**Notes**

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**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

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**Number**

529

**Author**

Fitzsimons B.

**Title**

Silvicultural management of lodgepole pine.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Lodgepole pine workshop. Proceedings of a workshop on the potential of fast grown Irish lodgepole pine, held at the Forest Products Department, EOLAS, on the 11th November 1988. (Edited by J. A. Evertsen)

**Key Word**

lodgepole pine, Pinus contorta, basal sweep, nursery practice, establishment practice, silviculture

**Abstract**

The performance of the various categories of lodgepole pine grown in Ireland (Lulu Island, inland, mixed provenances and south coastal) is assessed. South coastal, the most important of these provenances, both in terms of the area it covers and its growth rate, is very prone to sweep. The various factors contributing to sweep are examined. It is now thought that this condition arises largely from past nursery and crop establishment practice, and recommended remedial measures are outlined. The correct approach to silviculture for both pure crops and mixtures is also outlined. The case for premature clearfelling can be made on the basis of poor quality (coarse or crooked stems), disease, or poor growth.

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**Location**

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**Address of author**

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**Number**

530

**Author**

McLoughlin J.

**Title**

Lodgepole pine - has it a bright future?

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Lodgepole pine workshop '88. Proceedings of a workshop on the potential of fast grown Irish lodgepole pine, held at the Forest Products Department, EOLAS, on the 11th November 1988. (Edited by J.A. Evertsen)

**Key Word**

lodgepole pine, Pinus contorta, forest products, stability, stem form, sweep, joinery timber, timber processing, physical properties, marketing, timber market, joinery markets

**Abstract**

Lodgepole pine is a most adaptable species and can thrive under conditions not tolerated by other species. However, the coastal variety, the most extensively planted provenances, are affected by problems of stability and poor stem form. Despite these problems, a recent Task Force Report published by EOLAS found that lodgepole pine, as a joinery timber, is equal to or better than imported red deal in the physical characteristics examined. Forecasts of mean annual availability of lodgepole pine for the years 1988 to 1997 are included. They indicate that about 11,000 cubic metres of sawn material should potentially be available to the joinery industry every year.

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pp 26 - 32

**Location**

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**Notes**

available

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**Number**

531

**Author**

Atanackovic A.

**Title**

The effect of blue stain on the quality of lodgepole pine.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Lodgepole pine workshop '88. Proceedings of a workshop on the potential of fast grown Irish lodgepole pine, held at the Forest Products Department, EOLAS, Dublin, Ireland, on the 11th November 1988. (Edited by J.A. Evertsen)

**Key Word**

blue stain, timber processing, forest protection, fungal infection, fungi, lodgepole pine, preservatives, chemical treatment, hygiene

**Abstract**

Blue stain, or sapstain, appears as a discolouration of the wood caused by the dark fungus which can be seen on the surface of timber and generally goes deep into the wood. The conditions in which the fungus grows are described. An investigation of blue stain in lodgepole pine was carried out in two separate projects: in the first the effect of log storage location, duration of log storage, and application of blue stain preservative was evaluated; in the second the effect of air drying of untreated sawn timber was assessed. It was found that treatment with 'ANTIBLU-3739' reduces the hazard of blue stain infection of both sawn timber and saw log. After two weeks of storage, the probability of log infection is significantly increased, especially if logs are stored in the sawmill yard. Air drying of timber, without chemical treatment, reduces risk of deterioration.

**Page**

pp 33 - 51

**Location**

Forbairt library

**Notes**

available

**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

---

**Number**

532

**Author**

Evertsen J.A., Gallagher L.U.G.

**Title**

The effect of drying on the quality of lodgepole pine joinery timbers.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Lodgepole pine workshop '88. Proceedings of a workshop on the potential of fast grown Irish lodgepole pine, held at the Forest Products Department, EOLAS, Dublin, Ireland, on the 11th November 1988. (Edited by J.A. Evertsen)

**Key Word**

lodgepole pine, Pinus contorta, kiln drying, air drying, timber processing, timber industry, wood shrinkage, wood distortion, forest products

**Abstract**

In this paper the effect of both natural and artificial drying methods on shrinkage and distortion are assessed. It was found that air drying had an insignificant effect on plank length and thickness. A slight effect was noted in plank depth. Tests for distortion indicated that air drying caused an increase of 32% in the number of planks with spring, and kiln drying caused a 5% increase. The amount of bow caused by drying was negligible. Kiln drying caused an unacceptable level of twist in 29% of boards tested, but there was no significant difference in twist between the two types of drying. The report concludes that there is no obvious reason that kiln drying should decrease the quality of homegrown lodgepole pine.

**Page**

pp 52 - 68

**Location**

Forbairt library

**ISBN**

0900540940

**Notes**

available

**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

---

**Number**

533

**Author**

Department of Energy. Forest Service

**Title**

Planned recreational forestry. Guidelines for grant applications.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1992

**Key Word**

Planned Recreational Forestry Scheme, grants, subsidies, forest amenities, recreation

**Abstract**

These guidelines have been compiled to assist in preparing applications for grant aid under the Planned Recreational Forestry Scheme. Details of the type of information which must accompany the applications, and an explanation of the manner in which application forms must be filled are provided. An example of a completed application form, together with maps and financial estimates, is included.

**Page**

14p

**Location**

Coford

**Notes**

available

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**Number**

534

**Author**

Department of Agriculture and Food

**Title**

Operational Programme for Rural Development: As submitted to the EC Commission under the Community Support Framework.

**Publisher**

Department of Agriculture and Food

**Place**

Dublin

**Date**

1990

**Key Word**

rural development, Structural Funds, EC, EU, European Commission, Operational Programme for Forestry, European Community, European Union

**Abstract**

As part of the Department of Agriculture's submission to the European Commission under the Operational Programme for Rural Development, forestry is dealt with under the heading 'Identification of Sectors for Development'. The submission calls for measures which are supportive of the increased planting targets in the Operational Programme for Forestry and of planned recreational forestry.

**Page**

118p

**Location**

Coford

**Notes**

available

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**Number**

535

**Author**

Government of Ireland/Commission of the European Communities

**Title**

STRIDE Operational Programme for Ireland 1991-1993. Forestry Sub-Programme and Measures

**Publisher**

Department of the Marine

**Place**

Dublin

**Date**

1990

**Source**

Stride Operational Programme for Ireland 1991-1993

**Key Word**

STRIDE, forestry research, technology, EC, EU, Community Support Framework, forestry Sub-Programme, European Community, European Union

**Abstract**

The STRIDE operational programme for Ireland is designed to provide essential research and technological support to the Community Support Framework. The report states that although the outlook for continued growth in the Irish forestry sector is favourable, the national research effort is fragmented, sub-critical in scale and lacks an overall focus capable of mobilising national support or of attracting international assistance. The Sub-programme recommends the establishment of a forum to co-ordinate research activities in order to better serve the forestry industry, the promotion of better technology transfer to the industry, and the upgrading of lab equipment.

**Page**

pp 91 -112

**Location**

Coford

**Notes**

available

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**Number**

536

**Author**

O Muirgheasa Niall

**Title**

The future of long rotation forestry on midland peat.

**Publisher**

Irish Society of Agronomy and Land Use

**Place**

Carlow

**Date**

1978

**Source**

Irish Society of Agronomy and Land Use Symposium: 'Future use of midland bogs' at Tullamore February 1978.

**Key Word**

long rotation forestry, midland peat, environment, agriculture, land use, peatlands, bogs, marginal land, deep peat, environment, amenities, wildlife

**Abstract**

Four separate benefits of forestry are considered. As part of the overview of forests as high yielding crops of a commodity in short supply, the performance of lodgepole pine on deep peat and Sitka spruce on cutover < 2m. depth is considered. The importance of forests as a basis on which a locally based complex of industries can be established, and as a tool of conservation and protection of cutover peatlands is examined in detail. Forests also provide the cover within which large-scale, highly mechanised agriculture and horticulture can be developed. Their importance as a trap for air pollutants and their role as wildlife refuges and public amenities are also considered.

**Page**

pp 29 - 36

**Location**

Coillte library

**Notes**

available

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**Number**

537

**Author**

Collins A., MacSiurtain M.P., McCormick N.L.M. McCormick, Kirwan S., Joyce P.M.

**Title**

An operational forest management PC remote sensing integrated Geographic Information System (RS-IGIS).

**Publisher**

American Society for Photogrammetry and Remote Sensing

**Place**

Bethesda, MD

**Date**

1990

**Source**

Proceedings: Resource Technology 90. Second International Symposium on Advanced Technology in Natural Resource Management, Georgetown University Conference Centre, Washington D.C. November 12 - 15, 1990.

**Key Word**

Geographic Information Systems, GIS, computer applications, information technology, satellite remote sensing, forest management, forest inventory

**Abstract**

One application of remote sensing in forestry is the identification and interpretation of recent forest changes from imagery. These changes may then be incorporated into existing forest map databases. Software has been developed which enables this operation to be efficiently carried out at PC level. Three band enhanced images are displayed on a PC using standard graphics. Georeferenced ERDAS images are down-loaded to the PC from the mainframe. Existing forest maps, stored as digitized vector data, may also be displayed and interactively manipulated at PC level. Vector data are coded to facilitate their subsequent linking to an attribute database. Rectification of these map data, to the same mapping system used for image rectification, allows overlaying of corresponding vector data on enhanced unclassified and/or classified imagery. This enables changes in forest canopy to be identified and delineated on a standard PC colour monitor. These changes may then be incorporated into a forest map database using an interactive vector editor. A mainframe and operational PC based hardware-software and hardcopy configuration (PCUCDGIS) is outlined.

**Page**

pp 560 - 569

**Location**

Dept. of Forestry, UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

538

**Author**

Irish Delegation to the Joint Session of Timber Committee and European Forestry Commission

**Title**

Ireland. National Progress Report to Joint Session of Timber Committee and European Forestry Commission, 11 - 15 October, 1993 Rome.

**Publisher**

Irish Delegation to the Joint Session of Timber Committee and European Forestry Commission

**Date**

1993

**Key Word**

afforestation

forestry policy

timber processing

forest products

**Abstract**

Under the heading 'Recent Developments in the Forest Sector at National Level', the following aspects of Irish forestry are briefly summarised: (i) the announcement of the new Coillte/Louisiana Pacific OSB mill; (ii) the expansion the existing Medite MDF plant; (iii) planting policy; (iv) the increase in timber production during 1992; and (v) timber prices. A brief note on government policy on sustainable development as it relates to forestry is also included.

**Page**

6 p

**Location**

Coillte

**Notes**

available

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**Number**

539

**Author**

Mullen Michael

**Title**

Education and training for growth in the forest and timber sectors - an overview.

**Publisher**

Eurofortech. Irish Steering Committee.

**Place**

Dublin

**Date**

1994

**Source**

Eurofortech. Irish Steering Committee. A seminar: 'Training Requirements for the Irish Forest and Timber Sector'. The Forestry Department, UCD September 23rd 1994.

**Key Word**

education, training, Structural Funding, Forestry Operational Programme, skills, EU, EC, European Union

**Abstract**

The paper provides a brief comment on each of the three areas on which training undertaken of behalf of the Department of Agriculture under the 1989-93 Forestry Operational Programme was concentrated: farmers; harvesting; and the timber industry. The issues of greatest importance regarding funding for training under the next round of Structural Funding are the availability of this funding, and the basis on which it will be distributed. It is argued that all future funded training must be compatible with and complementary to the objectives and development priorities of the sector as a whole, and that very clear tangible benefits result from training.

**Page**

pp 5 - 9

**Location**

Coford

**Notes**

Available

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**Number**

540

**Author**

Lowery Martin D.

**Title**

Training requirements for the forest sector.

**Publisher**

Eurofortech. Irish Steering Committee

**Place**

Dublin

**Date**

1994

**Source**

Eurofortech. Irish Steering Committee. A seminar: 'Training Requirements for the Irish Forest and Timber Sector', The Forestry Department, UCD, September 23rd, 1994.

**Key Word**

training, education, forestry technicians, forestry graduates, skills, silviculture

**Abstract**

The various sectors of forestry training and education are briefly assessed. Forestry graduates are needed to provide intellectual flexibility so that the industry can adapt quickly to changes. The gap in technician training level for the industry will become a problem in the next ten years as the present generation retires. The introduction of a training course in one of the Regional Technical Colleges would help to alleviate this problem. Some of the key areas which could be covered in a newly designed course are outlined. Forestry operatives' lack of formal training in both Coillte and the private sector is noted. This is becoming an increasing problem with the greater mechanisation of forestry and the need for forestry workers to operate more independently. It is also essential to develop good forest management practice among private forest owners, especially farmers.

**Page**

pp 10 - 17

**Location**

Coford

**Notes**

Available

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**Number**

541

**Author**

Kerrigan John

**Title**

Training requirements for the timber processing sector.

**Publisher**

Eurofortech. Irish Steering Committee

**Place**

Dublin

**Date**

1994

**Source**

Eurofortech. Irish Steering Committee. A seminar: 'Training Requirements for the Irish Forest and Timber Sector'. The Forestry Department, UCD September 23rd 1994.

**Key Word**

timber processing, industry, training, education, management, business skills, technical skills, sawmilling industry, forest products

**Abstract**

The expected changes in the structure of the timber processing industry are briefly described. Both larger and smaller units will require staff with a very broad range of technical and business skills, and contracted knowledge and skills will become an increasingly important feature. Training will have to respond to these new needs. The areas which will become of greater importance in training comprise: business skills, particularly in management and sales and marketing; human resources management; research and development; quality and standards; health and safety, environmental protection; product knowledge and skills; process knowledge and skills.

**Page**

pp 18 - 27

**Location**

Coford

**Notes**

Available

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**Number**

542

**Author**

Tynan Eamon

**Title**

Training requirements for the wood manufacturing sector.

**Publisher**

Eurofortech. Irish Steering Committee

**Place**

Dublin

**Date**

1994

**Source**

Eurofortech. Irish Steering Committee. A seminar: 'Training requirements for the Irish forest and timber sector', The Forestry Department, UCD, September 23rd, 1994.

**Key Word**

wood manufacturing, training, education, timber processing, management, forest products

**Abstract**

The author provides a brief description of different aspects of the wood manufacturing industry, the type of competition within the industry and what the industry requires to make it more competitive as a whole. The role which industry and employers organisations and the various State and European agencies can play in this process is outlined.

**Page**

pp 29 - 36

**Location**

Coford

**Notes**

available

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**Number**

543

**Author**

GardIner J.

**Title**

The forest industry and the environment.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Forbairt Industrial Education Programme. Seminar. The Timber Market. 17th February 1994.

**Key Word**

environment, environmental management, timber processing, timber manufacturing, health, safety, marketing, timber market

**Abstract**

The consequences of the forest industry taking on the role of stewardship of the forest environment is considered under three headings: (1) the forest environment. The benefits which will accrue from good environmental management of the forest will include increased recreation and leisure facilities, biodiversity, wildlife habitat, landscape, provision of shelter (on farms), soil improvement and erosion control and absorption of CO<sub>2</sub> and carbon fixing. The author examines the way that the provision of these benefits will affect forestry and the production of wood products; (2) the manufacturing environment. Measures are needed to further decrease the release of chlorinated organic matter and to ensure a safe working environment in the timber processing sector; (3) the marketing environment. Irish producers can only survive by manufacturing to an ever higher standard in terms of dimension, grade, dryness and finish.

**Page**

8p

**Location**

Coford

**Notes**

Available

**Address of author**

Department of Forestry, UCD, Belfield Dublin 4

---

**Number**

544

**Author**

Mullen Maurice

**Title**

The impact of EC Structural Funds.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Forbairt Industrial Education Programme. Seminar. The Timber Market 17th February 1994.

**Key Word**

Structural Funding, Forestry Operational Programme, EU, EC, forestry policy, development, research, training, timber market, timber processing, State support, subsidies, grants, European Union, European Community

**Abstract**

A brief overview of the Forestry Operational Programme 1989-1993 is given. Forestry is a sub-programme of the Agriculture Operational Programme for the period 1994-1999. The main areas in which support will be provided are as follows: (i) research and development, provision will be made to upgrade research and development facilities relating to the timber chain, to backup the afforestation and wood processing programmes including genetic research, research dissemination, product development, management and marketing; (ii) training, the effort here will be concentrated in the areas of forest establishment and maintenance, forest harvesting and the development of nurseries and forest product marketing; (iii) harvesting measures; (iv) roads; (v) backup measures; (vi) woodland development; (vii) industrial development, restructuring is needed to create entities with the scale, management structures and business planning to compete internationally.

**Page**

9p

**Location**

Coford

**Notes**

Available

**Address of author**

Forest Service, Dept of Agric, Food and Forestry, Leeson Lane, Dublin 2

---

**Number**

545

**Author**

Doherty J.

**Title**

Trading in timber - the Irish perspective: structural and non structural timber.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Forbairt Industrial Education Programme. Seminar: The Timber Market, 17th February 1994.

**Key Word**

timber market, timber processing, imports, economics, currency, timber trade, forest products

**Abstract**

The difficulties facing importers and domestic sawmills as a result of the European currency crisis of 1993 are

described. However, the punt's devaluation and the environmental difficulties faced by the North American lumber trade will aid recovery in 1994. The trend in timber costs is explained with the use of graphs. The Russian sawn timber trade has been severely curtailed for a number of reasons and imports from there are likely to continue to fall. The import of Canadian and Russian timbers (1989 - 93) into the member states of the European Softwood Conference is analysed through a series of graphs. Some positive signs are seen in the forecasts for domestic wood in 1994. Lower interest rates and an increase in the building of local authority housing will also aid recovery.

**Page**

21p

**Location**

Coford

**Notes**

Available

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**Number**

546

**Author**

Wiley S.

**Title**

The current regulatory environment.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Forbairt Industrial Education Programme. Seminar. The Irish Timber Market. 17th February 1994

**Key Word**

building regulations, standards specifications, timber trade, timber processing, Forbairt, European Standards, British Standards, forest products

**Abstract**

The Irish timber industry was well prepared for the new building regulations published by the Department of the Environment in 1991. Provisions for kiln drying, stress grading and marking of all structural timber under Irish Standard Recommendation SR11 were already in place. The work of the Forbairt's Forest Products Department is summarised. The Irish timber market, both domestic output and imports, is analysed. Coillte's allocation scheme for raw material supplies to sawmills is described. It is forecast that there will be a 50% increase in log supply within ten years, and Irish sawn timber will increase its domestic market share to 75 - 80 %. Surplus requirements must be exported to the United Kingdom or Europe, and this trade is bound to be affected by the introduction of European Standards (ENs). Work on the development of standards for the structural timber area (TC 124), and for the non-structural area (TC 175) are at advanced stage.

**Page**

20p

**Location**

Forbairt

**Notes**

Available

**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

---

**Number**

547

**Author**

Fennel Thomas

(DIT College of Marketing and Design. Centre for Marketing Research.)

**Title**

Consumer reactions to Irish timber.

**Publisher**

Centre for Marketing Research

**Place**

Dublin

**Date**

1993

**Key Word**

timber trade, timber processing, consumer reactions, marketing, timber markets, imports, public awareness, retail trade

**Abstract**

The objectives of this research project were to monitor reactions of end users to Irish timber products. A survey was carried out using a structured questionnaire. Reactions to Irish timber were monitored in terms of consumers' decision making processes, with particular reference to store and product choice and the various influences on these choices. Perceptions of timber as compared to other materials and perceptions of Irish as opposed to other timbers were also monitored. Among the findings of the survey were that: softwood compares favourably with other materials in a number of respects, particularly in aesthetic qualities; there is difficulty in distinguishing Irish timber from imported varieties; Irish softwood does not compare favourably with imported varieties; and Irish softwood is seen as less versatile in its application compared to softwood generally.

**Page**

48p

**Location**

Coford

**Notes**

available

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**Number**

548

**Author**

Fennessy John

**Title**

Registered seed stand for the production of home grown tree seed.

**Publisher**

Coillte Research & Development

**Place**

Bray

**Series**

Coillte Research & Development. Information Note No. 14

**Date**

1994

**Key Word**

planting, seed sources, seed origin, registered seed stands, silviculture, seeds

**Abstract**

The use of seed from 'home grown' stands of trees provides a simple way of improving the genetic and productive quality of planting stock. This note outlines the benefits of using seed from native stands, and describes the EU scheme that regulates the quality of true seed. Guidelines for potential seed stand selection are provided.

**Page**

4p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray Co. Wicklow

---

**Number**

549

**Author**

Mulloy Fergal

**Title**

Public and private forestry.

**Place**

Dublin

**Series**

(Forest and Wildlife Service Internal Report)

**Date**

1984

**Key Word**

forestry policy, forestry history, private forestry, afforestation, grants, State subsidies

**Abstract**

The development of forestry policy in Ireland from 1948 is outlined. Initially most planting was confined to the south and south east of the country, but with technical advances and more appropriate choice of species planting was expanded into the western bogs and southern Old Red Sandstone. Advances were also made in yield class, especially with the most common conifers lodgepole pine and Sitka spruce. Another policy area in which change has taken place is land purchase, with better quality site types been chosen for planting. The low rate of private afforestation is analysed, and the measures taken to increase it, especially grant aid, are outlined. It is concluded that private forestry depends on fundamental attitude change from traditional land use patterns to one of acceptance that forestry is desirable on certain land types.

**Page**

17p

**Location**

Coford

**Notes**

Available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield Dublin 4

---

**Number**

550

**Author**

Carey Michael

**Title**

Forestry or farmland: a dilemma for land use and management in Ireland.

**Place**

Dublin

**Date**

1994

**Key Word**

forestry policy, history, afforestation, Coillte, private forestry, land use, agriculture, timber processing

**Abstract**

An outline of the development of forestry policy since the beginning of the century is given. At present Irish forestry is characterised by a very high percentage of public ownership (84%). The difficulty in acquiring land over the years is reflected in the fragmented character of Coillte's estate, which inhibits efficiency in forest management. However, the Coillte estate is young and expanding rapidly, and is highly productive relative to international competitors. The issues of converting land currently used for agriculture to forestry is examined. According to Teagasc, there are 1.2 M ha of land in Ireland unsuitable for agriculture and highly suited to forestry.

**Page**

12p

**Location**

Coford

**Notes**

available (Presentation to Geographical Society of Ireland Trinity College, Dublin.)

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2.

---

**Number**

551

**Author**

Mulloy Fergal, McCarthy George

**Title**

National status report of Ireland.

**Publisher**

Danish Forest and Landscape Research Institute

**Place**

Lyngby

**Date**

1992

**Source**

Final report of the Concerted Action: Rationalisation of Harvesting Operations. CEC Contract: MA2B-CT91-0037. (Edited by Pieter D. Kofman)

**Key Word**

economics, forest conditions, ownership, harvesting, forest machinery, statistics, forest roads, thinning

**Abstract**

This report provides general information on the state of forestry in Ireland. Topics covered include: breakdown of main tree species; extent of State ownership; distribution of forests; age class distribution; thinning regime; harvesting figures; machinery; and working conditions. Problem areas are identified as the unprofitability of thinning, poor transportation infrastructure and difficult ground conditions. Under the Operational Programme for Forestry (1989-1993) aid is given for the purchase of appropriate harvesting equipment.

**Page**

pp 109 - 116

**Location**

Coford

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4.

---

**Number**

552

**Author**

Dodd Peter

**Title**

Geographic information systems for national forestry (GIS - intensive information for intensive forestry).

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1991

**Source**

Proceedings of the International Union of Forestry Research Organisations (IUFRO S4.04.00) Symposium on 'The Application of Information Technology in Forest Management Planning'. September 3 - 7, 1991 University College Dublin. (Edited by Padraic M. Joyce)

**Key Word**

geographic information systems, GIS, information technology, forest management, planning, State forestry, computer models

**Abstract**

GIS is used in Irish forestry both in a day to day operational way and for 'what if' modelling and analyses. Foresters use the forest maps, crop descriptions and forecasts provided by GIS to obtain basic information about their resource and develop plans. GIS, through its use of spatial relationships, allows Coillte staff to share and co-ordinate information that could not otherwise be achieved using a standard relational database. This 'flow' of information is available across the various business functions within the company.

**Page**

pp 17 - 21

**Location**

Coford, Coillte library

**Notes**

Available

**Address of author**

Coillte, Sidmonton Place, Bray, Co.Wicklow.

---

**Number**

553

**Author**

O'Brien Dermot, Phillips Henry

**Title**

From work plan to business plan: an integrated forest management system.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1991

**Source**

Proceedings of the International Union of Forestry Research Organisations (IUFRO S4.04.00): Symposium on 'The Application of Information Technology in Forest Management Planning' September 3 - 7, 1991 University College Dublin. (Edited by Padraic M. Joyce)

**Key Word**

information technology, State forestry, intergrated forest management, information systems, information management strategy, business planning, data needs, Coillte

**Abstract**

This paper describes the development of Coillte's information management strategy. The information needed to begin this process was isolated through a series of interviews with staff. The information obtained revealed the necessity for centralised processing and an information systems strategy was devised upon this principle. The company's new planning process makes use of integrated systems and ensures information is shared across the different divisions of the company. The planning process consists of the following phases: allocation of targets; harvest program and forecasts; sales path; formulation of work plan; budget build up; and business plan.

**Page**

pp 32 - 43

**Location**

Coford, Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co.Wicklow.

---

**Number**

554

**Author**

Nieuwenhuis Maarten, Williamson Gary, McCarthy George

**Title**

Timber sales allocation: linking forests and mills.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1991

**Source**

Proceedings of the International Union of Forestry Research Organisations (IUFRO S4.04.00). Symposium on 'The Application of Information Technology in Forest Management Planning', September 3 - 7, 1991 University College Dublin. (Edited by Padric M. Joyce)

**Key Word**

timber sales, decision support systems, decision-making, Coillte, information technology, allocation support systems

**Abstract**

A timber sales allocation decision support system was developed as a decision-making tool for the allocation of the annual timber harvest from the forests of Coillte Teoranta. The model uses data from the company's databases on sales, mill demands, and the national roads network. A breakdown of supply and demand on species and size, into the desired number of product categories makes it possible to recommend allocation strategies on as detailed a basis as required. Comparison of actual and optimised allocation strategies indicate the possibility for large scale savings. In addition, the model can be used for other analyses, such as the influence of new mill locations on transport costs, the feasibility of timber transport by rail, and the selection of suitable ports for timber export. Integration of the model in the management decision making process will offer increased cost saving opportunities.

**Page**

pp 44 - 54

**Location**

Coford, Coillte library

**Notes**

available

**Address of author**

Department of Forestry, UCD, Belfield, Dublin 4.

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**Number**

555

**Author**

Collins A., MacSiurtain M.

**Title**

Forest stand mapping from satellite imagery on the Apple Macintosh.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1991

**Source**

Proceedings of the International Union of Forestry Research Organisations (IUFRO S4.04.00). Symposium on 'The applications of Information Technology in Forest Management Planning, September 3 - 7, 1991 University College Dublin. (Edited by Padraic M. Joyce)

**Key Word**

satellite imagery, forest stand mapping, information technology, remote sensing technology

**Abstract**

Satellite imagery was displayed and enhanced on the Apple Macintosh. Combined SPOT XS and P imagery was found to be particularly useful for the location of forests because of its high resolution. The imagery was used for stand mapping by visual interpretation and interactive delineation of forest boundaries. On-screen digitisation enables efficient and accurate identification, delineation, coding and area calculation of forested

areas. Colour hardcopy of imagery with overlaid stand map boundaries are the resulting products.

**Page**

pp 104 - 112

**Location**

Coford, Coillte library

**Notes**

available

**Address of author**

Department of Forestry, UCD, Belfield, Dublin 4.

---

**Number**

556

**Author**

Mulqueen John, Rodgers Michael, Hendrick Eugene, Keane Michael

**Title**

A booklet on afforestation drainage problems and their solutions. Drainage for afforestation.

**Publisher**

Coford

**Place**

Dublin

**Date**

1994

**Key Word**

drainage, water logging, marginal land, peatlands, site preparation, soil permeability, forest soils

**Abstract**

This booklet describes the common drainage problems that occur in Irish conditions. Each drainage problem is site specific and should be investigated individually. The objective of land drainage is to prevent soil water rising into and saturating the root zone and water logging the soil. Land drainage problems can be classified as follows: 1. impermeable layer; 2. hillside seepage; 3. springs and artesian seepage; 4. high water-table; 5. peatland drainage. Each type of drainage problem requires a different solution. In dealing with drainage problems it is important to know the soil's permeability. A number of methods of determining permeability are explained.

**Page**

27p

**Location**

Coford

**Notes**

Available

**Address of author**

Civil Engineering Department, University College Galway.

---

**Number**

557

**Author**

Department of Energy. Forest Service

**Title**

Rural development through forestry. Operational Programme for Rural Development, Forestry Measures, 1991-1993.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1992

**Key Word**

grants, subsidies, Operation Programme for Rural Development, EU, EC, European Commission, Structural Funding, Community Support Framework, forestry policy, European Union, European Community

**Abstract**

The operation of the grant scheme under the 1991-93 Operational Programme for Rural Development for the following categories is explained: planned recreational forestry; forest nurseries; back-up farm forestry services; forestry training .

**Page**

16p

**Location**

Publisher / Coford

**Notes**

available

---

**Number**

558

**Author**

Department of Energy. Forestry Service

**Title**

6 grant schemes for forestry.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1990

**Key Word**

grants, subsidies, Operational Programme for Forestry, EC, EU, European Commission, Community Support Framework, forestry policy, European Union, European Community

**Abstract**

The forestry grants which are available under the operational programme for forestry are outlined. These cover: 1. afforestation; 2.improvement of woodland; 3. reconstitution of woodland; 4. forest roads; 5. forest harvesting; 6. back-up measures.

**Page**

16p

**Location**

Publisher / Coford

**Notes**

available

---

**Number**

559

**Author**

Department of Energy. Forest Service

**Title**

Forestry and the landscape: guidelines.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1990

**Key Word**

landscape, environment, grants, subsidies, EC, EU, European Commission, Forestry Operational Programme, rural development, Structural Funding, European Union, European Community

**Abstract**

This booklet outlines the practical applications of landscape design in relation to forestry. The conditions which must be fulfilled in order to qualify for grant-aid under the Forestry Operational Programme are explained. Topics covered include forest shape, margins, open spaces and diversity.

**Page**

12p

**Location**

Publisher / Coford

**Notes**

available

---

**Number**

560

**Author**

Department of Energy. Forest Service

**Title**

Forest and archaeology: guidelines.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1990

**Key Word**

archaeology, grants, Forestry Operational Programme, EC, EU, European Commission, European Union, European Community

**Abstract**

These guidelines have been compiled to assist non-archaeologists involved in forestry development to identify archaeological sites. They set out the procedures which must be followed in order to qualify for grant-aid under the Forestry Operational Programme.

**Page**

4 p

**Location**

Coillte library / Forest Service

**Notes**

available

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**Number**

561

**Author**

Department of Energy. Forest Service

**Title**

Forestry and fisheries: guidelines.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1990

**Key Word**

Forestry Operational Programme, grants, EC, EU, fisheries, inland waterways, pollution, environment, European Union, European Community

**Abstract**

The Forestry Operational Programme has set out a number of requirements regarding the protection of fish and inland waterways which must be met by anyone applying for grant-aid under the programme. This booklet offers guidelines which explain the steps to be followed in order to comply with these requirements. Areas

covered include: forest establishment, ground preparation; planting; fertiliser application; chemicals and herbicides; thinning and harvesting; and roads and bridges.

**Page**

8p

**Location**

Coillte library, Forest Service

**Notes**

available

---

**Number**

562

**Author**

Department of Energy. Forest Service

**Title**

Guidelines on the recognition of dangerous trees.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1990

**Key Word**

forest protection, dangerous trees, tree diseases, plant health

**Abstract**

These guidelines describe the various symptoms of unhealthy trees and outlines the steps that need to taken to deal with the problem.

**Page**

8p

**Location**

Publishers

**Notes**

available

---

**Number**

563

**Author**

Department of Energy. Forestry Service

**Title**

Forest Service grants.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1992

**Key Word**

grants, EC, EU, Forestry Operational Programme, rural development, European Commission, subsidies, afforestation, European Union, European Community

**Abstract**

The aim of the grants scheme under the Forestry Operational Programme, and the associated forestry elements of the Rural Development Programme, is to expand the forest base significantly through a combination of both public and private sector development. This will involve a total investment of over £190m during the period 1989-1993 and total EC funding of some £68 million. The various grants outlined in this brochure are 70% funded by the EC.

**Page**

15p

**Location**

Publishers

**Notes**

available

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**Number**

564

**Author**

Department of Energy. Forest Service

**Title**

Grow ash for profit.

**Publisher**

Department of Energy

**Series**

Department of Energy. Forest Service. Advisory Leaflet No. 1

**Date**

1988

**Key Word**

ash, private forestry, grants, silviculture

**Abstract**

The steps involved in establishing and maintaining a profitable ash plantation are briefly outlined.

**Page**

2p

**Location**

Forest Service

**Notes**

available

---

**Number**

565

**Author**

Department of Energy. Forest Service

**Title**

Commercial forestry and the rural landscape.

**Publisher**

Department of Energy

**Place**

Dublin

**Series**

Department of Energy. Forest Service. Advisory Leaflet No. 2

**Date**

1988

**Key Word**

private forestry, landscape, afforestation, landscape, environment

**Abstract**

This booklet offers guidelines to those involved in private forestry on how to develop their resource in keeping with the balance and character of the local landscape. Issues covered include selection of species, shapes and patterns and road boundaries.

**Page**

6p

**Location**

Forest Service

**Notes**

available

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**Number**

566

**Author**

Department of Energy. Forest Service

**Title**

Taxation provisions relating to private forestry.

**Publisher**

Department of Energy

**Place**

Dublin

**Series**

Department of Energy. Forest Service Advisory Leaflet No. 3

**Date**

1988

**Key Word**

private forestry, investment, tax, finance

**Abstract**

The main tax rules which are of interest to owners of private woodlands are briefly summarised.

**Page**

2p

**Location**

Forest Service

**Notes**

available

---

**Number**

567

**Author**

Department of Energy. Forest Service

**Title**

Fuelwood crops.

**Publisher**

Department of Energy

**Place**

Dublin

**Series**

Department of Energy. Forest Service. Advisory Leaflet No. 4

**Date**

1988

**Key Word**

fuelwood crops, broadleaved forestry, forest establishment, coppicing, private forestry, broadleaves, woodfuel

**Abstract**

The benefits of growing broadleaf crops for fuel are explained. Advice is also given on establishing and maintaining a woodland site.

**Page**

6p

**Location**

Forest Service

**Notes**

available

---

**Number**

568

**Author**

McCusker Pat, Keogh Ray

**Title**

Facts on forestry.

**Publisher**

Department of Fisheries and Forestry

**Place**

Dublin

**Date**

1985

**Key Word**

forestry history, timber use, forestry policy

**Abstract**

Some basic facts regarding forest history, EEC forestry policy and the state of forestry in Ireland are presented.

**Page**

8p

**Location**

publisher

**Notes**

available

---

**Number**

569

**Author**

O'Toole Desmond

**Title**

Structural composite timber products.

**Place**

Dublin

**Date**

1993

**Key Word**

structural composite timber, economics, timber processing, timber trade, timber technology, SCT, OBS, LVL, timber market, product design, physical properties, forest products

**Abstract**

The overall objective of this project was to research and document existing technologies and practices in the design and manufacture of structural composite timber (SCT). SCT products are defined generally as all structural products produced by a combination of wood in its various forms, with adhesive. The topics surveyed in this report are: the various adhesives used in SCT product manufacture; SCT materials; SCT panel products, including orientated strand board (OSB); SCT products; SCT machinery technology; and SCT joints. The report concludes that SCT has several advantages over solid sawn timber. They are superior in strength to stress graded sawn timber and log size is not an issue in SCT manufacture. The product is also stable and manufactured to a high standard to achieve consistent strength properties. It is forecast that there is likely to be a steady increase in demand for structural panel in both North America and Europe. The reasons for the recent increase in the use of SCT products in construction in Europe are examined. An important factor influencing this development and the increased availability of SCT is the establishment of EU structural codes of practice and standards. The development of SCT product manufacturing in Ireland is examined. It is thought that SCT materials and products may hold the solution to declining availability of logs. While Ireland enjoys neither the timber constructing tradition nor the wealth of countries like the USA and Sweden, it does have the advantage of an increasing supply of home-grown timber. It is concluded that the further expansion of the SCT sector in Ireland is economically sound.

**Page**

105p

**Location**

Coford / Coillte library

**Notes**

Available (Completed at Timber Technology Centre, Dublin Institute of Technology, Bolton Street, Dublin 1).

---

**Number**

570

**Author**

Forbairt. Forest Products Department.

**Title**

Development of visual grading rules for scaffold boards of home grown Sitka spruce.

**Publisher**

Forbairt

**Place**

Dublin

**Series**

Study 92-62-02

**Date**

1993

**Source**

Forest Service Contract 1993. Final Reports.

**Volume**

Vol. 2

**Key Word**

visual grading, Sitka spruce, *Picea sitchensis*, scaffold boards, Knot Area Ratio, KAR, ultimate load strength, surface dimensions ratio, forest products, timber properties, standards, specifications, timber processing, timber end use

**Abstract**

Knot measurements, using surface measurements of knots as well as Knot Area Ratio (KAR) at the critical section, and ultimate load strengths tests were carried out on samples of home grown scaffolding boards. Some general statistics obtained were as follows: 37% of the planks contained the pith or split-pith in the cross section; average total KAR = 0.24; the average surface dimensions of knots was the same for the tension and compression faces; grading based on knots only, according to BS2482 indicated that 83% would pass. However, there was no significant difference in strength between the pass and failed boards. Initial linear correlations indicated that of the visual methods of evaluating knots, the TOTAL KAR, gave the best correlation ( $r^2 = 0.16$ ). Multiple stepwise regression using five KAR variables and two knot dimension variables showed that TOTAL KAR and Edge Dimensions were the best predictors. The indications from this investigation are that either of these two methods of knot evaluation or a combination of the two methods could be used for grading. In terms of bending strength the value obtained for the total sample irrespective of any form of grading was found to satisfy the strength requirements of BS2482 (required strength = 15.2 N/mm squared). Using a limiting value on KAR of 0.25 gives a strength value of 18.0 N/mm squared and a KAR limiting value of 0.33 gives 16.8 N/mm squared. However, the yields would be about 50% and 75% respectively. The quality of the sample tested was good in terms of knot evaluation for grading. The introduction of limits on knots produces higher strength but reduces the yield.

**Page**

60p

**Location**

Forbairt. Forest Products Department.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9.

---

**Number**

571

**Author**

Forbairt. Forests Products Department

**Title**

Requirements on fire resistance and use of Irish grown timber.

**Publisher**

Forbairt

**Place**

Dublin

**Series**

Study: 93.20:00

**Date**

1993

**Source**

Forest Service Contract 1993. Final Reports

**Volume**

Vol. 2

**Key Word**

standards specifications, fire resistance, structural timber, Eurocode, Building Regulations, Technical Guidance Documents, safety requirements, building components, forest products, timber processing

**Abstract**

This report outlines the requirements of timber based building components in relation to fire with particular attention being paid to Irish grown timber. Particular reference was made to the Irish Building Regulations published by the Department of the Environment and effective from June 1992. The Regulations will be predominantly interpreted through the Technical Guidance Documents, also published by the Department. The non-combustibility clause in the Documents could have a serious restriction on the use of timber in buildings. The authorisation of chemical retardent treatments may alleviate these restrictions to a certain extent, but there is unease regarding the quality of the application of this treatment. The Building Regulations, the same as those used in the UK, are interpreted more conservatively in Ireland than in Britain. The rules for designing timber structures in relation to fire are well established. Most buildings and dwellings are not significantly affected by BS 5268 Part 4 ('Fire Resistance of Timber Structures'). This however may be changed with the introduction of Eurocode 5, the equivalent design code to BS 5268 'The Structural Use of Timber'. While still in draft form, the Eurocode is believed to be more conservative in its approach to Fire Design than the British Standard. It is recommended that a study be made of the effects of Eurocode 5 on the use of Irish timber in construction, especially the fire aspect.

**Page**

55p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forbairt, Glasnevin, Dublin 9.

---

**Number**

572

**Author**

Forbairt. Forest Products Department

**Title**

Updating standards.

**Publisher**

Forbairt

**Place**

Dublin

**Series**

Study: 93.00.07

**Date**

1993

**Source**

Forest Service Contract 1993. Final Reports

**Volume**

Vol. 2

**Key Word**

standards, structural timber, trussed rafters, roofing, forest products, timber processing

**Abstract**

This study briefly outlines the work being carried out on the updating of the following standards: SR11 'Structural Timber for Domestic Construction' (1988); and IS 193 'Timber Trussed Rafters for Roofs' (1986). It is proposed that amendments be made to IS 127 'Stress Grading of Softwood Members' (1990)

**Page**

4p

**Location**

Dublin

**Notes**

available

**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

---

**Number**

573

**Author**

Forbairt. Forest Products Department

**Title**

Monitoring of new European standards on wood preservation.

**Publisher**

Forbairt

**Place**

Dublin

**Series**

Forest Service Study No: 93.31.05

**Date**

1993

**Source**

Forest Service Contract 1993. Final Reports

**Volume**

Vol. 2

**Key Word**

wood preservation, European standards, forest products

**Abstract**

This work is a continuation of the monitoring of new European Standards on wood preservation, which commenced at the start of 1992.

**Page**

4p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

---

**Number**

574

**Author**

Forbairt. Forest Products Department

**Title**

Long term investigation into durability of Irish timbers in service or ground contact. (Report for 1993).

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1993

**Source**

Forest Service Contract 1993. Final Reports

**Volume**

Vol. 2

**Key Word**

durability, fence rails, fence posts, Sitka spruce, lodgepole pine, timber life expectancy, forest protection, forest products, Picea sitchensis, Pinus contorta

**Abstract**

When Irish timber is exposed over a prolonged period of time it is very necessary to make estimates about timber performance and durability. In order to observe the performance of home-grown timbers exposed to domestic weather conditions in ground contact and in service over a prolonged period, EOLAS, in co-operation with the Forest Service, set up a testing ground at Glenealy, Co. Wicklow. The test material can be grouped into four main sample categories: fence posts of various home grown species; fence rails of various homegrown species; round posts; square posts; and stakes. Comparison of the results for the last two years and experience from field work conclude that: test procedure is adequate at the present time; pilodyn readings and pendulum tests provide additional information about the sample conditions; an advanced stage of fungal decay in untreated samples dictates yearly inspection until all untreated samples have failed; small stakes suggest that this type of specimen would yield results sooner than full size; stake tests should be extended to a range of cross sections, species and preservative loadings.

**Page**

60p

**Location**

Forbairt. Forest Products Department

**Notes**

available

**Address of author**

Forbairt, Glasnevin, Dublin 9.

---

**Number**

575

**Author**

Forbairt. Forest Products Department

**Title**

Distortion of Sitka spruce, especially of juvenile wood, during drying.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1993

**Source**

Forest Service Contract 1993. Final Reports

**Volume**

Vol. 2

**Key Word**

standards, specifications, timber properties, wood distortion, juvenile wood, sawn timber, timber processing, drying, structural timber, grading requirements

**Abstract**

The primary aim of this study is to compare juvenile and adult wood. Logs from experimental plots in Camolin and Forth forests, which have been subjected to differing silvicultural regimes, were converted to sawn timber. The area of juvenile wood, and the distortions present after conversions, were measured. The timber was then kiln dried and re-measured. Analyses were carried out on the measurements, which indicated that a high proportion of the material did not comply with grading requirements for structural timber. The limits for

distortion specified in IS 127 : 1990 - 'Specification for the Stress Grading of Softwood Timber' - are outlined. The effect of the presence of juvenile wood could not be accurately determined. Different thinning regimes showed no clear differences. Pruning slightly reduced the incidence of the twist but had little effect on other distortions. Compression wood appeared to have little effect on the severity of distortion. Twist was markedly more severe at the top of the logs from both forests. Orientation of cut had a marked effect in Camolin forest but not in Forth forest.

**Page**

70p

**Location**

Forbairt. Forest Products Department

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

576

**Author**

Forbairt. Forest Products Department

**Title**

Technical support for Irish timber.

**Publisher**

Forbairt

**Place**

Dublin

**Series**

Study No: 93.00.01

**Date**

1993

**Source**

Forest Service Contract 1993. Final Reports

**Volume**

Vol. 1

**Key Word**

Forbairt, forest products, timber uses, timber processing, promotional work, technical assistance, construction industry, structural timber, timber advisory services

**Abstract**

Throughout 1993 a comprehensive programme of work was undertaken on the promotion of Irish timber by the Forest Products Department, EOLAS. Throughout the year Department staff provided continuous assistance and technical advice on all sectors of timber to the timber and construction industries. In addition to sawmillers, timber importers and distributors, the services provided by the Department are utilised by architects, engineers, building contractors, semi-state bodies, second and third level colleges and regulatory authorities. An advisory service was provided on market opportunities for Irish timber in a number of areas, including: the use of alternative species and their requirements in structural applications; alternative species for use in joinery; preservative treatments of timbers; and the substitution of tropical hardwoods with Irish grown timber. Other promotional work included involvement in a TV series, seminars, talks and publications. The Department was also involved in training, quality control, and the development of specifications for national and international standards.

**Page**

42p

**Location**

Forbairt. Forest Products Department

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

577

**Author**

Cahill Declan

(Eolas. Forest Products Department)

**Title**

Directory of preservation plants in Ireland.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1993

**Source**

Forbairt. Forest Services Contract 1993. Final Reports

**Volume**

Vol. 1.

**Key Word**

preservation plants, timber preservatives, preservative treatment

**Abstract**

This directory lists all the timber preservation plants in Ireland and is intended to provide information on these facilities for timber users. The name, address and telephone number of each of the companies listed is provided. Descriptions of the various types of preservative treatment used by each of these plants are included.

**Page**

35p

**Location**

Forbairt. Forest Products Department

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

578

**Author**

Forbairt. Forest Products Department

**Title**

Draft IS 444

**Publisher**

Forbairt

**Place**

Dublin

**Series**

Study No: 93.00.04

**Date**

1993

**Source**

Forbairt. Forest Services Contract 1993. Final Reports

**Volume**

Vol. 1

**Key Word**

standards, specifications, timber processing, structural timber, Forbairt, forest products, drying, grading

**Abstract**

A new Irish Standard IS 444 is in the course of preparation, and this will replace SR 11 when it is finalised. This study stresses the need to ensure that current requirements for the drying, grading and marking of all structural

timber are implemented throughout the timber and construction industries. During 1993 the Forest Products Department established a comprehensive work programme, and this is outlined in the report under the following headings: education programme; training programme; publications; quality control programme; and monitoring programme.

**Page**

73p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

579

**Author**

Forbairt. Forest Products Department

**Title**

Development of quality standards for primary processing.

**Publisher**

Forbairt

**Place**

Dublin

**Series**

Study No. 93.00.05

**Date**

1993

**Source**

Forbairt. Forest Service Contract 1993. Final Reports.

**Volume**

Vol. 1

**Key Word**

Coillte Allocation Scheme, CAS, forest products, standards, quality development, sawmilling, timber processing, forest products

**Abstract**

The objective of the quality development programme described in this study is to achieve consistency and uniformity across the entire sawmilling sector in drying, grading, marking, dimensional accuracy and overall presentation of products. The linkage of quality requirements through the supply system of CAS (Coillte Allocation Scheme) is seen as the best means of achieving the national objectives for the industry as a whole. The quality development programme is based around the quality system requirements of ISO 9002. The work entailed in undertaking this programme in 1993 is outlined. The quality management systems installed in the sawmills are designed to ensure that all areas affecting quality have defined working methods and procedures that regulate work practices to fulfill national standards and customer specification requirements. Despite the work already done in raising the quality of Irish timber, there are still pressures on sawmillers to sell poorer quality, cheaper structural timbers. The importance of resisting these pressures is emphasised. It is forecast that all sawmills in CAS will be certified and registered to the ISO 9002 Quality System over the next couple of years.

**Page**

25p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

580

**Author**

EOLAS. Forest Products Department

**Title**

Promotion of Irish timber.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study No. 92.00.01

**Date**

1992

**Source**

Final Reports for 1992. Promotion/Research Studies on Irish Timber.

**Key Word**

Eolas, forest products, timber processing, promotional work, support, advisory services, training

**Abstract**

The Forest Products Department of Eolas undertook an extensive programme of work in the promotion of Irish timber during 1992. The programme aimed to develop confidence in the specification and use of Irish grown timber by providing technical assistance and support for the material with all trade sectors and regulatory bodies. The main developments during the course of the 1992 programme were: an increased demand on the Department for training and education, and technical information and advisory services; a much greater level of awareness among the general public regarding the availability and uses of timber; and an increased awareness of the economic importance and resource potential of Irish timber. Besides providing technical advice, the Department also provided an advisory service on market opportunities. Other aspects of the promotional programme included: participation in and organising of seminars, talks, publications and exhibitions; involvement in courses and training in several branches of the industry; and quality control of Irish forest products.

**Page**

48p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

581

**Author**

Cahill Declan, Knaggs Gordon

**Title**

Timber conservation.

**Publisher**

Institution of Engineers of Ireland

**Place**

Dublin

**Date**

1992

**Source**

Institution of Engineers of Ireland. Conservation and re-use of buildings: one day seminar, Thursday, November 12, 1992.

**Key Word**

timber conservation, wood preservatives, timber degradation, preservation, timber protection

**Abstract**

In this presentation the authors briefly describe the chief agencies of degradation, the risk factors pertaining to wood in construction, and the treatments that can be applied to protect timber. Degradation of wood is caused by: fungi; insects; animals; weathering; physical wear and abrasion; and heat. The various methods of protecting timber from these forms of degradation are discussed, including traditional chemical and non-chemical approaches. The current methods of preservation are: in situ treatments which can involve brushing, spraying or injection; dipping/immersion; diffusion, in which the preservative is carried by the water in the wood cells; hot and cold process; sap displacement; pressure treatment; double vacuum treatment. It is concluded that if timber is properly specified and maintained it will give long and useful service.

**Page**

20p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available (The text of this paper comprises Appendix 3 of EOLAS. Study 92.00.01, Final Reports for 1992. Promotion/Research Studies on Irish Timber)

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**Number**

582

**Author**

EOLAS. Forest Products Department

**Title**

Promotion and implementation of Irish Standard Recommendation SR11 - Structural Timber of Domestic Consumption.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study No. 92.00.04

**Date**

1992

**Source**

Final Reports for 1992. Promotion/Research Studies on Irish Timber.

**Key Word**

forest products, EOLAS, Irish Standard, structural timber, SR11, timber processing, building industry, stress grading

**Abstract**

The performance of Irish sawmillers in maintaining both its market share and the quality requirements of SR 11 - Structural Timber for Domestic Consumption - during 1992 is assessed. The Forest Products Department, EOLAS continued to act as the technical centre for SR 11, and to provide on-going education, monitoring and surveillance services to all sectors. The programme comprised the following aspects: education, which included talks given to various branches of the industry, an enquiry service and the publication of information sheets; training programme, which included stress grading, and timber appreciation courses; publications/circulars; a quality control programme on all aspects of stress grading timbers to SR 11 requirements; and monitoring SR 11 on building sites to ensure compliance with the Standards requirements.

**Page**

31p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

583

**Author**

EOLAS. Forest Products Department

**Title**

Development of quality standards for primary processing.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study No. 92.00.05

**Date**

1992

**Source**

Final Reports for 1992. Promotional/Research Studies on Irish Timber.

**Key Word**

quality control, standards, specifications, sawmilling, forest products, timber processing, Coillte Allocation Scheme, CAS, EOLAS

**Abstract**

A central objective of the Coillte Allocation Scheme (CAS) is to develop a Quality System throughout the Irish sawmilling industry. This study outlines the development of the Quality Systems, overseen by EOLAS, in the industry during 1992. Despite very difficult trading conditions sawmillers are committed to the programme, and all participants within the CAS scheme are seeking accreditation to the International Standards ISO 9002 Quality System. As part of the development of the Quality Systems a company Quality Manual and associated working procedures has been produced. The Forest Products Department was directly involved in providing advice and technical assistance to companies installing Quality Systems in their plants. Each plant underwent an overall assessment and review of their participation in CAS, and the Quality Systems are subject to on-going independent surveillance by EOLAS/Coillte. The work involved in monitoring CAS during 1992 is described. It is predicted that the confidence gained by sawmillers through the implementation of accredited Quality Systems to International Standards will greatly facilitate the Irish timber industry's export drive.

**Page**

41p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Department, Forbairt, Dublin 9

---

**Number**

584

**Author**

EOLAS. Forest Products Department

**Title**

Use of spruce in transmission poles.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study No: 92.31.17

**Date**

1992

**Source**

Final Reports for 1992. Promotion/Research Studies on Irish Timber.

**Key Word**

transmission poles, Sitka spruce, Picea sitchensis, timber end use, forest products, timber processing

**Abstract**

This project re-examined a number of Sitka spruce transmission poles which had been in service since 1962 and which had been previously examined in 1988/89. Both examinations followed the parameters: pilodyn measurements at breast height; hammer tests; and visual appearance. No discernible damage or difference in appearance, condition or hardness from the first examination was noticed, and the estimated life expectancy of these poles, 49 years, was validated.

**Page**

8p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

585

**Author**

Cahill Declan C.  
(EOLAS. Forest Products Department)

**Title**

Monitoring of new European Standards on wood preservation.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study No. 92.32.15

**Date**

1992

**Source**

Final Reports for 1992. Promotion/Research Studies on Irish Timber.

**Key Word**

wood durability, wood products, forest products, standards, timber processing

**Abstract**

This is a brief outline of the work undertaken by the Forest Products Department, EOLAS in monitoring the Technical Committee set up to implement the European Committee for Standardization - CEN/TC38 - Durability of Wood and Deprived Products.

**Page**

20p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

586

**Author**

EOLAS. Forest Products Department

**Title**

Visual grading rules for small size battens of home grown Sitka spruce.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 92-61.02

**Date**

1992

**Source**

Final Reports for 1992. Promotion/Research Studies on Irish Timber.

**Key Word**

tiling battens, Sitka spruce, Picea sitchensis, visual grading, knot area ratio, KAR, growth rings, physical properties, timber processing, forest products, building, strength properties, timber stress

**Abstract**

The objective of this study was to establish visual grading rules for tiling battens made from home grown Sitka spruce. Four hundred and nine battens in eight different sizes were tested in simple three point bending over a span of 600mm. Data on visual grading parameters were collected. These included knot areas and number of growth rings. Knot area ratios were calculated in three different ways: total knot area ration (KAR); knot area in the tension zone as a ratio of the tension area (TKAR); and tension knot area as a ratio of the total cross-sectional area (TTKAR). Statistical analyses included ANOVA, range and regression analyses. The critical grading parameter was knots. Growth rings did not appear to be significant for the sample tested. Although TKAR was the most significant as a predictor of ultimate strength, KAR is recommended for practical reasons. The analysis also showed that there was a maximum of 10% difference in the characteristic values between the two methods of determining knot ratios. Theoretical calculations were carried out to determine actual stresses in battens for three spans and the cross-sectional sizes used in the tests. These determinations were based on two assumptions: (i) that the batten would be continuous over at least one support; and (ii) that battens would not be loaded with the maximum manload in the centre of the span. Based on these assumptions it was found that only the 32mm X 35mm and the 46mm X 21mm were unsuitable for use at the 600mm span. If these assumptions are not made then tiling battens under 35mm thickness should not be used - the only exception being for spans less than 450mm when 35mm X 35mm could be used.

**Page**

54p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

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**Number**

587

**Author**

EOLAS. Forest Products Department

**Title**

Sitka spruce fence rails (100 X 35): Provision of data to facilitate amendment of RC25 specification.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 92-61-01

**Date**

1992

**Source**

Final Reports for 1992. Promotion/Research Studies on Irish Timber.

**Key Word**

Sitka spruce, Picea sitchensis, standards, specifications, forest products, timber processing, timber rails, timber posts

**Abstract**

The objectives of this study were to obtain data on Sitka spruce rails to determine whether this species can be used in road side fencing. Two hundred and fourteen fence rails were graded and tested. Two methods of grading from two documents were employed - RC25, which uses surface measurements of knots, and BS4978, which uses the knot area ratio method of assessing knots. The dimensional accuracy and variation in density was investigated. The effectiveness of the two types of grading based on the assessment of knots only was analysed. Ultimate loads were worked out based on a central point loading condition. The stresses that were used were determined from the test results of this investigation and were calculated for various knot area ratios (KAR) commonly used in structural grading. Home-grown Sitka spruce has been shown to have adequate strength for use in fence rails with the most severe loading condition based on the following assumptions: a) mean values of MOR are used; b) the imposed horizontal load is supported by two adjacent rails.

**Page**

42p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

588

**Author**

EOLAS. Forest Products Department

**Title**

Long term investigation into the durability of Irish timber in service or in ground contact. (Report for 1992).

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1992

**Source**

Final Reports for 1992. Promotion/Research Studies on Irish Timber

**Key Word**

timber durability, life expectancy, timber performance, forest products, timber processing, physical properties, strength, deterioration

**Abstract**

This project involves observing the performance of home grown timber exposed to domestic weather conditions over a prolonged period. The objectives are: to obtain information on durability and life expectancy of various timber species in service or in ground contact; to assess life expectancy of treated and untreated timber; and to evaluate the effect of preservatives, and treatment schedules on timber durability. The test material consists of five main sample categories: fence posts of various home grown species; fence rails of various home grown species; round posts; square posts; and stakes. To measure the change in strength properties caused by timber deterioration two tests were carried out: the pendulum impact test, for round posts and stakes; and the pilodyn test, for the square posts and fence structures. While no firm conclusions can be arrived at this stage, results suggest that the tests used do provide additional information about the samples condition. An advanced stage of fungal decay in untreated samples dictates yearly inspection until all untreated samples have failed. Small stake test suggest that this type of specimen would yield results sooner than the full size specimens.

**Page**

78p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

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**Number**

589

**Author**

EOLAS. Forest Products Department

**Title**

Promotion of Irish timber.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 00.01

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

EOLAS, forest products, sawmilling, timber processing, timber promotion, standards, advisory services, technical services

**Abstract**

The main objective of the promotional programme run by the Forest Products Dept., EOLAS, is to develop and maintain the credibility of Irish grown timber as a suitable material for specification and use in the market place and to provide a technical service to all concerned on its strength, treatability, durability, availability, drying and working properties. The work of the programme is outlined under the following headings: seminars, talks and publications; exhibitions, including participation in the Wood Ireland Exhibition; courses and training, including a visual stress grading course and lectures to timber technology students; technical information; national and international standards - Department personnel played an important role in the preparation of a new Irish Standard IS 3211 : Part 2 - 'Specification for the Stress Grading of Softwood Timber'.

**Page**

17p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept, Forbairt, Glasnevin Dublin 9

---

**Number**

590

**Author**

Cahill D.C.  
(EOLAS. Forest Products Department)

**Title**

Preservation of sawn Irish grown Sitka spruce.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 00.01 : Appendix 2.

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

timber preservation, preservatives, Sitka spruce, timber processing, building, forest products, wood protection, Picea sitchensis

**Abstract**

This paper outlines the results of work carried out on the preservation of sawn Irish grown Sitka spruce (*Picea sitchensis*) for two end-uses, roof trussed rafters and roadside fencing rails. The roof trussed timber was treated with an organic solvent based on preservative incorporating tri butyltin oxide and pentaclorophenol applied by the double vacuum process using three different schedules. A water based system incorporating Copper/Chromium/Arsenic (CCA) was applied to the fencing timber by pressure process. Comparisons were made with equivalent imported whitewood timber. The results show that, in both cases, the Irish timber achieved a much higher uptake of preservative than the imported material. Further work on the uptake of preservative in Sitka spruce of other commercial sizes is underway. The results of this research will provide useful information for the timber industry on expected uptakes in Sitka spruce and will help in the further development of this important natural renewable material.

**Page**

21p

**Notes**

Available (This is the text of a paper presented at The Sixth Irish Materials Forum: Department of Mechanical and Manufacturing Engineering, TCD, 28th, 29th Sept., 1989)

**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9.

---

**Number**

591

**Author**

Picardo V.

(EOLAS. Forest Products Department)

**Title**

Mechanical tests on indigenous timber.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 00.01. Appendix 3

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

Sitka spruce, *Picea sitchensis*, physical properties, mechanical testing, grading, sampling, standards, strength properties, building, forest products, timber processing

**Abstract**

In 1983 EOLAS was commissioned to establish a baseline for the strength properties of Irish grown Sitka spruce. New developments in grading and determining strength properties required testing actual structural sized specimens, inclusive of the various growth characteristics commonly associated with wood, rather than testing small clear specimens as done in the past. The primary objectives of the project were: a) determination of mechanical properties - bending strength, bending stiffness, tension perpendicular to grain, compression parallel and perpendicular to grain, shear parallel to grain; and b) determination of grading properties. A sample of 25 planks from a selection of three different sizes was examined. It was imperative that the sample design take into account the considerable variation in timber quality between and even within trees. The results from the series of tests carried out in this program showed that the strength properties of Irish Sitka spruce were comparable with the values published in the British Standard for British grown Sitka spruce and in some cases were better.

**Page**

16p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

592

**Author**

Evertsen J.A.

(EOLAS. Forest Products Department)

**Title**

Future options in training and education for the Irish timber industry.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 00.01 : Appendix 4

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

education, training, industrial skills, timber processing, forest products

**Abstract**

This paper examines the results of survey of the training and educational requirements those involved in each sector of the Irish timber industry. The various operational areas within the industry and the type of skills which the industry itself says are needed for these areas to operate effectively are examined: 1. forestry and forest operations, training is need in harvesting and machinery; 2. primary processing, the increasing level of mechanisation demands a change from predominantly 'on-the-job' training; 3. secondary processing; 4. timber and timber product utilisation, the greatest need here is for training in grading and machining of timber; and 5. market projection of timber and timber products. A summary of existing sources of training is discussed under the following headings: Technical Colleges; Universities; Commercial/ Professional Organisations. It is argued that the development of an effective training and education programme may require the formulation of a National Development Plan for the Irish timber industry. This will require interaction between industry, technical centres and educational institutions.

**Page**

12p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available (This is the text of a paper given to the Dublin Technology Partnership/ DIT. Bolton Street. Seminar: Training Partnerships in the Irish Timber Industry, Friday 10 Nov. 1989, Dublin)

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

593

**Author**

Cahill D.C.

(EOLAS. Forest Products Department)

**Title**

Directory of preservation plants in Ireland (Edition Number 10).

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 00.01 : Appendix 6

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

timber preservation, preservatives, timber processing, forest products

**Abstract**

This directory of timber preservation treatment plants lists the firms in Ireland which have a double vacuum or pressure plant.

**Page**

29p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

594

**Author**

EOLAS. Forest Products Department

**Title**

Implementation and promotion of Irish Standard Recommendation SR 11 - Structural Timber for Domestic Construction.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 00.02

**Date**

Dublin

**Source**

Final Reports for 1989

**Key Word**

structural timber, building industry, standards, timber processing, forest products, EOLAS

**Abstract**

In 1989, SR 11 - Structural Timber for Domestic Consumption became effective for the timber and construction industries. This requires that structural timber be dried, graded and marked to the requirements of SR 11. In order to co-ordinate the introduction and implementation of the new Standard throughout the timber industry, a comprehensive work programme was established by Forest Products Department, EOLAS. The various aspects of the programme are outlined: education, which included seminars and the production of information sheets; publications; training, a number of training courses and workshops, including courses in visual stress grading, were run; quality control procedures; specifications; timber imports; and monitoring SR 11 on building sites. The objective of establishing SR 11 as the mode of structural timber trading in Ireland was assisted by the acceptance and co-operation shown by the majority of companies in the different sectors of the industry.

**Page**

24p

**Location**

Fobairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

595

**Author**

Cahill Declan C.

(EOLAS. Forest Products Department)

**Title**

Preservation of sawn Sitka spruce used in construction.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Reference No: 31.14. 1989

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

timber protection, preservatives, timber preservation, forest products, Sitka spruce, sawn wood, timber processing, preservative uptake, standards, Picea sitchensis

**Abstract**

The objective of this project was to determine the uptake of preservative in sawn Irish Sitka spruce when treated in a commercial double vacuum treatment plant. Irish Standards and timber specifications have tended to adhere to the British Standards, BS 5258 and BS 5589. The specifications associated with these Standards and their implementation are outlined. The European Community's programme for harmonisation of wood preservation, and the preparation of a new European Standard, CEN/TC38, are described. The results of the test on a sample of sawn timber demonstrate that Irish grown sawn Sitka spruce absorbed more preservative solution than imported whitewoods when treated in a commercial double vacuum plant. The lateral preservative loading in all the tiling batten and rafter samples which were analysed met the criterion adopted in this study. Protim Cycle A confers adequate protection to constructional timbers of low timber volumes, but may not be adequate for larger timber volumes such as floor joists.

**Page**

103p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

596

**Author**

EOLAS. Forest Products Department

**Title**

Machine grading limits for home-grown Sitka spruce in Irish sizes and grades.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 61.11

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

machine grading, Sitka spruce, Picea sitchensis, standards, sawmilling, timber processing, forest products

**Abstract**

In order for sawmills with grading machines to grade timber to the strength classes in SR 11 - Structural Timber for Domestic Consumption, it is necessary to provide them with information regarding the loads to be applied and the deflection limits that have to be set for the required size and grade combination. The objective of this project was to determine the machine grading limits for home-grown Sitka spruce for the grades and sizes used in Ireland and in particular to determine limits to enable grading of one grade only to be done. As a result of this study machine limits for the Computermatic/Micromatic and Cook-Bolinder have been determined and supplied to the sawmills that required the limits. Machine grading has been successfully carried out to SR 11.

**Page**

4p

**Location**

Final Reports for 1989

**Notes**

available

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**Number**

597

**Author**

EOLAS. Forest Products Department

**Title**

Characteristic values for Eurocode 5.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 61.12

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

standards, Eurocode, timber processing, strength properties, characteristic values, forest products, EU, EC, European Community, European Union

**Abstract**

Eurocode 5 was drafted in order to allow for a common specification for building materials throughout the EC, and a study group was set up at the request of the Department of the Environment to examine and comment on the draft. The objective of this study was to establish the characteristic values of home-grown Sitka spruce in terms of the new Eurocode 5 definitions.

**Page**

2p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

598

**Author**

EOLAS. Forest Products Department

**Title**

Assessment of grading limits for SR11 strength class.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 61.13

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

machine stress grading, timber processing, forest products, standards, strength properties, mechanical testing, Sitka spruce, Picea sitchensis

**Abstract**

The objective of this study was to assess the strength in bending of homegrown Sitka spruce in the SR 11 - Structural Timber for Domestic Consumption strength classes using proof-loading methods. 30 pieces of successfully machine-graded material were selected from two sawmills. The weakest point and tension edge were positioned for each test piece, and a predetermined load and rate of loading was applied. The results indicate that the limits derived for machine grading to the SR 11 strength classes are satisfactory.

**Page**

4p

**Location**

Fobairt. Forest Products Department

**Notes**

Available

**Address of author**

Forest Products Dept., Fobairt, Glasnevin Dublin 9

---

**Number**

599

**Author**

EOLAS. Forest Products Department

**Title**

Lodgepole Pine Task Force.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Reference No. 83.05

**Date**

1989

**Source**

Final Reports for 1989

**Key Word**

lodgepole pine, Pinus contorta, timber processing technology, processing equipment, grading, forest products

**Abstract**

The objective of this study was to update information on processing technology and equipment in relation to identifying opportunities for upgrading lodgepole pine. Visits were made to trade fairs in Germany to examine pine-based products, production processes and machinery currently available and in use in Europe. This examination concentrated on those processes involving the upgrading of lower quality timber. Such processes could enable Irish lodgepole pine, which had been shown to have basic properties very similar to those of European red deal, to be used for high grade end uses. Processes applicable to Irish lodgepole pine were noted and products identified. These processes can be divided into three categories: a) size augmentation, i.e finger jointing for length or laminating for width; b) stabilisation/laminating processes; c) defect removal and

plugging.

**Page**

22p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

600

**Author**

Tansey, Webster & Associates

**Title**

The Irish forestry and timber industries: A report for Bord na Mona.

**Place**

Dublin

**Date**

1986

**Key Word**

commercial semi-state companies, Forest and Wildlife Service, State forests, economics, timber processing, private forestry, cutaway bogs, peatlands, Bord na Mona

**Abstract**

The performance of the Forest and Wildlife Service in managing the State's forestry resources is analysed. The report concludes that the State has lost money through its investment in this sector. The FWS inventories, on which valuations of this resource are drawn up, are criticised. The over-optimism of FWS production forecasts has distorted these valuations and has inhibited the development of the domestic processing industry. The state of private forestry in Ireland is examined, and the performance of the Irish timber processing industry is analysed. An economic and financial profile of Bord na Mona is given, and the company's ability to undertake the financial commitments of managing the State forests is assessed. A study is made of potential sources of private investment in forestry, especially pension funds. The report concludes that the best option available to the government for the future management of the State forest resource would be to transfer it to an existing State-sponsored body. Bord na Mona would be in a strong position if it wished to take on this role. The second part of the report examines the feasibility of afforestation on Bord na Mona's cutaway bog.

**Page**

152p

**Location**

Coillte library

**Notes**

available

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**Number**

601

**Author**

O' Carroll Cormac

**Title**

Forestry as a land use in Ireland.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1985

**Source**

Proceedings of 13th International Forestry Students Symposium: 'Forestry in Europe' held at University College, Dublin, 3rd, 4th, 5th January, 1985.

**Key Word**

forestry policy, forestry history, deforestation, afforestation, land use, agriculture, private forestry, State subsidies, grants

**Abstract**

This paper describes the historical background to the deforestation of the Irish countryside and its gradual reforestation, initially by private estates and, from the beginning of the twentieth century, by the State. As a result of the dominance of agriculture in economic policy, State forestry is concentrated on poorer lands. There is resistance to forestry in several areas of marginal land despite the incentives on offer through the EEC Western Package.

**Page**

pp 97 - 101

**Location**

Coillte library

**Notes**

available

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**Number**

602

**Author**

University College Dublin. Forestry Department

**Title**

Semi-natural woodlands of Ireland.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1985

**Source**

Proceedings of 13th International Forestry Students Symposium: 'Forestry in Europe' held at University College, Dublin, 3rd, 4th, 5th January, 1985.

**Key Word**

semi-natural woodlands, deforestation, forestry history, forestry policy, environment, broadleaves, conservation management

**Abstract**

This paper provides an historical background to the decline of Irish woodlands. It also outlines the need for conservation of these woodlands and the problems associated with this task.

**Page**

pp 109 - 121

**Location**

Coillte library

**Notes**

available

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**Number**

603

**Author**

Neenan M.

**Title**

Short rotation forestry as an energy source.

**Publisher**

Irish Society of Agronomy and Land Use

**Place**

Carlow

**Date**

1978

**Source**

Irish Society of Agronomy and Land Use. Symposium: 'Use of midland bogs' at Tullamore February 1978.

**Key Word**

short rotation forestry, energy sources, woodfuel, pulp wood, forest products

**Abstract**

This paper provides a brief overview of recent experiments on the use of short rotation forestry for pulp. The results of a number of costings show that pulp would seem to be price competitive with oil depending on the choice of species, the most promising of which are Salix and possibly alders and poplars.

**Page**

pp 37 - 38

**Location**

Coillte Research

**Notes**

Available

**Address of author**

Teagasc Research Centre, Oakpark, Co. Carlow

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**Number**

604

**Author**

Gillespie John

**Title**

Forest roads - an interim report.

**Publisher**

Department of Finance. Analysis Section

**Place**

Dublin

**Date**

1981

**Key Word**

forest roads, harvesting, forestry management, engineering, forest infrastructure, communications, surveying, forest infrastructure, transportation

**Abstract**

In order to facilitate greater levels of harvesting and afforestation, a considerable increase in forest road construction will be required. It is the aim of this study to identify areas which will need harvest roads over the next five years, and to establish priorities for building roads in these areas. The density of the roads required will depend on the harvesting techniques in use in the areas being serviced. Estimates of annual road requirements, and of the level of the various resources needed to build them, including staff, machinery, materials and funds, are presented. It is recommended that the Forest and Wildlife Service should adopt a target of 250km of new road per annum, and should recruit immediately an extra seven engineers and seven surveyors to enable that target to be achieved.

**Page**

80p

**Location**

Coillte

**Notes**

Available

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**Number**

605

**Author**

Landscape Architects in Ireland

**Title**

Wood fuel and domestic heating. A case for the development of wood fuel production within a national energy policy for Ireland.

**Publisher**

Landscape Architects in Ireland

**Place**

Dublin

**Date**

1979

**Key Word**

woodfuel, energy sources, landscape, coppicing, national energy programme

**Abstract**

This paper examines the potential of wood as a reliable energy source. Landscape Architects in Ireland are particularly interested in the effect on the landscape of excessive tree felling and extensive planting and management of wood for use as fuel. The potential role of wood fuel in a national energy programme, and the issues of land use, species selection and silvicultural techniques are examined.

**Page**

16p

**Location**

Coillte Research

**Notes**

Available

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**Number**

606

**Author**

Farrell Edward P., Cummins Thomas, Boyle Gillian M.

**Title**

European Community Scheme for the Protection of the Community's Forests against Atmospheric Pollution Council Regulations 3528/86 and 1613/89. Intensive monitoring of forest ecosystems in Ireland. Project Number 9060 IR 0060 Final Report.

**Publisher**

UCD. Department of Environmental Resource Management.

**Place**

Dublin

**Series**

UCD. Department of Environmental Resource Management. Forest Ecosystem Research Group Report Number 13

**Date**

1994

**Key Word**

forest ecosystems, pollution, environment, environmental resource management, chemical pollutants

**Abstract**

This study is designed to improve understanding of the effects of atmospheric pollution on forest ecosystems, and is based on permanent sample plots located in important forest ecosystems in Ireland. The study involved: quantitative collection and analysis of atmospheric gases and particles on an open-field site; quantitative collection and chemical analysis of precipitation in an open-field plot; quantitative collection and chemical analysis of forest throughfall and stemflow; collection and chemical analysis of forest soils solution from zero-tension lysimeters below the forest floor and from suction lysimeters at greater depths; tensiometer measurements; soil chemical analysis; foliar loss and discolouration assessments; foliar chemical analysis; quantitative collection and analysis of forest litter. In addition, detailed site, stand and soil descriptions were made. The results suggest significant pollutant deposition at the plot in Roundwood. Forest health observations do indicate slightly higher damage at this site than at others, but the levels of defoliant are not critical. Neither of the other plots is seriously effected by pollution. Marine ion levels at these sites are very high. Interception of these ions by trees is very considerable, so that deposition is greatly increased as a result of afforestation.

**Page**

157p

**Location**

Coford

**Notes**

available

**Address of author**

Department of Environmental Resource Management, UCD, Belfield Dublin 4.

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**Number**

607

**Author**

Healy John Joe

**Title**

Design considerations in the development of Teva forestry equipment with particular reference to branch density on the stem and tree weight.

**Publisher**

Danish Forest and Landscape Research Institute

**Place**

Horsholm, DN

**Date**

1995

**Source**

Harvesting early thinnings cost effectively: the present and the future. A report from Concerted Action 'Cost Effective Early Thinnings' AIR - CT93 - 1538. (Edited by Luc Bouvarel & Kofman Pieter Kofman).

**Key Word**

forestry equipment, forest machinery, harvesting, branch density

**Abstract**

This paper presents the findings of a finite element analysis of an area of the frame of a Teva TP03 Harvesting Head, which was developed to harvest timber with crooked stems and heavy branches. An aspect of the work involved in correct material selection and gauge selection is described. This work involves determining the stresses in the most critical region of the timber processor using the finite element method and in particular the commercial package PATRAN.

**Page**

pp149 - 152

**Location**

Coillte library

**ISBN**

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**Notes**

Available

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**Number**

608

**Author**

de Brit G.

**Title**

Evaluation of seed and plant production systems.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Internal Report

**Date**

1982

**Key Word**

Forest and Wildlife Service, FWS, private forestry, seed production, plant production systems, nursery

management, nursery systems, seeds

**Abstract**

In addition to its main responsibilities the Forest and Wildlife Service has an important part to play in the promotion of private forestry through the provision of reproductive material (seeds and plants) through the nursery trade. This report evaluates the FWS nursery section under the following headings: seed procurement, (seed purchase, cone collection); seed extraction; seed processing; seed testing; seed storage; and plant production. The inherent, developed and organisational defects of the present system of plant production are examined. In the conclusion to the report the changes in the field of plant production which have occurred since the present FWS system was introduced are outlined. The future appears to be in the direction of two basic production systems: (a) precision sowing, (b) containerised production system.

**Page**

39p

**Location**

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**Notes**

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**Number**

609

**Author**

Colclough Patrick, Gallagher Leonard U., Lally Aubrey

**Title**

Irish homegrown softwood sawmilling industry. Study of the Irish softwood sawmilling industry, its growth prospects and problems: Report of the Working Group to the Timber Promotion Study. Steering Committee (FWS, HGTMA, IIRS).

**Publisher**

Department of Fisheries and Forestry

**Place**

Dublin

**Date**

1978

**Key Word**

sawmill industry, homegrown sawn timber, timber processing, timber market, timber prices, sawmilling, forest products, softwood sawmilling, sawlog supply

**Abstract**

The objectives of this report were to: 1. to examine the place of homegrown sawn timber in the Irish market at present; 2. to consider the extent to which it can increase its share of the market by replacing imported timber; and 3. to examine and evaluate the action required, both corrective and promotional, if the market is to absorb the totality of homegrown timber becoming available. A critical examination of the homegrown softwood sawmilling industry was undertaken, including an assessment of the sawlog supply, material properties, applications of sawn softwood and the Irish market size, growth and structure. This examination found that many of the sawmills which have the potential for modernisation will have difficulty in obtaining access to the grading and drying facilities they need to improve the quality of their sawnwood. The technical capability of many of the sawmills is generally low and efforts should be made to concentrate training, management education and other services in the industry to increase the quantity and quality of production.

**Page**

70 p

**Location**

Coillte

**Notes**

Confidential - Restricted circulation

**Address of author**

Forest Products Department, Fobairt, Glasnevin, Dublin 9

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**Number**

610

**Author**

Dunstan Gregory  
(Irish Planning Institute)

**Title**

The future of the rural landscape in Ireland.

**Publisher**

Irish Planning Institute/Trinity College Dublin. Department of Geography

**Place**

Dublin

**Date**

1985

**Key Word**

landscape, visual impact, environment, regulation, legislation, landscape design, upland landscapes, forest appearances

**Abstract**

The various factors which affect the visual appearance of forests are examined. The measures which are necessary to minimise the impact of the forest outline are described. Sensitive management and the incorporation of features of the older and wider landscape determines the quality of forests as an environment for recreation. It is accepted that most upland landscapes can accommodate afforestation, if properly designed. The extension of planning control to forestry is not favoured. A code of practice is proposed, in recognition of the potential of afforestation for landscape change. State and private forestry should be treated equally. Responsibility for measures to improve appearances should be left to foresters as they are best qualified to implement them.

**Page**

50p

**Location**

Coillte library

**Notes**

available

**Address of author**

Department of Geography, Trinity College, Dublin 2

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**Number**

611

**Author**

Forest and Wildlife Service

**Title**

Report on aerial photography.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service. Research and Technology Internal Report

**Key Word**

Geographic Information Systems, GIS, aerial photography, forest inventory, photogrammetric plotting, mapping, forest surveys, ground surveys

**Abstract**

In 1983 maps of forest roads and areas, plotted using GSI photographs from 1973-77, were made available to the Inventory Section of the FWS. This photography is at a nominal scale of 1 : 30,000 which, while not ideal for forest inventory purposes, is nonetheless large enough to allow accurate photogrammetric plotting at a scale of 1 : 10,560 using sophisticated instruments. Ride-lines, roads etc. cannot be plotted accurately from photographs without proper 'control points'. The only realistic method of obtaining these control points, for the foreseeable future, is by ground inspection or ground survey.

**Page**

16p

**Location**

Coillte library

**Notes**

available

**Address of author**

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---

**Number**

612

**Author**

Quinn L.

**Title**

Accuracy test on forecast clearfell volume. Report.

**Publisher**

Forest and Wildlife Service. Inventory Section.

**Place**

Bray

**Series**

Forest and Wildlife Service. Inventory Section Internal Report

**Date**

1984

**Key Word**

timber production forecasts, inventory, FWS, clearfell timber production, Forest and Wildlife Service

**Abstract**

The primary purpose of this study was to test the accuracy of the 1983 and 1985 Forest and Wildlife Service forecasts of clearfell timber production, based on a sample area of 157 ha. in which the volume of timber was estimated. The 1983 forecast of clearfell timber is based mainly on 1968 inventory data, while the 1985 forecast is based on the more recent 1978 inventory. The study concludes that neither forecast overestimates the volume of clearfell timber. The forecasts grossly overestimated the amount of large sawlog in the case of LP (C). A survey of 83 forests showed no change in the mean yield class, since the 1968 inventory, of crops planted before 1958, for any of the main species.

**Page**

38p

**Location**

Coillte library

**Notes**

available

**Address of author**

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**Number**

613

**Author**

Molloy Fergal

**Title**

Irish forestry - the Stride contributions.

**Place**

Dublin

**Date**

1994

**Source**

STRIDE. Forestry Sub Programme Workshop, Silver Springs, Cork, 26th April 1994

**Key Word**

Stride, forestry research, EU, Forestry Sub-Programme, technology transfer, European Union

**Abstract**

This paper briefly outlines the contribution to research and industry made by the Forestry Sub-Programme

(Stride Operational Programme for Ireland). The Council, established under Measure 1 of the Sub-Programme, concentrated its work in three main areas: 1. existing forest research, an inventory revealed that there were over 131 projects being undertaken in 25 research units but there was little co-ordination between them; 2. sectoral committees, which undertook to develop research programmes for each sector; and 3. research reports. The administration of the projects being funded is undertaken by COFORD. Other Measures under the Sub-Programme include technology transfer, provision of research facilities and linkages and twinning. A list of projects funded under Measures 2,3 and 4 is included.

**Page**

pp 1 - 9

**Location**

Coford

**Notes**

available

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---

**Number**

614

**Author**

O'Brien Tim

**Title**

A good beginning: research and the STRIDE contribution.

**Place**

Dublin

**Date**

1994

**Source**

STRIDE. Forestry Sub Programme Workshop, Silver Springs Cork, 26th April 1994

**Key Word**

STRIDE. Forestry Sub Programme, broadleaves, afforestation, forestry research, EU, European Union, planting targets, State forestry, private forestry, economics, investment

**Abstract**

Ireland is at present undergoing a major afforestation programme. This paper examines the steps which will be necessary to ensure that the wood produced as a result of this programme is of the highest standard. Private forestry will play an important role in fulfilling future planting targets. Among the factors which will have a significant bearing on the success of the afforestation programme are: species selection, which will be governed mainly by silvicultural and economic considerations; vegetation management, which is vital to prevent smothering and excessive competition for nutrients; and shaping and pruning. The Stride programme is already of benefit in minimising the mortality rate in planting out of trees. Stride has a crucial role to play in overcoming the problems associated with a major broadleaf expansion.

**Page**

pp 10 - 14

**Location**

COFORD

**Notes**

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**Number**

615

**Author**

Crowley Tim

**Title**

Managing the forest resource.

**Place**

Dublin

**Date**

1994

**Source**

STRIDE. Forestry Sub Programme Workshop. Silver Springs, Cork, 26th April 1994

**Key Word**

forestry research, STRIDE. Forestry Sub Programme, technology transfer, Coillte, EU, European Union, research infrastructure, forest health, harvesting technology, research funding, GIS, Geographic Information Systems, silviculture

**Abstract**

Stride funding is being used to improve the forest research infrastructure. The benefits of this improvement to forestry management in Coillte's Cork Region are examined. Forest health is monitored in Ireland on an annual basis, and Stride funding is being used to develop a system of health assessment using infra-red photography. The acquisition of new harvesting technology, and developments in Geographic Information System facilities in the region are also discussed. Stride has also contributed significantly to Coillte's Technology Transfer programme. This includes the establishment of a silvicultural network between Ireland and other European countries, and the creation of a database on forest research information.

**Page**

pp 15-18

**Location**

Coford

**Notes**

available

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**Number**

616

**Author**

Healy John Joe

**Title**

New technological demands in forest harvesting.

**Place**

Dublin

**Date**

1994

**Source**

STRIDE. Forestry Sub Programme Workshop. Silver Springs, Cork, 26th April 1994

**Key Word**

STRIDE Forestry Sub Programme, harvesting equipment, forwarders, harvesting technology, forest transport, forestry research

**Abstract**

Recent developments in harvesting technology are summarised. The various types of harvesting equipment, including forwarders and timber harvesters, that have been developed by TEVA Ltd. of Co. Galway are described. The company's ability to design equipment for specifically Irish conditions was considerably enhanced through involvement in the Harvesting and Transport Sectional Committee established by COFORD.

**Page**

pp 19 - 23

**Location**

Coford

**Notes**

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**Number**

617

**Author**

Kerrigan John

**Title**

The challenges of the processing industry: the STRIDE relevance.

**Place**

Dublin

**Date**

1994

**Source**

STRIDE. Forestry Sub Programme Workshop, Silver Springs, Cork, 26th April 1994

**Key Word**

STRIDE. Forestry Sub Programme, timber processing, forestry research, technology transfer, EU, marketing, forest health

**Abstract**

The recent record of the Irish wood processing industry is assessed. The presents state of the industry is examined in terms of: strengths, which include the disease-free status of Irish forests, established markets and experienced production units; weaknesses, which include the quality of the resource, dependence on a limited number of markets and problems with raw material supply; opportunities, including projected market growth and growth in supplies from private forestry; and threats, including over reliance on one species. A number of areas in which STRIDE has made a contribution to the Irish wood processing industry are identified The formation of COFORD is seen as extremely important in the research area, especially in establishing linkages between the industry and the research establishments. Other areas covered in the various Measures of the Stride forestry programme include the promotion of technology, strengthening of forest research facilities, technology transfer in the area of structural composite timbers and forest road construction.

**Page**

pp 24 - 33

**Location**

Coford

**Notes**

available

**Address of author**

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**Number**

618

**Author**

Fizsimons B.

**Title**

An assessment of the extent of basal sweep in south coastal lodgepole pine.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1987

**Source**

Lodgepole Pine Taskforce. Report No. 2 (Volume 1).

**Key Word**

lodgepole pine, Pinus contorta, basal sweep, stem form, forest products, joinery timber, timber processing

**Abstract**

Despite the difficulties associated with growing lodgepole pine it has been shown that, given the right environment, this species can produce timber of good joinery quality. However, lodgepole pine trees grown on peat often have poor stem form. The object of this study was to determine whether or not trees of the degree of straightness which can reasonably be expected on peat sites can provide joinery quality logs. A random sample of lodgepole pine stands planted in 1963 was chosen and assessed for degree of sweep at breast height. After selection of final crop the average degree of sweep or lean in all the plots surveyed was 12.9 degrees. There was, however, great variability between plots. It is concluded that, with the selection of better stems, 95% of plots have the potential to form a final crop with a mean sweep of 15 degrees or less, which is within the range considered suitable for sawlog material.

**Page**

pp 11-20

**Location**

Coillte library/ Forbairt. Forest Products Department

**Notes**

Available (Technical Report 3.1, Lodgepole Pine Taskforce, Report No. 2)

**Address of author**

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**Number**

619

**Author**

Knaggs G.R.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Glueing properties.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1987

**Source**

Lodgepole Pine Taskforce. Report No. 2 (Volume 1)

**Key Word**

lodgepole pine, adhesives, gluing properties, strength properties, forest products, timber processing

**Abstract**

The aim of the tests carried out in this study was to assess the suitability of lodgepole pine for use in conjunction with urea-formaldehyde adhesives. Lap shear tests were carried out on untreated lodgepole pine and on lodgepole pine treated with an organic solvent preservative, both sapwood and hardwood, in both dry and moist conditions. A comparable series of tests were run on Scots pine, the standard joinery softwood. It was found that for all parameters, lodgepole pine joints are superior in strength. However, preservative treatment does weaken the joints. Soaking also affects joint strength.

**Page**

pp 81-87

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

available (Technical Report 3.5, Lodgepole Pine Taskforce, Report No. 2)

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

620

**Author**

Atanackovic A.

(EOLAS. Forest Products Department)

**Title**

Long term investigation into the durability of Irish timbers in service.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Final Reports 1989

**Key Word**

timber durability, forest products, preservative treatment, preservatives, fence posts, rails, timber decay, timber processing, timber preservation

**Abstract**

The primary objective of this project was to assess the durability of various timber species in ground contact and in service. It was also intended to test the effect of different preservation treatments on timber durability. The samples used for testing comprised squared fence posts (100 mm X 100 mm X 1800 mm) and rails (100 mm X 35 mm X 3600 mm) in service and square and round posts in ground contact. A number of fence posts and rails were impregnated by 'Tanalith' water borne preservative (copper-chrome-arsenic). It was proposed to start with inspection of the untreated posts and rails after 2 years of service.

**Page**

25p

**Location**

Forbairt. Forest Products Dept.

**Notes**

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**Number**

621

**Author**

Moroney Sean

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Ponding and sprinkling of Sitka spruce transmission poles - demonstration project.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1982

**Key Word**

transmission poles, forest products, preservation treatment, preservatives, permeability, Sitka spruce, timber decay, ponding, creosote, Sitka spruce, Scots pine, Pinus sylvestris, Picea sitchensis

**Abstract**

Research has shown that spruce poles can be treated satisfactorily with preservative following a period of ponding or sprinkling with suitable lake water. A project was established in September 1981 with the object of determining the feasibility and effectiveness of using the water treatment process for the production of permeable spruce transmission poles using 880 ponded and 192 sprinkled Sitka spruce poles. Both methods worked extremely well in terms of increasing the permeability of Sitka spruce to creosote. The average penetration of creosote was 2.7 cm and the charge loadings obtained were similar to imported Scots pine, with an average charge loading of 210 kg/square meter for the Bethell (full cell) process. The average increase in volume of Sitka spruce over Scots pine was 32.2% and the average volume the poles produced was 0.5 cubic metres. The average tpe was 0.77 cm/m. The additional cost incurred for a ponded pole over a regular pole species such as Scots pine was £15.02/pole and that for a sprinkled pole was £16.02/pole.

**Page**

110p

**Location**

Forbairt. Forest Products Dept.

**Notes**

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**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9

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**Number**

622

**Author**

EOLAS. Forest Products Department

**Title**

Use of Sitka spruce for transmission poles. Summary interim report.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 31.11

**Date**

1989

**Key Word**

transmission poles, forest products, timber processing, preservation treatment, preservatives, timber decay, drying, Sitka spruce, *Picea sitchensis*, creosote penetration, timber end use

**Abstract**

A two year research programme examining the use of Sitka spruce as transmission poles, initiated by the Forest Service, commenced in January 1988. This interim report summarises the findings of the work carried out in 1988. The programme was divided into 5 phases: Phase 1, air-drying, kiln-drying and preservation of Sitka spruce poles, (Telecom Eireann size); Phase 2, investigation of the effects of drying conditions in the forest on Sitka spruce poles (ESB size); Phase 3, full scale investigation of Sitka spruce poles for ESB use; Phase 4, examination of creosote penetration and strength of Sitka spruce poles processed by Telecom Eireann during 1987; Phase 5, assessment of the performance of unponded spruce poles in service. All of the poles tested complied with the design stress specification. All of the unponded creosoted Sitka spruce poles in service which have been tested are in good condition, despite having shallow creosote penetration. Assessment of creosote penetration in a small random sampling from 2,500 Sitka spruce poles treated by Telecom Eireann indicated that 50% of the poles had deep penetration. This differed from an earlier Telecom report, which indicated that 90% of the poles had good creosote penetration.

**Page**

200p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Department, Forbairt, Glanevin Dublin 9

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**Number**

623

**Author**

Carey M.L., Griffin E.

**Title**

Sitka spruce v lodgepole pine.

**Publisher**

FWS

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication No. 20

**Date**

1982

**Key Word**

Sitka spruce, lodgepole pine, *Picea sitchensis*, *Pinus contorta*, soil nutrients, peat soils, mineral soils, Old Red Sandstone, ORS, soil nitrogen, mixtures, Japanese larch, economics

**Abstract**

Problems arise in growing Sitka spruce on certain peat soils and mineral soils derived from Old Red Sandstone

due to lack of available soil nitrogen. The object of this study was to make a financial comparison between growing Sitka spruce, using fertiliser nitrogen, and lodgepole pine which grows vigorously without any such inputs. The results suggest that the economics of growing pure crops of Sitka spruce on impoverished mineral soils using fertiliser nitrogen are questionable. Lodgepole pine would appear a more attractive option. However, the lower nitrogen inputs necessary to sustain Sitka spruce production on certain peat soils, and the lower production potential of lodgepole pine, result in spruce being more attractive under certain circumstances, particularly if the price of nitrogen does not increase in real terms. Japanese larch/Sitka spruce mixtures are also included in the appraisal and appear an attractive proposition on poor mineral soils.

**Page**

19p

**Location**

Coillte library

**Notes**

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**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

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**Number**

624

**Author**

Cahill Declan

(EOLAS. Forest Products Department)

**Title**

Use of Sitka spruce for transmission poles. Project No. 31.11. Phase 1. Effects of air drying and kiln drying on creosote uptake and strength of Bord Telecom poles from Hollywood Forest.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Study 31.11. The use of Sitka spruce for transmission poles. Interim Report.

**Key Word**

transmission poles, forest products, timber processing, drying, preservatives, preservation treatment, physical properties, strength testing, timber end use

**Abstract**

This phase of the project on the utilisation of Sitka spruce as transmission poles involved the examination of air-drying, kiln-drying, creosote treatment and strength of Sitka spruce poles of Telecom Eireann size. 362 Sitka spruce trees, Yield Class 14, were selected and felled during February-April 1988. Each of the trees were converted into poles, and discs were cut from the top and bottom of each pole. After being allowed to air-dry for two weeks, moisture meter contents measurements of the poles were taken at two depths, (20mm and 30mm). Similar measurements were taken from kiln-dried samples. All the poles were pressure treated with creosote using a modified Reuping schedule. The depth of penetration of creosote was measured at four points along the pole. Results indicate that the moisture content is higher at the top of the pole than at the bottom for both sapwood and heartwood. Also a non-destructive method to indicate sapwood depth in standing Sitka spruce trees was confirmed. The poles set aside for air-drying dried within four months instead of the expected 18 months. The work on the kiln-drying of spruce poles gave encouraging results. The average creosote penetration, measured at four points, was 16mm and the average minimum depth was 7mm.

**Page**

156p

**Location**

Forbairt. Forest Products Dept.

**Notes**

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**Address of author**

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**Number**

625

**Author**

EOLAS. Forest Products Department

**Title**

Study 31.11. Use of transmission poles. Phase 4: Examination of Sitka spruce poles treated by Telecom Eireann.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 31.11

**Date**

1989

**Source**

The use of Sitka spruce for transmission poles. Interim Report

**Key Word**

transmission poles, preservation treatment, preservatives, forest products, timber processing, Sitka spruce, *Picea sitchensis*

**Abstract**

2,500 Sitka spruce poles were treated using a modified Reuping treatment schedule in a process carried out by Telecom Eireann in 1987. It was found that 90% of the poles had achieved deep, regular penetration, while the remainder showed irregular shallow penetration. It was decided to evaluate a random selection of 50 poles from this stock by: a) carrying out full-scale strength tests; and b) measuring the area of creosote penetration in these poles. Of the 49 poles examined, 25 showed deep regular creosote penetration while the remainder had a shallower irregular pattern. The average area of creosote penetration in the poles with deep treatment was 55.9% while the average of the remaining poles was 32%. The ratio of poles with deep penetration compared to those with shallow penetration was 50 : 50 approx. This differed to the original Telecom assessment of 90 : 10.

**Page**

7p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

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**Number**

626

**Author**

EOLAS. Forest Products Department

**Title**

Study 31.1 : Phase 5. The performance of unponded Sitka spruce transmission poles in service.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

The use of Sitka spruce for transmission poles. Interim report.

**Key Word**

transmission poles, forest products, preservation treatment, preservatives, Sitka spruce, *Picea sitchensis*, timber processing

**Abstract**

A number of unponed Sitka spruce transmission poles which, according to ESB records, had been in service for 15-20 years were located and mapped. Pilodyn and hammer tests were carried out and Pressler cores taken for creosote penetration and fungal attack investigations. All poles examined appear sound and free of decay on both hammer test and Pilodyn cores. The penetration of creosote, except where a core is taken close to a spit, is low, often only 4-6 mm, but despite this shallow penetration there is no evidence of fungal invasion.

**Page**

8p

**Location**

Forbairt. Forest Products Dept.

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**Number**

627

**Author**

Picardo Valez

(EOLAS. Forest Products Department)

**Title**

Study 31.11 : Use of Sitka spruce for transmission poles strength investigation; Phases 2 & 4.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1989

**Source**

The use of Sitka spruce for transmission poles. Interim report.

**Key Word**

transmission poles, strength testing, design stress, physical properties, forest products, timber processing

**Abstract**

These phases of the project on the utilisation of Sitka spruce as transmission poles involved carrying out strength tests on sample poles. The objectives for both phases were to determine the strength of the poles and to compare the values obtained with existing design values. In Phase 2 the poles selected for testing were obtained from a ramping experiment where the effects of five different exposures were being investigated. The ESB classified most of the 141 poles used in the experiment as 'soft' poles, meaning poles with good penetration but inadequate strength. The method of testing strength was according to that described in ASTM D1036: Standard Methods of Static Tests of Wood Poles. Analyses of results in both phases indicated that there was no significant difference in ultimate strengths between the samples chosen. For the purpose of a test carried out to determine the effect of penetration, samples of the poles were designated 'good' or 'bad' depending on how good or bad was the preservative penetration. In phase 2 tests there was no significant difference between 'good' and 'bad' poles. In Phase 4, analyses of test results showed that there was a significant difference (6 N/ mm squared) in ultimate stresses between 'good' and 'bad' poles. The results of phase 2 show that the overall mean (39.28 N/mm squared) is better than the present ESB design stress. However, only 3 of the 10 'good' poles exceeded the ESB design stress. The design stress for Telecom Eireann is slightly higher and most poles tested in phase 4, including the 'good' poles, did not exceed this.

**Page**

62p

**Location**

Forbairt. Forest Products Dept.

**Notes**

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**Address of author**

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**Number**

628

**Author**

EOLAS. Forest Products Department

**Title**

Study 31.11 : Use of Sitka spruce in transmission poles. Strength investigations (Appendix 1)

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Study No. 31.12 : The use of Sitka spruce for transmission poles. Summary report.

**Key Word**

transmission poles, strength tests, physical properties, drying, forest products, timber processing, Sitka spruce, Picea sitchensis

**Abstract**

The objectives of the tests described in this report were: (i) to investigate the effects of drying on strength; (ii) to confirm the strength and penetration results of previous tests; (iii) to determine the strength of in-service Sitka spruce poles after 26 years service. There were three separate phases to the tests, each using a different sample of posts: Phases 1-3, which involved tests on three batches of poles subjected to three different drying conditions, air-drying, kiln-drying - 9 days, and kiln-drying - 15 days; Phase 4, poles were randomly selected from an ESB stock yard; and Phase 5, poles removed from 'dead' electricity lines. The method of testing was according to that described in ASTM D1036: Standard Methods of Static Tests of Wood Poles. An analysis of variance of results from the Phase 1 - 3 tests indicated that there was significance difference in mean ultimate strength between the kiln-cracked (15 days) and the other drying conditions. However, it is concluded that cracks in poles do not adversely effect the strength of poles. Analysis of results from Phase 4 indicated no significant variance between samples or between this test and the earlier test. The difference in mean Ultimate strength between poles which were classified as having good preservative penetration and those having bad penetration was just under 5 N/square mm, which is 11% of the overall mean. The mean strength of both categories exceeds Telecom Eireann mean design stress value.

**Page**

17p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

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**Number**

629

**Author**

Cahill Declan

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**Title**

The use of Sitka spruce for transmission poles. Report on 1989 work. Creosote penetration in Bord Telecom poles, Phase 4.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study No : 31.12

**Date**

1990

**Source**

The use of Sitka spruce for transmission poles. Report on 1989 work.

**Key Word**

preservatives, preservation treatment, Sitka spruce, transmission poles, forest products, timber processing, *Picea sitchensis*, timber end use

**Abstract**

The object of this phase of the study of the utilisation of Sitka spruce as transmission poles was to observe and record the preservative uptake in poles using two separate cylinders and two separate treatment schedules. The older of the two creosote cylinders had a slower action pump than the cylinder, the other had a rapid pressure pump. Creosote penetration assessments were carried out on the poles by Pressler borings, (67 poles), and disc measurements, (40 poles). The overall conclusion from the assessments of both samplings is that approximately half of the poles had deep, regular creosote penetration while the remainder exhibited a shallow irregular pattern. There is therefore no discernible difference in preservative uptake between poles receiving separate treatments.

**Page**

16p

**Location**

Forbairt. Forest Products Department

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**Number**

630

**Author**

EOLAS. Forest Products Department

**Title**

The use of Sitka spruce for transmission poles. Report on 1989 work. Results of a survey of spruce poles in other countries.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1990

**Source**

Study No: 31.12. The use of Sitka spruce for transmission poles. Report on 1989 work.

**Key Word**

transmission poles, Sitka spruce, preservatives, preservation treatment, survey, forest products, *Picea sitchensis*, timber processing, timber end use

**Abstract**

During 1988 a questionnaire on the use of spruce for transmission poles was sent to 13 European countries. It was found that softwood poles are still widely used in Europe, although there is a growing tendency to use underground cables. Spruce poles are used commercially only in France and Denmark. Pressure treatment with creosote or copper-chrome-arsenic is widely used to treat timber poles. The Reuping process is the preferred method of creosote application. Sap displacement is used in Denmark. The expected life service of poles in France and Denmark is 30 years, however longer service periods have been recorded. French poles used for electricity supply are treated by the Estrade process. This involves air-drying the poles and then placing them in warm air to induce cracks, after which they are treated normally with preservative. It was concluded that the French should have considerable experience on the use of these poles.

**Page**

80p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

631

**Author**

Knaggs G.R.

(EOLAS. Forest Products Department)

**Title**

Project 31/1.1 Phase 5 : The performance of unponded Sitka spruce transmission poles in service.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1990

**Source**

Study 31.12 : The use of Sitka spruce for transmission poles. Report on 1989 work.

**Key Word**

Sitka spruce, forest products, transmission poles, preservation treatment, preservatives, *Picea sitchensis*

**Abstract**

This phase of the study on the utilisation of Sitka spruce as transmission poles involved finding unponded spruce poles which had been used for electricity transmission in the past, and assessing their performance in service. A number of poles were located at different sites and a series of tests carried out on a representative sample to determine creosote penetration, hardness of poles and incidence of fungal attack. The test procedure involved a visual assessment of condition, pilodyn measurements, hammer tests and Pressler core tests. The poles are characterised by marked checking, accompanied by a shallow penetration of creosote. Despite this, no failures have occurred in service and the bulk of the poles are unaffected by decay fungi. The strength of the poles tested showed no statistical difference from that of freshly treated poles, showing that significant deterioration has not occurred.

**Page**

65 p

**Location**

Forbairt. Forests Products Dept.

**Notes**

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**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

632

**Author**

McLarnon D., Lavery D. J., Atanackovic A., Taylor J.M.

**Title**

Improving the quality of the surface finish on fast-grown softwoods using factorial experimental design methods.

**Publisher**

Kyoto University. Faculty of Agriculture

**Place**

Kyoto

**Date**

1995

**Source**

Proceedings of the 12th International Wood Machining Seminar, October 2 - 4, 1995 Kyoto, Japan.

**Key Word**

surface finish, timber quality, moisture content, rake angle, feed speed, knot area, timber processing, forest products, machine surface planing

**Abstract**

This paper reports on the results of a factorial experiment devised to study the process conditions that will produce the optimal quality of surface finish for fast grown softwoods. The limitations of fast grown timbers in terms of attaining quality planed surface finish are documented. The control parameters selected for the experiment were moisture content, rake angle, feed speed, and knot area. The results of the experiment demonstrate that the effects of moisture content and knot area on the quality of finish are very small. The feed speed is more significant, and marginal benefits can be gained by increasing the feed to 26m/min. Rake angle has the largest effect on clearwood assessment. Increasing the rake angle to a high of 24 degrees can significantly increase the quality of surface finish attainable on planed clearwood. The optimum process configuration of factor levels for the best planed surface depends on whether a clearwood or a knotwood area is considered. The poorest quality section of planed surface tends to occur around knotwood because of problems associated with the complex nature of grain orientation around the knot, which was shown to adversely affect the planing process. The wider implications of this study are that the use of Sitka spruce in value added product would be enhanced if the incidence of medium to large knots were reduced.

**Page**

pp 102 - 109

**Location**

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**Number**

633

**Author**

Picardo Valez

(EOLAS. Forest Products Department)

**Title**

Sitka spruce fence rails (100 X 35): Provision of data to facilitate amendment of RC25 Specification.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 92-61-01

**Date**

1993

**Key Word**

Sitka spruce, *Picea sitchensis*, fencing rails, forest products, timber processing, physical properties, stress grading, strength testing, structural grading, British Standards, specifications, timber end use

**Abstract**

The objectives of this study were to obtain data on Sitka spruce rails to enable it to be used in road side fencing rails by: 1) establishing that it had the required strength; 2) providing the necessary information for amending RC25 : Road Design Manual Section 3, Part 1: Nailed Timber Post and Rail Fences. 214 fence rails were graded and tested. Two methods of grading from two documents were employed - RC25 which uses surface measurements of knots, and BS4978 which uses the knot area ration (KAR) method of assessing knots. It was found that dimensional accuracy was good and within the permissible method of grading. The effectiveness of the two types of grading based on the assessment of knots only was analysed. The KAR method of grading is effective, the RC25 method is not effective. The development of permissible stresses for design purposes is discussed in terms of the method for deriving the basic stress (i.e. using the fifth percentile or mean values for MOR) and the factors that should be used on the basic stress. Ultimate loads were worked out based on a central-point loading condition. The stresses that were used were determined from the test results of this investigation and were calculated for various KARs commonly used in structural grading. It will be necessary to establish both new factors for derivation of design stresses, and design loads to use in the design of rails. Present

British Standards guidelines appear too severe. It is concluded that home-grown Sitka spruce has adequate strength for use in fence rails with the most severe loading conditions.

**Page**

44 p

**Location**

Forbairt. Forest Products Dept.

**Notes**

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**Address of author**

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---

**Number**

634

**Author**

Atanackovic Andreja

(EOLAS. Forest Products Department)

**Title**

Long term investigation into the durability of Irish timber in service or in ground contact. (Report for 1992).

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1993

**Key Word**

timber durability, life expectancy, strength characteristics, deterioration, preservation treatment, forest products

**Abstract**

This project was set up in order to obtain information on the durability and life expectancy of home grown timber. It was proposed to observe the importance of home grown timber exposed to domestic weather conditions, in ground contact and in service, over a prolonged period. These observations were carried out at the testing site in Glenealy nursery, Co. Wicklow. This report presents the results and updated data of the inspection carried out in October/November 1992. The test material consisted of fence posts and rails, round posts, square posts and stakes. The effect of timber deterioration on strength properties of the timber was measured using the pendulum impact test and the pilodyn test. In contrast with untreated timber, samples impregnated with preservative showed little change in physical appearance. Untreated timber was seen to be in an advanced state of fungal decay, the worst affected species being sycamore, poplar and lodgepole pine. While pilodyn readings and pendulum tests provide additional information about the samples' condition, they are only indicators and cannot be interpreted as accurate measurements where timber deterioration exists.

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72 p

**Location**

Forbairt. Forest Products Dept.

**Notes**

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**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

635

**Author**

Cahill Declan

(EOLAS. Forest Products Department)

**Title**

Investigations of the uptake of preservative in small cross-sectional size Sitka spruce. Final report.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 29

**Date**

1988

**Key Word**

preservation treatment, preservatives, Sitka spruce, roof trusses, structural timber, forest products, timber processing, Picea sitchensis

**Abstract**

The objectives of this study were: to examine the double vacuum treatment of Sitka spruce for use as roof trusses; to compare the uptake of preservative with that obtained with imported roof truss material; to modify, where necessary, the current treatment schedule for the Irish material; to modify, where necessary, the treatment clause in IS 293 : 1986 - 'Timber Trussed Rafters for Roofs.' Three double vacuum schedules were employed in the study. The volume uptake of preservative achieved in 3 mm outer layers of both native and imported timber was measured. Examination of the average gravimetric uptake of preservative solution showed that Irish timber had a 78% higher uptake than imported for the mildest treatment schedule, 128% higher for the next schedule and 185% for the most severe schedule. Preservative analysis and uptake measurements clearly show that Irish roof truss timber can be adequately treated with a simple double vacuum schedule. The imported material required a much more severe schedule.

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50 p

**Location**

Forbairt. Forest Products Dept.

**Notes**

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**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

636

**Author**

Cahill Declan

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Evaluation of timber roadside fencing in service since 1968. Final report.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1988

**Key Word**

Sitka spruce, fencing, durability, forest products, preservation treatment, Picea sitchensis, preservatives

**Abstract**

The objectives of this study were to evaluate the performance of a stretch of timber fencing (reported to be Sitka spruce) on the Longford/Newtownforbes road, and to use this information to help utilise Sitka spruce in roadside fencing. The length of fencing selected for testing was estimated to be 18 years old and was heavily weathered with extensive growth of mosses and lichens. The quality of timber used in the rails had a high rejection rate in relation to knots. There was a high rate of end-grain splitting in the rails. The moisture content of the fencing shows levels conducive to decay. It was found that the specified nail size induces stresses in timber which can cause splitting. The preservative did not appear to cause a detrimental effect on the nails, and it is estimated that they may provide a further fifteen to twenty years service. Decay was detected in small pockets in some of the posts at the most hazardous area, the ground-line zone. However, given the limited penetration of preservative, the likely wet condition of the timber before treatment, and the high degree of checking, the performance of these spruce posts is considered to be quite good. No decay was visually detected on any of the rail samples selected. The penetration of preservative in the rails was better than expected while the depth of preservative

achieved in the posts was considered normal for the species. None of the samples achieved the desired loading of preservative required by the specification.

**Page**

42p

**Location**

Forbairt. Forest Products Dept.

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**Address of author**

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**Number**

637

**Author**

Atanackovic A., Evertsen J.A.

**Title**

Blue stain infection of logs and sawn timber.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1987

**Source**

Lodgepole Pine Taskforce: Report No. 2 (Volume 1).

**Key Word**

preservation treatment, preservatives, timber protection, timber processing, fungal infection, Ceratocystis, blue stain, lodgepole pine, forest protection

**Abstract**

Blue stain is a discolouration in timber caused by certain fungi, including isolates of the genus *Ceratocystis*. Freshly felled logs, sawn timber, and rewetted surfaces of susceptible species are all at risk of infection. The objective of this programme was to assess the incidence of blue stain infection in logs and sawn timber. Three categories of treatment were applied to a sample of logs from Kilworth Forest, Co. Tipperary and 1188 planks converted from these logs. The treatments were: 1. Log storage location; 2. Log storage duration; 3. Chemical treatment with a 1.5% w/v Hickson Antiblue 37739 solution for prevention of blue stain infection. The results of the tests showed that logs can be safely stored up to two weeks after felling without any risk of blue stain infection progressing beyond the slab area of the log, after 4 weeks 10% of the plank surface area can be infected. Logs dipped in Antiblue 3739 were free of infection except in cases where concentration is border line. Using multiple regression analysis of results to produce estimation factors for the likelihood of infection after treatment, it was found that the efficiency of the plank dip treatment is at least 84%. Storing logs in the forest for a maximum of two weeks and dipping the planks immediately after conversion is the most effective combination of treatments (96% efficiency achieved).

**Page**

pp 21-42

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

available. (Technical Report 3.1., Lodgepole Pine Taskforce)

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

638

**Author**

Gallagher L.U.

**Title**

Kiln drying of sawn timber.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1987

**Source**

Lodgepole Pine Taskforce. Report No. 2 (Volume 1).

**Key Word**

joinery timber, lodgepole pine, Pinus contorta, timber processing, kiln-drying, drying, forest products

**Abstract**

The objective of this study was to evaluate the effect of applying different kiln drying schedules on the drying performance of joinery-size lodgepole pine. Sample planks were selected from lodgepole pine with a range of basal sweep from 5' to 15'. Two kiln runs in each of the two test years, 1986 and 1987, were conducted. The objectives of 1986 were to determine the effects of drying and other plank qualities on the degree of distortion and degrade recorded in kiln dried lodgepole pine joinery of uniform thickness. In 1987 the objectives were to determine the effect of the drying schedule, log type, and plank size on the degree of distortion and degrade found when mixed sizes of lodgepole pine were dried according to two different schedules. The 1986 63 mm timber sample was adequately dried in 11 days in the case of both kiln runs. The 54 plus 79 mm stock dried within 11 to 13.5 days. This is within the time scale expected in established drying schedules. Shrinkage values are within the expected limits for the species. Degrade in terms of spring and bow were low with 72% of planks having 5 mm or less spring and 55% having 5 mm or less bow - both insignificant amounts of distortion. The overall rejection rate due to twist was 21%, largely due to the presence of split or boxed heart. 7.2% of planks were totally rejected due to fissures, but 66.6% were free of fissures on at least three surfaces. However, a considerable amount of the timber is amenable to salvage. It is recommended that lodgepole pine timber for joinery should be dried according to FPD Schedule 2 of this report.

**Page**

pp 43-73

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

available (Technical Report 3.3, Lodgepole Pine Taskforce, Report No. 2)

**Address of author**

Forest Products Dept., Fobairt, Glasnevin, Dublin 9

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**Number**

639

**Author**

Knaggs G.R.

**Title**

Manufacture of window joinery.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1987

**Source**

Lodgepole Pine Taskforce. Report No. 2 (Volume 1)

**Key Word**

window joinery, lodgepole pine, Pinus contorta, forest products, timber processing, manufacturing, timber end use

**Abstract**

The object of this study is to assess the suitability of lodgepole pine for use in window joinery. The timber used in the study was converted from logs obtained from Kilworth Forest, from which 26 lengths suitable for the moulding of window sections were prepared. Graded sample material was then manufactured into windows in

the same manner as with imported red deal. After moulding it appeared that the machine surfaces of the processed lodgepole pine were the equal of surfaces on imported red deal. Tenoning and morticing also performed satisfactorily. Sash and frame components underwent the same preservation treatment as red deal using Protom Prevac, double vacuum schedule. The loading achieved by the sample was found to be comfortably in excess of the IS 63 loading requirement of 0.003% for this preservative. A visual assessment of the completed windows indicated that they generally met the requirements of IS 63. However, a number of bark encased knots occurred on exposed surfaces and these would not be permitted under the Standard.

**Page**

pp 74-79

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

available (Technical Report 3.4, Lodgepole Pine Taskforce. Report No. 2)

**Address of author**

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---

**Number**

640

**Author**

Knaggs G.R.

**Title**

Finger jointing.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1987

**Source**

Lodgepole Pine Taskforce. Report No. 2, (Volume 1).

**Key Word**

finger jointing, lodgepole pine, Pinus contorta, joinery timber, timber processing, basal sweep, forest products

**Abstract**

Despite the problems associated with the species, including the presence of knots and shortened lengths due to basal sweep, lodgepole pine can produce top quality joinery stock if fingerjointed successfully. This study was designed to assess the suitability of lodgepole pine for finger jointing by comparing its performance with that of red deal. Tests to determine modulus of rupture, density and moisture content were carried out on 47 jointed specimens and 29 unjointed specimens. The 'joint efficiency' of the finger-jointed specimens was calculated according to the requirements of BS 5291 : 1984 and the results analysed. The finger jointed sections of lodgepole pine are stronger than those of Scots pine by a stress value of 6.42 N/mm squared. With the species combined, unjointed timber sections are stronger than the jointed section by a stress value of 27.89 N/mm squared.

**Page**

pp 88-93

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

available (Technical Note 3.6, Lodgepole Pine Taskforce, Report No. 2)

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

641

**Author**

Cahill D.C.

**Title**

Uptake of organic solvent preservative.

**Publisher**

Institute for Industrial Research and Standard

**Place**

Dublin

**Date**

1987

**Source**

Lodgepole Pine Taskforce. Report No. 2 (Volume 1)

**Key Word**

lodgepole pine, Scots pine, Pinus contorta, Pinus sylvestris, preservation treatment, preservative uptake, treatability, forest products, timber processing, preservatives

**Abstract**

The objective of this sub-study was to see whether lodgepole pine could undergo the same preservative treatment as Scots pine. Twenty four samples of Scots pine and lodgepole pine which had undergone Vac-Vac Double Vacuum treatment were quantitatively analysed for tri-butyltin oxide (TBTO) in accordance with BS. 5666 : Part 7 : 1980. The analysis of the data from the results of these tests show that there is no significant difference between the preservative uptakes of the two species. The difference in uptake is greater by a factor of 2 in the sapwood than that in the heartwood, and is considered to be highly significant. It is clear that Irish lodgepole pine does not have different preservative treatment characteristics to the imported Scots pine.

**Page**

pp 100-107

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

Available (Technical Report 3.8, Lodgepole Pine Taskforce, Report No. 2)

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

642

**Author**

Thornton P.J.

**Title**

Compatibility with surface coatings.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1987

**Source**

Lodgepole Pine Taskforce, Report No. 2 (Volume 1).

**Key Word**

lodgepole pine, red deal, surface coatings, forest products, timber processing, Pinus contorta

**Abstract**

The object of this study was to establish a comparison between a range of coating systems applied to lodgepole pine and red deal when subjected to accelerated and long-term durability tests. For the purposes of the test programme, the following coating systems were used: 1. A conventional alkyd undercoat and gloss finish system based on IS 32 materials and applied over a BS 4756 aluminium wood primer; 2. As 1, but using a conventional non standard aluminium wood primer; 3. A water thinnable micro-porous paint system based on synthetic resins and solvents (Xuladecro Gloss). The tests involved: subjecting samples to 2,000 hours accelerated artificial weathering as specified in BS 3900 : Part F3 : 1971; adhesion testing; and natural weathering tests according to ISO 2810 : 1974. During application no differences in the behaviour of the various materials with respect to the ease with which they can be applied with a brush, wetting, sinkage, or drying time was noted between the two timbers. The initial bond formed between lodgepole pine panels and the coating systems was found to be satisfactory. The natural colour of lodgepole pine is marginally more stable

than that of Scots pine in the accelerated test. The results of the various tests show that the durability of paints and other coatings such as stains is not adversely affected by being applied to lodgepole pine.

**Page**

pp 107-125

**Location**

Coillte library, Forbairt. Forest Products Dept.

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Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

643

**Author**

Evertsen J.A.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Determination of wood quality of standing trees by a non-destructive method. Final report.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Report No. 7

**Date**

1986

**Key Word**

sampling, non-destructive testing, strength properties, paper pulp properties, wood stability, mechanical testing, wood density, wood quality, timber quality

**Abstract**

The objective of this programme was to establish whether non-destructive sampling and testing methods can be used to determine wood quality and whether the quality of standing timber can be predicted from non-destructive samples. Sixty Sitka spruce trees were sampled by destructive and non-destructive techniques. Four categories of wood quality determining properties were evaluated: wood stability, mechanical strength properties, wood density and paper pulp properties. In addition, the effect of knot volume on wood quality was examined. In the analysis of the first tree wood quality property groupings it was shown that no great correlation existed between the individual destructive and non-destructive samples, while prediction equations to predict wood property characteristics in individual planks in a tree from increment cores could not be reliably formed. In the case of paper pulp properties, increment cores could be used to determine pulp yield and fibre length. Although in the case of fibre length, the application can only be made on a comparative rather than an absolute basis. Knots play a significant role in the quality of sawn timber. Algorithms were developed to determine knot volume in the tree stem, cant and planks. When a sawlog is positioned with an optimal orientation at the time of conversion, the knot volume in the log can be reduced by 10%. Knot volume and plank deflection appear to be related.

**Page**

120p

**Location**

Forbairt. Forest Product Dept.

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**Number**

644

**Author**

O'hEirgeartaigh Micheal, Evertsen Jos, Stephen Elaine  
(Institute for Industrial Research and Standards. Forests Products Department)

**Title**

Estimating knot volumes in wood.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1987

**Source**

Determination of wood quality of standing trees by a non-destructive method.

**Key Word**

knot volume, timber cant, physical properties, non-destructive sampling, non-destructive testing

**Abstract**

This paper is concerned with the determination of knot volume in a tree log, and its relationship with the maximum square timber cant extracted from this log. The knot volume in the tree and the cant are determined from branch diameter and its angle to the tree trunk. The method of determining the knot volume in planks is also described. Subroutines for the elementary knot shapes are given; more complicated knot shapes are composites of the elementary ones. The parameters chosen to measure the knot characteristics in planks were selected for their robust characteristics and practicality of measuring. The results of the study demonstrate that it is possible to get a very accurate estimate of the knot volume in the cant from the visual observation of a tree in a forest or a log in a sawmill.

**Page**

18p

**Location**

Forbairt. Forest Products Dept.

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**Number**

645

**Author**

Evertsen J.A.  
(EOLAS. Forest Products Department)

**Title**

The development of treatment schedules to ensure eradication in timber of the pinewood nematode (*Bursaphelenchus xylophilus*) and its insect vectors.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1991

**Key Word**

EC, EU, European Community, European Union, pinewood nematode, forest pathogens, *Bursaphelenchus xylophilus*, insect pests forest protection, pasteurisation, insects

**Abstract**

This project was established under EC contract 90/399002. The contract specified a technical development programme, with the aim of investigating various aspects associated with the risk of introducing a forest pathogen (*Bursaphelenchus xylophilus*) and its vector (*Monochamus* sp.) into Europe through the importation of infested timbers. Time/temperature schedules and a database for final development have been achieved. Basic research was initially required to establish the correct framework from which experimentation could be designed for the development of time/temperature regimes relevant to plant health objectives. The pinewood nematode technical development programme identified four project areas: development of a time/temperature regime for

the pasteurisation of softwood timbers; development of a temperature indicator system to monitor conformity to time and temperature schedules; an EC survey of imported softwoods from N. America; and a verification study in Canada and the USA.

**Page**

200p

**Location**

Forbairt. Forest Products Dept.

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**Address of author**

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**Number**

646

**Author**

Knaggs G.

(EOLAS. Forest Products Department)

**Title**

Development of a time/temperature regime for the pasteurisation of softwood timbers.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1991

**Source**

The development of treatment schedules to ensure eradication in timber of the pinewood nematode (*Bursaphelenchus xylophilus*) and its insect vectors.

**Key Word**

forest pathogens, pinewood nematode, pasteurisation, *Bursaphelenchus xylophilus*, forest protection, insect pests

**Abstract**

In this section of the project, the development of a time/timber core temperature regime for seven softwood species of four sizes was investigated. The objective was to reach a biologically lethal temperature in the core of a timber section that will kill *Bursaphelenchus xylophilus* and *Monochamus* sp.. In order to achieve this, only heating of the timber is required. Drying of the timber at these elevated temperatures is not a pre-requisite. Equation models have been formulated to estimate the heating time required in conventional kilns operating at 80 degrees dry bulb, to heat the core of four timber section sizes for each of six softwood species, to 60 degrees C. A separate equation model has been formulated for each timber size category.

**Page**

72p

**Location**

Forbairt. Forest Products Dept.

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**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

647

**Author**

Evans H.F.

(EOLAS. Forest Products Department)

**Title**

Development of a temperature indicator system to monitor conformity to time and temperature schedules.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1991

**Source**

The development of treatment schedules to ensure eradication in timber of the pinewood nematode (*Bursaphelenchus xylophilus*) and its insect vectors. (Chapter 3).

**Key Word**

temperature indicator systems, pinewood nematode, *Bursaphelenchus xylophilus*, insect pests, insect eradication, forest protection

**Abstract**

Research has been carried out into the feasibility of a temperature indicator system (TIS) that can be applied to wood that receives heat treatment to kill pine wood nematode (PWN) and its *Monochamus* sp. vectors. A number of thermally-sensitive pigments, produced by Company T, have been tested and the most promising candidates evaluated for suitability either as paints or in association with a physical carrier. Results showed that none of the pigments was stable enough to be used as paintable formulation; loss of colour was noted as a result of the high humidity and adverse chemical atmosphere typical of fresh wood heated in a kiln. Further tests with one pigment, code PC1, has, however, resulted in development of an epoxy-polyamide formulation that can be applied to physical characters suitable for driving into the wood. Two prototype carriers, designated T-type (purpose built by Company T) and N-type (commercially available from Company N) have been tested in both laboratory and field (in North America) conditions. Both carriers performed well, showing good colour changes and high stability. Experience during the research and in the verification visit to North America have emphasised the strong need for TIS to verify conformity to given to time and temperature regimes. Considerable progress has been made in the present research. However, further work is necessary to bring the technology to practical fruition.

**Page**

38p

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**Number**

648

**Author**

Marzin H.

(EOLAS. Forest Products Department)

**Title**

EC Pinewood Nematode Survey.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1991

**Source**

The development of treatment schedules to ensure eradication in timber of the pinewood nematode (*Bursaphelenchus xylophilus*) and its insect vector. (Chapter 4)

**Key Word**

Pinewood nematode, *Bursaphelenchus xylophilus*, *Mucronatus*, fungal contamination, insect pests, grub holes, moisture content, drying, forest pathogens, forest protection

**Abstract**

The pinewood nematode survey on imported softwood from North America was carried out in collaboration between seven EC countries through the Plant Health Committee. Methodology for sampling and recovering

nematodes from timber have been developed. Fungal contamination, presence of insects and grub holes, moisture content of both kiln dried and non kiln dried woods have been checked on the parcels sampled. Data on *Bursaphelenchus xylophilus* and *Mucronatus* detection, levels of contamination, infestation, moisture contents of the sampled parcels are given. Recommendations for further study are included.

**Page**

pp 57 - 66

**Location**

Forbairt. Forest Products Department

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

649

**Author**

Evertsen Johannes A.

**Title**

Determination of wood quality in Sitka spruce (*Picea sitchensis* Bong. Carr.) by destructive and non-destructive methods.

**Place**

Dublin

**Date**

1988

**Key Word**

destructive tests, non-destructive tests, wood quality, wood properties, strength, mechanical testing, physical properties, forest products, timber processing, Sitka spruce, *Picea sitchensis*

**Abstract**

The objectives of this research programme were to establish whether destructive techniques, traditionally used in the evaluation of wood quality, could be substituted by non-destructive methods, and whether these non-destructive techniques could be used to predict the wood quality of living trees. Trees were sampled by destructive and non-destructive techniques and provided planks and increment cores respectively. Planks were tested by traditional methods, while increment cores were tested by specially developed non-destructive techniques. Four groups of wood properties were evaluated; wood stability, mechanical properties, wood density and paper pulp properties. In assessing wood stability it was found that plank shrinkage and twist could be predicted from the radial shrinkage of increment cores. Similarly, ultrasonic measurements of increment cores could be used to predict mechanical strength properties of planks. The mean density of increment cores was used to predict the density of planks. For the paper pulp properties, it was found that increment cores could be used to determine pulp yield. Knots are a principal factor that diminishes the quality of structural timber. The effect of knot volumes on timber quality was assessed. Algorithms were developed for the computation of knot volumes in logs and sawn timber. It was shown that optimal orientation of a log at the time of conversion, reduced the knot volume in sawn timber by 10%. The deflection pattern of a plank under a constant load coincided with the pattern of knot distribution along that plank.

**Page**

264p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available (A thesis submitted to the Faculty of Agriculture, UCD, for the degree of Philosophiae Doctor)

**Thesis**

Ph.D. Thesis, UCD

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

650

**Author**

Evertsen J.A., Mac Siurtain M.P., Gardiner J.J.

**Title**

The effect of industrial emission on wood quality in Norway spruce (*Picea abies*).

**Publisher**

IAWA

**Place**

Leiden

**Date**

1986

**Source**

IAWA Bulletin

**Volume**

Vol. 7, No. 4

**Key Word**

ring width, density, latewood percentage, industrial emissions, environment, Norway spruce, atmospheric pollutants, wood quality, *Picea abies*

**Abstract**

In this preliminary study the influence of industrial emission on the wood quality of Norway spruce was evaluated. Intrinsic wood quality determining properties, ring width (RW), mean annual density, percentage annual latewood and the product of (RW x (maximum density)) appear to be affected by the emissions of a fertiliser factory adjoining the stands studied. Fluctuations in the performance of these intrinsic wood properties coincide with the start of production by the factory and a change in the manufacturing process.

**Page**

pp 399 - 404

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

651

**Author**

Ni Dhubhain A., Evertsen J.A., Gardiner J.J.

**Title**

The influence of compression wood on the strength of Sitka spruce.

**Publisher**

Forest Products Research Society

**Date**

1988

**Source**

Forest Products Research Society

**Volume**

Vol. 38, No. 9

**Key Word**

compression wood, Sitka spruce, *Picea sitchensis*, grading, modulus of elasticity, modulus of rupture, strength properties, mechanical testing, timber processing

**Abstract**

The influence of compression wood on the strength properties of Sitka spruce timber was evaluated. Structurally sized planks containing compression wood were machine graded and tested for modulus of elasticity (MOE) and the modulus of rupture (MOR). The test method used followed the procedure outlined in BS 5820 (3). The results indicated that the MOE in static bending of planks containing compression wood decreases as the percentage compression wood in the plank increases. On the other hand, the percentage of compression wood does not appear to influence MOR, nor does it influence machine grade output. However, there is a tendency for planks containing compression wood to rupture in a brash manner, which may lead to this type of timber failing

without warning. The results of a preliminary study are reported here.

**Page**

pp 67 - 69

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available. (Reprint)

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

652

**Author**

Feeney Finbarr E.

**Title**

The adaptation of ultrasonic pulse velocity technique for use on small samples of Sitka spruce for the evaluation of structural wood quality.

**Place**

Dublin

**Date**

1987

**Key Word**

non-destructive sampling, ultrasound pulse velocity technique, structural wood quality, Sitka spruce, increment cores, physical properties, Picea sitchensis

**Abstract**

An ultrasonic velocity measuring technique was used successfully for the first time to measure ultrasonic velocity in small samples (5mm diameter) of Sitka spruce wood which can be extracted non-destructively from the trunks of living trees. These samples, termed 'increment cores' are removed from the tree trunk in a radial direction from bark to pith. High frequency, (2MHz) and therefore short wavelength, ultrasound was used because of the small sample size. Special features of the ultrasonic velocity measuring system were a narrow ultrasonic beam (2mm) combined with a computerised datalogging system. This enabled the velocity of ultrasound to be measured at each annual ring in each increment core. Significant correlations were found between ultrasonic velocity measurements made along the axial transmission direction of the increment cores and standard modulus of elasticity (MOE) determinations made on larger samples (20 X 20 X 300mm) extracted destructively from adjacent areas of the same trees. The axial ultrasonic velocity measurement displayed overall trends in agreement with radial density variations which are characteristic of Sitka spruce. Axial increment core velocity measurements combined with densitometric measurements on increment cores can thus be used to provide estimates of clear wood MOE. A non destructive evaluation of the structural quality of the wood in living Sitka spruce trees is now available. Ultrasonic measurements made on the larger samples, combined in a ratio with density, were found to correlate significantly with modulus of elasticity measurements on the same samples. A viscoelastic model of wave propagation was shown to be significant in interpreting large specimen ultrasonic measurements.

**Page**

92 p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available (A thesis submitted to St. Patrick's College Maynooth, in fulfillment of the requirements for the degree of Master of Science)

**Thesis**

Msc. Thesis, St. Patrick's College Maynooth

---

**Number**

653

**Author**

Picardo V.

**Title**

Mechanical tests on indigenous timber.

**Place**

Dublin

**Date**

1989

**Source**

The Sixth Irish Materials Forum, Department of Mechanical Engineering, University of Dublin Trinity College, Thursday 28th & Friday 29th September 1989.

**Key Word**

mechanical testing, stress grading, strength properties, Sitka spruce, Picea sitchensis, forest products, timber processing, mechanical properties

**Abstract**

Recent developments in timber research have included new methods of grading timber and determining strength properties, and a change in design procedures from deterministic design methods to reliability based methods. The objectives of the programme described in this paper were broadly divided into two categories: a) determination of mechanical properties; and b) determination of grading properties. Sampling was designed to take into account the considerable variation in timber quality both between trees and within individual trees. Testing was carried out in accordance with BS5820 : 1979 'Methods of test for determination of certain physical and mechanical properties of timber in structural sizes.' Data on general classification, density, moduli of elasticity, modulus of rupture and grading were collected and analysed. The results showed that the strength properties of Irish Sitka spruce were comparable with the values published in the British Standard for British grown Sitka spruce and in some cases were better. The data collected and the results provide an invaluable database of information for the evaluation of aspects of grading and silviculture in relation to strength properties.

**Page**

15p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

654

**Author**

Quaide Michael, Robinson Bill

**Title**

Timber and fire timber treatments.

**Publisher**

EUROTECH Irish-Swedish UETP

**Place**

Dublin

**Date**

1991

**Source**

EUROTECH Irish-Swedish UETP. Training Seminar. Timber in Construction Design, 19 & 20 November 1991.

**Key Word**

construction design, construction timber, fire resistance, fire precautions, forest products, fire timber treatments, flame retarding material, fire safety, building regulations, timber processing

**Abstract**

This study describes the manner in which timber performs in a fire and examines the various forms of treatment which can be used to make timber more fire-resistant. The ability of a structural or non-structural element to withstand a fully developed fire is based on standardised fire tests conducted in accordance with BS 476, Parts 20 to 23. These require elements of structure to perform to the specified functions of 'stability',

'integrity', 'insulation' and 'imperviousness' for fire resistance periods, dependent on their location within the building purpose groups which they are intended to use. Two main categories of flame retarding treatments are dealt with: 1) Impregnation treatments, of which there are three main types, interior, humidity resistant and leach resistant; and 2) Surface coating. The various type of treatment required for timber utilised in a particular part of a structure are examined. An overview is provided of the Standards BS 5268: Part 4, Section 4.1, BS 5268: Part 4, Section 4.2 and Eurocode 5: Design of Timber Structures Part 10 - Structural Fire Design. A paper entitled 'Structural Timber Fire Precautions and the Proposed Building Regulations' outlines the general principles underlying the provisions of the Draft Building Regulations in relation to fire precautions and timber design.

**Page**

150p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

655

**Author**

O'Connor Ciaran

**Title**

Timber in Ireland, design and detailing.

**Publisher**

EUROTECH Irish-Swedish UETP

**Place**

Dublin

**Date**

1991

**Source**

EUROTECH Irish-Swedish UETP. Training Seminar, Timber in Construction Design, 19 & 20 November 1991.

**Key Word**

wood construction, timber processing, timber quality, strength properties, timber products, Standards specifications, building,

**Abstract**

The author argues that wood has retained its relevance as a design material. Unlike other European countries Ireland has not enjoyed an unbroken wood culture, and there are several issues related to wood construction which will need attention if a vibrant wood culture is to develop in this country. Timber processors must aim for less deviation in sawn timber. Drying is a neglected area in native timber. It is essential that proper moisture specifications are established and adhered to. Far greater use of machine stress grading is needed to ensure high timber quality. Quality control is vital to native timber. Defects such as knot frequency, spring, twist, cup and waney edge, as well as accurate sawing and drying must be effectively and consistently controlled. Also timber should be presented properly bound and clean from grease or mud. Various methods of timber preservation are described. The building regulations governing the use of timber in construction are outlined. Recommendations are given regarding transportation, storage and on site construction. The new timber products being produced in Ireland, Medium Density Fibreboard and Particle Board are described.

**Page**

20p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

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**Number**

656

**Author**

Stewart Duncan

**Title**

Timber frame construction.

**Publisher**

EUROTECH. Irish-Swedish UETP

**Place**

Dublin

**Date**

1991

**Source**

EUROTECH. Irish-Swedish UETP. Training Seminar. Timber in Construction Design, 19 & 20 November 1991.

**Key Word**

building, timber frame construction, wood culture, construction history, architecture

**Abstract**

An overview is given of the history of the timber frame, its influence on architecture, and the use of timber framing in traditional construction. Particular attention is given to Swedish and Norwegian early timber buildings and to the development of timber frame building in New England, particularly 'post and beam' and 'timber peg' construction systems. Ireland lacks this timber frame construction and has few examples remaining from the past. Details are given of contemporary timber framed systems, in particular the 'platform frame' and 'balloon frame' panel systems.

**Page**

48p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

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**Number**

657

**Author**

Robinson W.J.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Space joists in Irish timber. Final report.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/Research Studies on Irish Timber. Study 12.

**Date**

1986

**Key Word**

space joists, structural timber, load span tables, strength properties, deflection tests, forest products, timber processing

**Abstract**

This report describes the technical evaluation of space joists manufactured from Irish timber and follows two previous status reports. Space joists are effectively two timber chords separated by a metal lattice. Its structural behavioural mode therefore could be described as either a 'box' beam or a latticed 'truss'. The initial objective of this project was to produce load span tables for the most 'commonly' sized 'space joists' manufactured from Irish timber and to prepare specifications for their use. Two spans were load tested for samples of the two most likely chord sizes - 72 X 42 mm and 97 X 42 mm. One span was to represent Irish M75 grade timber the other imported white deal SS grade. The method of test involves three different processes: preload; deflection test; and strength test. The failure of the space joists to pass the load test on a deflection criterion necessitated a

change of emphasis in the stated objective. From initial calculations it seemed that the final test deflections were quite close to the theoretical calculated deflections and that therefore it should be possible to derive a design method. From this design method the intention was to produce load span tables for the timber chord sizes mentioned and if necessary for other cord sizes.

**Page**

90p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

658

**Author**

Hughes Dara, Keating John, Feeney Barry, Evertsen J.

**Title**

Estimating the quality of timber using artificial neural networks.

**Publisher**

St. Patrick's College Maynooth

**Place**

Maynooth

**Date**

1995

**Source**

Neural Computing, Research and Applications III. Proceedings of the Fifth Irish Neural Networks Conference, Maynooth, 11-13 September, 1995. (Edited by John Keating).

**Key Word**

artificial neural networks, timber quality, computed tomography, information technology, defect detection

**Abstract**

This study examines the use of artificial neural networks (ANN) in the assessment of the quality of Irish timber, in particular Irish Sitka spruce. The quality of a saw log is currently assessed from its external appearance. However, research is under way to improve the lumber yield using computed tomography. One benefit of this approach is that it enables the internal structure details of a log to be imaged, prior to the physical sectioning at the saw mill. For softwoods, such as Irish Sitka spruce, the industry objective is to maximise the lumber yield. The log is sawn using parallel cuts along the widest log face. This pattern of sawing is known as 'live-sawing'. This study describes some initial work in the development of a method to utilise computed tomographic data for the detection and separation of good wood from internal defects such as knots and split areas, that degrade the quality of a sawn log. The implementation of ANN for the detection of defects in timber, and ways in which classification for quality may be achieved are discussed. Training data for the ANN was derived from a new mathematical model specifically developed for this research. It was found that the ANN successfully identified defects with an accuracy of 88%.

**Page**

pp 171-179

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Dept. of Computer Science, St. Patrick's College Maynooth, Co. Kildare

---

**Number**

659

**Author**

O'Donoghue D., Duffin J., Feeney F.E., Lawlor V., Evertsen J.

**Title**

Sitka spruce quality estimation using neural networks.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1994

**Source**

Proceedings of the Irish Neural Network Conference '94. University College Dublin, September 12-13, 1994.

**Key Word**

neural networks, information technology, automated classification, wood quality, timber processing

**Abstract**

This paper describes an automated classifier for the identification of good wood and knotty wood from computer tomography (CT) images of logs. Such a system is intended to allow better assessment of saw logs before being cut into timber. A new empirical model for the growth of Sitka spruce, the operation of which is adapted to Irish conditions, is described. The use of Hopfield networks for 2D cross-section image reconstruction from CT data obtained from the model is investigated. A multi-layer feedforward neural network trained with fast back-propagation is used to identify good wood from knotty wood. The Hopfield approach to image reconstruction was seen as unsuitable for application with the wood industry. However, the use of a feedforward neural network for wood classification produced very promising results when trained on the tree model. It is expected that results from real wood data would be even more accurate.

**Page**

pp 165-169

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Dept of Computer Science, St. Patrick's College, Maynooth Co. Kildare

---

**Number**

660

**Author**

Institute for Industrial Research and Standards. Forest Products Department

**Title**

Joist programme. Report No. 2: Interim results from mechanical and visual grading (Batch 2 and 3).

**Publisher**

IIRS

**Place**

Dublin

**Date**

1981

**Source**

Research Programme on Native Softwoods for the Forest and Wildlife Service.

**Key Word**

joists, mechanical grading, visual grading, mechanical properties, forest products, timber processing

**Abstract**

The objective of this interim study was to examine the validity and credibility of all aspects of the joist testing programme. The investigation covered three areas: 1) Visual grading; 2) Mechanical stress grading; 3) Mechanical properties test, which involves simulation tests, deflection tests and strength tests. The results obtained were unsatisfactory and it was decided to do a detailed examination of all aspects of the investigation before carrying on with any further testing.

**Page**

6p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

661

**Author**

Industrial Research and Standards. Forest Products Department

**Title**

Joist Programme. Report No. 1: Interim results from mechanical and visual grading.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1980

**Source**

Research Programme on Native Softwoods for the Forest and Wildlife Service.

**Key Word**

joists, mechanical grading, visual grading, forest products, construction timber, timber processing

**Abstract**

This is a preliminary report on the data obtained to date from the machine and visual grading of 385 joists. Statistical analysis carried out on one item of data obtained in each type of grading is presented in the form of histograms and cumulative percentage curves. A summary table of the percentage yields of the various machine and visual grades is also presented.

**Page**

14p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

662

**Author**

Institute for Industrial Research and Standards. Forest Products Department

**Title**

Stress-grading. Present position, implications and trends, status of HGT: A review of the situation - April 1977.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1977

**Key Word**

stress grading, structural timber, visual grading, machine grading, forest products, timber processing

**Abstract**

This is an explanatory document dealing with a number of issues relating to stress-grading including the visual and machine grading of timber, the structural use of Irish HGT, FF Tables and British CP 112.

**Page**

17p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

---

**Number**

663

**Author**

Colclough Partick R.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

The development and potential of Irish Timber.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Paper to Faculty of Engineering and Architecture, Civil Engineering Department, University College, Dublin.

**Date**

1979

**Key Word**

economics, forestry history, forestry policy, timber processing, sawmilling, forest products, pulpwood products, structural timber, timber trade

**Abstract**

This paper reviews the development and potential of the home-grown timber market. The development of the State forestry programme from the early years of the State to the present day, including the role currently played by the Forest and Wildlife Service is described. A broad picture of the present structure of the sawmilling industry is given. The work of the Forest Products Department of the IIRS in research and development and in carrying out quality insurance work, training and consultancy work for industry is analysed. The quality of home-grown timber is assessed in terms of the requirements of the construction industry. These are: strength; moisture content; durability; presentation; and regulations/standards. The potential for home-grown timber over the next twenty years is examined. The structural applications of particle board production and their development in Ireland is summarised.

**Page**

25p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

664

**Author**

McDarby F., Gallagher L.

(Institute for Industrial Research and Standards. Forest Products Department.)

**Title**

A preliminary investigation of the incidence of spiral grain in standing Sitka spruce

**Publisher**

IIRS

**Place**

Dublin

**Series**

Study 6

**Date**

1978

**Key Word**

spiral grain, Sitka spruce, Picea sitchensis, timber quality

**Abstract**

The objective of this investigation was to conduct a limited survey on the incidence of spiral grain in standing Sitka spruce to determine whether or not the subject requires further examination. The experiment, which was conducted in 2 phases, involved tests on 240 trees. Phase 1 was an examination of the effect of age on the incidence of spiral grain in trees of the same growth rate. Phase 2 was a study of the relationship between rate of growth and spiral grain in similar aged young crops; first in yield class groups, and then in individual trees. It was established that spiral grain is a widespread feature in Sitka spruce in Ireland, and is a normal feature of growth rather than a phenomenon. Spiral grain is most pronounced in juvenile wood, decreasing with age. In young crops rate of growth (as expressed by Yield Class Difference), did not have an influence on spiral grain except where growth was severely restricted.

**Page**

45p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

665

**Author**

EOLAS. Forest Products Department

**Title**

Promotion of Irish timber.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 00.01

**Date**

1991

**Source**

Final Reports for 1990. Promotion/Research Studies on Irish Timber. Part A.

**Key Word**

Irish timber promotion, Eolas, forest products, timber processing

**Abstract**

The promotion of Irish timber programme undertaken by the Forest Products Department of Eolas in 1990 was aimed primarily at establishing and maintaining credibility and confidence in the specification and use of Irish grown timber. This report on the programme is divided into the following categories: 1. General promotion - which included a technical information service on the use of Irish timber in all its aspects and advice on the technology appropriate to its use; 2. Seminars, talks, publications - a major seminar, 'Timber Trading in the 90s', was held in Eolas; 3. Courses and training; 4. Quality control - which included a survey of sawmills throughout the country; 5. National and international standards; and 6. Plant health.

**Page**

46p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

666

**Author**

EOLAS. Forest Products Department

**Title**

Promotion and implementation of Irish Standard Recommendation SR 11 - Structural Timber for Domestic Construction.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 00.04

**Date**

1991

**Source**

Final Reports for 1990. Promotion/Research Studies on Irish Timber Part A.

**Key Word**

Eolas, forest products, timber processing, Standards specifications, domestic construction, building

**Abstract**

The work undertaken by the Forest Products Department, Eolas in implementing, promoting and monitoring the Irish Standard SR 11 - Structural Timber for Domestic Construction is outlined under the following headings: 1. Educational programme; 2. Training; 3. Publications; 4. Monitoring SR 11 on building sites; 5. Quality control programme. It is concluded that, despite trading difficulties due to competition from exports, the maintenance of a national focal point by the Forest Products Department for the co-ordination, promotion and on-going servicing of SR 11 has generated a level of confidence in Irish timber never before experienced within the industry.

**Page**

20p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

667

**Author**

Cahill Declan C.

(EOLAS. Forest Products Department)

**Title**

The use of Sitka spruce for transmission poles (monitoring of Telecom Eireann's air-drying trials).

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study No. 31.16

**Date**

1990

**Source**

Final Reports for 1990. Promotion/Research Studies on Irish Timber. Part A.

**Key Word**

Sitka spruce, Picea sitchensis, transmission poles, air-drying, forest products, timber processing

**Abstract**

This study describes the Forest Products Department's monitoring of a large scale pole air drying trial conducted by Telecom Eireann during 1990. Discs were cut from each of the study's 60 test poles, and used to measure the moisture content of the sapwood and hardwood. The average moisture contents of the discs, the average sapwood depths and the average monthly moisture contents of cores from the test poles were used to establish the drying pattern during the period of the test. As yet no firm conclusions regarding the drying and re-wetting of air dried Sitka spruce poles can be made as yet, and the monitoring of these poles will continue.

**Page**

80p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

668

**Author**

Picardo Valez  
(EOLAS. Forest Products Department)

**Title**

Strength check and databank update. Final report.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 61.14

**Date**

1990

**Source**

Final Reports for 1990. Promotion/Research Studies on Irish Timber. Part B.

**Key Word**

Sitka spruce, *Picea sitchensis*, strength properties, timber properties, grading, grade testing, timber processing, forest products, structural timber, bending

**Abstract**

The objectives of this study were to assess the strength in bending of home-grown Sitka spruce by in-grade testing, and to check the market quality against the SR 11 - Structural Timber for Domestic Construction values. The sample planks used in the test were taken from sawmills in several different locations and from timber suppliers. This is the first time that a check has been carried out on graded SCA0 timber on a nationwide basis. An MOE test was carried out on each plank, and every fifth or sixth plank was tested to destruction and the maximum load recorded. The data obtained from the tests made it clear that three of the sites visited were below average, and leads to the conclusion that grading was not carried out properly particularly in these three sites. Overall MOR values were considered acceptable, while MOE values were low.

**Page**

20p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

669

**Author**

Robinson W.J.

(EOLAS. Forest Products Department)

**Title**

Evaluation of bolts and screws in Irish timber. Final report.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study No. 71.06

**Date**

1990

**Source**

Final Reports for 1990. Promotion/Research Studies on Irish Timber. Part B.

**Key Word**

bolts, screws, forest products, construction timber, load tests, withdrawal load tests, mechanical tests, timber processing

**Abstract**

This report describes the technical evaluation of steel bolts and screws in Irish timber. Lateral and withdrawal load tests were carried out on screws of diameter 3.5, 4.0, 5.0 & 6.0 mm with a penetration of 28 mm, and on screws with diameter 5.0 mm with penetration of 21, 32 & 36 mm. The results from the lateral load tests indicate a relationship between load and screw penetration and between load and screw diameter. The results from the withdrawal load tests indicate a relationship between load and screw penetration and between load and screw diameter. For the bolt tests timber of thickness of 35mm and 44mm were selected, and the range of bolt diameters selected for test were 8mm, 10mm, 12mm and 16mm. These diameters were tested in 3 member joints with a range of timber densities. It was hoped that a bolt diameter-timber density dependency could be determined and that if such a dependency was not evident then the testing should enable a comparison to be made between the test results and the code values. The results from the tests for the 35mm thick timbers indicated a relationship between bolt diameters and timber density, and that the present permissible bolt loads for this timber thickness are adequate for use in Irish timber. The results from the bolt tests for the 44mm thick timbers were unclear in indicating any relationship between the bolt diameter and timber density. However, the analysis of the test results does indicate that the permissible bolt loads used presently are satisfactory for use in Irish timber.

**Page**

80p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

670

**Author**

Forest and Wildlife Service

**Title**

Economic study of timber production on deep peat.

**Publisher**

FWS

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report

**Date**

1977

**Key Word**

deep peat, peatlands, economics, afforestation, costs, Forest and Wildlife Service, productivity, State forestry

**Abstract**

The increase in the area of deep peatland acquired for the State's afforestation programme, and the variety in general character and fertility levels of this land, has led to greater variety in the species used in planting. The productivity of average type peatland has increased with the introduction of fertiliser treatment, mechanical cultivation and the gradual increase in the use of coastal provenances of lodgepole pine. In 1976 the FWS undertook an economic study of timber production on deep peat sites. This report is the outcome of that study. The objectives of the study were: to establish the financial yield to be derived from the production of lodgepole pine on (a) virgin midland raised bog, (b) western blanket peats; to investigate the level of input in terms of land, labour, machinery and to estimate output or revenue levels on unplanted areas representative of four different site types; to ascertain probable post-establishment operation cost levels; to consider the most suitable manner of dealing with costs such as rate payments and roading costs involved in extraction; and to present the first economic estimates within one year. The study findings are regarded as tentative, and it is not as yet possible to make hard decisions as to methods of harvesting etc.

**Page**

70p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research and Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

671

**Author**

Toolan Colm

**Title**

An integrated pulp and paper mill.

**Place**

Dublin

**Date**

1981

**Key Word**

pulp mills, paper mills, timber processing, economics

**Abstract**

The objectives of this study were to examine the feasibility of setting up an integrated pulp and paper mill, and to examine the product type, timing and location of such a facility. The author recommends newsprint as the most suitable product type, and a pulping operation of the thermo mechanical type. To attain viability it is estimated that a paper output of 150,000 tons per annum is needed, requiring a wood intake of 375,000 cubic metres. It is argued that sufficient timber will be available in the North West region to allow the establishment of an integrated mill there by 1988.

**Page**

80p

**Location**

Coillte library

**Notes**

available (Thesis, School of Architecture, Dublin Institute of Technology)

**Thesis**

Thesis, School of Architecture, Dublin Institute of Technology

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**Number**

672

**Author**

Carey M.L., Griffin E.

**Title**

Treatment of checked crops.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication, No. 22

**Date**

1983

**Key Word**

checked crops, Sitka spruce, Picea sitchensis, fertilisers, nutrients, tree growth, nitrogen

**Abstract**

Checked crops of Sitka spruce show a good response in growth to applications of fertiliser nitrogen provided other nutrients are not limiting. The optimum rate of application is 200 kg N/ha, equivalent to 727 kg of calcium ammonium nitrate or 434 kg urea. There were no difference in the the responses to the two forms of nitrogen, either of which can be applied between April and July. Heather control, although it resulted in small increases in growth, did not appear cost-effective when compared with the results obtained through nitrogen application. In general, drainage does not appear to be a factor limiting the growth of checked crops. Guidelines are included on the diagnosis of the major nutrient deficiencies and on the procedure for taking foliage samples for chemical analysis.

**Page**

10p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

---

**Number**

673

**Author**

Condon Liam

**Title**

Wood as an alternative source of energy: a perspective for Ireland.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Internal Report

**Date**

1983

**Key Word**

woodfuel, forest products, forest residues, waste utilisation, energy sources

**Abstract**

This report describes the role played by Irish agencies in the International Energy Agency's (IEA) Energy Research Programme. The main objectives of the Programme are identified as: (i) the exchange of information on national forest energy research, development, demonstration activities and on planning of national programmes; (ii) develop proposals for co-operative research, development and demonstration projects. The possibility of using wood as a feedstock for electricity generation in Ireland is examined. The situation regarding availability of land for production of wood fuel and forecasts of residues from conventional forests is examined. It is concluded that existing conventional forestry has the potential to provide a ready source of wood energy in the form of forest residue if techniques of harvesting, utilisation and conversion of waste can be developed.

**Page**

19p

**Location**

Coillte library

**Notes**

available

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**Number**

674

**Author**

Hendrick E., Dillon J.

**Title**

Afforestation of surface-water gleys.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication, No. 21

**Date**

1983

**Key Word**

Sitka spruce, *Picea sitchensis*, surface-water gley soils, drainage, ploughing, cultivation, fertilisers, afforestation

**Abstract**

Stability is the major problem for Sitka spruce (*Picea sitchensis* Bong. Carr.) crops on wet surface-water gley soils. Traditional methods of drainage, using spaced furrow ploughing, contribute to instability by confining the structural roots to the plough ribbon. Ripping, an alternative drainage technique, will improve stability and reduce harvesting costs and is recommended for most surface-water gley sites. Planting should be to one side of the rip channel and where grass cleaning is needed application of atrazine is currently recommended. On the majority of sites rock phosphate application should not be necessary.

**Page**

28p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

675

**Author**

Crowe Sylvia

**Title**

Landscape aspects of afforestation in Ireland.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Internal Report

**Date**

1976

**Key Word**

landscape, afforestation, environment

**Abstract**

The author examines the possible effects of afforestation on a number of different types of landscape including

mountain, hills, bogland and heather moorlands. The landscape principles which are relevant to this study are the shape of plantations and colour and texture. Other issues discussed in the study include roadside and view points and recreations.

**Page**

27p

**Location**

Coillte library

**Notes**

available

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**Number**

676

**Author**

Friel Brendan, Fennessy John

**Title**

The Irish forest industry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1992

**Source**

Wood Ireland: National Exhibition of Wood Products and Design. University College Dublin, September 18th, 19th & 20th, 1992. (Edited by John Fennessey)

**Key Word**

timber industry, forest products, timber processing, sawmilling, pulp, wood residue, economics

**Abstract**

This paper gives an overview of the present state of the Irish industrial wood production and timber processing industries. The level of production of each category of industrial wood is analysed. The volume of finished products, sawn goods and round stakes from the sawmilling sector is estimated and the large volume of residual material, produced during the conversion of round logs into sawn goods, is highlighted. The use to which bark, sawdust and chips are put is examined. The value of the forests products industry to the economy is estimated to be £160m.

**Page**

9 - 11

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

677

**Author**

Wilson Trevor

**Title**

Forestry and the timber industry in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1992

**Source**

Wood Industry: National Exhibition of Wood Products and Design. University College Dublin, September 18th, 19th & 20th, 1992. (Edited by John Fennessy)

**Key Word**

forestry policy, timber processing, State forestry, forestry development, sawmilling, forestry history

**Abstract**

The development of State forestry in Northern Ireland since 1910 is outlined and the current state of the industry is assessed. The current timber production from State forests is estimated at just over 200,000 cubic metres and will reach about 250,000 cubic metres by the end of the century. The important role played by technological advances in the sawmilling industry in advancing the overall development of the timber industry in Northern Ireland is noted.

**Page**

13

**Location**

Coillte library

**Notes**

available

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**Number**

678

**Author**

Knaggs Gordon

**Title**

The development of the Irish Timber industry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1992

**Source**

Wood Ireland: National Exhibition of Wood Products and Design. University College Dublin, September 18th, 19th & 20th, 1992. (Edited by John Fennessy)

**Key Word**

forest policy, forest history, timber processing, sawmilling, forest products

**Abstract**

The author gives an outline of the development of the Irish timber industry from the early days of timber trading in the Middle Ages to the current state of the timber production and processing industries. In recent years private planting, aided by such measures as the 'Western Package' has begun to make a significant contribution to the afforestation programme. The sawmilling industry has worked hard to rid itself of its poor post-war image. The development of this sector was seen as vital to the well-being of the forest industry. The Coillte Allocation Scheme encouraged technological advances in individual sawmills. Research carried out by the Forest Products Department of the IIRS (later Eolas) established the suitability of properly treated Irish for use in the structural timber industry. An important recent development is the introduction of machine stress grading. It is clear from the forecasts for future production of softwood sawlog that a rapid expansion in board manufacture and other pulpwood using industries will be necessary. Several possible areas for future expansion of the forest industry are examined, including the use of lodgepole pine in the joinery industry. The importance of developing our own hardwood resources to the future health of Irish forestry is stressed.

**Page**

pp 15 - 17

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9.

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**Number**

679

**Author**

Jacob Malcolm

**Title**

New wood products in construction.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1992

**Source**

Wood Ireland: National Exhibition of Wood Products and Design. University College Dublin, September 18th, 19th & 20th, 1992. (Edited by John Fennessy)

**Key Word**

structural composite wood materials, structural timber, wood processing, glued laminated timber, laminated veneer lumber, timber processing, forest products

**Abstract**

This paper assesses the new wood products made from Irish sawlog which will be available for use in the construction industry over the next few years. These products can be divided into three general categories: composite wood materials; combinations of wood or wood products; and solid wood elements connected together with metal connectors. The usage and applications of products such as glued laminated timber (glulam) and laminated veneer lumber (LVL) in various European countries is examined. At present research is being carried out on the use of Irish softwood in the manufacture of these products, but the pace of this research needs to be increased so that the predicted over supply of timber can be fully exploited.

**Page**

pp 34 - 36

**Location**

Coillte library

**Notes**

available

**Address of author**

Timber Technology Centre, Dublin Institute of Technology, Bolton Street, Dublin 1.

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**Number**

680

**Author**

Pfeifer A.

**Title**

Tree Improvement Programme Development Plan 1991-1995.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No 7/91

**Date**

1991

**Key Word**

tree improvement programme, Coillte, genetics, breeding

**Abstract**

The current tree improvement programme operating in Coillte is described. This is centred around 6 main projects, each of which is interlinked to form an integrated strategy to select, package and deliver improved genetic material for the planting programme. Each project is outlined giving objectives, current status, costs and

benefits. The latter are quantified where possible. The future direction of the tree improvement programme is discussed in some detail. Recommendations are made to scale down expenditure in provenance trials, hold current investment in the Sitka spruce breeding programme at more or less present levels, and increase the levels of activity with hardwood breeding. The future development of the pine breeding programme is discussed. A five year plan detailing milestones, work planning chart and deliverables is presented together with the personnel, infrastructural and financial resources required to implement the plan. Allied to the improvement programme is the development of a vegetative propagation unit at Ballintemple Nursery where improved seed and cutting from the Sitka breeding programme will be bulked up to commercial quantities.

**Page**

38p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

681

**Author**

Hendrick E., Murphy G.

**Title**

The effect of fast growth on structural yields of SS - a study on a yield class 30 stand.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research and Technology Internal Report No. 8/91

**Date**

1991

**Key Word**

tree growth, structural yields, yield class, Sitka spruce, spacing, *Picea sitchensis*

**Abstract**

Considerable uncertainty exists regarding the effect of fast growth on the wood quality of Sitka spruce. In order to examine the situation a Yield Class 30 crop of Sitka spruce was sampled at 28 years of age. The yield of structural wood was 84% of the total sawlog volume recovered. This figure does not take into account the effects of twist or pruning. Twist reduced structural yield to 61%. Pruning improved structural yields by 18% over the unpruned material. At present costs, and in such a crop, pruning can be justified economically. Close initial spacing appeared to be the most important factor influencing the relatively high yield of structural wood obtained.

**Page**

20p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4

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**Number**

682

**Author**

Kennedy B.

**Title**

Report on charcoal.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No. 13/91

**Date**

1991

**Key Word**

charcoal, forest products, hardwoods, energy, fuel

**Abstract**

The various methods of making charcoal and its applications as a fuel are briefly outlined. The process by which charcoal is made and the type of equipment that is required for its manufacture are described. Hardwoods are the most suitable raw material as they yield a dense hard charcoal which burns clearly and slowly. The cost of production is also examined. It is concluded that there is a home market for charcoal, but management of broadleaved woods must be adapted if this market is to be supplied from Irish woods.

**Page**

13p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teo., Belview, Dublin Rd., Mullingar, Co. Westmeath

---

**Number**

683

**Author**

Hendrick Eugene, Donnellan Michael, Lim Oh Peng

**Title**

Volume estimation by the Silvatec Harvesting Head.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No 17/91

**Date**

1991

**Key Word**

harvesting, Silvatec Harvesting Head, harvesting machinery, volume estimation

**Abstract**

A study was conducted to examine the accuracy of a newly fitted electronic device on the Silvatec harvesting head for volume estimation. The accuracy and precision of the lengths of sawlog, palletwood and pulpwood cut by the Silvatec head were also examined. Production was measured by the machine over a 2 day period in a stand of Sitka spruce at Castlefin forest. The sawlog, palletwood, and pulpwood volumes were also measured on the grounds and compared with the Silvatec estimates. The sawlog output was accurately measured but the palletwood and pulpwood volumes were seriously underestimated. The most likely cause of the differences in volume between the two estimates is an underestimation of billet diameter. The Silvatec head as presently calibrated is not recommended for volume estimation except in the case of sawlog.

**Page**

24p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

684

**Author**

O'Dowd J., Pfeifer A.

**Title**

A transplant grading study.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No. 12/91

**Date**

1991

**Key Word**

grading, forest nurseries, nursery management, planting, transplanting

**Abstract**

This report describes a grading study carried out in Camolin Nursery in spring of 1991. The objective of the project was to gain practical experience of indoor grading, with the view to establishing facilities on an operational scale in Coillte's nurseries. The equipment used and the lifting and grading system employed are described in detail. Benefits and limitations encountered are discussed and recommendations made for future facilities.

**Page**

13p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teo., Avonmore, Rathdrum, Co. Wicklow

---

**Number**

685

**Author**

Hendrick Eugene

**Title**

Late spring frost.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No. 18/91

**Date**

1991

**Key Word**

frost damage, weather, meteorological zones, frost protection

**Abstract**

This report assesses the problems and risks facing the forest manager trying to decide whether or not to plant Sitka spruce in areas vulnerable to frost damage. The probability of frost occurring in a range of meteorological zones is assessed. The greatest risk of damage occurring is in the May 15th zones during the first three years of the crop's life. The two main strategies available to reduce frost risk are changing from a vulnerable species and

removing and controlling vegetation. A number of trials designed to assess the success of both these strategies is described and the costs involved are estimated.

**Page**

13p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

686

**Author**

Hendrick Eugene, Lim Oh Ping

**Title**

Plot volume estimation - number of volume sample trees.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No. 6/91

**Date**

1991

**Key Word**

growth models, plot volume estimation, crop analysis

**Abstract**

The most important variable in any stand growth model is volume production. In estimating volume growth the procedure is to accurately measure the volume of a number of trees. The purpose of this study was to estimate the number of trees which should be climbed in order to determine plot volumes to an acceptable level of accuracy. Volumes to 7, 14 and 20cm top diameter for a number of sample trees were computed using a SAS program. From an analysis of the data it was concluded that seven volume sample trees are sufficient to estimate plot volume with an accuracy of + or - 10% (= 2X % standard error). Increasing the number of volume trees does not result in any improvement in accuracy.

**Page**

21p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

687

**Author**

Hamilton Annmarie

**Title**

Shiitake mushroom pre-feasibility study.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No. 3/91

**Date**

1991

**Key Word**

forest products, shiitake mushroom, food production, mushroom production, cultivation

**Abstract**

This report is a pre-feasibility study examining the shiitake mushroom industry and its potential. The most common forms of cultivation and the technical aspects of the commercial production process are described. An estimate of the costs of production is made and a brief analysis of the current market situation is given.

**Page**

5p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research Lab., Newtownmountkennedy, Co. Wicklow.

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**Number**

688

**Author**

EOLAS. Forest Products Department

**Title**

The use of Sitka spruce for transmission poles. Summary Report.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Study 31.12

**Date**

1989

**Key Word**

transmission poles, forest products, timber processing, physical properties, strength tests, drying, preservation treatment, preservatives, Sitka spruce, Picea sitchensis, timber end use

**Abstract**

This summary report provides an overview of the results of the two year project which investigated the use of Sitka spruce as transmission poles. The study began in 1988. The broad objective of the project was to examine, from a technical point of view, the possible use of Irish grown Sitka spruce as a transmission pole material for use by Telecom Eireann and the Electricity Supply Board. The report summarises the main results under the following headings: general acceptability, drying, strength, treatability, durability, potential domestic reaction, and the use of spruce poles in other countries.

**Page**

200p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Department, Forbairt, Glasnevin Dublin

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**Number**

689

**Author**

Carey M.L., Hendrick E., McCarthy R.G.

**Title**

Phosphorus requirements at planting.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication No. 23

**Date**

1983

**Key Word**

phosphorus requirements, ground rock phosphate, soil nutrition, crop growth, nutrients, planting

**Abstract**

Phosphorus application is essential on much of the land acquired for afforestation. Results from a series of experiments laid down in 1975-76 suggest that the rate of application of ground rock phosphate at planting can be reduced from 500 to 350 kg/ha. This will result in a small reduction in growth and a substantial saving in expenditure of about 100 kg rock phosphate over the first 6 years. Most second rotation crops respond to phosphorus application

**Page**

8p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

---

**Number**

690

**Author**

Hendrick E.

**Title**

Planting position and method.

**Publisher**

FWS

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication No. 24

**Date**

1986

**Key Word**

planting methods, ploughing, planting methods, cultivation methods

**Abstract**

The most suitable ploughing techniques for Sitka spruce, Douglas fir and lodgepole pine on both peat soils, mineral soils and reforestation sites are outlined.

**Page**

15p

**Location**

Coillte library

**Notes**

available

**Address of author**

National Council for Forest Research & Technology, Agriculture Building, UCD, Dublin 4

---

**Number**

691

**Author**

Colclough Patrick, Gallagher Leonard U., Lally Aubrey  
(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Irish homegrown softwood sawmilling industry: study of the Irish softwood sawmilling industry, its growth prospects and problems. Report of the Working Group to the Timber Promotion Study Steering Committee (FWS, HGTMA, IIRS).

**Publisher**

IIRS

**Place**

Dublin

**Series**

Report Series No. 0202 07069

**Date**

1977

**Key Word**

sawmilling industry, timber processing, forest products, construction industry, sawnwood market, sawmills, economics, grading, sawn whitewood

**Abstract**

The capacity of State forests to supply the future requirements of the Irish sawmilling sectors is assessed. The importance of maintaining standards in sawing accuracy, drying, grading and presentation in supplies of sawnwood for structural applications, the largest market sector, is stressed. The Irish market for sawn softwood is examined. The construction sector, which accounts for over 70% of the market, is seen as the major opportunity area for sawmills. At present only 25% of the whitewood used in construction is homegrown. The fencing and pallets/boxwood sectors already use homegrown sawnwood extensively. A survey of the sawmilling industry in 1975-76 reveals that many would have difficulty in meeting the grading and drying requirements necessary to compete successfully in structural timber market. Firms should be encouraged to replace sawing equipment and invest in training and handling equipment.

**Page**

70p

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

**Number**

692

**Author**

Picardo Valez  
(Institute of Industrial Research and Standards. Forest Products Department)

**Title**

Study of prefabricated trussed rafters using different types of metal connectors.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/Research Studies on Irish Timber. Study 13

**Date**

1984

**Key Word**

prefabricated trussed rafters, timber processing, forest products, Sitka spruce, limiting spans, standards, trusses, metal connectors, Picea sitchensis

**Abstract**

Fourteen trusses using seven different types of metal plate connectors were tested to verify the proposed new limiting spans for home grown Sitka spruce machine graded to M75. Each of the seven Irish truss fabricators made two trusses one using 34 mm X 112 mm and the other using 41 mm X 97 mm section timber with pitches of 22.5 degrees and 30 degrees respectively. No requirements were put for plate size and in many cases existing plate sizes for imported whitewood were used. Recommendations for extra bracing in home grown Sitka spruce trusses are made.

**Page**

19p

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

available-

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

693

**Author**

Gallagher L.U., Colclough P.R., Lally A.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Timber promotion study: evaluation of and strategy for increasing the use of homegrown sawn timber. Draft report of the Working Group for consideration by the Steering Committee.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1976

**Key Word**

timber promotion, softwood markets, whitewood, timber processing, forest products, sawmilling

**Abstract**

The overall consumption of softwood in Ireland is examined and the likely requirement for whitewood up to 1985 is forecast. The various markets for whitewood are identified. The possibility of homegrown timber penetrating these markets and the capacity of State and private forests to supply them are discussed. The results of a survey of sawmills, which sought information on raw material consumption, production, equipment and general facilities, are examined. A number of research institutions in both Britain and Ireland were visited in order to build a picture of current and future consumption of softwoods. The report estimates that the present growing stock is capable of producing 74% of market demands by 1985. The capacity of Irish forests to meet whitewood demand by the end of the century and the source of existing supplies are examined. It is estimated that only 20% of the sawmills surveyed are likely to be able, with appropriate restructuring to compete beyond local markets. Homegrown timber only supplies 9% of the building market and this is an area to which future growth in consumption must be directed. There will need to be considerable improvement in drying, stress grading and presentation if Irish sawmills are to compete successfully in the sawn structural timber market.

**Page**

120p

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

available

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**Number**

694

**Author**

Institute for Industrial Research and Standards. Forest Products Department

**Title**

Promotion of Irish timber. Summary of activities for 1984.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Study 1.

**Date**

1985

**Key Word**

timber promotion, forest products, timber processing, standards, education, training, IIRS, Forbairt

**Abstract**

The main objectives of the timber promotion programme undertaken by the Forest Product Dept. of the IIRS were to inform potential timber users of the work of the department and to provide information on specific aspects of Irish timber including strength, durability and availability. The activities carried out under the programme can be divided broadly into the following categories: quality assurance and advisory activities; seminars, exhibitions, training, publications and information sheets; national and international representations.

**Page**

60p

**Location**

Coillte library. Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

695

**Author**

Atanackovic Andreja

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Summary of results in developing an inexpensive mechanical grader. Technical Report No. 1.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on homegrown timber. Study 3.

**Date**

1982

**Key Word**

machine grading, mechanical testing, stress tests, forest products, physical properties, timber processing

**Abstract**

The objective of this study was to assess the performance of a manufacturer's prototype of a mechanical stress grading machine and to establish validity of timber quality indicated by this machine. Over 4,000 pieces of timber were examined by the machine over a period of 3 months. A sub-sample were also investigated using an established grader in the IIRS forest products laboratory. Both sets of results were compared and analysed. There was a good correlation between the results of the tests on the two machines. It is concluded that the performance of the prototype is consistent, i.e. with a given setting it regularly identified the grade.

**Page**

24p

**Location**

Coillte library, Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

696

**Author**

Gallagher Leonard U.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Drying of home grown timber. Technical report 4.3.1: An evaluation of the rate of drying and the occurrence of degrade in Sitka spruce in steam-kiln drying conditions, using an established schedule.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on home grown timber. Study 4.

**Date**

1982

**Key Word**

steam kiln drying, timber degrade, structural timber, forest products, timber processing, Sitka spruce, *Picea sitchensis*

**Abstract**

This report describes an experiment designed to evaluate the rate of drying and the occurrence of degrade in Sitka spruce in steam kiln drying conditions using established schedules. Two kiln runs were undertaken, one with each of two different sizes of timber, after which each plank used was reweighed and examined for moisture content to determine the extent of drying. The effect of drying on cup, spring bow, twist and fissures was assessed by before and after measurements using the tolerances recommended in BS 3978 'Timber Grades for Structural Use'. There was found to be considerable distortion during drying, which was not confined to the upper layers of timber in the kiln.

**Page**

8p

**Location**

Coillte library. Forbairt. Forest Products Dept.

**Notes**

available

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**Number**

697

**Author**

Picardo V.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Scaffold boards using Irish timber: a survey of the market place, analysing consumer reaction and deciding on test material. Technical report No. 1.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on homegrown timber. Study 5.

**Date**

1982

**Key Word**

scaffold boards, design strength values, machine grading, building industry, forest products, timber processing,

timber end use

**Abstract**

This study sets out to establish a specification for the use of home grown timber in scaffold boards and to obtain: (i) design strength values for scaffolding board sizes; (ii) data to establish machine grade limits. The report gives the results of a survey of house building sites, sawmills and building contractors on the basis of which a selection of sizes, spans and the number to be tested was made.

**Page**

6p

**Location**

Coillte library, Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

698

**Author**

Atanackovic Andreja

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Developing an inexpensive mechanical grader. Technical report No. 2: evaluations of the credibility of production model of the FP timber stress grading machine.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on homegrown timber. Study 3.

**Date**

1983

**Key Word**

timber stress graders, grading, timber processing, grader design, machine grading, forest products

**Abstract**

This report summarises the investigations carried out on a new production model of the FP Timber Stress Grader carried out in the IIRS laboratory during 1983. The main objective of the investigation was to test both the working parts of the machine and its grading performance. It was found that the working parts of the machine function satisfactorily and the degree of accuracy is acceptable. The machine meets basic design requirements and suitable as a reasonably inexpensive method of determining the strength of timber in wood processing plants with a relatively small output.

**Page**

40p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

699

**Author**

Gillespie Andrew R.

**Title**

Comparative Irish and American hardwood culture 1. One tree to the acre: the value and silviculture of fine

hardwood management on small woodlots in the midwestern U.S.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 2

**Key Word**

comparative hardwood culture, hardwood management, broadleaf forestry, broadleaves, timber market, small woodlots, farm forestry, sawlog prices, economics, forestry history, deforestation

**Abstract**

Because the midwestern US and Ireland share similar agricultural landscapes, information on hardwood culture and reforestation efforts is presented for comparison. Historically, the respective land areas were once heavily forested, but land clearing for agriculture in both countries has resulted in relatively small, fragmented woodlots. This makes farm-forestry an important component of forest production in these landscapes. The status of the Indiana hardwood forest is provided with current growth and species trends. Timber values and recent timber sales figures by species are included for contrast with Irish woodlots and the long-term trends of sawlog prices in Indiana are provided which show the competitive rates of return that hardwood management can bring

**Page**

pp 77 - 94

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Forestry and Natural Resources, Purdue University, West Lafayette, IN 47907-1159 USA

---

**Number**

700

**Author**

Convery Francis Joseph

**Title**

An economic analysis of the wood processing industries in Ireland.

**Place**

Dublin

**Date**

1966

**Key Word**

wood processing, timber economics, land use, timber sales, timber price, chemical pulping, wood products, timber market, timber demand, timber processing

**Abstract**

The wood processing industry in Ireland is analysed under three main headings: wood supply; production; marketing. The transfer of wood from the forests to the factories is examined in detail, and the methods of purchase, pulp-wood price determination, estimation of costs and harvesting are examined. The past demand for pulp-wood by each of the mills is reviewed and the pulp-wood which will become available to them annually is forecast up to 1978. The affect of the new chipboard or chemical pulp mill on supply is also considered. The production processes used in each plant are described and some recent, potentially useful technical advances are noted. The suitability of Irish wood for the various processes is discussed. The issues involved in deciding where to establish new mills are outlined, and the questions of mill size, integration, and the possible establishment of a chemical pulping industry are considered. The demand for paper and panel products and the factors influencing it are examined. Outlets for these products and their distribution on both the home and UK market are described, and tariffs affecting incoming paper and board are noted. A more co-ordinated approach by the industries and the Forest Service to the question of wood supply is recommended.

**Page**

156 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis presented in the Faculty of Agriculture, UCD for the Degree of Master of Agriculture Science)

**Thesis**

M.Agr.Sc. Thesis, UCD

**Address of author**

UCD Environmental Institute, Richview, Clonskeagh Drive, Dublin 14

---

**Number**

701

**Author**

Quinn William E.

**Title**

The response of pole-stage Sitka spruce (*Picea sitchensis* (Bong.) Carr.) crops to fertiliser application on drumlin soils.

**Place**

Dublin

**Date**

1978

**Key Word**

Sitka spruce, *Picea sitchensis*, fertilisers, drumlin forestry, soil nutrients, soil fertility, volume estimation, pole production, silviculture, fertilisation

**Abstract**

The purpose of this thesis was to examine the response of pole-stage Sitka spruce (*Picea sitchensis* (Bong.) Carr.) crops to fertiliser application on Drumlin soils. The study is divided into two sections. In the first section the extent, distribution, geology and formation of drumlins are explained. In the second section the physical and chemical properties of drumlin soils are examined with reference to their nutritional impoverishment and poor structure. The soils of Drumhierney plantations, where the experiments were carried out, are considered with particular reference to their physical and chemical properties and to the climatic features of the locality. The two stands in which the experiments were laid down in 1969 are described, and an account of the experimental design used and details of the type and levels of fertilisers applied are presented. The parameter originally chosen for measuring response to fertiliser application, basal area increment, is discussed. Statistical analyses of the results to date indicate that there has been no significant response to fertiliser application. Finally, the experimentation and the results are critically analysed under the headings of: design of experiments; fertiliser applied; method of assessment; conclusion. The second section of the thesis re-examines the fertiliser experiments. The factors which prompted the re-appraisal of the fertiliser trials are discussed. The unique features of the two stands (extreme vigour, wide spacing, green pruning, no thinning) are emphasised. The use of parameters other than basal area increment for estimating volume production is discussed. The procedures followed and details of the measurements taken (height to tip, timber height, upper-stem diameters and diameter at 50 % of timber height) are outlined. The data are analysed and treatments compared by height, upper-stem diameter, form factor and volume production in both the Brae Face and Mill Field stands. Finally, the significance of the results, which show no significant difference between treatments and certain limitations of the experimental design and procedures adopted are presented.

**Page**

96 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to Faculty of Agriculture, UCD for the Degree of Master of Agricultural Science)

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

702

**Author**

Vuokko R.

**Title**

Sitka spruce seedling characteristics in relation to some nursery conditions.

**Place**

Dublin

**Date**

1984

**Key Word**

Sitka spruce, *Picea sitchensis*, forest nurseries, soil characteristics, soil nutrients, soil organic matter, silviculture, plant nutrients, foliar analysis, seedling growth, fertilisers, fertilisation

**Abstract**

The objective of this study was to determine the factors which affected seedling quality. Sitka spruce seedling (2+0) samples and soil samples were taken from four Forest and Wildlife Service nurseries. Seedlings were analysed for physical characteristics (height, root-collar diameter, dry weight of different fractions) and nutrient content (N,P,K,Ca and Mg). Correlations between various seedlings and soil factors were analysed using a multiple regression procedure. The values obtained from different soil properties were generally uniform within nurseries, although the areas sampled within each nursery were small, but the variation between nurseries was large. The soils in the sample fields had a higher proportion of silt and clay than recommended in the literature for good nursery soils. The organic matter and pH were at recommended levels. Some severe nutrient deficiencies were found in the sample fields. Great variation was found in both plant physical and chemical properties. Seedling density was particularly variable, both between and within nurseries. In all of the nurseries, nutrient content of needles was higher than that of stems or roots. The correlation between seedling density and root-collar diameter was also strong. Root-shoot ratio was not strongly correlated with any other particular plant characteristics. The correlations between soil properties and seedling characteristics were poor. The effect of varying density was so great that it was not possible to assess the importance of other factors, such as soil nutrients, in seedling growth. In addition, the apparent variation in soil moisture conditions between the nurseries undoubtedly decreased the attempts to determine good relationships between soil properties and seedling quality. Results also show a wide-spread need for application of major nutrients. However, nutritional problems seem to be different in each nursery.

**Page**

101 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to Faculty of Agriculture, UCD for award of the Degree of Master of Science)

**Thesis**

M.Agr.Sc. Thesis, UCD

**Number**

703

**Author**

Malaya F.M.

**Title**Root system development of lodgepole pine (*Pinus contorta* Doug. Ex Loud.) in the early stages.**Place**

Dublin

**Date**

1986

**Key Word**

lodgepole pine, *Pinus contorta*, roots, root distortion, stem curvature, silviculture

**Abstract**

The development of the root system of lodgepole pine (*Pinus contorta* Doug. Ex Loud.) at the glasshouse stage, nursery stage and early plantation stage is examined. Some naturally seeded trees were also included in the study for comparison with planted trees. Root excavations were undertaken in all the areas of the study. The root systems of the pot-sown glasshouse seedlings, grown for 6 months, resembled the 1+0, 2+0 nursery seedlings

and the naturally seeded tree roots, in structure. However, the 1+1 nursery transplants and the planted trees showed various forms of root deformation. Nevertheless, it was found that root distortion did not affect plant growth and survival but it was feared that tree stability could be greatly affected. Although indications are that root deformation does not reduce biomass production, this is largely unproved especially for lodgepole pine. However, root deformation leading to stem curvature does reduce sawmill yield.

**Page**

116 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to Faculty of Agriculture, UCD for award of the Degree of Master of Science)

**Thesis**

M.Agr.Sc. Thesis, UCD

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**Number**

704

**Author**

McLarnon D., Lavery D.J., Atanackovic A., Keogh S., Moloney S.  
(University of Uster/Forbairt/University of Limerick)

**Title**

Improving the quality of machine surface finish of fast-grown Irish timber. Final report.

**Publisher**

University of Limerick

**Place**

Limerick

**Date**

1996

**Key Word**

surface finish, timber quality, planed surfaces, grading, timber knots, silviculture, moisture content, machine finishing, cutting geometry, knotwood, Sitka spruce, Picea sitchensis, knot classification, timber scanning, rake angle, feed speed, timber processing, forest products

**Abstract**

The main objective of this project was to find ways of enhancing the surface quality of machine finish of fast-grown Sitka spruce. It was intended to achieve this end by optimising the cutting geometry and the machining conditions to provide a commercially acceptable finish. The development of an understanding of the interactions between the process and material available was seen as essential to realising this goal. Additionally it was intended to develop from scratch a computer based model to simulate the process. The control of knotwood areas through characterisation has been shown to be crucial to improvement in the quality of surface finish in Sitka spruce. The availability of scanning equipment and the use of refined knot classification makes it possible to determine which portions of the sawn wood throughput are capable of producing a finish of merchantable quality. This has enabled the influence and relative significance of the following silvicultural and machine surface planing parameters to be identified: pruning; feed speed; rake angle; moisture content; and drying schedule. A number of recommendations regarding practice in these areas are made. It is recommended to the forest industry that commercially acceptable surface finishes on machined locally grown softwoods can be achieved if specified knot category timbers are machined according to the following processing conditions: (i) the rake angle of the cutterknife is set at 22.5 degrees; (ii) machining moisture content in the range 15% - 16%; (iii) cutterblock feed speed maintained at 12m/min. The Irish timber industry needs to formulate standard limits or rules of practice on the allowable knot size for proposed commercial use of manufactured end-product of locally fast-grown timbers.

**Page**

207p

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available (Project Director: Prof. Brian Norton, University of Ulster)

**Address of author**

School of the Built Environment, University of Ulster, Newtownabbey BT37 OQB, N. Ireland

---

**Number**

705

**Author**

Javadi Zibandeh

**Title**

The effect of tree espacement upon wood density and ring-width in Sitka spruce (*Picea sitchensis* (Bong.) Carr.).

**Place**

Dublin

**Date**

1982

**Key Word**

Sitka spruce, *Picea sitchensis*, tree espacement, annual rings, wood density, silviculture

**Abstract**

The objective of this study was to examine the effect of spacing upon annual ring width and wood density in Sitka spruce (*Picea sitchensis* (Bong.) Carr.). Sample trees for the study were felled for an espacement trial established at Doneraile Forest, Co. Cork by the Forest and Wildlife Service. Eight trees were felled from three espacements, 1.2 metre X 1.2 metres, 2.4 metres X 2.4 metres, and 3.0 metres X 3.0 metres. Ring width was measured by using a digital positionmetre, and wood density was estimated by the water displacement method. The results showed that mean ring width increased with increased espacement. However, no significant effect of spacing upon mean wood density per tree could be demonstrated. Computation of the results indicated that small differences in wood density may exist between the trees established at narrow and wide espacements. However, to satisfactorily demonstrate this effect more intensive sampling would be needed.

**Page**

74 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to Faculty of Agriculture, UCD for award of the Degree of Master of Science)

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

706

**Author**

Joyce P.M.

**Title**

A study of the growth and form of *Pinus contorta* under Irish conditions leading to the preparation of a volume table.

**Place**

Dublin

**Date**

1962

**Key Word**

lodgepole pine, *Pinus contorta*, volume estimation, tree growth, tree form

**Abstract**

*Pinus contorta* Douglas ex Loudon is native to western North America where it is remarkable for its wide range of habitats and its morphological variability. Attempts to classify lodgepole pine into a number of different species have failed and it is generally regarded as one species. Three variations or forms are differentiated in Ireland; inland, intermediate and coastal. While distribution of the intermediate form is somewhat restricted and growth of the inland form is poor except on the best sites, the coastal form shows relatively good growth, even on poorer sites, and is being planted extensively in recent years. An investigation of the growth and form of *P. contorta* in Ireland showed significant variation between inland and coastal and within coastal forms. By confining the data used in the construction of the volume table to the coastal form variability was reduced and, it was felt, a general table would prove adequate for Irish needs. Preparation of the volume table was along the

lines outlined by Hummel (1955), and is based on the assumption that " the regression of volume on basal area can be adequately approximated by a straight line within each height class". Testing of the table shows that significant local variations occur, which may be catered for by a local volume table or by adjustment of the general table for local variability. In general, however, the tests show that over a range of samples, the table gives a relatively accurate estimate of measured volume.

**Page**

66 p

**Location**

UCD Forestry Department

**Notes**

Available.

**Thesis**

M.Ag.Sc. Thesis, UCD

---

**Number**

707

**Author**

Phillips Henry

**Title**

Forest management models - a simulation approach.

**Place**

Dublin

**Date**

1973

**Key Word**

computer simulation, computer applications, growth simulation models, polynomial regression, forest management models, information technology

**Abstract**

A case is made for the use of simulation models as an aid to solving forest management problems. The more widely known simulation models currently used in this field are reviewed with reference to their applicability under Irish conditions. The importance of a flexible method of growth simulation is stressed and a new approach taken. Growth is simulated by means of polynomial regression equations which are specific to yield class within a given tree species. Simulation models (written in FORTRAN IV) suitable for forest planning and management are given. The application of these models is illustrated with the aid of yield table data. The results obtained are discussed and analysed.

**Page**

95 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to Faculty of Agriculture, UCD for award of the Degree of Master of Science)

**Thesis**

M.Agr.Sc. Thesis, UCD

**Address of author**

Coillte Teo., Government Buildings, Cranmore Road, Sligo

---

**Number**

708

**Author**

Ni Dhubhain Aine

**Title**

Feller Productivity In First Thinning System.

**Place**

Dublin

**Date**

1991

**Key Word**

thinning systems, feller productivity, windthrow, selective thinning, forwarder time study, forwarder productivity, linear modelling, harvesting, silviculture

**Abstract**

The risk of wind-throw following systematic forest thinning has resulted in their replacement by rack and selective systems in many areas in Ireland. The purpose of this research was to quantify how feller productivity changed with the introduction of these more selective systems. The following systems were included in the study: (1) 1-in-3 line thinning (system 1); (2) racks 1 line in 5 with selective thinning (system 2); (3) racks 1 line in 11 with selective thinning (system 3); (4) 1-in-4 line thinning (system 4); (5) racks 1 line in 10 with chevron thinning (system 5); (6) racks 1 line in 9 with selective thinning (system 6); (7) racks 1 line in 5 with selective thinning (system 7); (8) racks 1 line in 7 with selective thinning (system 8). Forwarder productivity in the latter 5 systems was examined. A preliminary study was carried out in Ballyfin forest. Ring, Mullinavat, Ennis and Thurles Forests were selected as study sites. Systems 1, 2 and 3 were examined in Ballyfin Forest. On this site, four fellers were time studied as they operated in the three thinning systems, yielding a total of 12 plots (feller/system combinations). These plots were not replicated. Systems 4, 5 and 6 were studied at Ring and Mullinavat forests. On both sites two fellers operated in the three systems and each plot was replicated three times. Thus, a total of 18 plots were studied on each site. Systems 4, 7 and 8 were examined in Ennis and Thurles Forests. Two fellers operated in the three thinning systems, with each plot replicated twice, yield a total of 12 plots on these sites. A time study was carried out on a Valmet 872K as it extracted material from the plots in Ring and Mullinavat while a Farmi-Trac was studied in the Ennis site. The data from the Ballyfin site were analysed separately to those from the remaining sites. The results show that feller productivity in systems 2 and 3 was significantly lower than that in system 1 (27% and 39%, respectively). No significant differences were found in the time spent per tree in the systems, but the mean tree size removed in system 3 was 29% lower than that removed in system 1.

**Page**

196 p

**Location**

U.C.D. Forestry Department

**Notes**

Available (Thesis submitted to the Faculty of Agriculture, UCD for the Degree of Philosophiae Doctor).

**Thesis**

Ph.D. Thesis, UCD

**Address of author**

Dept. of Forestry, Agriculture Building, UCD

---

**Number**

709

**Author**

Gillespie Andrew R., Clinch Peter J., Markey Jan

**Title**

Comparative Irish and American hardwood culture II. The diversity and effectiveness of grant schemes for promoting forestry in rural areas of the midwestern U.S. and Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 2

**Key Word**

comparative hardwood culture, grants, subsidies, forestry policy, broadleaf forestry, broadleaves, agriculture, land use, farm forestry, environment, agricultural prices, economics

**Abstract**

Though farming and forestry have traditionally been antagonistic, current economic and environmental

necessities are promoting new partnerships. Reforestation efforts on farmland in the US and Ireland are making effective use of government subsidies to farm owners for planting trees, though significant challenges lie ahead. Analysis of the type and objectives of grant schemes, however, shows differences in Irish and American approaches. Irish grants are much more strongly aimed at promoting the business of forestry and cover a wider variety of costs and related infrastructure. Differentials are included to promote farm-forestry and hardwood planting. American grants, particularly annual payments, are much more of an attempt to control soil and water quality degradation, over-production of commodities, and commodity prices. Future success of these grant schemes in both countries will depend on the forestry community's ability to educate an agricultural population and to accept mixtures of agriculture with traditional forestry.

**Page**

pp 95 - 107

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Forestry and Natural Resources Purdue University, West Lafayette, IN 47907-1159 USA

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**Number**

710

**Author**

Coen Rosaleen D.

**Title**

Microbial activity In Sitka spruce.

**Place**

Dublin

**Date**

1978

**Key Word**

Sitka spruce, *Picea sitchensis*, leaf litter, soil nutrients, ammonium nitrogen, potassium, mineral phosphate, needle litter, fungus, fungi, Actinomycete, cellulose decomposition, micro-organisms, *Fomes annosus*, soil bacteria, soil microflora, fertilisers, fertilisation, silviculture

**Abstract**

The addition of CaCO<sub>3</sub> to the litter at normal field levels resulted in significant increases in oxygen up-take over 30 days incubation. After this time, however, this effect was diminished. When the litter samples were amended with NH<sub>4</sub>-N, the rate of oxygen up-take in the litter was significantly depressed at all levels of application. Treatment of litter with compound fertilisers depressed the rate of oxygen up-take. However, this effect was overcome after 80 days incubation. The addition of glucose to litter samples at concentrations of 0.5% and 1.0% significantly increased the rate of oxygen up-take. At lower concentrations, the increases were not significant. Considerable release of ammonium nitrogen was found in litter samples incubated for 50 days at temperatures ranging from 12 degrees to 55 degrees. The addition of CaCO<sub>3</sub> to the litter at normal field levels resulted in a decrease in the NH<sub>4</sub>-N concentration of the litter and an increase in NO<sub>3</sub>-N content. The addition of phosphorus as GMP to the litter resulted in substantial increases in the amount of K<sub>2</sub>SO<sub>4</sub>-extractable nitrogen in the litter following 50 days incubation at 12 degrees. Very intensive sampling was necessary when examining microbial activity in Sitka spruce litter. The numbers of aerobic bacteria varied seasonally from 1M to 69M organisms per gramme of dry litter. The dominant cellulose-decomposing micro-organisms in the litter were fungi and Actinomycetes. Twenty one fungi, representing seven Genera, were isolated from Sitka spruce litter. A number of *Penicillium* species isolated from litter samples were shown to be capable of inhibiting the growth of *Fomes annosus* on malt extract agar. The effect of litter extracts on the growth of two bacteria isolated from the litter was found to vary according to the method of extract preparation. In general, cold water extracts gave slight inhibition of bacterial growth and growth was stimulated by the addition of hot water litter extracts to the basal medium.

**Page**

220 p

**Location**

UCD Forestry Department

**Notes**

Available (A thesis submitted to the Faculty of Science of the National University of Ireland, University

College, Dublin for the Degree of Philosophiae Doctor).

**Thesis**

Ph.D. Thesis, UCD

---

**Number**

711

**Author**

O'Carroll Niall (ed.)

**Title**

The forests of Ireland - history, distribution and silviculture.

**Publisher**

Turoe Press

**Place**

Dublin

**Date**

1984

**Key Word**

forest history, silviculture, forestry policy, forest administration, land availability, harvesting, timber end use, forest recreation, amenity forestry, forest protection, land use, classification, forest soils, education, silviculture

**Abstract**

A general outline of the geography of Ireland and the development of the country's landscape is provided. The extent of man's influence on Irish forests over the centuries is assessed, and the ownership of the woodlands and their classification are reviewed. In the section which deals with wood production the principal forest trees, the type of land used for forestry, silviculture, harvesting and end use of forest crops are examined. Various forest protection issues including forest fire hazards, disease problems, insect attack, wind damage and the influence of mammals on forest crops are discussed. Matters relating to recreation, wildlife conservation, and forestry policy and administration are examined. The role of the forester is also reviewed, and the future prospects for forestry in Ireland are assessed.

**Page**

128 p

**Location**

Coillte Library

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**Notes**

Available.

**Address of author**

Dept. of Forestry, Agriculture Building, UCD

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**Number**

712

**Author**

Lowe Richard W.V.

**Title**

An Assessment Of Windthrow Risk Classification Methods In Ireland.

**Place**

Dublin

**Date**

1994

**Key Word**

windthrow, forest protection, windthrow hazard classification, tree stability, critical height, wind damage, silviculture

**Abstract**

In this study, seven land classification systems which have been developed to classify forest stability in relation to wind, were examined. The different systems are as follows: (1) Forestry Commission UK - Old form; (2)

Forestry Commission UK - New form; (3) Northern Ireland Forest Service; - (4) Coillte Teoranta's Thinning model; (5) Coillte Teoranta's Land Acquisition; (6) Forest Resource Survey; (7) Local Forest Manager. Three forests, comprising 274 forest blocks, were surveyed and classified according to the seven different methods. To assess which systems were predicting stability correctly, the height of the trees at which the onset of windthrow occurred (critical height) was examined. A comparison between predicted heights for windthrow and the heights at which windthrow occurred in the field was made using Chi-squares analysis. This analysis was carried out on the British Forestry Commission's old and new form and Coillte's land acquisition system, as these were the only systems which gave tree height values. It was found that none of these systems was predicting accurately what was happening in the field. This comparison was tested further in that Coillte's Land Acquisition model was adjusted downward by one metre intervals to test whether this model could be adapted to match what had been observed in the field, or not. The adjustment which matched the field observations most closely was at maximum attainable height minus four metres. Duncan's multiple range/test found that the Northern Ireland Forest Service's and Coillte's thinning model were not significantly different from Coillte's Land Acquisition system and, therefore, were predicting windthrow hazard accurately. The British Forestry Commission's old and new windthrow hazard system did not predict the onset of windthrow correctly for the forest blocks assessed. These latter systems predicted that trees were more stable and that the onset of windthrow would happen at a later stage than using Coillte's Land Acquisition Model. Coillte's resource survey predicted stability between the two groups of systems and the local forest managers held the most pessimistic view-point in relation to tree stability.

**Page**

120 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to Faculty of Agriculture, UCD for award of the Degree of Master of Science)

**Thesis**

M.Agr.Sc. Thesis, UCD

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**Number**

713

**Author**

Murray Neil

**Title**

Evidence of former tree growth at Clonsast.

**Place**

Dublin

**Date**

1957

**Key Word**

ancient woodlands, forestry history, peatlands, peat soils, cutaway bogs, pollen analysis, seed analysis, peat stratigraphy, tree ring analysis

**Abstract**

This study investigates how the forests which once grew on the mineral soil in the Clonsast area were overwhelmed by peat, and also how some of the peat was latter colonised by trees. A visual estimation of tree growth in the area, prior to peat formation, has been made possible following the cutting away of the deposit by Bord na Mona. From a palaeo-botanical viewpoint, this clearance is unfortunate as it means the large scale destruction of evidence of past happenings as they are recorded in the peat strata. Clonsast Bog, County Offaly lies 6.5 km north of the town of Portarlinton, County Laois. In extent, the bog is 3.0 km X 6.5 km. Fine profiles of both peat and the under-lying moraine material are visible throughout the bog thus making features of lateral extent easily traceable. The four points from which material for analysis was collected all lie along Trench 2. The average rainfall on the bog for the years 1937 - 1955 was 27.64", or approximately 70 cm. During the course of numerous visits to the bog, material for pollen analysis was collected, in one case directly from a profile, but elsewhere by the standard method using a Hiller borer. The plant nomenclature followed is that of Clapham, Tutin and Warburg (Flora of the British Isle, 1st Edition). The first part of the text deals with the stratigraphy and the pollen and seed analyses. This is followed by notes on Taxus, Pinus and peatland afforestation. Finally, there is a section on the identification of woody remains found in peat.

**Page**

94 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to the University of Dublin, Trinity College for award of Master of Science degree)

**Thesis**

M.Sc. Thesis, TCD

---

**Number**

714

**Author**

Department of Agriculture and Technical Instruction for Ireland

**Title**

Report of the Departmental Committee on Irish Forestry.

**Publisher**

Alexander Thom

**Place**

Dublin

**Date**

1908

**Key Word**

forestry policy, forestry history, forest development, afforestation Purchase Acts, land availability, forest land, private forestry, State forestry, timber processing, forest products, forestry education, investment, legislation

**Abstract**

This report is divided into three sections. Section 1 examines the present situation of Irish woodlands, and outlines the effects of deforestation. The importance of protecting surviving woodlands is emphasised. The various arguments for a scheme of afforestation are considered, and the manner in which the defects in the Purchase Acts will affect any programme of afforestation are described. Section 2 deals with the recommendations of the Committee. The potential role of the State in a national scheme for afforestation is examined. Related issues such as the need for co-operation of County Councils in the afforestation scheme, the organisation of the timber industry, technical instruction, and the required legislation are considered. The third section deals with financial aspects of the forestry programme.

**Page**

484 p

**Location**

UCD Forestry Department

**Notes**

Available (This report was prepared by the Department of Agriculture and Technical Instruction for Ireland).

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**Number**

715

**Author**

Breslin Seamus

**Title**

A study on the red squirrel, *Sciurus vulgaris*, the damage it causes and an investigation into feasible control measures.

**Place**

Dublin

**Date**

1981

**Key Word**

red squirrel, *Sciurus vulgaris leucourus*, forest fauna, rodents, forest protection, forest pests, pest control, chemical pest control, wildlife

**Abstract**

The family Sciuridae is represented in Ireland by the red squirrel, *Sciurus vulgaris*, and by the grey squirrel,

*Sciurus carolinensis*. The race of red squirrel which is native to Ireland and Britain is classified as *Sciurus vulgaris leucourus* (Kerr). It is a forest pest, and can cause a considerable amount of damage to Scots pine plantations, its preferred habitat. Control by shooting or trapping appears to be equally effective. Various control measures used at Athy, Monasterevin and Cloney are described. Control must be undertaken in sites adjacent to damaged stands and can take from two to five years to complete. Warfarin is not used by the Forest and Wildlife Service as a control measure, but its use on a trial basis in one of the more damaged properties could provide valuable information. The use of rodent fertility depressant drugs over the next few years may be considered. As initial research into the Coccidiosis virus has only recently commenced it is unlikely that this will be a viable control tool for some years.

**Page**

110 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted for award of the Degree of Bachelor of Agricultural Science).

**Thesis**

B.Agr.Sc. Thesis, UCD

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**Number**

716

**Author**

Curran Eugene P.

**Title**

Foliar Characteristics of some oak samples in Ireland.

**Place**

Dublin

**Date**

1988

**Key Word**

oak, sessile oak, pedunculate oak, hybridisation, *Quercus petraea*, *Quercus robur*, taxonomy, botany

**Abstract**

The purpose of this work was to examine the foliar characteristics of some well known semi-natural oak stands in Ireland. This was carried out by comparing foliage taken in these stands against standard measurements from known *Quercus petraea* and *Quercus robur* trees. The location of specimen trees presented a difficulty since trees labelled *Quercus robur* and *Quercus petraea* in the National Botanic Gardens appear to be partial hybrids. Eventually, a set of standard measurements was put together by reference to herbarium specimens and to published data. Examination and analysis of the data derived from foliage taken from these stands of oak showed that none of the stands examined could be regarded as pure. The Wicklow oak has foliage which resembles that of *Quercus petraea* but most trees show definite *Quercus robur* characteristics. The Charleville Estate oaks have many *Quercus robur* characteristics. The oak trees in Reen Wood and Game Wood in Killarney appear to be quite intermediate in character. Combination class analysis of the foliar data showed that active introgressive hybridisation is taking place in Charleville Estate. In general terms, the Wicklow oaks appear to be, taxonomically, more stable than any of the other trees examined. The trees in the Kerry stands show little evidence of introgressive hybridisation and could be considered as being variable, intermediate populations of oak. The results indicate that none of the oak stands sampled could be considered pure and that, even in stands of oak such as Charleville Estate which were long considered as being pure *Quercus robur*, evidence of active progressive hybridisation is apparent.

**Page**

108 p

**Location**

UCD Forestry Department

**Notes**

Available. (Thesis submitted to Faculty of Agriculture, UCD for award of the Degree of Master of Science)

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

717

**Author**

Department of Agriculture, Food and Forestry

**Title**

Afforestation Grant Scheme. Forest Premium Scheme.

**Publisher**

Department of Agriculture, Food and Forestry

**Place**

Dublin

**Date**

1994

**Key Word**

Afforestation Grant Scheme, Forest Premium Scheme, CAP, forest policy, land use, farm forestry, private forestry, grants, subsidies

**Abstract**

The Afforestation Grant Scheme and the Forest Premium Scheme have been introduced as part of the reform of the Common Agricultural Policy, and are aimed at encouraging afforestation of agricultural lands. Grants are payable in two parts, a grant for afforestation and a maintenance grant. The minimum area for planting is 1 hectare for conifers and 0.1 hectares for broadleaves. Only approved tree species may be planted. Development must be compatible with the protection of the environment. The various premium levels are outlined. The period of qualification for the premium is 20 years for farmers and 15 years for others.

**Page**

19 p

**Location**

Coillte library

**Notes**

Available.

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**Number**

718

**Author**

Toibin Sean

**Title**

Trosca na mBanta - Aisti simpli ar na crainn choitianta duchais.

**Publisher**

Chlochuallacht Chathail Teoranta for Oifig an tSolathair

**Place**

Dublin

**Date**

1967

**Key Word**

forest heritage, forest history, fables, folklore, forest culture, native species, native woodlands

**Abstract**

'Furniture of the Fields - Simple stories about our common heritage trees' is a direct translation of the title of this book. The book is divided into two sections, on deciduous trees and ever-green trees. Each section is further sub-divided into minor tree species, or scrub trees, and there are a number of cultural and heritage anecdotes on each species accompanying each article.

**Page**

157 p

**Location**

Coillte library

**ISBN**

white willow, whitebeam, hazel, alder, elder, dwarf elder, hawthorn, whitethorn, blackthorn, laburnam, locust tree, briar, blackberry, loganberry, bilberry, whortleberry, bog myrtle, crab apple, honeysuckle, woodbine,

lonicera, dog briar, dog rose, scotch rose, burnet rose, spindle tree, pegwood, sessile oak, common oak, beech, copper beech, elm, wych elm, sycamore, sugar maple, field maple, ash, horse chestnut, silver birch, lime, linden, Spanish chestnut, poplar, aspen, plane, larch, hornbeam, walnut, holly, arbutus, furze gorse, dwarf furze, heather, heath, ling, common yew, Irish yew, juniper, Scots pine, pine, wellingtonia, redwood, silver fir, monkey puzzle, Norway spruce, cypress

**Notes**

Available. This is an Irish language publication from Government Publications and is available from Government Publications's Sales Office.

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**Number**

719

**Author**

Clear T.

**Title**

The production of high grade softwood timber in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1946

**Source**

Irish Forestry

**Volume**

Vol. 3, No. 2

**Key Word**

timber quality, knot, silviculture, Douglas fir, *Pseudotsuga menziesii*, Scots pine, *Pinus sylvestris*, pruning practice, timber processing, tree spacing, annual rings

**Abstract**

The problems caused by knots in timber and the reasons for knot formation are outlined. The damage to processing equipment and inefficiencies in the processing of timber into products such as Kraft paper, fibre-board and pulp are described. It is necessary to control ring width in order to maintain the overall quality characteristics of the timber of coniferous trees. The aim should be to check diameter growth, or reduce ring width, as far as possible in the beginning and from the thicket stage, or small pole stage, in order to maintain, or increase, the ring width. Gradually increasing breadth of the annual rings at the thicket, or small pole stage, results in optimum quality and optimum yield. A thinning treatment which concentrates on the removal of the coarse dominants with a view to forming a final crop of half-shade trees, or co-dominants as they are sometimes called, is recommended for Douglas fir. The value of early pruning the issues of thinning and quality increment are also discussed.

**Page**

pp 75 - 83

**Location**

Coillte library

**Notes**

Available.

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**Number**

720

**Author**

McEvoy T.

**Title**

The vegetation of Irish native woodland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1946

**Source**

Irish Forestry

**Volume**

Vol. 3, No. 2

**Key Word**

native flora, oak, ash, holly, hazel, plant succession, sere, native woodlands, forest soils, hazel, oakwood, calcareous soil woodlands, oak-ashwood, ashwood, site indicator, alderwood, birchwood, forest eco-systems

**Abstract**

The theory of plant succession and the notions of seral stages and climax communities in Ireland's flora are discussed. There are some historical notes provided on the removal of Irish woodland cover. The biotic factors impinging upon floral communities are examined. Oakwood on acidic soils are divided into vaccinium types, luzula types, and fern types. Woods on calcareous soils are sub-divided into (i) oak-ashwood of deep soils; (ii) ashwood of shallower soil; and (iii) hazel scrub of the bare limestone pavements. There are two more or less permanent types dependent on high water-table in the soil: (a) alderwood with or without ash; and (b) birchwood. All of these vegetation- cover types are dealt with in detail.

**Page**

pp 84 - 92

**Location**

Coillte library

**Notes**

Available.

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**Number**

721

**Author**

Deasy J.J.

**Title**

Notes on the disposal of weeds in the forest nursery.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1946

**Source**

Irish Forestry

**Volume**

Vol. 3, No.2

**Key Word**

Forest nurseries, nursery practice, weed control, weed disposal, forest protection, fertilisers, fertilisation

**Abstract**

The disposal of forest nurseries weeds is discussed. The use of weeds to form compost is a common disposal method. The addition of farmyard manure or liquid fertiliser is necessary to assist the activity of certain essential organisms. The difficulties in creating and managing compost heaps in the forest nursery are discussed. The burning of weeds using kilns is also examined. The ash recovered contains potash and is very useful as a fertiliser. It can be applied to the soil when green cropping. The burning of weeds means that a supply of humus is cut off, but this can be made up by green manuring.

**Page**

pp 93-95

**Location**

Coillte library

**Notes**

Available.

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**Number**

722

**Author**

Forbes A.C.

**Title**

The forestry revival in Eire.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1947

**Source**

Irish Forestry

**Volume**

Vol 3, No. 2

**Key Word**

forestry history, education, forestry policy, State forestry, estate forestry, forest law, forestry acts, native woodlands, afforestation, legislation

**Abstract**

The native forests of Ireland are estimated to have been in the region of 100,000 acres to 200,000 acres in extent in 1700, not including scrub and partially open ground. The surviving remnants of this woodland are described. The process of estate planting, which was often carried out for shelter or ornamental purposes, is examined. The Land Acts of the late nineteenth century prevented the further extension of estate woodlands. The Howitz Report on forestry in Ireland and the attempt at afforestation at Knockboy in the west of Ireland are assessed. The establishment of a forestry school at Avondale, the setting up of the Departmental Committee in Irish Forestry, the Forestry Act of 1928, and the benefits of State intervention in the afforestation programme are also discussed.

**Page**

pp 11 - 26

**Location**

Coillte library

**Notes**

Available.

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**Number**

723

**Author**

McCarthy T.

**Title**

Flood damage at Ballyhoura nursery.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1945

**Source**

Irish Forestry

**Volume**

Vol. 3, No. 1

**Key Word**

forest nurseries, environment, flood damage, nursery practice

**Abstract**

The damage caused by flooding to the forest nursery at Ballyhoura in August 1946 is assessed. Transplants and

seedlings were either washed away, partly up-rooted or partly covered with silt. Locally, it is claimed that the flooding was caused by the diverting of the stream from its original course some 150 years previously.

**Page**

pp 30 - 31

**Location**

Coillte library

**Notes**

Available.

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**Number**

724

**Author**

Galvin James

**Title**

The Irish nursery trade.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1947

**Source**

Irish Forestry

**Volume**

Vol. 4, No. 1

**Key Word**

forestry history, forest nurseries, forestry policy, private forestry, nursery practice

**Abstract**

Historical factors which have affected the development of a private forest nursery sector are outlined. Private planting of forest trees in commercial quantities is only practical on large tracts of land. The difficulties faced by private nursery enterprises are noted. A period of prosperity for the farming population at the start of the 20th Century was also good for private nurseries. In 1932 the industry tried to come to an arrangement with the government to provide some share of the increased supplies needed for an expanded government planting programme. However, this attempt failed and it was feared that surplus stock from State nurseries would be dumped on the market. The forecast for the future of private nurseries is not optimistic.

**Page**

pp 32 - 34

**Location**

Coillte library

**Notes**

Available.

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**Number**

725

**Author**

Clear T.

**Title**

Does our forest policy need an overhaul?

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1947

**Source**

Irish Forestry

**Volume**

Vol. 4, No. 2

**Key Word**

forestry policy, timber demand, afforestation land use, marginal land, timber supply

**Abstract**

The role of the Irish Forestry Society in influencing the Government's forestry policy is examined. The factors influencing the development of forestry policy are outlined. These include the necessity to maintain the supply of timber and firewood to local populations, and environmental factors. As a result of a falling population and a low level of house building, Ireland's timber demands have been below normal for a long time. Current policy aims at the creation of a forest area of 600,000 acres. It appears that our forestry programme is designed only to meet our minimum, or emergency, needs from home woods. Progress towards self-sufficiency in timber is assessed, and the need for a bolder marginal land-use policy is emphasised.

**Page**

pp 49 - 58

**Location**

Coillte library

**Notes**

Available.

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**Number**

726

**Author**

Sharkey Malachy

**Title**

The unreliability of tree growth in site assessment.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1947

**Source**

Irish Forestry

**Volume**

Vol. 4, No. I

**Key Word**

site assessment, site indicators, species choice, silver fir, European larch, growth rings, silviculture, tree growth

**Abstract**

It is generally accepted that the most reliable and conclusive indicator in site assessment is the quality or success of an existing stand of timber on the site or on a similar site in the locality. The unreliability of existing poor quality timber stands as site indicators without due regard to stand history is examined. Examples of this unreliability in action are given with regard to two coniferous species, silver fir and European larch.

**Page**

59 - 62

**Location**

Coillte library

**Notes**

Available.

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**Number**

727

**Author**

Deasy J.J.

**Title**

Note on the extraction of firewood.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1947

**Source**

Irish Forestry

**Volume**

Vol. 4, No. 1

**Key Word**

timber extraction, fire-wood, horses, sleds, harvesting

**Abstract**

The problems caused by terrain in extracting wood for fuel and costs involved in this extraction are examined. The difficulties in using the traditional chains looped around the logs are outlined. The use of sleds in extraction of fire-wood is examined.

**Page**

pp 63 - 64

**Location**

Coillte library

**Notes**

Available.

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**Number**

728

**Author**

Beresford-Barrett H.

**Title**

Some comments on Irish forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1948

**Source**

Irish Forestry

**Volume**

Vol.4, No. 2

**Key Word**

forestry policy, Forest Service, State forestry

**Abstract**

This article is based on observations made on the Irish Forest Service in June, 1947. The author recommends the appointment of a silviculturist and a working plans officer, greater decentralisation, and increased co-ordination with County Councils and other local bodies.

**Page**

pp 67 - 69

**Location**

Coillte library

**Notes**

Available.

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**Number**

729

**Author**

Hanahoe A.J.

**Title**

Extraction of conifer seed at Avondale, Co. Wicklow.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1948

**Source**

Irish Forestry

**Volume**

Vol. V, Nos. 1 and 2

**Key Word**

forestry technology, seeds supply, seed extraction, kiln drying

**Abstract**

The historical background note to the establishment of the first Irish seed-extraction kiln at Avondale in 1930 is provided. At present its output represents 60% of the conifer tree seed requirements of the State Forest Service. The seed-extraction methods used are highlighted, and the proper storage conditions of cones awaiting seed extraction described. The principal of kiln drying is explained, and the type of heating apparatus and fuel used are described. The post-drying process, which involves removal of the seed from the kiln, detaching the wings, winnowing and final cleaning, and weighing and identification is outlined.

**Page**

pp 9 - 17

**Location**

Coillte library

**Notes**

Available.

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**Number**

730

**Author**

O Muirgheasa Niall

**Title**

Monterey pine as a forest tree in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1948

**Volume**

Vol. V, Nos. 1 and 2

**Key Word**

Monterey pine, *Pinus insignis*, *Pinus radiata*, silviculture

**Abstract**

It is expected that the Californian species, Monterey pine would prove to be a more successful forest tree in Ireland than in Great Britain. Among the tree's qualities are: (1) it is probably the greatest bulk producer and fastest grower of our exotic pines; (2) it does not need a highly fertile soil for normal growth; (3) if one is to judge by its heavy leaf-fall and the consequent mould formed, it is a soil improving species; (4) it is a storm-firm species and indications are that it is also a wind-resistant tree; (5) it will withstand sea spray; (6) it is a prolific and early seed producer; and (7) it has not, so far, shown itself to be subject to any serious disease. Timber quality may be rough. Suitable silvicultural, practices are critical to ensure that the highest quality of timber is produced. An account is given of the growth of the species in an exposed area at Sliabh na mBan Forest, including a comparison with other species of equal age growing on similar ground.

**Page**

pp 20 - 25

**Location**

Coillte library

**Notes**

Available.

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**Number**

731

**Author**

Clear T.

**Title**

Irish forestry - to-day and to-morrow.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1949

**Source**

Irish Forestry

**Volume**

Vol. 6, Nos. 1 and 2

**Key Word**

forestry policy, forest history, timber supply, afforestation, land availability, land use, forest research, forestry and employment

**Abstract**

The development of Irish forestry and the effect of the State's forestry policy on this development is examined. Past policy failings are criticised, especially since the 1908 Departmental Committee on Irish Forestry recommendations were made. The progress of afforestation in Ireland is compared with the situations prevailing in the Kingdom of Denmark and in New Zealand. The issues of land availability for forestry, the cost of forest land and the current lack of a co-ordinated land-use policy are discussed. The social effects of afforestation in rural areas are examined.

**Page**

pp 3 - 12

**Location**

Coillte library

**Notes**

Available.

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**Number**

732

**Author**

Wittich Walter

**Title**

The possibility of afforesting soils of the Old Red Sandstone in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1949

**Source**

Irish Forestry

**Volume**

Vol. 5, Nos. 1 and 2

**Key Word**

Old Red Sandstone, soil improvement, geology, soil compaction, soil mechanics, soil permeability, weathering, liming, humus formation, forest soils

**Abstract**

Old Red Sandstone soils are common in the south and south-west of Ireland. Afforestation of the soils derived from ORS has been under consideration for many years, but at present they remain unsuitable for afforestation. Ballyhoura hills is presented as an example of the potential for forestry on such sites. During the years 1924-28 planting and experimentation with different soil treatments was carried out. Scots pine is the principal planted species. Irish Old Red Sandstone contains few bases and little weatherable material, and these sites are particularly deficient in lime. It has been established that the soil at Ballyhoura has suffered unusually severe destructive processes. The severe compaction of the soil and the periodical water-logging on these sites has caused the pines to develop unusually shallow roots. To re-gain soil permeability it is recommended that the hard-pan ought to be removed to allow the eluvial and illuvial layers to be mixed. The peat on these sites consists largely of lignin and lignin fractions which are released by the breakdown of the readily decomposed associated carbohydrates. After liming they undergo strong auto-oxidation, forming acid groups of great importance to the soil's sorption capacity.

**Page**

pp 13 - 21

**Location**

Coillte library

**Notes**

Available.

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**Number**

733

**Author**

Gallagher G.

**Title**

Evolution of plantation management in the Republic of Ireland.

**Publisher**

New Zealand Ministry of Forestry. Forest Research Institute.

**Place**

Rotorua, New Zealand

**Series**

FRI Bulletin No. 151

**Date**

1990

**Source**

New Approaches to Spacing and Thinning in Plantation Forestry. Proceedings of a IUFRO symposium held at the Forest Research Institute, Rotorua, New Zealand, 10-14 April 1989. (Edited by R.N. James & G.L. Tarlton)

**Key Word**

Initial stocking, thinning regimes, stability, timber quality

**Abstract**

The extensive State afforestation programme in Ireland, reaching 10,000 ha per annum by the 1960s, has resulted in large areas of conifers reaching thinning stage in recent years. Sitka spruce and lodgepole pine constitute over 80% of these plantations. Forests were initially established at 4,000 - 5,000 trees per hectare and, where thinning took place, low, light, selective thinning was the norm. Thinning control was subjective. When lodgepole pine yield tables were compiled in the early 1960s attention was focused on the need for thinning yield regulation. Forest management tables derived from sample plots in Britain resulted in the adoption of 'marginal' thinning intensity. Research into the effects of spacing at establishment, respacing and thinning on growth, together with experience gained from increased mechanisation in harvesting and wind damage have resulted in present-day practice - with establishment at 2,500 stems per ha and row and selective thinning at marginal intensity. Pruning to increase timber quality is now becoming more common forest management.

**Page**

pp 66 -70

**Location**

Coillte library

**ISBN**

0111-8129

**Notes**

Available.

**Address of author**

Forest Service, Leeson Lane Dublin 2

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**Number**

734

**Author**

T.J. Lynch

**Title**

A report on respacing experiments in the Republic of Ireland.

**Publisher**

New Zealand Ministry of Forestry. Forest Research Institute.

**Place**

Rotorua, New Zealand

**Series**

FRI Bulletin No. 151

**Date**

1990

**Source**

New Approaches to Spacing and Thinning in Plantation Forestry. Proceedings of a IUFRO symposium held at the Forest Research Institute, Rotorua, New Zealand, 10-14 April 1989. (Edited by R.N. James & G.L. Tarlton)

**Key Word**

Spacing, thinning regime, *Picea sitchensis*, volume production, timber quality, silviculture

**Abstract**

Crops of high yielding Sitka spruce (*Picea sitchensis* (Bong.) Carr.) grown on wind-prone sites, where an active thinning policy is not practical, can be respaced to maximise sawlog output and give an enhanced financial return. For maximum benefit, respacing should be carried out when the top height of the crop is about 5 metres. The costs involved in respacing can be recouped in 12 years. An optimum level of respacing which leaves 850 - 900 stems per hectare is suggested. Respacing must be accompanied by green pruning. Many questions relating to the intrinsic quality of highly productive spruce remain unanswered.

**Page**

pp 137 - 143

**Location**

Coillte library

**ISBN**

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**Notes**

Available.

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

---

**Number**

735

**Author**

Williamson Gary, Nieuwenhuis Maarten

**Title**

Integrated Timber Allocation and Transportation Planning in Ireland.

**Publisher**

Department of Forest Engineering, University of New Brunswick

**Place**

Fredericton, NB, Canada

**Date**

July 1993

**Source**

Journal of Forest Engineering

**Volume**

Vol. 5, No. 1

**Key Word**

timber allocation, transportation planning, network analysis, forest infrastructure, forest roads, information systems

**Abstract**

In order to manage Coillte's harvesting and transportation operations efficiently, a national timber sales allocation procedure was developed by the Forestry Department of University College, Dublin. The procedure uses Coillte's databases on harvesting volumes, sub-divided into supply categories, on mill demands, specified by demand categories, and on the national transportation network, including road, rail and water transport modes. The developed operational procedure was used as a decision-making tool during the allocation of the 1991 sales volumes. A comparison of the actual versus the optimised 1990 allocation strategy identified opportunities for large-scale savings. In addition to its main function as a decision-making tool for the annual sales allocation, the model has been used for other strategic and tactical planning analyses, such as the influence of new mill location on transport costs, the impacts of a timber processing industry rationalisation programme on the industry as a whole and on individual mills, the feasibility of timber transport by rail, the selection of suitable ports for timber export and the impact of road construction and improvement programmes on national timber transport strategies. The model has been successfully linked with the company's ARC/INFO Geographic Information System, which extends the post-allocation analysis and interpretation capabilities and combines the output with existing information systems. A further integration of the management decision-making processes in the company will result in increased cost-saving opportunities.

**Page**

pp 7 - 15

**Location**

Coillte library

**ISBN**

0843-5243 (ISSN)

**Notes**

Available.

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**Number**

736

**Author**

Shine William

**Title**

Timber extraction by chute at Glenmalure.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1949

**Source**

Irish Forestry

**Volume**

Vol. 6, Nos. 1 and 2

**Key Word**

timber extraction, harvesting, chutes

**Abstract**

The difficulties involved in extracting timber from a site with a steep gradient are described. The construction of a road to the site was a problem. The nearest forest road was 800 feet below the site. After a number of options had been considered, including the use of slinging by horses in order to extract the timber, it was decided to use a chute instead. The construction of the chute is described and its usefulness assessed.

**Page**

pp 22 - 28

**Location**

Coillte library

**Notes**

Available.

---

**Number**

737

**Author**

O'Beirne M.

**Title**

Birds in the forest.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1950

**Source**

Irish Forestry

**Volume**

Vol. 7, Nos. 1 and 2

**Key Word**

birds, forest fauna, natural regeneration, nutrient recycling, wildlife

**Abstract**

The role of birds in forest protection is examined, and the relationship between reductions in bird populations in periods of bad weather and increases in pathogen activity in subsequent seasons and years is assessed. The role of birds in seed dissemination, natural regeneration and nutrient recycling is discussed. The use of bird-boxes to attract birds to woodlands is recommended.

**Page**

pp 12 - 13

**Location**

Coillte library

**Notes**

Available.

---

**Number**

738

**Author**

Department of Energy. Forest Service

**Title**

Forestry and the environment.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1990

**Key Word**

Operational Programme for Forestry, environment, afforestation, ecology, woodland ecosystems, environmentally sensitive areas, species diversification, forestry policy

**Abstract**

The EC Operational Programme for Forestry emphasises the protection of the environment and the need to ensure that forestry development generally will contribute to environmental improvement. This booklet provides brief guidelines on how these obligations can be met by those involved in forestry at every level. Of particular importance is the diversification of species and, specifically, the encouragement of broadleaf species.

**Page**

8p

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Leeson Lane, Dublin 2

---

**Number**

739

**Author**

Coillte Teoranta

**Title**

Annual Report & Accounts 1994.

**Publisher**

Coillte Teoranta

**Place**

Dublin

**Date**

1995

**Key Word**

forestry policy, Coillte Teoranta, business, sales, targets, economics, revenue, services, State forestry

**Abstract**

The review of Coillte's activities during 1994 identifies a number of key achievement for that year. In financial terms Coillte had a very successful year, making profits of IR£10.83m, increasing revenue by 37% to IR£41.9 and reducing borrowing to IR£10.6m. Land acquisition, volume of logs sold, harvesting, and nursery plant production were all up on the previous year, while planting was reduced. The performance of each of the following business units are briefly assessed: nurseries, which produced 44m plants in 1994; sawmills; engineering technology development; leisure; Christmas tree farms; technical services; and overseas development. Important developments in the research branch of the company during the previous year included a programme of silvicultural training for forest managers, expansion of wood technology research, and mechanical thinning projects. The role of forestry in the enhancement of the environment and the role of Coillte in this process is assessed. A number of targets which the group has set for 1995 are identified. These include increases in land acquisition, planting and sales, further development of forest infrastructure, the successful start up of the OSB mill and the implementation of the the Continuous Improvement Programme.

**Page**

52p

**Location**

Coillte library

**Notes**

available

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**Number**

740

**Author**

McCarthy R., Hogan J.

**Title**

A study of the cause-effect relationships underlying forest decline: Ireland 1990. EC Project No. 9060IR0020.

**Publisher**

Coillte Teoranta

**Place**

Dublin

**Series**

Coillte Research & Development Internal Report

**Date**

1990

**Key Word**

forest decline, forest health, forest protection, Sitka spruce, *Picea sitchensis*, Norway spruce, *Picea abies*, noble fir, *Abies amabilis*, green spruce aphid, *Elatobium abietinum*, foliage colour, soil moisture, nutrient concentrations, crown density, forest damage

**Abstract**

The results of the 1990 forest decline study are presented. The study is restricted to three species: Sitka spruce, Norway spruce and noble fir. A total of 429 trees were assessed in 25 permanent plots, comprising 217 Sitka spruce (14 plots), 176 Norway spruce (9 plots), and 36 noble fir (2 plots). The crown densities and foliage colour of Sitka spruce, in particular, and, to a lesser extent, Norway spruce and Noble fir, improved in 1990 compared to 1989, the improvement increasing each year since the start of the study in 1988. The improvement in crown density is almost certainly largely due to a decrease in the incidence of green spruce aphid (*Elatobium abietinum*) which decreased in severity from 1988 to 1990. The number of trees considered to be moderately damaged (26 - 60% defoliation) in terms of defoliation was very low (Sitka spruce: 16% of Sitka spruce trees assessed; Norway spruce: 22% and, Noble fir: 0%), particularly as most of the trees assessed were located on exposed plot edges. Foliage colour followed a similar trend to crown density, with only a small number of trees showing even 'moderate discolouration' (26 - 60% discolouration), that is, 8% for Sitka spruce, 12% for Norway spruce, and 0% for Noble fir. Nutrient concentrations continued to be well above critical level, although there was a general decrease from 1989 levels. The cause of the decrease is not known, but clearly it had not had a deleterious effect on forest condition so far. Soil moisture deficits, in the June-December period, were not as severe or as frequent in 1990 as in 1989. It is thought that this, allied to the relative absence of the green spruce aphid, were important factors resulting in improvements in the forest condition in 1990, even compared to 1988-89 when forest damage levels were extremely low.

**Page**

36p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

741

**Author**

Farrell E.P.

**Title**

Land acquisition for forestry.

**Publisher**

Resource and Environmental Policy Centre, University College Dublin

**Place**

Dublin

**Date**

1983

**Source**

Promise and performance. Irish environmental policies analysed. (Edited by John Blackwell and Frank J. Convery).

**Key Word**

land use, land acquisition, forestry policy, afforestation, Land Commission, State forestry, Forest and Wildlife Service, Department of Finance, agriculture, marginal land, land purchase, soil quality, National Soil Survey, forestry policy

**Abstract**

This paper examines the administrative, legislative and socio-political controls over land acquisition for forestry. In recent years the fall off in land acquisition for afforestation has adversely affected the State's planting programme. Reforestation will rapidly begin to comprise a much greater proportion of total planting. Until recently the Forest and Wildlife Service acquired land wherever it became available, but a strategy has now been adopted which seeks to use land acquisition to consolidate existing holdings. The 17,800 acres purchased by the FWS in the period 1976 - 1982 represents about 19% of total land purchase, making the FWS a very important buyer on the land market. Despite the widely held belief among the general public that trees grow

well on very poor soils, several studies have shown that both potential productivity and financial return are strongly site related. To be successful, State forestry must compete for land of marginal value to agriculture. The most obvious example of this is wet mineral lowland soils, which make up 21.3% of land in the country and 97% of land in Leitrim. Acquisition of land by the FWS is controlled by the Department of Finance and the Land Commission, which controls acquisition both by the State and private sector. The manner in which this control is exercised is explained. A major shortcoming in the present system is the lack of a test of suitability for agriculture. A revaluation of this system would involve an extension of the work of the National Soil Survey and would establish a productivity rating for land based on soil quality. The author recommends that the FWS should be given greater freedom in acquisition, and should be allowed to spend from grant-in-aid fund for land that it needs. Land Commission control over land purchase should be reduced, and decisions on priority use of land should be based on the land use-range classes drawn up by the National Soil Survey.

**Page**

155 - 167

**Location**

Coillte library

**Notes**

available

**Address of author**

Department of Environmental Resource Management, UCD, Belfield Dublin 4

---

**Number**

742

**Author**

O'Reilly Eugene

**Title**

Multi purpose power unit for Irish forests.

**Publisher**

Eolas

**Place**

Dublin

**Date**

1991

**Source**

Eolas Project No. ARP/4a/91

**Key Word**

forest engineering, forest harvesters, tracked excavators, harvesting technology, site preparation, forest machinery

**Abstract**

This project proposes to examine the feasibility of converting a standard, tracked excavator into a multi-purpose, forestry power unit by making such a machine perform the following tasks when fitted with the appropriate boom equipment: (a) standard boom and bucket(s) for excavation, trenching and road building; (b) mounding bucket for tree planting; (c) harvesting head; (d) log handling and transport. From this study, it can be seen quite clearly that the excavator has many uses in the forestry industry. It has been shown that the machine is ideally suited to site preparation i.e. road construction, drainage, mounding etc. It has also shown that the machine can be adapted and used for harvesting. To back this up, a performance test should be carried out to determine its productivity levels compared with a similar-sized, purpose-built harvester. The trend at the moment seems to be that the excavator harvester owners are moving on to purpose-built machines. Therefore, they are using the excavator/harvester as a stepping stone. Although some of the owners are not happy, a change back to excavator-based harvesters is a far more productive alternative to the large capital outlay for the purpose-built machines.

**Page**

50 p

**Location**

UCD Agricultural and Food Engineering Department, Earlsfort Terrace, Dublin 2.

**Notes**

Available. This is the report of the Eolas (Applied Research Programme) Project No. ARP/4a/91.

**Address of author**

UCD Agricultural and Food Engineering Department, Earlsfort Terrace, Dublin 2.

---

**Number**

743

**Author**

Forsythe Paul

**Title**

An investigation into the effects of high temperature drying on the strength of home grown Sitka spruce.

**Place**

Newtownabbey

**Date**

1995

**Key Word**

Sitka spruce, Picea sitchensis, timber quality, high temperature drying, moisture content, timber structure, mechanical bending, modulus of elasticity, timber processing, forest products

**Abstract**

This study examines the effect of high temperature drying on the strength of home grown Sitka spruce. Four batches of timber, with 10 samples in each batch, were dried at four different temperatures. Each sample then underwent mechanical bending in order to determine its modulus of elasticity. Finally the samples were dried down completely and the moisture content and density of each sample was determined. There was no decrease in modulus of elasticity in the Sitka spruce samples.

**Page**

102p

**Location**

Department of the Built environment, University of Ulster

**Notes**

Available (Thesis submitted for award of B.Sc. degree in Building, University of Ulster, Jordanstown)

**Thesis**

B.Sc. Thesis, University of Ulster

---

**Number**

744

**Author**

Williamson Gary P., Nieuwenhuis Maarten A.  
(UCD. Department of Forestry)

**Title**

Development of a timber allocation procedure - final report.

**Place**

Dublin

**Date**

1991

**Key Word**

timber allocation, computer applications, Coillte Teoranta, harvesting, forest transport, Geographic Information Systems, GIS, timber transportation, forest transportation

**Abstract**

Coillte's annual timber harvest volume is increasing from 1.4 million cubic metres in 1990 to 3.5 cubic metres in 2010. This rapid increase necessitates improved planning and scheduling procedures in order to benefit fully from the improved flexibility and expanded processing alternatives which this expansion offers. The objectives of this study were: (1) to develop an operational procedure to help optimise the allocation of Coillte Teoranta's annual timber supply; (2) to use the developed procedure as a decision support system in solving tactical timber allocation, processing location and transport routing problems; (3) to ensure that the developed procedure is useable, thereby enabling Coillte to concentrate on their core business of maximising recovery from the round timber and developing markets. The timber allocation procedure, which has been developed, is operational both on PC and main-frame platforms. The procedure can be used to examine and solve various tactical timber allocation and transport problems and, also, as a planning tool to assist in the efficient allocation of the annual timber supply. The procedure has the potential to generate significant savings. It can deal with increased and

more complex timber flows and ensure the optimal allocation of the timber supply to the wood processing industries.

**Page**

13p

**Location**

UCD Agricultural and Food Engineering Department / Coillte Teoranta, Leeson Lane

**Notes**

Available.

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow

---

**Number**

745

**Author**

Pilcher J.R., Baillie, M.G.L. Brown D.M., McCormac F. MacSweeney P.B. McLawrence A.S.PY:

**Title**

Dendrochronology of subfossil pine in the north of Ireland.

**Place**

Oxford

**Date**

1995

**Source**

Journal of Ecology

**Volume**

Vol. 83, No. 4

**Key Word**

Pinus sylvestris, dendrochronology, raised bogs, forest history native woodlands, subfossil pine chronology

**Abstract**

Two subfossil pine (*Pinus sylvestris*) chronologies have been carried out on 7 raised bog sites in the north and west of Ireland. The chronologies are replicated by trees from several sites and the more recent chronology is dated to 3451-2569 BC by cross dating with the long north of Ireland oak chronology. The bog pines show higher autocorrelation and lower levels of cross-dating than commonly found in bog oaks. Dendrochronological dating of bog pines may be used to throw light on the timing and interpretation of the pine decline in Britain and Ireland.

**Page**

pp 665-671

**Location**

UCD library

**Notes**

Available

**Address of author**

Palaeoecology Centre, School of Geosciences, Queen's University, Belfast BT7 1NN

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**Number**

746

**Author**

Lyons John

**Title**

National status report for Ireland.

**Publisher**

Ministry of Agriculture. Danish Forest and Landscape Research Institute

**Place**

Denmark

**Date**

1993

**Source**

Environmental consequences of harvesting operations: The situation in Europe. A report from the concerted action "Cost Effective Early Thinnings", AIR 2 - CT93 - 1538.

**Key Word**

harvesting technology, forest machinery, thinning, forest soils, site cultivation, forestry education, forest protection, forest law, forest damage, rutting, compaction, environment

**Abstract**

The current state of the forest industry in Ireland is assessed. The following issues are examined: 1. Harvesting technology. The main harvesting system is the short-wood system with the use of forwarders for extraction to roadside; 2. Site factors. Planting on deep ploughed sites has been practised extensively in the past, but this has caused difficulties in the use of conventional agricultural machinery in the forest; 3. Weather factors. Thinning operations are generally carried out throughout the year with a preference for the Summer and Autumn months; 4. Public opinion. The public, generally, have a positive attitude to forestry. However there has been some adverse reaction to the introduction of large-scale harvesting machines because of their negative impact on employment.

**Page**

pp 100 - 103

**Location**

UCD Agricultural and Food Engineering Department

**ISBN**

87-89822-26-9

**Notes**

Available

**Address of author**

Coillte Teo., Government Buildings, Sullivans Quay, Cork

---

**Number**

747

**Author**

Lyons John

**Title**

Low ground pressure (L.G.P.) small scale harvesting machines.

**Publisher**

Ministry of Agriculture. Danish Forest and Landscape Research Institute

**Place**

Denmark

**Date**

1993

**Source**

Environmental consequences of harvesting operations: the situation in Europe. A report from the concerted action "Cost Effective Early Thinnings", AIR 2 - CT 93 - 1538.

**Key Word**

low ground pressure vehicle, tracked forwarders, harvesting heads, mechanical harvesters, harvesting, cultivation, forest machinery, forest vehicles, thinning

**Abstract**

This paper outlines developments in low ground pressure machines used in thinning over the past 7 years. On soft ground and peats the single and double mould-board methods of deep ploughing, although aiding establishment, made subsequent harvesting operations difficult. Terrain vehicles, agricultural tractors, cable extraction and winches were tried without success. The Brunett 578 was first introduced in the 1980s but caused damage to soils in the form of deep rutting and root damage leading to crop instability. In 1986, Farmitrac 3000 tracked forwarders were introduced into Ireland. These proved to be much more suitable to forest conditions but extraction costs were high. The Farmitrac 5000, which was introduced in 1989 was less popular. NOKKA introduced a low ground pressure thinnings forwarder in 1990 but maintenance costs tend to be high for this type of tracked vehicle. Another NOKKA tracked forwarder and a Teva tracked forwarder, both suitable for thinnings, were introduced in 1992. The trend has been for machine size and weight to increase with each new model. Low Ground Pressure harvesters are also examined, and the performance of the 1 and 2 grip harvesting heads assessed.

**Page**

pp 220 -224

**Location**

UCD Agricultural and Food Engineering Dept.

**ISBN**

87-89822-26-9

**Notes**

Available

**Address of author**

Coillet Teo., Government Buildings, Sullivans Quay, Cork.

---

**Number**

748

**Author**

Wilson W.L., Day K.R.

**Title**

Spatial variation in damage dispersion, and the relationship between damage intensity and abundance of the pine weevil (*Hylobius abietis* L.).

**Date**

1994

**Source**

International Journal of Pest Management

**Volume**

Vol. 40, No. 1

**Key Word**

*Hylobius abietis*, forest pests, forest protection, Sika spruce, *Picea sitchensis*, insect pests, population dynamics, Coleoptera, insect pests, entomology

**Abstract**

A study of 82 forest sites in Northern Ireland during June 1993 assessed the extent of damage caused by the *Hylobius abietis* to Sitka spruce planted in 1991-93. Numbers of adults were estimated at each site. Billet trapping was used to estimate the number of adults at each site. An examination of variation in damage dispersion within site suggested that single point or transect assessment of variation provided a reliable estimate of damage over a limited area. However, there was a marked temporal effect on estimation efficiency. Variation in damage between sites was related to the abundance of *H. abietis*.

**Page**

pp 46 - 49

**Location**

UCD library

**Notes**

Available

**Address of author**

Applied Ecology Research Group, Department of Biological and Biomedical Sciences, University of Ulster, Coleraine BT52 1SA

---

**Number**

749

**Author**

Mooney O.V.

**Title**

*Cedrus deodara* at Glengarra.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1951

**Source**

Irish Forestry

**Volume**

Vol. 8, No. 1

**Key Word**

Cedrus deodara, deodar cedar, taper, silviculture

**Abstract**

The remarkable growth of the species *Cedrus deodara* at Glengarra in the Galty mountains of County Tipperary is noted. These trees were planted 70 years ago at 6 feet spacing. At 60 years of age, they were high pruned to a height of 20'. The soil is Old Red Sandstone drift, a light, stony, well-drained soil of good depth. The first impression is of a stand which is vigorous and healthy with an ideal amount of growing space for each tree. About 12% of the trees in this wood are forked at 2' to 4' above ground level and many roots bear two fine, tall stems. The taper of the cedars, despite their age, appears to be small, but no detailed investigation into this quality of the crop could be carried out.

**Page**

pp 3 - 7

**Location**

Coillte library

**Notes**

Available.

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**Number**

750

**Author**

Clear T.

**Title**

Douglas fir in Co. Wicklow.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1951

**Source**

Irish Forestry

**Volume**

Vol. 8, No. 1

**Key Word**

*Pseudotsuga menziesii*, Douglas fir, silviculture

**Abstract**

The green Douglas fir is native to the fog belt along the Pacific coastal region of the United States of America and Canada. Poor site selection has affected crop quality. The incidence of check occurrence and subsequent release in dominants, co-dominants and sub-dominants is examined. The author argues that Douglas fir is not likely to be a very heavy yielding species on the foot-hills of County Wicklow, but it is much superior in growth rate to alternatives, such as European larch and Scots pine. It is inferior in height growth to Japanese larch in the early stages, but promises to give a much better quality timber. Douglas fir is extremely sensitive to drought and to root competition. However, it shows good powers of recovery from check and disease, being much superior to Scots pine in this regard. The need for cleaning of furze and other competition is imperative and brashing has a beneficial effect on the crop. Early thinning (starting at the age of 15 years post-planting) and the reduction of numbers to between 400-500 stems by the 25th year seems to be necessary if increment is to be maintained. The fact that co-dominants and sub-dominants show very little response to crown thinning would seem to indicate that a heavy, low thinning might be more suitable than crown thinning.

**Page**

pp 8 - 18

**Location**

Coillte library

**Notes**

Available.

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**Number**

751

**Author**

McNulty M. E.

**Title**

Nursery mechanisation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1951

**Source**

Irish Forestry

**Volume**

Vol. 8, No. 1

**Key Word**

forest mechanisation, forest technology, forest nurseries, seedsowing drill, weeding, nursery practice

**Abstract**

Mechanisation of forest nursery practice is necessary to keep down operations costs. Weeding costs and loss of seedlings due to faulty weeding by in-experienced staff have added to costs in the past. The use of a new Multiple Seedsowing Drill, or the 'Macslat, is discussed'. Manual weeding of drilled beds is only one-fifth that of broadcast beds. It was observed that seedlings in drills grew to a greater height than did those which were from broadcast beds.

**Page**

pp 19 - 20

**Location**

Coillte library

**Notes**

Available.

---

**Number**

752

**Author**

O'Muirgheasa Niall

**Title**

The farmer's part in national afforestation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1951

**Source**

Irish Forestry

**Volume**

Vol. 8, No. 2

**Key Word**

farm forestry, private forestry, afforestation, grants, subsidies

**Abstract**

The potential role of farmers in the afforestation programme is examined. Small plots of land on farms could contribute up to 100,000 acres of land, or 6,000,000 cubic feet of timber, to annual production. The difficulties in attracting farmers to afforest their land are discussed, in particular the length of time before returns are made on investments and planting costs. The grant scheme which supports the private planter is explained. The first

part is paid immediately after planting, the second, which is paid after a 5 year lapse, is held over to ensure that the trees are maintained during those critical early years when they are most susceptible to injury by weeds and vermin.

**Page**

pp 55 - 57

**Location**

Coillte library

**Notes**

Available.

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**Number**

753

**Author**

McDonald Mary Elizabeth

**Title**

Estimation of moisture content in timber using ultrasonics.

**Place**

Newtownabbey

**Date**

1991

**Key Word**

ultrasonic testing, moisture content, timber processing, kiln drying, forest products

**Abstract**

The purpose of this study was to evaluate the effectiveness of a relatively new method of oven-drying. A non-destructive testing method for material properties of wood, using ultrasonic pulse velocity, was used to determine moisture content of timber samples. This test was developed using the results of research carried out by Norton and Greehalgh on the Australian timber Jarrah, and the method can be used to determine the moisture content of timber samples as they dry in a kiln. There was little correlation between the actual and predicted moisture contents of the samples tested, probably because of the difference in timber properties between the Sitka spruce sample used in this experiment and that of Jarrah. It was demonstrated that the presence of knots has a definite effect on the pulse time as it passes through the material. It was concluded that the procedure would produce more accurate results if the samples could be tested while still in the kiln.

**Page**

91p

**Location**

Dept. of the Built Environment, University of Ulster

**Notes**

Available (Thesis submitted for award of B.Sc. in Building, University of Ulster)

**Thesis**

B.Sc. Thesis, University of Ulster

---

**Number**

754

**Author**

Mooney O.V.

**Title**

Irish deer and forest relations.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1952

**Source**

Irish Forestry

**Volume**

Vol 9, No. 1

**Key Word**

deer, forest fauna, forest protection, forest wildlife, red deer, *Cervus elaphus*, sika deer, *Cervus nippon*, roebuck, *Cervus capriolus*, roe deer, fallow deer, *Cervus dama*

**Abstract**

An account is provided of the main deer species in Ireland, their ranges, origins, the circumstances of their introduction and their physical features. The species discussed are the Red Deer (*Cervus elaphus*), the Fallow Deer (*Cervus dama*), the Japanese, or Sika, Deer (*Cervus nippon*) and the Roebuck, or Roe Deer, (*Cervus capriolus*). Deer are graziers and depend on grass, trees and shrubs for food. They are a menace to crops and eat the leaves and twigs of broadleaved trees and the bark and needles of conifers. The type of damage done by deer in plantations is described. The type of silvicultural practices which encourage the presence of deer are identified and alternative strategies suggested.

**Page**

pp 11 - 27

**Location**

Coillte library

**Notes**

Available.

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**Number**

755

**Author**

O'Kelly P.F.

**Title**

*Pinus contorta* as a forest tree in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1952

**Source**

Irish Forestry

**Volume**

Vol. 9, No. 1

**Key Word**

*Pinus contorta*, lodgepole pine, exotic conifer, mounding, site cultivation, nurse species, timber end use, Old Red Sandstone, thinning, silviculture

**Abstract**

*Pinus contorta* is the most valuable species used in afforestation of exposed up-land heath and moorlands. The origin of the tree species and its physical characteristics are outlined. Seed production, germination, nursery practice and soil cultivation/planting techniques are also examined. Two types of variety 'Murrayana' have been observed at Kilworth and these are described. It may be necessary to prune *Pinus contorta* as early as the fourteenth year and all dead and suppressed stems should be removed. First thinning should be carried out when co-dominants are 25 feet high. Second thinnings in vigorous stands may have to follow as soon as 2 years later. A notable feature of *Pinus contorta* at Kilworth is its ability to stimulate retarded crops of other species growing in close proximity to it.

**Page**

pp 28 - 33

**Location**

Coillte library

**Notes**

Available.

---

**Number**

756

**Author**

Parkin K.F.

**Title**

The establishment of forest seed orchards in northern Ireland.

**Publisher**

Society of Irish Foresters.

**Place**

Dublin

**Date**

1952

**Source**

Irish Forestry

**Volume**

Vol. 9, No. 2

**Key Word**

seed orchards, seed sources, grafting, forest nurseries, seeds

**Abstract**

Grafted larch plants at Newcastle nursery, County Down were used to form the basis of a forest seed orchard. The home supply of seed is negligible so that the Forest Service is almost entirely dependent on the supply of commercial seed dealers. Seed collected from trees which have already grown to maturity under the exacting conditions of Ireland are more favourably inclined towards producing a successful timber crop. The requisites for choice of seed orchard site, or location, are outlined. The establishment of the seed orchard, the collection of suitable scions and the use of root pruning are also discussed.

**Page**

pp 67 - 69

**Location**

Coillte library

**Notes**

Available.

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**Number**

757

**Author**

Murray James S.

**Title**

Group dying of spruce in Eire.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1953

**Source**

Irish Forestry

**Volume**

Vol. 10, No. 2

**Key Word**

group dying, *Rhizina undulata*, *Rhizina inflata*, forest protection, forest pathogens, forest diseases, fungal diseases

**Abstract**

The symptoms of group dying are described. The pathogen responsible for this disease has yet been identified. Group dying was observed at Glendalough and Glenmalure forests in County Wicklow and Dundrum forest in County Tipperary. One possible source of the condition is *Rhizina inflata* (Schaess). Weather conditions are thought to have favoured the spread of the fungus this year.

**Page**

pp 55 - 57

**Location**

Coillte library

**Notes**

Available.

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**Number**

758

**Author**

McKay R., Clear T.

**Title**

Association of *Rhizina inflata* with group dying of Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1953

**Source**

Irish Forestry

**Volume**

Vol. 10, No. 2

**Key Word**

*Rhizina undulata*, *Rhizina inflata*, group dying, Sitka spruce, forest diseases, forest pathogens, fungal diseases, *Picea sitchensis*

**Abstract**

The possible connection between the fungus, *Rhizina inflata* and a case of group dying discovered in Glendalough Forest in September 1953 is discussed. Fungal fructifications were found at the base of almost all the affected trees. The fungus *Rhizina inflata* is often found growing saprophytically on woodland soils and often occurs near tree stumps. The fungus seldom attacks broadleaved trees. The similarities in symptoms between group dying in Sitka spruce and previous reports of *Rhizina inflata* attacks on other conifers are noted.

**Page**

pp 58 - 59

**Location**

Coillte library

**Notes**

Available.

---

**Number**

759

**Author**

Joyce P.M.

**Title**

Comparison in yields of Sitka spruce and Norway spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1953

**Source**

Irish Forestry

**Volume**

Vol. 10, No. 2

**Key Word**

yield tables, volume yields, Sitka spruce, Norway spruce, Picea sitchensis, Picea abies

**Abstract**

The growth of Norway spruce and Sitka spruce at Castlepollard in County Westmeath was observed. The main finding of the comparison made between the two species is that at 30 years of age, the volume of timber produced for Sitka spruce is 5516 cu. ft. per acre over-bark, while for the Norway spruce the equivalent figure is 3219 cu. ft. per acre overbark. Therefore the mean annual increment of Sitka spruce is 72% greater than Norway spruce. It is important to note that the number of stems per hectare is lower than the level recommended in the British Forestry Commission Yield Tables due to over-thinning.

**Page**

pp 67 - 68

**Location**

Coillte

**Notes**

Available.

---

**Number**

760

**Author**

Thompson D.G., Pfeifer A.R.

**Title**

Future options for the genetic improvement of conifers. Part II: Longer-term technologies.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 2

**Key Word**

genetic improvement, micropropagation, rejuvenation, cryogenic storage, in vitro selection, somaclonal variation, molecular genetics, genetic engineering, biotechnology

**Abstract**

Developments in the areas of micropropagation, 'rejuvenation', cryogenic storage, in vitro selection, somaclonal variation, molecular genetics and genetic engineering offer potential new tools for forest tree improvement. Because of the technologies involved, these techniques are not widely employed in tree improvement programmes at the present. This paper describes the current level of development of these techniques and provides some suggestions as to how they might be employed in tree improvement programmes in the future.

**Page**

pp 108 -122

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

761

**Author**

Bulfin Michael

**Title**

Aiming for quality timber.

**Place**

Birr

**Date**

1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 7

**Key Word**

species selection, site selection, species diversification, forest landscape, amenity forestry

**Abstract**

The proper management of farm forests, which comprise 85% of private planting in Ireland, is discussed. The importance of using quality land for forestry, and the need for diversification of the tree species being planted is emphasised. In farm plantations, the rigid adherence to field patterns should be avoided and the addition of small amounts of broadleaved trees to conifer plantations is advised. Wildlife also benefits from species diversity. There are notes on the matching of species to site, the economic benefit of having larger forest blocks, the use of shelter-belts and the amenity value of forestry. A table is provided which matches soil type to elevation and species.

**Page**

pp 11 - 12

**Location**

Coillte library

**ISBN**

ISSN 0791 7422

**Notes**

Available.

**Address of author**

Tegasc Kinsealy Research Centre, Malahid Rd., Dublin 17

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**Number**

762

**Author**

Anon

**Title**

Rare hardwoods at home in Ireland.

**Place**

Birr

**Date**

1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 7

**Key Word**

walnut, *Juglans nigra*, wild cherry, gean, mazard, *Prunus avium*, silviculture, plantation management, species diversification

**Abstract**

The success of the walnut plantation in Mallow has led to the species being considered eligible for aid under the current Forest Service grant and premium scheme. The trees are expected to be a 'commercial proposition' from 30 to 35 years after establishment. It is estimated that one acre of walnut trees (*Juglans nigra*), on an ideal site, can be more valuable than eighty acres of Sitka spruce. Planting in pure plantations is advised because the roots of the tree give off allelopathic exudates which inhibit the growth of other tree species growing nearby. Wild cherry (*Prunus avium*) was planted at Ringaskiddy, Cork in 1992. With appropriate management, wild cherry is a commercial proposition after 30 to 35 years. *Prunus avium* management is not difficult and the species can be inter-planted with other trees.

**Page**

pp 18 - 19

**Location**

Coillte library

**Notes**

Available.

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**Number**

763

**Author**

Whiteside Jim

**Title**

Broadleaves - are they really worth the trouble?

**Place**

Birr

**Date**

October 1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 7

**Key Word**

broadleaves, silviculture, native hardwoods, broadleaf management, amenity forestry, hardwood regeneration

**Abstract**

The management objectives in Northern Ireland's broadleaved plantations are reviewed. In recent years broadleaved planting has increased by 10%. However, the economic viability of this planting programme is questioned. The conservation, landscape and amenity values of broadleaves are assessed. Natural plant succession in bare gaps left in upland afforestation situations and the thinning out of coppice shoots to select for the best stems are suggested as a means of reducing the costs involved in the establishment of broadleaved species.

**Page**

p 20

**Location**

Coillte library

**Notes**

Available

**Address of author**

N. Ireland Forest Service, Dundonald Hse, Upper Newtownards Rd., Belfast

---

**Number**

764

**Author**

Keane Michael, Freeman Joe

**Title**

The MacLarty moulder in Ireland.

**Place**

Birr

**Date**

Oct/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 7

**Key Word**

mounding, mechanical moulnders, site cultivation, peatland forestry, mineral soils, moling, ripping, excavators, forest technology, forest machinery, forest engineering, peatlands

**Abstract**

Mounding is now the major cultivation system for afforestation on peat and mineral sites in Ireland. The

operation of the MacClarty mechanical moulder is described. The moulder operates in conjunction with an excavator, and produces mounds and rips at a minimum spacing of 2.1m between rows and at 1.8m and 1.9m within the row. The efficiency of the machine is evaluated. Most foresters questioned feel that the machine can play a major role in the afforestation of certain sites and that, overall, the moulder performed impressively.

**Page**

pp 23 - 24

**Location**

Coillte library

**Notes**

Available.

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

765

**Author**

Anon

**Title**

Xmas tree farming with Coillte.

**Place**

Birr

**Date**

Dec/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 8

**Key Word**

Christmas trees, Coillte Teoranta, silviculture

**Abstract**

In 1990 Coillte Teoranta established three Christmas tree farms in Counties Wicklow, Tipperary and Roscommon with a total planting target of 100,000 trees per annum. The problem of finding suitable land for the production of these trees is discussed. The main tree species grown are lodgepole and Scot's pines, Nordman, Frazer and noble firs, and Norway spruce. The importance of observing trends and changes in species preferences among customers, and the need to develop a balanced customer base between Ireland, Great Britain and continental Europe are emphasised.

**Page**

pp 14 - 15

**Location**

Coillte library

**Notes**

Available. ( From an interview conducted with Bill Murphy, manager of Coillte's Christmas tree farms.)

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**Number**

766

**Author**

Lyons John

**Title**

Technology topics.

**Place**

Birr

**Date**

Dec/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 8

**Key Word**

forest technology, forest engineering, harvesting, thinning, forest soils

**Abstract**

A number of machine manufacturers made presentations of their products at a recent EU Concerted Action Programme meeting. The Sifor 614 thinning harvester is briefly described. The timber measurement system on board provides details of total volumes, harvester utilisation, number of trees, number of pieces, average tree size, production per machine hour or attendance hour, number of logs in each category and category volumes. Research is being carried out into the use of pressure and feed sensors on harvesting heads to give an indication of branchiness. The operation of a walking machine-type harvester is described. Because it has spot contact with the ground it does not make continuous tracks, and erosion and run-off are reduced. There is an optimum ground pressure distribution at all times. It has fine stability along with variable ground clearance and, because of its ability to move in all directions, the machine has excellent manoeuvrability in difficult terrain.

**Page**

pp 18 - 19

**Location**

Coillte library

**Notes**

Available.

**Address of author**

Coillte Teo., Government Buildings, Sullivans Quay, Cork

---

**Number**

767

**Author**

Slattery Donal

**Title**

Forest Fencing.

**Place**

Birr

**Date**

Dec/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 8

**Key Word**

forest fencing, forest protection, forest pests, grants, subsidies

**Abstract**

Good quality fencing, essential for successful plantation establishment, is also a requirement for the payment of second instalments of afforestation grants under existing schemes. The types of fencing which are needed to ensure successful exclusion of animal pests, the cost of erection, and Irish specifications for wire types are described. Preservation and dimensions of stakes and strainers used are also discussed.

**Page**

p 24

**Location**

Coillte library

**Notes**

Available.

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**Number**

768

**Author**

Anon

**Title**

King's River community - a very special saw-mill.

**Place**

Birr

**Date**

Dec/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 8

**Key Word**

forest products, timber processing, hardwoods, forest employment, sawmills, sawmilling

**Abstract**

The employment policy of the King's River community sawmill in County Kilkenny, which hires disabled people, is explained. The enterprise also caters for the long-term unemployed who have little or no educational qualifications. It produces hardwood and softwood flooring using a 60 inch, semi-automatic Stenner Bandmill, and a new furniture making project is planned.

**Page**

pp 8 - 9

**Location**

Coillte library

**Notes**

Available. (This article is based upon an interview with Mister |Pat Phelan, founder and managing director of the King's River community saw-mill in county Kilkenny).

---

**Number**

769

**Author**

Nieuwenhuis Maarten, Williamson Gary

**Title**

Harvesting Coillte's forests: the right tree at the right time.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1993

**Source**

Irish Forestry

**Volume**

Vol. 50, No. 2

**Key Word**

Coillte Teoranta, harvesting, timber processing, timber supply, exports, forest management, forestry research, decision-making, decision support, timber allocation, transportation, strategic planning

**Abstract**

Coillte Teoranta harvested approximately 1.4 M cubic metres in 1990. By 2010 this annual harvest volume will increase to 3.5 M cubic metres. This increased harvest volume, most of which will have to be exported, either as finished products or as round timber, has focused attention on the necessity for efficiency and rationalisation in the overall timber industry. The Department of Forestry, University College Dublin, in co-operation with Coillte, has developed a number of prototype planning procedures, designed as decision-support tools for forest management. Their main function is to illustrate the possible benefits to the company of the integration of operations research techniques in both operational and strategic planning procedures. The area that this paper focuses on is timber allocation and transportation. Past procedures, changes that have been made up to the present and proposed future developments are illustrated with the aid of hypothetical examples, using data from Coillte's databases.

**Page**

pp 123-133

**Location**

Coillte library

**Notes**

available

**Address of author**

Department of Forestry, Agriculture Building, Belfield, Dublin 4

---

**Number**

770

**Author**

Anon

**Title**

Oak trees from acorns is childsplay.

**Place**

Birr

**Date**

Dec/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 8

**Key Word**

oak, plant propagation, seed storage, seed collection, sowing, seeds

**Abstract**

The propagation of oaks by using acorns is explained. The collection, storage, selection, sowing and after-care of the acorns are described.

**Page**

p 12

**Location**

Coillte library

**Notes**

Available.

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**Number**

771

**Author**

Edwards C., Guyer C.

**Title**

Farm woodland policy: an assessment of the response to the Farm Woodland Scheme in Northern Ireland.

**Place**

London

**Date**

1992

**Source**

Journal of Environmental Management

**Volume**

Vol. 34, No. 3

**Key Word**

farm forestry, private forestry, forestry policy, grants, subsidies

**Abstract**

A surveys of farmers' attitudes to the Farm Woodland Scheme was carried out in Derry and Antrim in 1988-89. Although responses to the survey reveal a high level of awareness of the scheme among farmers, knowledge of the scheme's details, in particular eligibility was low. Dissatisfaction with the scheme was largely due to a perceived lack of land, the duration of commitment required before a financial return and the inability of the annual payments to compete with conacre prices.

**Page**

pp 197 - 209

**Location**

UCD library

**Notes**

Available

**Address of author**

School of Environmental Studies, University of Ulster at Coleraine, Coleraine BT52 1SA

---

**Number**

772

**Author**

Anon

**Title**

Energy from biomass and wastes moving towards commercial reality.

**Place**

Birr

**Date**

Jan/1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 1

**Key Word**

Biomass production, Salix, Populus, renewable energy sources, short rotation forestry

**Abstract**

The use of agricultural biomass to create renewable energy sources has the potential to provide new employment opportunities in rural areas. The EU aims to increase the energy produced by renewable energy resources from almost 4% in 1991 to 8% in 2005. Research has shown that one hectare of fast-growing biomass can produce 5 tonnes of oil equivalent, and removes up to 20 tonnes of carbon dioxide from the atmosphere at the same time. Salix and Populus spp. give the highest yields. Renewable energy sources currently provide about 2% of Ireland's energy requirements.

**Page**

p 7

**Location**

Coillte library

**Notes**

Available.

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**Number**

773

**Author**

Gawn L. J.

**Title**

A preliminary investigation into the variation in strength of fast grown unthinned Sitka spruce in Northern Ireland.

**Publisher**

University of Ulster

**Place**

Jordanstown

**Series**

UL School of the Built Environment. Project No: IUUU/632

**Date**

1986

**Key Word**

Sitka spruce, Picea sitchensis, structural quality, timber quality, forest products, timber processing, structural

timber, silviculture, construction timber, yield classes, juvenile core, windthrow

**Abstract**

This investigation followed two previous studies on the structural quality of Northern Ireland grown timber Sitka spruce carried out by the Building Research Establishment (BRE), but eliminated a number of variables operating in these earlier studies. It was hoped that by comparing the results obtained with those of the BRE studies some positive trends in the structural qualities of locally grown Sitka spruce could be identified and developed to give some indication of the likely volume of structural material available. For this project, timber was obtained from five different forest plots of similar age and growing conditions to those in the plots tested in the BRE studies. The stands chosen were those most liable to windthrow. The results of the investigation showed that timber from these fast grown stands was of relatively poor structural quality, primarily consisting of very open textured material with excessively wide ring spacing. The trees require at least another ten years growth to give suitable timber for general construction uses, so care must be taken to minimise the risk of windthrow. Consolidated growth to the girth of the trees would greatly increase the likely yield of sawn timber available from the saw logs. Additionally the extent of the taper on the trees may also reduce over a period of further slower growth. Stem form and straightness is considerably better in the stands of Washington/Oregon origin than in those stands of Vancouver Island origin. Consequently in any analysis of timber yields, seed origin and provenance should be included as an important variable in the estimates. It is not considered worthwhile introducing HTMA/FC grading rules for the assessment of logs at the point of sale, for this fast grown material. While actual yields of structural material are difficult to estimate on the restricted basis of this one experimental programme, an indication of likely yields for trees of this age with a large percentage of juvenile core present in available sawlogs can be given. These yields are disappointingly low, stressing the need to reduce the extent of the juvenile core present in these trees through slower, consolidated growth.

**Page**

37p

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available

**Address of author**

School of the Built Environment, University of Ulster, Newtownabbey, BT37 OQB, N. Ireland.

---

**Number**

774

**Author**

Taylor John M., Lavery Donald J., Norton Brian

**Title**

A fundamental approach to the prediction of changes in moisture content in drying timber using ultrasonic sound.

**Publisher**

International Union of Forestry Research Organisations

**Date**

1994

**Source**

Proceedings, 4th IUFRO International Wood Drying Conference, Rotorua New Zealand, 1994.

**Key Word**

timber drying, moisture content, ultrasonic sound, timber processing

**Abstract**

The use of ultrasonic sound has been developed as a reliable and economic method for determining moisture content in timber undergoing drying. The fundamental equation for the speed of ultrasonic pulses through porous media is derived. The equation is then used in the prediction of moisture content in timber, using the relationship between variations in pulse velocity and changes in moisture content. The predictions are compared with experimental results for Sitka spruce undergoing drying.

**Page**

pp 241 - 246

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available

**Address of author**

PROBE, University of Ulster, Newtownabbey, BT37 OQB, N. Ireland

---

**Number**

775

**Author**

McGrane Fergal

**Title**

Glue laminated timber structures.

**Place**

Dublin

**Date**

1986

**Key Word**

glue laminated timber, glulam, timber processing, timber end use, forest products, construction timber, timber structure, timber technology

**Abstract**

Glulam structures are formed by an arrangement of at least four laminations parallel to the axis of a member. The individual boards comprising the laminations are assembled with their grain approximately parallel and glued together to form a member which functions as a single structural unit. Native timber is ideally suited to the manufacture of Glulam products. In spite of the fast growth rate which lowers the density, strength and modulus of elasticity in native timber, this does not affect its suitability for Glulam work. The advantages and applications of Glulam are discussed. The various types of adhesives used are examined, and the manufacturing process is described. The types of preservatives which are used in the manufacture and the methods of application are also described.

**Page**

209 p

**Location**

Library, DIT, Bolton Street

**Notes**

Available. (Thesis submitted for award of Diploma in Engineering, Bolton Street College of Technology)

**Thesis**

Dip.Eng. Thesis, Bolton Street, DIT

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**Number**

776

**Author**

Ryan Roger

**Title**

Decay and preservation of structural timber.

**Place**

Dublin

**Date**

1987

**Key Word**

timber preservation, timber decay, fungus, preservatives, timber durability, brown rot, white rot, *Merulius lacrymans*, dry rot, cellar fungus, *Coniophora cerebella*, *Poria vaporaria*, white pore fungus

**Abstract**

A brief account of the main types of fungal decay found in structural timber, and their effects on timber strength properties are provided. These include: a dry rot fungus, *Merulius lacrymans*; a cellar fungus, *Coniophora cerebella*; a white pore fungus, *Poria vaporaria*; stringy oak rot; and dote, or pocket rot. The main preservative treatment systems are also described. The value of weight-loss measurement as an indicator of strength loss in structural timber due to fungal decay is assessed. A comparison is made between a laboratory test and a field test for assessing decay resistance. The testing of the strength properties of decayed softwood measured on miniature test beams, and changes in impact bending strength, weight and alkali solubility following fungal

attack on birch wood are examined.

**Page**

125 p

**Location**

Library, DIT, Bolton Street

**Notes**

Available. (Thesis submitted for award of Diploma in Engineering, Bolton St., DIT)

**Thesis**

Dip.Eng. Thesis, Bolton Street, DIT

---

**Number**

777

**Author**

Niall Moody

**Title**

A study of timber and its uses in prefabricated timber structures.

**Place**

Dublin

**Date**

1987

**Key Word**

timber end uses, timber conversion, construction timber, prefabricated timber building, timber seasoning, forest products, timber processing

**Abstract**

The timber frame method of construction offers is highly flexible with simple connections, economic use of materials and a wide choice of finishings. The over-all dead weight of the structure is lower than that of a traditional block-work building. The structure virtually eliminates the risk of damage in case of settlement, the most common cause of serious failure in traditional housing construction. Lower labour costs, rapid completion and lower working capital requirements are bonuses to contractors. The benefits to occupiers of the buildings are more efficient, cheaper heating systems. The types of preservation needed, and the design of a typical straight ply-wood box beam are examined.

**Page**

104 p

**Location**

Library,DIT, Bolton Street, Dublin 1.

**Notes**

Available. (Thesis submitted for award of Diploma in Civil Engineering, Bolton Street).

**Thesis**

Dip.Eng. Thesis, Bolton Street, DIT

---

**Number**

778

**Author**

O' Mahony Laurence Patrick

**Title**

Fire: the use of timber in building elements.

**Place**

Dublin

**Date**

1981

**Key Word**

fire resistance, timber, construction timber, forest products, timber processing

**Abstract**

This project investigated the effect of fire on building and timber used in construction. The design of doors for fire resistance was examined, and tests were carried out on four different types of timber stud partitions to

ascertain their resistance to fire.

**Page**

86 p

**Location**

Library, DIT, Bolton Street.

**Notes**

Available. (Thesis presented for the Diploma in Civil Engineering, Bolton Street College of Technology).

**Thesis**

Dip. Eng. Thesis, Bolton Street, DIT

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**Number**

779

**Author**

O' Neill Tony

**Title**

The structural use of timber.

**Place**

Dublin

**Date**

1988

**Key Word**

timber end uses, structural timber, timber conversion, timber product, glue laminated timber, plywood, tempered hardboard, timber testing

**Abstract**

The structure and strength of softwood and hardwood timbers are discussed. The strength determination of timber, and the effects of static and impact bending are considered. Moisture content, its measurement, and defects in timber caused by excessive moisture is discussed. The strength claims made for new species are assessed. Glue laminated timber, ply-wood, tempered hard-board and joints in timber are examined.

**Page**

97 p

**Location**

Library, DIT, Bolton Street.

**Notes**

Available. (Thesis presented for award of Diploma in Civil Engineering , College of Technology, Bolton St.)

**Thesis**

Dip.Eng. Thesis, DIT

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**Number**

780

**Author**

O'Brien Declan

**Title**

Design of a timber frame house.

**Place**

Dublin

**Date**

1991

**Key Word**

timber frame housing, timber end uses, laminated timber, structural timber, construction timber

**Abstract**

This study deals with the issues involved in the designing of timber frame buildings. The steps involved in designing trussed roofs, timber beams and columns, and the external frame wall are described. Classification and properties of timber, methods of timber building construction, trussed rafters, roof design and flexural beam design are discussed.

**Page**

100 p

**Location**

Library, DIT, Bolton Street.

**Notes**

Available. (A thesis presented as a Civil Engineering Technician Diploma project).

**Thesis**

Dip.Eng. Thesis, Bolton Street, DIT

---

**Number**

781

**Author**

Courtney P.J.

**Title**

Timber decay in buildings.

**Place**

Dublin

**Date**

1985

**Key Word**

timber decay, decay fungus, Merulius lacrymans, dry rot, timber preservation, construction timber, preservatives, structural timber, timber end uses

**Abstract**

This thesis examines the topics of timber classification, wood composition, timber moisture content, sources of timber decay and the place of timber in construction. The various categories of wood attacking fungi and the more common types of fungal species are identified. The treatment of decayed timber and fungal growth, and treatment of water penetration and dampness are explained. Correct design, good carpentry practice, and appropriate preservative treatment of timber help to prevent rot.

**Page**

73 p

**Location**

Library, DIT, Bolton Street.

**Notes**

Available. (Thesis submitted for award of Diploma in Civil Engineering Technician, College of Technology, Bolton Street)

**Thesis**

Dip.Eng Thesis, UCD

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**Number**

782

**Author**

Grey Kevin

**Title**

Timber frame construction.

**Place**

Dublin

**Date**

1993

**Key Word**

timber frame construction, forest products, timber end use, timber processing, structural timber, construction timber

**Abstract**

Over the last thirty years timber frame construction has become an established method of building as the benefits of dry construction, rapid completion, high insulation and accurate engineering design have been realised. The consensus among engineers is that timber frame housing has great potential, and it is only a matter of time before production levels in Ireland begin to match those of North America and Scandinavia. In this

thesis, the topic of timber frame construction is discussed specifically under the following headings: introduction to timber frame construction; construction below ground floor; the timber structure; the racking system of timber frame panels; design of a double skin stress skin panel; and design of a load-bearing stud in an external wall panel.

**Page**

124 p

**Location**

Library, DIT, Bolton Street.

**Notes**

Available. (Thesis submitted for award of Civil Engineering Diploma, College of Technology, Bolton Street)

**Thesis**

Dip.Eng. Thesis, Bolton Street, DIT

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**Number**

783

**Author**

FitzGerald Nicholas

**Title**

The structural use of timber.

**Place**

Dublin

**Date**

1987

**Key Word**

timber end uses, construction timber, glue lamination, forest products, stress grading, physical properties, tree growth, wood structure, wood technology, engineering, timber processing

**Abstract**

The use of structural timber is still largely confined to single occupancy housing, flats, maisonettes, light industrial buildings and small office and industrial developments. However, technological advances, for instance in the area of glue lamination, and the rise in procurement costs of rival materials in recent times has aided the cost-competitiveness of timber. The following topics are dealt with in this study: timber processing and stress-grading; loadings, with particular attention to load duration; imposed loading for floors and domestic floor joists; trusses, trussed rafters; mechanical and glue joints; and glue lamination.

**Page**

123p

**Location**

Library, DIT, Bolton Street.

**Notes**

Available. (Thesis submitted for Civil Engineering Diploma , College of Technology, Bolton St.)

**Thesis**

Dip. Eng. Thesis, Bolton Street, DIT

---

**Number**

784

**Author**

Kennedy Mary N.

**Title**

Irish timber frame construction - looking to the future.

**Place**

Dublin

**Date**

1995

**Key Word**

timber frame building, structural timber, construction timber, timber end use, forest products, timber processing

**Abstract**

The current state of the timber frame construction industry is assessed. Expansion of the industry has been impeded somewhat by a conservative public attitude to construction methods, opposition from brick and block manufacturers, views of local authorities, and adverse publicity in other markets. Incentives for the use of timber-frame in construction, including support from the European Union, are discussed. The dominant position of one company in the timber frame market is noted, and a brief description of this company's activities and prospects are provided.

**Page**

91 p

**Location**

Library, DIT, Bolton Street.

**Notes**

Available. (Thesis submitted for award of B.Sc. (Surveying), Trinity College, Dublin)

**Thesis**

B.Sc. Thesis, TCD

---

**Number**

785

**Author**

Sheedy James Andrew

**Title**

The marketability of Irish timber for construction.

**Place**

Dublin

**Date**

1989

**Key Word**

marketing, timber processing, standards, forest development, forest products, Irish timber industry, timber end use

**Abstract**

This thesis examines the current condition of the Irish timber industry and identifies ways in which the market for Irish timber products can be increased. It is argued that all participants in the wood chain should co-operate in order to create a greater market for Irish timber. Standardisation and quality control is important for the acceptance of Irish timber as structural timber. Alternatives to the sealed tender sale system are suggested. The expansion of the timber frame housing market would also be a boost for the sale of home grown timber.

**Page**

90 p

**Location**

Library, DIT, Bolton Street.

**Notes**

Available. (Thesis submitted for Diploma in Construction Economics, College of Technology, Bolton St.)

**Thesis**

Dip.Eng. Thesis, DIT

---

**Number**

786

**Author**

Cronin K., Norton G., J. Taylor

**Title**

Development of a simulation tool to enable optimisation of the energy consumption of the industrial timber-drying process.

**Publisher**

Elsevier

**Date**

1996

**Source**

Applied Energy

**Volume**

Vol. 53

**Key Word**

timber drying, moisture content, computer simulation, simulation tools, computer models, information technology, energy consumption

**Abstract**

Reducing the liquid content of green products is an important step in the manufacturing process. Process conditions in the drying phase have significant influences on the quality of the end product, on energy consumption and on required manufacturing time. Effective optimisation of the drying process requires accurate representation of the drying product and its interaction with its environment. The development of a computer simulation tool to analyse the industrial batch timber drying process is outlined. A detailed finite difference product model describing the heat and mass transfers within a plank during drying is described. It is intergrated with customised CFD code characterising the process conditions within the drying chamber. Simulation output from the integrated model is used to generate a macroscopic representation of the product in its drying environment. Analysis with this global model can lead to optimisation of energy consumption of the industrial drying process whilst maintaining product quality and acceptable drying duration.

**Page**

pp 325 - 340

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available

**Address of author**

PROBE, School of the Built Environment, University of Ulster, Northern Ireland, BT37 OQB

---

**Number**

787

**Author**

Taylor John M., Norton B., Lavery D. J.

**Title**

Challenges presented by the use of ultrasonic pulses to determine changes in moisture content of Sitka spruce undergoing drying.

**Publisher**

International Union of Forestry Research Organisations

**Date**

1992

**Source**

Proceedings, 3rd IUFRO Drying Conference, Vienna, 1992

**Key Word**

timber drying, moisture content, ultrasonic sound, timber processing

**Abstract**

The ultrasonic method of moisture content determination is relatively low in capital cost, is non-intrusive, facilitates on-line measurement, is accurate at all levels of moisture content, and as the pulse passes through the full length of the sample, gives a truly representative moisture content. The lack of moving parts and rugged sensors makes maintenance easy. The results of tests with this method are discussed and evaluated. The findings indicate that more considerations should be given to the influence of temperature and knots on the accuracy of the technique before it can be widely applied commercially.

**Page**

pp 78 - 83

**Location**

Dept. of Building and Environmental Engineering, University of Ulster

**Notes**

Available

**Address of author**

PROBE, Department of Building and Environmental Engineering, University of Ulster, Newtownabbey, BT37 OQB, Northern Ireland

---

**Number**

788

**Author**

McLarnon D., Lavery D. J., Moloney A., Atanackovic A., Taylor J. M.

**Title**

Improving the quality of the surface finish on fast-grown softwoods using factorial experimental design methods.

**Place**

Newtownabbey

**Series**

School of the Built Environment Internal Paper

**Date**

1994

**Key Word**

surface finish, timber quality, Sitka spruce, Picea sitchensis, planing, factorial experiments, knotwood, knot area, silviculture, timber processing, forest products

**Abstract**

This study reports on the results of a factorial experiment devised to study the process conditions that will produce the optimal quality of surface finish for fast grown softwoods. The limitations of fast grown timbers in terms of attaining quality planed surface finish are documented. Results indicate the relative importance of knot area, feed speed and rake angle for the planing of Sitka spruce, the timber species used in this experiment. The optimum process configuration of factor levels for the best planed surface quality inferred from the analysis of data obtained in this study ultimately depends upon whether a clearwood or a knotwood area is considered. Invariably, the poorest quality section of planed surface tends to occur around knotwood because of problems associated with the complex nature of grain orientation around the knot which was shown to adversely affect the planing process. The wider implications of this study are that the use of Sitka spruce in value added product markets would be enhanced if the incidence of medium to large knots were reduced. The authors have attempted to achieve this experimentally using statistical methods, however this process relies heavily on rejecting non-conforming timber samples. Realistic silvicultural policies and economic methods must be researched and adopted if all of the raw material is to be processed for these potential lucrative markets.

**Page**

12p

**Location**

School of the Built Environment, University of Ulster, Newtownabbey BT37 0QB N. Ireland

**Notes**

Available (This work forms part of a study supported financially by the International Fund for Ireland, and by BALCAS Ltd., and is directed by Prof. Brian Norton)

**Address of author**PROBE, School of the Built Environment, University of Ulster, Newtownabbey, BT37 0QB, N. Ireland

---

**Number**

789

**Author**

Sheridan Cormac

**Title**

Seeing the wood from the trees.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

Nov/Dec 1995

**Source**

Technology Ireland

**Volume**

Vol. 27, No. 7

**Key Word**

forestry policy, species diversification, sawmilling, forest co-operatives, forest products, timber supply, timber processing, Coillte, State forestry

**Abstract**

Output from Irish State forests doubled between 1970 and 1990 and is expected to double again by the start of the next century. The forestry sector is probably the only indigenous natural resource sector with strong potential for growth. The benefits and disadvantages of the increased planting of broadleaved species is examined. The increase in harvesting carried out by Coillte, and the company's need for rationalisation are examined. The performance of the saw-milling sector is assessed, and the potential role which Coillte Teoranta may play in the industry is studied.

**Page**

pp 24 - 26

**Location**

Coillte library

**ISBN**

ISSN 0040-1676

**Notes**

Available.

---

**Number**

790

**Author**

Anon

**Title**

Forestry and agricultural income comparisons.

**Place**

Dublin

**Date**

Jan/1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 1

**Key Word**

agriculture, land use, forestry grants, farm forestry, subsidies, afforestation

**Abstract**

This article examines the financial implications in changing from farming to forestry. The main costs associated with farm forestry up to year 20 are the 5% administration charge, insurance, marketing/brushing/pruning costs and management costs. Sixty per cent of all farms are involved in low income systems and would be classified as enclosed and improved under the forestry schemes. The average family income generated on these farms was £170 per hectare in 1993. The annual income from coniferous forestry on similar land over 20 years ranges from £125 to £225 per hectare after allowing for deductions of £30 from the forestry premium. The various types of farms on which forestry is an attractive option are outlined.

**Page**

p 20

**Location**

Coillte library

**Notes**

Available.

---

**Number**

791

**Author**

Eoghan Daly

**Title**

JCB/Logset combination - a new force in Irish forestry.

**Place**

Birr

**Date**

Jan/1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 1

**Key Word**

forest technology, harvesting, forest engineering, harvesting heads, forest harvesters, forest machinery

**Abstract**

The performance of the JCB 814 Super site excavator in combination with Logset 5-55 harvesting head at a clear-felling test site at Knockanroe Wood, near Silvermines, County Tipperary is assessed. The maximum cutting diameter of the head is 55 centimetres, but because of the limited manoeuvrability of the excavator boom it cannot be used in thinning. The weight of the head is 750 kgs, and the weight of the complete unit is approximately 15,000 kgs. Hydraulic and urea hoses over the boom are well-protected, ensuring damage-free operation. Operator visibility is excellent because the same view is maintained regardless of the boom position. There are three unique features associated with the Logset 5-55 harvesting head: triple-grip; syncro-knife; mini-clamp. It is concluded that the Logset 5-55 fitted to the JCB 814 Super is a highly efficient machine for clearfelling.

**Page**

p 22

**Location**

Coillte library

**ISBN**

ISSN 0791 7422

**Notes**

Available.

---

**Number**

792

**Author**

Quirke Denis A.

**Title**

Report on a survey of insect and fungus pests of Irish woodlands.

**Place**

Dublin

**Series**

(Department of Lands. Unpublished report)

**Date**

1945

**Key Word**

forest protection, forest pathology, forest pests, forest entomology, forest diseases, insects, fungus, fungal diseases, forest pathogens

**Abstract**

This report assesses the significance of insects and fungi in Irish forestry practice. The most serious insect pests include: *Rhyacionia buoliana* Schiff, which is a serious pest of pine; *Adelges* spp., which attacks pines, silver fir, Douglas fir and larch which have already been weakened by fungi or environmental conditions. *Hylobius abietis* L. has only been found on young conifers, and causes growth retardation, rather than death. *Prays curtisellus* Donovan is widespread on ash, and frequently destroys leading buds. The sap-sucking *Neomyzaphis abietina* Walker attacks Sitka spruce, in particular, retarding its growth. *Chionopsis salicis* L. also attacks ash. Fungal attacks are most serious on trees younger than 20 years old and on old trees. The most serious fungal diseases are *Dasyscypha calycina* Fuckel; *Armillaria mellea* (Vahl.) Fr.; *Fomes annosus* Fr.; and *Nectria ditissima* Tul. The actual amount of injury caused to Irish forests by fungi and insects is very small compared to other countries, but the importation of exotic fungal and insect pests in Ireland could cause more serious

problems. Under an expanding system of forestry in Ireland, many insects and fungi, previously considered to be relatively unimportant, may assume the role of major pests. Damage may be minimised with appropriate silvicultural practices.

**Page**

547 p

**Location**

Coillte library

**Notes**

Available.

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**Number**

793

**Author**

Kelly M.T., Curry J.P.

**Title**

The influence of phenolic compounds on the suitability of three *Salix* species as hosts for the willow beetle *Phratora vulgatissima*.

**Publisher**

Kluwer Academic Publishers

**Place**

Belgium

**Date**

May/1991

**Source**

Entomologia Experimentalis et Applicata

**Volume**

Vol. 61

**Key Word**

willow beetle, *Phratora vulgatissima*, *Salix* spp., condensed tannins, salicin, salicortin, forest insects

**Abstract**

The phenolic glycosides salicin and salicortin were found to influence larval growth and development rates and adult feeding preference for *Phratora vulgatissima* in laboratory feeding studies. Salicortin was more toxic to larvae than salicin and none of the third instar larvae fed on *Salix viminalis* leaves amended with 1.52% (fresh mass) salicortin pupated. Condensed tannins (proanthocyanadins) did not affect larval performance. It was concluded that *Salix burjatica* resistance to willow beetle is due to high levels of salicortin which occur in leaves of this species.

**Page**

pp 25-32

**Location**

Department of Environmental Resource Management, Faculty of Agriculture, University College, Dublin, Belfield, Dublin 4.

**Notes**

Available.

---

**Number**

794

**Author**

Kelly M.T., Curry J.P.

**Title**

Growth, development, food consumption and food utilisation of the willow beetle *Phratora vulgatissima* (L.).

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

June/1991

**Source**

Proceedings of the Royal Irish Academy

**Volume**

Vol. 91, B, No. 3

**Key Word**

*Phratora vulgatissima*, willow beetle, forest insects, forest entomology, forest protection, forest pests, *Salix viminalis*, *Salix matsudana*, *Salix burjatica*

**Abstract**

The growth, development and food utilisation of *Phratora vulgatissima* (L.) reared in the laboratory on leaves of *Salix viminalis* and *Salix matsudana* were studied. Leaves of *Salix burjatica* were not accepted as food. The duration of the larval stage was 13 - 16 days and the pupal stage lasted 6 - 7 days. The food consumption rate ranged from 0.93 mg to 1.63 mg per mg larval biomass per day on a fresh mass basis. Total food consumption during instar II was 10.3 mg and 9.2 mg and 25.1 mg and 27.5 mg during instar III on *S. viminalis* and *S. matsudana*, respectively. Mean relative growth rates (GR) were 0.21 mg mg<sup>-1</sup> d<sup>-1</sup> for instar II larvae and 0.23 mg mg<sup>-1</sup> d<sup>-1</sup> for instar III larvae. Mean efficiency of conversion of ingested food (ECI) was 14.2% and 23% for instar II and III larvae respectively. GR and ECI declined markedly in late instar III larvae, but less so in larvae fed on *S. matsudana* than in larvae fed on *S. viminalis*. Leaf tissue consumption by adults ranged from 0.61 mg to 1.21 mg and from 0.25 mg to 1.65 mg dry mass ind<sup>-1</sup> d<sup>-1</sup> on *S. viminalis* and *S. matsudana*, respectively. Leaf tissue consumption in the field was estimated at 14% - 20% of canopy leaf biomass during 1982 and 2.3% - 3% during 1983. Leaf area loss in 1983 was estimated to be 3% - 4%.

**Page**

37 - 50

**Location**

Department of Environmental Resource Management, Faculty of Agriculture, University College, Dublin, Belfield, Dublin 4.

**ISBN**

ISSN 0035-8983

**Notes**

Available. A paper from the Proceedings of the Royal Irish Academy, Section B - Biological, Geological and Chemical Science.

---

**Number**

795

**Author**

Kelly M.T., Curry J.P.

**Title**

The biology and population density of the willow beetle (*Phratora vulgatissima* [L.]) on *Salix viminalis* in reclaimed cutaway peat.

**Publisher**

Paul Parey

**Place**

Hamburg

**Date**

1991

**Source**

Journal of Applied Entomology

**Volume**

Vol. 111

**Key Word**

willow beetle, *Salix viminalis*, *Phratora vulgatissima* L., peatland ecology, forest entomology, forest insects, *Salix caprea*, forest protection, peatlands

**Abstract**

The life cycle and population ecology of *Phratora vulgatissima* (L.) were studied in *Salix viminalis* plots on cutaway peat at Clonsast, Co. Offaly during 1982 and 1983. Development time from the first appearance of larval instar I to eclosed adult emergence was circa 6 weeks; the duration of the pupal stage was about 2 weeks. Adults over-wintered in crevices and under bark of *Salix caprea* in an adjacent hedgerow. Larvae were significantly more abundant on internal than on distal branches, on widely-spaced than on narrowly-spaced trees

and on coppiced than on uncoppiced trees. Maximal mean densities in 1983, when trees experienced significant moisture stress, were 607 larvae and 308 adults per tree. Population densities in 1983 were considerably lower (max. mean densities 154 larvae and 72 adults per tree).

**Page**

pp 44-56

**Location**

Department of Environmental Resource Management, Faculty of Agriculture, University College, Dublin, Belfield, Dublin 4.

**ISBN**

ISSN 0931-2048

**Notes**

Available.

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**Number**

796

**Author**

Department of Agriculture, Food and Forestry

**Title**

Growing for the future: a strategic plan for the development of the forestry sector in Ireland.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1996

**Key Word**

forestry policy, forestry management, forestry development, timber processing, forest products, economic planning, economics, strategic planning, farm forestry, private forestry, State forestry

**Abstract**

The overall aim of this Plan is to maximise the contribution of forestry to national economic and social well-being. The current state of the forestry industry in Ireland is briefly described, and the case for further investment in this sector assessed. The details of an economic analysis of forestry, carried out in the context of formulating the Strategic Plan, are provided. Proposals for action in a number of forestry-related areas are presented. The total productive planted area will reach 1.2M hectares, and annual timber output will reach 10M cubic metres. Each afforestation project is to include a minimum of 2 species, and Sitka spruce is to be reduced to 60% of national average annual afforestation. Other initiatives which will be introduced include: the development of a Code of Best Forest Practice for all forestry activities; the introduction of a new, market-aligned system of timber sales; the establishment of a Forestry Industry Development Group; the setting up of a Forest Inventory and Planning System; and the establishment of a liaison group of educational, training and industrial interests.

**Page**

vi, 98p

**Location**

Coillte library

**ISBN**

0707624304

**Notes**

Available

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**Number**

797

**Author**

Curry J.P., Kelly Mary, Bolger T.

**Title**

Role of invertebrates in the decomposition of Salix litter in reclaimed cutover peat.

**Publisher**

Blackwell Scientific Publications

**Place**

Oxford

**Series**

British Ecological Society. Special Publication No. 4.

**Date**

1985

**Source**

Ecological Interactions in Soil. Special Publication Number 4 of the British Ecological Society. (edited by A.H. Fitter et al.)

**Key Word**

Salix spp., peatland ecology, peatland fauna, litter decomposition, earthworms, Lumbricus terrestris, Dendrobaena rubida, peatlands

**Abstract**

Invertebrate respiration normally accounts for 1% - 20% of total heterotrophic metabolism in most terrestrial ecosystems, but faunal exclusion studies indicate that invertebrates have a much greater influence on decomposition rates than their contribution to respiratory metabolism would suggest. Large earthworms, such as Lumbricus terrestris L. Have an important role in woodland mull soils. L. terrestris is slow to colonise reclaimed peat, but, when introduced experimentally, it can greatly accelerate litter disappearance. This paper presents data on Salix leaf-fall and the influence of invertebrates on litter decomposition rates in cutover peat. The study site was an area of raised bog at Clonsast, County Offaly which had been reclaimed following mechanical peat extraction and planted with fast-growing trees such as Alnus, Populus and Salix spp. Litter-fall was measured between 22 September and 21 November, 1981 and between 15 September and 17 November, 1982. A litter bag technique was used to measure litter decomposition rates. Micro-plots were established at Belfield to facilitate experiments requiring frequent attention. Litter consumption by Lumbricus terrestris was measured at Belfield. Litter disappearance was determined at 8-week intervals and the litter was renewed. Results of litter disappearance and consumption are given as means  $\pm$  S.E. Litter fall in the Salix plots was 441 g  $\pm$  23 g dry wt m<sup>-2</sup> in 1981 and 529 g  $\pm$  42 g in 1982. After 130 days, 63.5% of the litter had disappeared from the coarse mesh bags at Clonsast. Decomposition rates in the coarse bags were virtually linear at Belfield with 43.7% of the litter disappearing within 183 days and 61.3% after 309 days. Micro-invertebrates were scarce at Clonsast, with only the litter-dwelling earthworm Dendrobaena rubida (Sav.) being abundant. Litter consumption by L. terrestris was greatest during October to December when the weather was mild and declined considerably during the colder December to March period.

**Page**

pp 393 - 397

**Location**

Department of Zoology, University College, Dublin, Belfield, Dublin 4.

**Notes**

Available. (Reprinted from - Ecological Interactions in Soil. Special Publication Number 4 of the British Ecological Society. (edited by A.H. Fitter et al.) Blackwell Scientific Publications, Oxford, 1985).

---

**Number**

798

**Author**

Hyde T. J., Lavery D. J., Taylor J. M.  
(University of Ulster. School of the Built Environment)

**Title**

Orthogonal cutting of Irish fast grown Sitka spruce.

**Publisher**

PROBE

**Place**

Newtownabbey

**Series**

School of the Built Environment internal paper

**Date**

1994

**Key Word**

orthogonal cutting, Sitka spruce, Picea sitchensis, cutter geometry, wood failure, timber quality, timber properties, mechanical properties, chip formations, timber processing, forest products

**Abstract**

Orthogonal cutting of Irish fast grown Sitka spruce was analysed experimentally and analytically to investigate how cutter geometry and wood failure affects chip formation and its relation to the quality of surface finish. Sitka spruce conditioned to 6%, 12% and 18% moisture contents was orthogonally cut parallel to the grain (90 - 0 degrees). Machining variables included rake angle (10 - 35 degrees in increments of 5 degrees) and depth cut (0.4 - 0.8 mm in increments of 0.1 mm). The parrallel and normal tool force components were measured and recorded and chip form analysed. Chip formations are classified as type I, type III or type III as identified by Franz (Analysis of the Wood-cutting Process, 1958). Mechanical wood properties were determined using static strength testing techniques. Chip formations predicted analytically are discussed in relation to an analysis primarily provided by Franz where force components and wood mechanical properties are related to stress failure and surface quality. Comparison is made between chip types predicted analytically and those observed experimentally.

**Page**

12p

**Location**

School of the Built Environment, University of Ulster

**Notes**

Available (unpublished paper)

**Address of author**

School of the Built Environment, University of Ulster, Newtownabbey, Co. Antrim, BT37 OQB

---

**Number**

799

**Author**

Levingstone Victor

**Title**

Timber frame housing - its future in Ireland.

**Place**

Dublin

**Date**

1988

**Key Word**

Timber frame construction, saw milling industry, timber conversion, timber end use

**Abstract**

In North America 90% of houses are built using timber frame construction. The corresponding figure for Scandinavia is 80%, and 40% for Scotland. In Ireland the figure is only 1.5%. Timber frame houses cost about 4% more overall to construct but on a properly managed site the end cost is about the same as for masonry construction. There is practically no waiting period for drying out as the internal envelope has very little heavy wet construction. One of the main reasons why this method has not been popular in Ireland is the conservative nature of the buyer who wants an asset with no inherent risk. Ireland will be self-sufficient in whitewood by the mid-1990's, but at present sawmills are not receiving enough timber and are operating well below capacity. Irish timber could provide about 70% of the timber used in the construction of a traditionally built, three-bedroom, semi-detached dwelling. This figure could reach 86% in timber frame dwellings. The industry could be helped considerably by the following developments : a promotional campaign; a certification/registration scheme for manufacturers; standard setting and code of practice for designers, certifiers and builders; a relaxation of the requirements of the Proposed Building Regulations that separating walls should be constructed of non-combustible materials.

**Page**

64 p

**Location**

Library, College of Technology, Bolton Street, Dublin 1.

**Notes**

Available. (Thesis submitted for the award of Diploma in Construction Economics)

**Thesis**

Dip.Eng. Thesis, UCD

---

**Number**

800

**Author**

Gallagher Leonard U.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Report 4.0.2. The drying of timber - a review.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on home grown timber. Study 4.

**Date**

1983

**Key Word**

drying, kiln drying, timber processing, forest products, timber degrade, timber grading

**Abstract**

This report outlines the various reasons why timber is dried and briefly describes the following drying techniques: air-drying; kiln drying; dehumidification. Factors associated with drying, including energy consumption, moisture content control and degrade in drying, are also dealt with. The most recent developments in drying research are reviewed, and a brief account is given of a tour of kilning facilities in Britain.

**Page**

13p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

801

**Author**

Picardo Valez

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Data base on physical and mechanical properties of Irish Sitka spruce. Final report.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on Irish timber. Study 2.

**Date**

1986

**Key Word**Sitka spruce, *Picea sitchensis*, physical properties, mechanical properties, design data, bending stress, elasticity, machine grading, forest products, timber processing**Abstract**

It is anticipated that the use of home-grown timber in the building industry in Ireland will increase significantly as larger amounts of Irish softwoods reach the market. However, for timber to be more efficiently used in structures such as floor joists or roof trusses it is essential that design data and design procedures be made available to structural engineers, architects and builders. In this study a total of 2265 planks were tested - 778 in

the green condition and 1487 in the dry. Samples were taken from 5 forests from each of 4 Yield Classes although tests in the green condition were done mainly on material from 2 Yield Classes (YC 16 and 24) and only 1 forest from a third (YC 20). In the analyses of variance a model was constructed to take into account the effects of Yield Class, forest and tree level. These relationships may indicate how silvicultural practice may be changed for the purpose of producing better quality timber for structural usage. Relationships between timber ultimate bending stress (MOR) and the grade modulus of elasticity (Grade MOE) provide the basis for (a) the bending strength properties to be determined for the new Irish Code and for comparing with existing values and (b) the determination of machine grade setting for the various grades. Analysis of the results of the tests showed that Yield Class and tree section affected MOR and MOE significantly. Differences between forests were statistically significant. Correlations with MOR were highest with ACTUAL (5H) MOE and GRADE MOE. Correlations with GRADE MOE were strongest with the other MOEs and highest with ACTUAL MOE and SIMULATION MOE.

**Page**

180p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9

---

**Number**

802

**Author**

Gallagher Leonard U.

(Institute for Industrial Research and Standard. Forest Products Department)

**Title**

The properties of Irish-grown Sitka spruce - report No. 5.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1969

**Key Word**

Sitka spruce, Picea sitchensis, physical properties, mechanical tests, chemical constituents

**Abstract**

The material chosen for this study was taken from Mountshannon Forest, Co. Clare. Four cross-sectional discs were cut from each of the eight trees selected. Two of these discs were used for studies on shrinkage, true density and chemical constituents. Of the remaining discs, one was used to determine the moisture content, basic specific gravity and percentage of bark, the other to study the radial growth rate and tracheid length. A further two discs were used to evaluate moisture content, specific gravity, bark percentage and growth rate. Screw and nail-holding tests and bending strength tests were carried out on a number of logs after conversion.

**Page**

42p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

803

**Author**

Gallagher Leonard U.  
(Institute for Industrial Research and Standard. Forest Products Department)

**Title**

The properties of Irish-grown Sitka spruce - report No. 7.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1969

**Key Word**

Sitka spruce, Picea sitchensis, physical properties, mechanical tests, chemical constituents

**Abstract**

The material chosen for this study was taken from Ossory Forest, Co. Leix. Cross-sectional discs were cut from each of the logs selected. Two of these discs were used for studies on shrinkage, true density and chemical constituents. Of the remaining discs, one was used to determine the moisture content, basic specific gravity and percentage of bark, the other to study the radial growth rate and tracheid length. A further two discs were used to evaluate moisture content, specific gravity, bark percentage and growth rate. Screw and nail-holding tests and bending strength tests were carried out on a number of logs after conversion.

**Page**

37p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

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**Number**

804

**Author**

Gallagher Leonard U.  
(Institute for Industrial Research and Standard. Forest Products Department)

**Title**

The properties of Irish-grown Sitka spruce - report No. 6.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1969

**Key Word**

Sitka spruce, Picea sitchensis, physical properties, mechanical tests. chemical constituents

**Abstract**

The material chosen for this study was taken from Gort Forest, Co. Galway. Cross-sectional discs were cut from the trees selected. Two of these discs were used for studies on shrinkage, true density and chemical constituents. Of the remaining discs, one was used to determine the moisture content, basic specific gravity and percentage of bark, the other to study the radial growth rate and tracheid length. A further two discs were used to evaluate moisture content, specific gravity, bark percentage and growth rate. Screw and nail-holding tests and bending strength tests were carried out on a number of logs after conversion.

**Page**

42p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

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**Number**

805

**Author**

McDarby F., Gallagher L.U.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Spiral grain report 2. An investigation of the effect of thinning on spiral grain development in standing Sitka spruce.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1979

**Key Word**

thinning, spiral grain, Sitka spruce, Picea sitchensis, diameter growth, spirality, silviculture

**Abstract**

The objective of this study was to assess the impact of thinning on the incidence of spiral grain in standing Sitka spruce. The study was conducted in a uniform stand which is part of a current Forest and Wildlife Service thinning experiment. Three separate thinning treatments, in duplicate plots, were examined, comprising a total sample of 120 trees. Surface grain angles only were measured. It was concluded that the thinning treatments have a significant effect on diameter growth, but not on spiral grain. There is no significant correlation between diameter and degree of spirality. The results of the study indicate that there is no need for restrictions on thinning practice because of concern over its effect on spiral grain.

**Page**

21p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

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**Number**

806

**Author**

Taylor J.M., Lavery D.J., Cronin K.

**Title**

Energy related aspects of timber drying.

**Publisher**

Ambient Press Ltd.

**Date**

1996

**Source**

International Journal of Ambient Energy

**Volume**

Vol. 17, Number 1

**Key Word**

High Temperature Drying, timber drying, energy costs, timber processing

**Abstract**

The cost of drying timber can be quite high because of recurrent energy costs and a relatively low return on capital investment in physical plant. This paper considers the energy related aspects of timber in general and analyses the results of a study which examined the use of High Temperature Drying (HTD). This study indicates that saving can be made by the use of HTD for the processing of softwoods. The results show a significant saving in time of up to 25%. The energy savings indicated were relatively small (approximately 0.25%). The main finding of this paper is that the use of HTD can give significant savings, particularly due to the increased utilisation of capital plant, and is therefore worthy of further investigation to establish its technical viability, especially in relation to possible degradation in timber dried by this method.

**Page**

pp 41 - 48

**Location**

School of the Built Environment, University of Ulster

**Notes**

available

**Address of author**

PROBE, School of the Built Environment, University of Ulster, Newtownabbey, BT37 OQB

---

**Number**

807

**Author**

Atanackovic A., Knaggs G.R., Van Leemput M.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

The upgrading of small diameter logs by lamination and by the continuous production of laminated timber by the use of high frequency and micro wave fields.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1990

**Key Word**

lamination, dielectric heating, microwave heating, timber adhesives, wood glues, laminated timber

**Abstract**

The main objectives of the investigation described in this report were to: investigate the curing of glue by dielectric and microwave heating under laboratory conditions; to assess the quality of the adhesion with reference to the type of laminae used, formulation of glue resins, duration of cure-pressure time and other factors involved in the laminating process; and to observe the laminating process using dielectric heating for glue setting in an industrial environment and the influence of some important factors involved in production. It was found that the method using microwave radiation with an improved design of wave guides provided shorter glue setting times. The two types of adhesives performed differently under different testing conditions. The glue designated as a general purpose glue, RL-417, was shown to be more suitable for dry conditions. Neither glue allows a very long open time. The results from test samples made by microwave heating of the glue line showed almost identical results to high frequency heating for both types of glue. The length of time used for heating the glue line did not appear to be a significant factor. Microwave heating was found to be more suitable for a higher moisture content of timber at the time of laminating. The type of laminae, sliced or planed timber, was a significant factor, giving higher shear values for sliced, thin lamellae of 5 mm, than planed 15 mm lamellae.

**Page**

31p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

808

**Author**

Lavery D.J., McLarnon D., Taylor J.M., Moloney S., Atanackovic A.

**Title**

Parameters affecting the surface finish planed Sika spruce.

**Publisher**

Forest Products Society

**Place**

United Kingdom

**Date**

1995

**Source**

Forest Products Journal

**Volume**

Vol. 45, No. 4

**Key Word**

surface finishing, planing, Sitka spruce, machine-planned timber, timber processing, forest products, *Picea sitchensis*

**Abstract**

The influence and relative significance of the various silvicultural and machine surface planing parameters in the production of good quality timber finishes on Sitka spruce is investigated. Data analysis was carried out using linear multiple-regression techniques. Results are presented in the form of regression charts and scatter plots. Feed speed, moisture content, and rake angle variables have been found to be important predictors of the quality of machine-planed timber. In particular, setting the feed speed to 10m/min. results in a good-quality finish. Two distinct areas that demand separate scrutiny have been identified on the timber sample boards, the clearwood area and the knotwood area.

**Page**

pp 45 - 50

**Location**

(Reprint in Forbairt. Forest Products Dept.)

**Notes**

Available

**Address of author**

School of the Built Environment, University of Ulster, Newtownabbey BT37 OQB, Northern Ireland

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**Number**

809

**Author**

Picardo Valez

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Technical Report No. 1. Basic data & relationships between mechanical properties.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on homegrown timber. Study 5.

**Date**

1983

**Key Word**

scaffold boards, physical properties, mechanical properties, timber grading, modulus of rupture, modulus of elasticity, strength properties, forest products, timber processing

**Abstract**

The main objective of this study was to obtain basic information on physical and mechanical properties of scaffold boards made from Irish grown timber and to determine the relationships between the grade determining properties and ultimate strength. Scaffold boards of three different thicknesses were obtained from four different sawmills. A total of 59 boards of 38 mm nominal thickness, 56 of 44 mm nominal thickness and 88 of 63 mm nominal thickness were tested. Visual and mechanical grading was carried out according to the rules in BS 2482. Results were analysed for both the visual and mechanical grades and overall relationships were determined between modulus of rupture (ultimate bending stress) and modulus of elasticity measured in three different ways. An alternative method for obtaining the minimum value has been presented. It is concluded that both visual grading in accordance with BS 2482 and machine grading does identify the stronger boards satisfactorily.

**Page**

60p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

810

**Author**

Picardo Valez

(EOLAS. Forest Products Department)

**Title**

Characteristic Strength values for European Grades of timber in relation to Eurocode 5.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1990

**Key Word**

European Union, EU, EC, standards, grading practice, timber processing, forest products, grading rules, physical properties, timber strength

**Abstract**

As part of the programme for harmonisation of grading practice within the the EC, grading systems in use in the various Member States were compared and standardised procedures for sampling, testing, collating and analysing European timbers were established in order to obtain characteristic values relating to EC5. This report describes a part of the process of comparing grading rules. This involved visual and mechanical grading of a sample of Irish grown Sitka spruce timber according to the rules applied by each country. The 500 planks in the sample were tested in bending in accordance with ISO 8375 to obtain Modulii of Elasticity and Rupture values. Characteristic values were determined for all grades from each country using four methods - the non-parametric and three distribution functions (normal, log-normal and 3-parameter Weibull). A comparison of the grading systems was made and analyses of variance used to investigate differences between sizes and grades within each system. It was found that the main difference in grading systems was in the method of measuring knots. There were similarities in the characteristic values determined for the grades obtained from the different systems. There is therefore a distinct possibility of harmonising the grading rules.

**Page**

100p

**Location**

Forbairt. Forest Product Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

811

**Author**

Atanackovic A.

(EOLAS. Forest Products Department)

**Title**

Improvement of stability and durability by means of wood impregnation by tannin. Final report.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1990

**Key Word**

timber protection, preservatives, timber preservation, tannin, durability, stability, timber processing, forest products, EC, EU, Sitka spruce, European Union, European Community, Picea sitchensis

**Abstract**

As part of the European Directorate for Science and Technology's project, 'Improvement of wood stability and durability by means of tannin impregnation', EOLAS investigated the possibility for tannin treatment of green Sitka spruce timber of home origin. The main objectives of the Irish contribution were to: evaluate the most satisfactory treatment schedule for tannin impregnation of home grown Sitka spruce; to assess the stability of timber after tannin treatment; and, to evaluate dimensional stability of treated timber after exposure to external climatic conditions. In the first stage of the work programme, treatment schedules for two types of tannin solutions, one synthetic and one made from natural tannin, were investigated. In the second stage, the behaviour of treated timber in prolonged exterior exposure was observed. The result of the tests demonstrated that for synthetic tannin an eight hour treatment schedule is adequate. Statistical analysis indicated that eight hours treatment had beneficial effects on dimensional stability of timber when it is exposed to exterior climatic conditions. Sixteen hours treatment is most suitable for natural tannin. Beneficial effects of tannin treatment diminishes over prolonged external exposure due to leachable properties of tannin. The results of this investigation revealed that tannin treatment can be beneficial in reducing timber movement and distortion.

**Page**

54p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

812

**Author**

Atanackovic Andreja

(EOLAS. Forest Products Department)

**Title**

Optimisation of kiln control via improved feedback systems. (Evaluation of systems on fast grown softwoods). Final report.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1990

**Key Word**

kiln drying, feedback systems, case hardening, timber processing, forest products

**Abstract**

As part of the European Directorate for Science and Technology's project, 'Optimisation of kiln control via improved feedback systems', EOLAS carried out experimental work on the determination of stress gradient, moisture gradient and assessment of case hardening in Irish fast grown Sitka spruce timber during kiln drying. After drying, sample boards showed significant differences between moisture content assessed on the periphery and in the inner core. Moisture content recorded at the layer closer to the surface of a board gives a fair indication of the moisture content which can be expected in the layer closest to the centre of the cross section. Regression equations obtained for rate of drying, based on a small number of observations, showed that a polynomial curve would be more suitable than a single quadratic or linear best fit line. To achieve the level of accuracy required for an effective feedback control mechanism, further investigation with an increased number of observations, frequency and timber sizes is required.

**Page**

80p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

813

**Author**

Atanackovic Andreja

(EOLAS. Forest Products Department)

**Title**

Testing machine graded (FP grader timber using an in-grade technique). Final report.

**Publisher**

EOLAS

**Place**

Dublin

**Series**

Promotion/research studies on homegrown timber. Study 15

**Date**

1988

**Key Word**

mechanical grading, sawmilling, mechanical stress, proof loading, forest products, timber processing

**Abstract**

In this project, the grade settings used on the FP grading machine for mechanically grading timber of homegrown origin were critically examined through a series of tests, using green and kiln dry timber in structural sizes. Using these settings, the study sought to obtain a yield of mechanically stressed graded timber in the grade M75 from the sawmilling production. After examining the prescribed grade settings, and deciding whether adjustments are necessary to increase the reliability and efficiency of the machine, it was intended to look at the possibility of developing a separate set of grade settings for grading in the green condition. Samples from three sawmills were machine graded and were then subjected to a proof loading test. The proof loading test combined with the mechanical stress grading indicated that some fine adjustments of grade settings could be made, reducing by 0.5mm the setting for the roof size and increasing the deflection limit of joist size for the same amount. A separate set of deflection limits for grading green timber is not warranted.

**Page**

21p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

814

**Author**

Gallagher Leonard U.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Developments in Irish timber: design and developments in structural timber.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1985

**Key Word**

sawmilling, timber industry, timber trade, wood quality, grading, timber processing, forest products, building industry, timber quality

**Abstract**

The aspects of the timber trade most relevant to Irish grown timber are examined and the current state of the Irish timber industry is assessed. The recent rapid development of this industry is linked to increase in availability of Irish softwood sawlogs. Future yields of sawlog timber from State forests are forecast. The development in the productive capacity of the sawmilling industry is explained, and its ability to meet the demand for quality timber is assessed. The area of product development is examined under the following headings: physical and mechanical properties of home grown timber; wood quality assessment; developing a mechanical timber grader; investigation of drying techniques in relation to home grown timber; evaluating sawmill production. The role of quality control and advisory services and the importance of developments in silviculture, timber conversion and presentation and product development are examined.

**Page**

25p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available (UCD Forestry course text)

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**Number**

815

**Author**

Gallagher Leonard U.

**Title**

The properties of Irish-grown Sitka spruce timber.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Institute for Industrial Research and Standards. Forest Products Department. Bulletin No. 1

**Date**

1979

**Key Word**

Sitka spruce, *Picea sitchensis*, physical properties, mechanical properties, chemical properties, mechanical testing, stresses, timber processing, forest products

**Abstract**

This report summaries 6 years work in the Forest Products Department, IIRS, on the properties of Irish grown Sitka spruce. The trees and sites from which samples were drawn are described. Methods of sampling are outlined and descriptions of physical and mechanical tests are given. These properties are quantified and mechanical data are extrapolated to provide basic stresses. The relevance of these data are explained in the conclusion of the report.

**Page**

17p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

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**Number**

816

**Author**

Gallagher L.U.  
(Institute for Industrial Research and Standards. Forest Products Department).

**Title**

Kiln drying of Sitka spruce timber from three discrete yield classes.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on Irish timber

**Date**

1985

**Key Word**

kiln drying, Sitka spruce, Picea sitchensis, yield class, timber degrade, forest products, timber processing

**Abstract**

An important area of concern when evaluating drying techniques is the effect of yield on the drying characteristics of timber. The objective of this study was to determine basic information on the kiln drying of Irish timber, so that information may be made available to the trade on proper practice, and to allow for realistic appraisals on the cost-effectiveness of any alleged improvements which may be studied later. Measurements were taken from a number of sample planks, representative of each yield class and several sizes, before and after drying. Using these figures moisture content, dimensional change and distortion in drying were evaluated. The results of the tests conducted show that drying created little problem with development of cup, bow or spring. However, kiln drying, even using a moderate schedule, has a marked effect on the development of twist.

**Page**

19p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

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**Number**

817

**Author**

Mayrs Alan

**Title**

An investigation into the effects of high temperature drying on the strength of home grown Sitka spruce.

**Place**

Newtownabbey

**Date**

1994

**Key Word**

high temperature drying, strength properties, Sitka spruce Picea sitchensis, timber processing, timber drying, forest products

**Abstract**

This study examines the effect of high temperature drying on the strength of home grown Sitka spruce. Laboratory tests involved drying a number of specimens at various temperatures and mechanically bending the material to determine their modulus of elasticity (MOE). Through a comparative analysis of these test results, conclusions into the effects of high temperature drying on the MOE of the material were drawn. The Sitka spruce samples had no reduction in MOE.

**Page**

130p

**Location**

Dept. of Building and Environmental Engineering , University of Ulster

**Notes**

Available (Thesis submitted for award of B.Sc. in Building Engineering and Management, University of Ulster)

**Thesis**

B.Sc. Thesis, University of Ulster

---

**Number**

818

**Author**

Gallagher Leonard U.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Drying of homegrown timber. Technical report 4.2.1. Air-drying of Sitka spruce; initial observations on rate of drying and degrade.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on homegrown timber. Study 4.

**Date**

1983

**Key Word**

air-drying, distortion, timber processing, forest products

**Abstract**

The objective of this study was to determine basic information on the unaided drying of Irish timber so that realistic appraisals of the cost-effectiveness of any alleged improvement to be studied later may be made. There were three parts to the experiments: an evaluation of distortion in air drying through before-and -after measurements of a number of planks; an assessment of final moisture contents throughout the stack; and an on-going record of moisture loss in each stack. Indications at this early stage of the overall project suggest that, even in a good summer, air drying of softwoods is likely to require in the order of two months for timbers to reach equilibrium moisture content.

**Page**

7p

**Location**

Forbairt. Forest Products Department

**Notes**

Available

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**Number**

819

**Author**

Knaggs G.

**Title**

Technical properties of lodgepole pine timber.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Lodgepole Pine Workshop '88. Proceedings of a workshop on the potential of fast grown Irish lodgepole pine, held at the Forest Products Department, EOLAS, The Irish Science and Technology Agency, Dublin, Ireland, on the 11th November 1988. (Edited by J.A. Evertsen).

**Key Word**

lodgepole pine, physical properties, joinery timber processing, window joinery, forest products, red deal, Scots pine, gluing, preservatives, laminating, adhesives

**Abstract**

This paper compares the physical properties of homegrown lodgepole pole pine with imported red deal, the

standard Irish and European softwood species for the manufacture of joinery, particularly in respect of those parameters which are important in joinery. Samples of lodgepole pine and Scots pine were bonded using urea-formaldehyde adhesives and the strength of the bond was tested. Lodgepole pine joints were found to be superior in strength. The suitability of lodgepole pine for finger jointing was assessed by comparing its performance with Scots pine. The results demonstrate that lodgepole is stronger in both the jointed and unjointed forms. Lodgepole pine was also found to have significantly greater screw holding power than Scots pine. An analysis of preservative uptake showed that there was no significant difference between the two species. A similar batch of tests on a consignment of laminated lodgepole pine for window joinery also gave very encouraging results.

**Page**

pp 69 -96

**Location**

Forbairt library

**ISBN**

0900450940

**Notes**

available

**Address of author**

Forest Products Dept., Glasnevin, Dublin 9

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**Number**

820

**Author**

Thornton P.J.

**Title**

Compatibility with surface coating.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Lodgepole Pine Workshop '88. Proceedings of a workshop on the potential of fast grown Irish lodgepole pine, held at the Forest Products Department, EOLAS, The Irish Science and Technology Agency, Dublin, Ireland, on the 11th November 1988. (Edited by J.A. Evertsen).

**Key Word**

surface coating systems, paints, physical properties, lodgepole pine, timber processing, red deal, Scots pine, *Pinus sylvestris*

**Abstract**

The project described in this paper involved comparing the performance of various coating systems when applied to imported red deal and lodgepole pine. The test programme consisted of accelerated weathering to two different intensities, adhesion testing, gloss assessment and spectrographic colour assessment. The results of the test show that the durability of the coatings are not adversely affected by being applied to lodgepole pine. Furthermore light and medium stains tend to have better colour retention over lodgepole pine than over Scots pine. There is no evidence to date to indicate that lodgepole pine is less durable under paint coatings than Scots pine.

**Page**

pp 97 - 109

**Location**

Forbairt. library

**Notes**

available

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**Number**

821

**Author**

Glennon P.

**Title**

Processing lodgepole pine and marketing its products - a trade experience.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Lodgepole Pine Workshop '88. Proceedings of a workshop on the potential of fast grown Irish lodgepole pine, held at the Forest Products Department, EOLAS, The Irish Science and Technology Agency, Dublin, Ireland, on the 11th November 1988. (Edited by J.A. Evertsen)

**Key Word**

timber processing, lodgepole pine, Pinus contorta, red deal, forest products, silviculture, grading

**Abstract**

The author, a timber manufacturer, describes the problems associated with lodgepole pine in the past. However, he points out that home grown material now machines as good as imported red deal. The process through which the log goes, from harvesting in the forest to sawmill and workshop, is briefly described. The selection and treatment processes involved in grading are also described and the silvicultural measures need to eliminate defects in grade 2 and 3 are outlined.

**Page**

pp 110 - 114

**Location**

Forbairt library

**ISBN**

0900450940

**Notes**

available

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**Number**

822

**Author**

Knaggs G.R., Wright L.

**Title**

The requirement for timber for the joinery trade.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Lodgepole Pine Workshop '88. Proceedings of a workshop on the potential of fast grown Irish lodgepole pine, held at the Forest Products Department, EOLAS, The Irish Science and Technology Agency, Dublin, Ireland, on the 11th November 1988. (Edited by J.A. Evertsen).

**Key Word**

timber processing, lodgepole pine, Pinus contorta, standards, knots, joinery, timber end use

**Abstract**

This paper describes the manufacture of Standard IS63 type windows from lodgepole pine as part of the Lodgepole Pine Taskforce set up by EOLAS in 1986. The current requirements of joinery manufacturers are outlined, and the defects, particularly knots and the presence of sapwood, which affect this manufacture are outlined.

**Page**

pp 115 - 120

**Location**

Forbairt library  
**Notes**  
Available

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**Number**

823

**Author**

Knaggs G.R.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Drying problems associated with juvenile wood in pine and spruce.

**Publisher**

IIRS

**Date**

1989

**Key Word**

drying, juvenile wood, distortion, longitudinal shrinkage, compression wood, forest products

**Abstract**

This report reviews the experimental work that has been carried out in Ireland on the problems associated with drying juvenile wood. Through a series of tables, the author demonstrates the associations that exist between longitudinal shrinkage and juvenile wood and between longitudinal shrinkage and compression wood in drying. Research, both in Ireland and in the south eastern United States has shown that young-growth trees containing a high proportion of juvenile wood pose particular problems in drying, especially in distortion.

**Page**

20p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

824

**Author**

Knaggs Gordon

**Title**

Timber for Construction.

**Place**

London

**Date**

1984

**Source**

Construction

**Volume**

Vol. 30, No. 4

**Key Word**

structural timber, construction industry, forest products, timber processing, standards, specifications

**Abstract**

The various species of both softwood and hardwood used most extensively in the Irish construction industry are listed. The most recent Standard Recommendation, covering the requirements for joists, rafters and purlins used in domestic construction, was published by Eolas in 1988. The methods of measuring moisture content in both softwoods and hardwoods, in order to comply with building specifications, are described. The most suitable approaches to caring for and preserving seasoned timber are also discussed.

**Page**

pp 73 -75

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products, Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

825

**Author**

Knaggs Gordon

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Plant health and construction industry requirements in relation to moisture content - an Irish perspective.

**Place**

Dublin

**Date**

1987

**Key Word**

plant health, forest protection, insect pests, forest pathogens, drying

**Abstract**

Preventing the importation of forest pests, such as the pine wood nematode and bark beetles, is particularly important in Ireland because of the heavy dependence on one species, Sitka spruce, and the absence of natural predators. Irish building regulation and supporting standards requires that all timber, both home-grown and imported, be dry graded.

**Page**

3p

**Location**

Forbairt. Forest Products Dept.

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

826

**Author**

Gallagher L.U.

**Title**

Rural Development needs a forestry input.

**Publisher**

Agricultural Science Association

**Place**

Dublin

**Date**

Sept/1983

**Source**

Journal of the Agricultural Science Association

**Key Word**

rural development, private forestry, land use, agriculture, farm forestry

**Abstract**

The author examines the contribution made by forestry, both State and private, to the rural economy. The return on investment for those engaged in farm forestry, though delayed, is quite high compared to other land uses, particularly on marginal land. An example of a successful venture in farm forestry on poor gley soil is given.

The operation of the 'Western Package', an EC scheme to promote agricultural development in less advantaged areas, is explained and the grant schemes it supports are outlined. The continued expansion of State forestry in the western counties is examined. The need to change the negative attitude of farmers towards forestry is emphasised.

**Page**

pp 41 - 45

**Location**

Forbairt. Forest Products Depart.

**Notes**

Available

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**Number**

827

**Author**

Purcell T.J.

**Title**

Irish forestry - availability and suitability of home grown timber.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1982

**Source**

Timber as a farm resource: organised by An Foras Taluntais for advisory staff of An Chomhairle Oiluna Talmaiochata, Mallow, 1982.

**Key Word**

forestry history, timber processing, forestry development, silviculture

**Abstract**

The author provides a brief background to the development of forestry in Ireland and lists the main species of trees grown in Ireland with information on their natural distribution, properties and uses. The process of afforestation, by both the State and private owners, is described. The following information is given in tabular form: the position of the forest estate by ownership in 1980; the age - class distribution by ownership of stocked area; species distribution by area and ownership; and the range and mean yield classes for the common conifers in State plantations.

**Page**

pp 1 -17

**Location**

Teagasc library

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**Number**

828

**Author**

Gallagher Leonard U.

**Title**

Scope for use of timber on the farm.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1982

**Source**

Timber as a farm resource: organised by An Foras Taluntais for advisory staff of An Chomhairle Oiliuna Talmaiochta, Mallow, 1982

**Key Word**

agriculture, farm buildings, farm forestry, timber uses, land use

**Abstract**

The author argues that awareness of wood as a national resource has increased considerably over the past few years and this will play an important part in the recognition of timber as an important farm resource. The utilisation of timber on the farm is considered under the following headings: protection of animals and crops; fuel crops; fencing material; agricultural buildings; and farm dwellings. Timber as a component of farm buildings has the advantages of being easily erected, amenable to prefabrication, readily altered and adapted on site. Total erection costs of timber frame housing are less than for traditional methods. Other timber uses on the farm include animal bedding, poultry litter and composts and manures.

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pp 18 - 33

**Location**

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**Number**

829

**Author**

Cahill D.

**Title**

Factors influencing the use of timber.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1982

**Source**

Timber as a farm resource: organised by An Foras Taluntais for advisory staff of An Chomhairle Oiliuna Talmaiochata, Mallow, 1982

**Key Word**

timber use, farm buildings, agriculture, structural timber, forest products, timber processing, farming

**Abstract**

This paper discusses some of the factors which will influence the use of timber in specific end-uses on Irish farms. It discusses the present usage of timber and identifies the areas where it can be utilised to a greater extent. These areas are: the domestic house, the use of timber here has the advantages of speedy erection, dry construction and high thermal insulation; outbuildings, the production of sawn, graded and dried timber by sawmills greatly increases the potential for the use of both structural and non-structural timber in farm buildings; fences; gates; and doors. The exploitation of homegrown timber in these end-uses is discussed. The role of the Forest Products Department, IIRS, is explained.

**Page**

pp 34 - 48

**Location**

Teagasc library

**Notes**

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**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

830

**Author**

Hallanhan E.V.

**Title**

Timber as a farm resource: attitudes of authorities.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1982

**Source**

Timber as a farm resource: organised by An Foras Taluntais for advisory staff of An Chomhairle Oiliuna Talmaiochta, Mallow, 1982

**Key Word**

timber use, farm buildings, agriculture, forest products

**Abstract**

Despite the advantages of timber as a structural material, there is a certain apprehension among farmers regarding total timber structures. The economic advantages of using timber in farm buildings is explained and the criteria for the allocation of building grants, which applies to both timber and non-timber structures, is outlined. In most cases insulation and ventilation are better provided for in timber buildings. The disadvantages of timber use in agricultural building, particularly in regard to cleaning and disinfecting, are examined.

**Page**

pp 55 - 57

**Location**

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**Number**

831

**Author**

O'Brien Terry

**Title**

The multipurpose woodlot on the farm.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1982

**Source**

Timber as a farm resource: organised by An Foras Taluntais for advisory staff of An Chomhairle Oiliuna Talmhaiochata, Mallow, 1982.

**Key Word**

farm forestry, agriculture, species selection, private forestry, forestry policy, grants, subsidies, land use

**Abstract**

The author notes that attitudes to woodlands are changing and more and more farm owners appreciate the benefits of woodland to their holdings, both for shelter and timber production. The various considerations involved in planning a woodland are examined, including design and location and choice of species. The topics of rotation length, coppicing and firewood production and yield forecasting are also covered. The various classes of scrub found in Ireland are outlined and the most appropriate form of treatment for each is explained. The various aspects of State support for private forestry, including advisory services, grants and schemes such as the 'Western Package', are outlined.

**Page**

pp 58 - 71

**Location**

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**Notes**  
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**Number**

832

**Author**

Bulfin M., Gallagher G., Dillon F.

**Title**

Forest production.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Series**

An Foras Taluntais. Soil Survey Bulletin No. 29

**Date**

1973

**Source**

County Leitrim Resource Survey: Part 1 - land use potential (soils, grazing capacity and forestry). Chapter VII.

**Key Word**

County Leitrim , marginal land, land use, agriculture, Yield Class, soil types, afforestation, rural development, forest soils, land use

**Abstract**

Because of the limited number of land utilisation types and low income from farming, afforestation may offer Co. Leitrim the prospect of an alternative competitive land use enterprise. The purpose of this part of the Resource survey is to establish the forestry potential of the different soils so that this information can be used to make an economic assessment of forestry as an alternative land use enterprise. The very high forest potential of Leitrim soils is seen when the county is categorised by the area in each Yield Class. 42% of the county is capable of producing Yield Class 24 to 26; a further 28% is in the high production category.

**Page**

pp 49 - 56

**Location**

Teagasc library

**Notes**

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**Address of author**

Teagasc, Kinsealy Research & Development Centre, Malahide Road, Dublin 17

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**Number**

833

**Author**

Lowery Martin

**Title**

Forestry - its part in rural development.

**Publisher**

RDS

**Place**

Dublin

**Series**

RDS Seminar Proceedings. No 4.

**Date**

1991

**Source**

The Right Trees in the Right Places: the proceedings of a conference on forestry and the environment, held in the Royal Dublin Society from October 17-19, 1990. (Edited by Charles Mollan & Michael Maloney).

**Key Word**

Coillte Teoranta, environmental protection, afforestation, economics, rural development, farm forestry

**Abstract**

The author argues that forestry is the best commercial and economic application for over one million hectares of Irish land. Sustained yield forestry is a viable job and wealth-creating enterprise on a long-term basis in Ireland. The upsurge in private planting, particularly by farmers, is welcomed. However, it is important that past mistakes are not repeated and the grant schemes are used properly. The environmental impact of the great increase in State and private planting is acknowledged and the measures which Coillte, the Forestry Board, are taking in the area of environmental protection are explained.

**Page**

pp 35 - 41

**Location**

Teagasc library

**ISBN**

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**Notes**

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**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

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**Number**

834

**Author**

Conway Andy

**Title**

Ireland - agriculture; the prospects

**Publisher**

RDS

**Place**

Dublin

**Series**

RDS Seminar Proceedings. No 4.

**Date**

1991

**Source**

The Right Trees in the Right Places: the proceedings of a conference on forestry and the environment, held in the Royal Dublin Society from October 17-19, 1990. (Edited by Charles Mollan & Michael Maloney).

**Key Word**

CAP, GATT, agricultural reform, land use, agricultural economics, food production, farm forestry, agriculture

**Abstract**

The short, medium and long term prospects for agriculture are examined. In the short term the economic prospects for agriculture are poor. In the medium term, reform of the Common Agricultural Policy will weaken support for agriculture and this will require significant adaptation for Ireland's agriculture. In the longer term a broader policy framework for rural development and rural resource management is seen as appropriate to Ireland and in accordance with the thrust of EC development. This will shift the balance of emphasis away from primary food production and toward amenity and service activities in rural areas. Environmental considerations will assume increasing importance in relation to both food production and rural resource management generally. Forestry development, by removing land from primary food production, is seen as particularly relevant to the Community's problems with exportable surpluses of agricultural produce. However, as a long-term investment, forestry development will have to be considered in the context of the long-term policy framework.

**Page**

pp 42 - 47

**Location**

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**ISBN**

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**Notes**

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**Address of author**

Cera/Conway Economic Research and Analysis

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**Number**

835

**Author**

Carbonnier Louis

**Title**

Ireland - Forestry; the potential.

**Publisher**

RDS

**Place**

Dublin

**Series**

RDS Seminar Proceedings. No 4.

**Date**

1991

**Source**

The Right Trees in the Right Places: the proceedings of a conference on forestry and the environment, held in the Royal Dublin Society from October 17-19, 1990. (Edited by Charles Mollan & Michael Maloney).

**Key Word**

forestry economics, afforestation, timber trade, timber demand, exports, softwood timbers

**Abstract**

Despite successful planting efforts since 1945, Ireland is still one of the least forested countries in Europe with only 7% of its surface area covered by forests and wooded land. Although the resources are limited, the existing plantations have the best growth in Europe and the dominating species, Sitka spruce and Norway spruce, are well suited for industrial development. Available volumes from the coniferous plantations are increasing rapidly and will reach 4.4 million cubic metres by the year 2010, which is seven times more than what it was 30 years before. Irish forestry is very cost competitive compared with Western Europe and is likely to stay in such a position in the future. Expected increases in demand for softwood-based products such as sawn wood, kraft pulp and coated wood-containing printing papers, will require an increased wood demand in Western Europe of more than 20 million cubic metres from 1988 to 200. Ireland is well placed to contribute to this expansion, but it is important to plan this process so that all sectors will benefit.

**Page**

pp 48 - 55

**Location**

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**ISBN**

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**Number**

836

**Author**

Kearney Brendan

**Title**

Agriculture, forestry and the environment in the year 2025.

**Publisher**

RDS

**Place**

Dublin

**Series**

RDS Seminar Proceedings. No 4.

**Date**

1991

**Source**

The Right Trees in the Right Places: the proceedings of a conference on forestry and the environment, held in the Royal Dublin Society from October 17-19, 1990. (Edited by Charles Mollan & Michael Maloney)

**Key Word**

EC, EU, CAP, agriculture, economic diversification, economics, rural development, land-use, environmental protection, European Union, European Community

**Abstract**

The EC policy of supporting diversification in the rural economy, together with the decrease in returns from the main agricultural enterprises, has helped to increase the rate of afforestation in the medium term. There have been a number of EC policy initiatives concerning land use, which have either supply management or environmental/conservation objectives. Some of these have been implemented in practice but have had only a marginal effect in attaining their goals. From now much more emphasis and support will be given to farming practices which respect the environment and countryside while also meeting the realities of the market. Simultaneously forestry is being promoted as an environmentally-friendly activity and as the main alternative land using enterprise. Among the factors which could affect the pace of afforestation are the high proportion of small holdings and the concern for areas of scientific interest. Nevertheless, at the end of a generation from now, up to 13% of the land area could be planted if the supportive mechanisms continue.

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pp 56 - 63

**Location**

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**Number**

837

**Author**

Miller Hugh

**Title**

The impact of the national target - 30,000 hectares per annum.

**Publisher**

RDS

**Place**

Dublin

**Series**

RDS Seminar Proceedings. No 4.

**Date**

1991

**Source**

The Right Trees in the Right Places: the proceedings of a conference on forestry and the environment, held in the Royal Dublin Society from October 17-19, 1990. (Edited Charles Mollan & Michael Maloney).

**Key Word**

afforestation, environmental protection, rural development, wildlife habitats, pollution, forestry policy, recreational forestry, amenities

**Abstract**

Although forestry expansion in Ireland makes good economic sense, the potential of forestry for wealth creation has to be tempered by appreciation of both the service functions that can be provided by forests (recreation, new habitats etc.) and by potential adverse impacts (loss of habitats, effects on streamwater etc.). Before planting, habitats of particular value must be identified and then left unplanted; there may also be extensive tracts of land of considerable habitat or wilderness importance. Streamwater can be affected by forests and forest operations leading to increased silt loads or acidity, but these problems can be alleviated by proper design of roads, ploughing and drainage schemes.

**Page**

pp 67 - 72

**Location**

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**ISBN**

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**Notes**

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**Address of author**

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**Number**

838

**Author**

Soutar Rob

**Title**

Towards a nature conservation balance sheet for afforestation.

**Publisher**

RDS

**Place**

Dublin

**Series**

RDS Seminar Proceedings. No 4.

**Date**

1991

**Source**

The Right Trees in the Right Places: the proceedings of a conference on forestry and the environment, held in the Royal Dublin Society from October 17-19, 1990. (Edited by Charles Mollan & Michael Maloney)

**Key Word**

environment, conservation, wildlife, Nature Conservancy Council, indicative forest strategies

**Abstract**

This paper is a discussion of methods which could be used to construct a broad balance sheet of losses and gains to nature conservation owing to afforestation. It draws on an approach which is being developed by the Nature Conservancy Council to assist with broad-scale audits of nature conservation resources for use in Indicative Forestry Strategies in Scotland. General research needs are identified and there is a short summary of measures which are already known to be useful in minimising losses and maximising gains to nature conservation when afforestation is planned.

**Page**

pp 73 - 82

**Location**

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**ISBN**

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**Number**

839

**Author**

Kula E., McKillop D., McKillop D.G.

**Title**

A planting function for private afforestation in Northern Ireland.

**Date**

1988

**Source**

Journal of Agricultural Economics

**Volume**

Vol. 39, No. 1

**Key Word**

afforestation, private forestry, grants, subsidies, forestry policy, planting function

**Abstract**

This project is part of the the Northern Ireland Forestry Service's effort to increase the level of private afforestation. A planting function for private afforestation projects is derived. The objective is to provide information on responsiveness of private plantation work to changes in grant aid and the time-scale involved in reallocation of land towards afforestation. Sample data covered the period 1948-84. The four most relevant variables were: land prices; softwood prices; a weighted price index for agricultural commodities; and grant aid. It is recommended that the level of grants should be increased, and promotion by advisory services should be enhanced. An annuity-style scheme to provide a steady income to foresters until felling should also be established.

**Page**

pp 133 - 140

**Location**

UCD library

**Notes**

Available

**Address of author**

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**Number**

840

**Author**

Wall Jeremy

**Title**

Environmental aspects of forestry - a community view.

**Publisher**

RDS

**Place**

Dublin

**Series**

RDS Seminar Proceedings. No 4.

**Date**

1991

**Source**

The Right Trees in the Right Places: the proceedings of a conference on forestry and the environment, held in the Royal Dublin Society from October 17-19, 1990. (Edited by Charles Mollan & Michael Maloney)

**Key Word**

environment, EC, EU, bogland ecology, bio-diversity, forestry development, forestry policy, European Union, European Community

**Abstract**

This paper examines the development of forestry in Ireland from local, Irish national, and European Community perspectives. Some of the pertinent environmental questions in forestry are addressed, such as the boglands debate, the growing of Eucalyptus, and the need to maintain and increase bio-diversity in forestry development. While several lessons can be learned from the implementation of the Irish Forestry Operational Programme, there is need for greater awareness of forestry issues in the broader context, such as tropical deforestation and desertification.

**Page**

pp 91 - 96

**Location**

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**ISBN**

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**Number**

841

**Author**

Bulfin Michael

**Title**

The right trees in the right places.

**Publisher**

RDS

**Place**

Dublin

**Series**

RDS Seminar Proceedings. No 4.

**Date**

1991

**Source**

The Right Trees in the Right Places: Proceedings of a conference on forestry and the environment held in the Royal Dublin Society from October 17 - 19, 1990. (Edited Charles Mollan, Michael Maloney)

**Key Word**

environment, diversification, cost benefit analysis, land use, marginal land, agriculture

**Abstract**

The author argues that the achievement of the apparently simple and laudable goal of the 'right trees' in the right places depends entirely on how the term 'right' is defined in this phrase. A possible list of criteria to be used in the definition of 'right trees' is included: (1) maximum biomass production; (2) quality timber production; (3) ecologically most suited species; (4) economically most suited species; (5) scenic enhancement; and (6) a weighting of criteria. The concept of 'right places' puts emphasis on the actual sites to be planted. In this context there are parameters and public interests constraints to be considered. On the physical side, soil and climate will determine both the range of species that will thrive and the maximum production that can be produced from a given site. Public interest, expressed through government action, will impinge in the form of incentives such as grants and premium payments, while public constraints are involved in such concepts as preserving Environmentally Sensitive Areas or, as in the UK, Areas of Outstanding Natural Beauty. Social policy may also involve the development of Integrated Regional Development Strategies wherein forestry is encouraged as part of an integrated approach to regional socio-economic development. This paper will concentrate on selecting the appropriate species and on maximising benefits from our land base.

**Page**

pp 99 - 107

**Location**

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**ISBN**

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**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

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**Number**

842

**Author**

McElhinney C., Mithchell D.T.

**Title**

Phosphate activity of ectomycorrhizal fungi of Sikta spruce and Japanese larch.

**Place**

Dublin

**Date**

1991

**Source**

Proceedings of Irish Botanists' Meeting 25 - 27th March 199: Department of Botany, University College Dublin.

**Key Word**

phosphate activity, enzymes, biochemistry, ectomycorrhizal fungi, Sitka spruce, Picea sitchensis, Japanese larch, Larix kaempferi, mycorrhizae

**Abstract**

Phosphatase enzymes are associated with the breakdown of complex phosphorus sources into assimilated form. Phosphatase of two symbionts isolated from Sitka spruce mycorrhizas were compared with two mycorrhizal fungi (*Paxillus involutus* and *Suillus grevillei*) cultured from basidocarps found beneath a mixed stand of Sitka spruce and Japanese larch. The fungi were grown on liquid medium containing ferric phytate, separated into cytoplasmic, extracellular and wall- and membrane-bound fractions and assayed for phosphatase. All the fractions hydrolysed p-nitrophenol phosphate (PNPP) optimally at pH 4.4 - 5.6. In all fungi, the most active enzyme was the wall-bound, which was very resistant to release by NaCl, sonication and wall-degrading enzymes (chitinase and laminarinase). The Michaelis-Menten characteristics of the wall-bound fraction showed variations between the four fungi. A wide substrate specificity was demonstrated for all fungi with pyrophosphate and sodium glycerophosphate being the most efficiently hydrolysed and sodium phytate having a low rate of hydrolysis. These studies provide more evidence of the role of ectomycorrhizal fungi in the utilisation of organic P substrates in the soil.

**Location**

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**Number**

843

**Author**

An Foras Taluntais

**Title**

How to develop forestry.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1978

**Source**

County Leitrim Resource Survey, part IV: a programme for development. (Chapter 4)

**Key Word**

County Leitrim Resource Survey, economics, employment, timber processing, subsidies, government support, grants, rural development, afforestation, marginal land, land use

**Abstract**

The potential of Leitrim soil for forest production has been demonstrated. This part of the survey examines the economic and employment aspects of forestry, the only major viable land use system. At all interest rates applicable, forestry is found to be a more economic enterprise than agriculture in Leitrim. Estimated employment potential of forestry is higher than that for agriculture and forestry results in much more employment in the processing sector. The viability and employment potential of a timber processing plant at Drumbshanbo is assessed. Two projects aimed at expanding forestry output are examined: the Drumlin Afforestation Project, which would be carried out by the State and; the Annuity Purchase Scheme, aimed at bringing private forestry within reach of the typical small landowner in the area.

**Page**

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**Location**

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**Number**

844

**Author**

Bulfin M., Hickey B.C.

(An Foras Taluntais)

**Title**

Private forestry.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1978

**Source**

County Leitrim Resource Survey, part III A: forestry, economics, employment and development proposals. (Chapter 8).

**Key Word**

private forestry, subsidies, Annuity Purchase Scheme, costs, economics, agriculture, farm forestry, grants

**Abstract**

In order to maintain production and achieve overall targets it will be necessary for the State to encourage private forestry. This chapter of the Leitrim Survey deals with private forestry from the point of the small landholder of 6-20 ha and examines the method of financing the transfer of land from agriculture to forestry. The Annuity Purchase Scheme, in which the small landowner plants his own land and receives an annual income from a timber purchasing agent, is explained. The costs to the landowner of growing the forest, the cost of felling and extraction and the revenue per ha with sale of timber at 1976 prices are demonstrated in tables. Other types of systems are also considered, including share-cropping arrangements.

**Page**

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**Address of author**

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**Number**

845

**Author**

Bulfin M.

(An Foras Taluntais)

**Title**

State forestry in Ireland.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1978

**Source**

County Leitrim Resource Survey, part III A: forestry, economics, employment and development proposals. (Chapter 2).

**Key Word**

State forestry, forestry policy, afforestation, economics, development, public awareness, economic diversification, acquisition policy

**Abstract**

This chapter provides some basic information about forestry, its current position nationally and its contribution to local development. The lack of a tradition of forestry in Ireland, the position of the State as the largest afforestation agent and the scattered nature of Irish forests have all contributed to a low level of awareness of the forest industry in rural communities. State acquisition policy and the absence of natural woodlands in Ireland have led to a system largely dominated by plantation forestry on marginal lands. The contribution of State forestry to employment, the economy generally and amenities is assessed. The importance of diversification, particularly in areas of poor land, is outlined.

**Page**

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**Address of author**

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**Number**

846

**Author**

Bulfin M.

(An Foras Taluntais)

**Title**

Forestry in Leitrim.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1978

**Source**

County Leitrim Resource Survey, part III A: forestry, economics, employment and development proposals. (Chapter 3).

**Key Word**

County Leitrim Resource Survey, afforestation, marginal land, land use, land acquisition, forest management, forestry development

**Abstract**

Forestry in County Leitrim is examined under the following headings: acquisition of land, which is hampered by the small size of parcels of land available for sale and the recent increase in land prices; production; finance; afforestation; and rotation length - rapid growth rates allow the forest manager a wider spectrum of management decisions regarding rotation length. Finally the potential contribution which forestry can make to the landscape, particularly to the drumlin and lakeland areas, is examined.

**Page**

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**Location**

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**Number**

847

**Author**

Hickey B., Bulfin M.  
(An Foras Taluntais)

**Title**

Economics of forest production in Leitrim.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1978

**Source**

County Leitrim Resource Survey, part III A: forestry, economics, employment and development proposals.  
(Chapter 4).

**Key Word**

economics, agriculture, land use, net annual revenue, costs, agriculture, net incomes, land prices

**Abstract**

The authors argue that a decision to plant trees in a particular area should be based on an assessment of the prospective net revenue, i.e. value of output less all relevant costs of forestry. Forestry and agriculture costs and values in Co. Leitrim are compared at 1973 price levels. Estimated net annual revenue per ha of agriculture and forestry, for both the Drumlin and Hill and Mountain Areas, are calculated. For the county as a whole the net annual revenue of forestry is much greater than agriculture at low discount rates. After examination of all revenues and costs for each sector it was found that, within the range of discount rates which are generally considered appropriate, the financial results favour planting of the Wet Drumlin areas in preference to the Mountain and Hill areas.

**Page**

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**Location**

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**Number**

848

**Author**

Bulfin M.  
(An Foras Taluntais)

**Title**

Employment in forestry.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1978

**Source**

County Leitrim Resource Survey, part III A: forestry, economics, employment and development proposals.  
(Chapter 5).

**Key Word**

forestry employment, harvesting, timber processing, economics, agriculture, land use, short rotation forestry

**Abstract**

The main topics of concern in this chapter on forest employment are: the distribution of employment within the different sectors of the forest industry; the relationship between Yield Class and employment; the type of employment and total employment. The numbers employed in harvesting and processing must be considered

when the employment content of a regional forest industry is being estimated. Unlike farming, which produces very few jobs in processing, it is estimated that forestry provides two jobs for every one person on the land. For a Yield Class 25 site the likely on-the-land employment is one man per 36 - 38 ha; total employment including processing is estimated at one man per 28-33 acres. Short rotation forestry is recommended as providing the best return on investment in terms of increased employment.

**Page**

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**Location**

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**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

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**Number**

849

**Author**

Bulfin M.

(An Foras Taluntais)

**Title**

Drumlin afforestation project.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1978

**Source**

County Leitrim Resource Survey, part III A: forestry, economics, employment and development proposals. (Chapter 7).

**Key Word**

afforestation, drumlin soils, land use, agriculture

**Abstract**

The County Leitrim Drumlin Afforestation Project will help to diversify land use in the area by transferring some land to a productive forest enterprise. Its two primary objectives are identified as (i) the provision of local and regional employment and, (ii) the provision of the timber raw material for home and export markets. The drumlin soils have very high growth rates and provide an alternative to the economically questionable policy of planting on peatlands and mountains sites. The Project envisages an annual planting programme of 2,400 ha over a 25-year period. This will contribute significantly to the attainment of the recommended 80-20 agriculture/forestry land use ratio.

**Page**

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**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

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**Number**

850

**Author**

Kelleher Carmel

**Title**

Forestry and farmers.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1986

**Source**

Economics and Rural Welfare Research Centre, 13th Annual Conference: The Changing Cap and its Implications. 2 December, 1986, Burlington Hotel, Dublin 4.

**Key Word**

farmer forestry, private forestry, grants, subsidies, disadvantaged areas, incentives, EC, EU, economics, agriculture, European Union, European Community

**Abstract**

Despite the suitability of land for forestry in disadvantaged areas in the west of Ireland and the high level of grant aid available, farmers in these areas have been slow to engage in forestry. This paper examines the option of forestry from the viewpoint of the western farmer. The objectives of the paper are to: (1) outline the background to the case for forestry in Ireland; (2) review the uptake of the special forestry incentives available to Irish farmers; (3) discuss the role of farmers in forestry development; (4) examine State agency and EC support for farmer forestry and; (5) assess options for future development.

**Page**

pp 188 - 213

**Location**

Teagasc library

**Notes**

available

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**Number**

851

**Author**

Hickie David

(An Taisce)

**Title**

Forestry in Ireland: policy and practice.

**Publisher**

An Taisce

**Place**

Dublin

**Date**

1990

**Key Word**

environment, ecology, afforestation, farm forestry, peatlands, marginal land, sustainable development, forestry policy

**Abstract**

This paper presents a critical overview of Irish forestry policy and suggests an approach which may allow for the development of a sustainable forestry industry which is compatible with the environment. The effects of afforestation on peatlands and other soil types and on waterways are examined. As forestry techniques become more highly developed, plantations will increasingly resemble the intensive production of other agricultural crops and will be ecologically damaging. As a result other sectors of the economy which depend on a high quality environment for their viability, such as tourism and fisheries, are threatened. The correct target areas for the expansion of commercial forestry are the wet mineral soils on marginal farmland and on the cutaway bogs of the Midlands. Farm forestry, in particular, has the potential to generate real environmental, social and economic benefits for rural communities if planned and managed properly.

**Page**

32p

**Location**

Coillte library

**Notes**

available

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**Number**

852

**Author**

Adams S.N.

**Title**

Sheep performance and tree growth on a grazed Sitka spruce plantation.

**Publisher**

Royal Scottish Forestry Society

**Place**

Edinburgh

**Date**

1986

**Source**

Scottish Forestry

**Volume**

Vol. 40

**Key Word**

sheep, grazing damage, tree growth, Sitka spruce, Picea sitchensis

**Abstract**

Scottish blackface sheep were grazed in a 2ha Sitka spruce plantation in Ballyboley Forest, Co. Antrim for 7 summers following the seventh year after planting. It was found that grazing significantly reduced growth. The output in terms of the weight gained by sheep and the biomass maintained was relatively small after the first grazing season. The small amount of feed available, together with management problems such as difficulty of gathering and loss of and damage to the wool, limits the value of grazing with sheep in young Sitka spruce plantations.

**Page**

pp 259 - 263

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Agriculture and Food Chemistry, The Queen's University of Belfast and Department of Agriculture, Northern Ireland

---

**Number**

853

**Author**

Whelan Donal P., Whelan-Schuller Mechteld

**Title**

Market analysis of broadleaved roundwood prices in Ireland: a study undertaken by Commercial Forestry Services Ltd.

**Publisher**

Commercial Forestry Services Ltd.

**Place**

Dublin

**Date**

1993

**Key Word**

hardwood prices, roundwood prices, timber trade, broadleaved timber, exports, sawmilling, timber processing,

broadleaves, hardwood timber

**Abstract**

The purpose of this study was to obtain accurate and detailed information on Irish hardwood roundwood prices and to determine the major factors influencing hardwood timber prices and attempt to quantify the effects of these factors. The feasibility of further constructing reasonably accurate price-size curves for the major Irish broadleaved species is also examined. The survey techniques used for the analysis are outlined, and the factors influencing hardwood timber prices are discussed. 114 individual usable records and 8 Irish hardwood sawmill throughput records were obtained and divided by species into the following groups: ash, beech, oak, poplar and mixed/other group for the sales records and ash, beech, oak and other for the hardwood throughput records. The average sale volume recorded in the survey was 130 cubic metres, and it was found that most of the sales were sold standing by negotiation. 4% of the sales in the survey were exported, accounting for 28% of the total value recorded in the survey and consisting of the most valuable timber. The volume of hardwood exported since 1988 is giving cause for concern that Ireland is slowly depleting its hardwood resource beyond its sustainable level. Hardwood prices depended ultimately on timber quality rather than the tree size. Therefore it was not feasible or practical to construct general price-size curves for Irish broadleaves. When the results of a similar British Forestry Commission broadleaved price survey were compared with this survey it was concluded that the average prices received for hardwood in Ireland are significantly lower than the prices received for similar quality hardwood in Britain.

**Page**

60p

**Location**

Coillte, Bray

**Notes**

Available

**Address of author**

CFS, 17 Castle St., Dalkey, Co. Dublin

---

**Number**

854

**Author**

Forrest M.

**Title**

Production systems for Eucalyptus cut foliage.

**Publisher**

Soil Science Society of Ireland

**Place**

Dublin

**Date**

1996

**Source**

Papers presented at the Agricultural Research Forum Incorporating the Annual Research Meetings of the Irish Grassland and Animal Production Association, 22nd meeting/Irish Tillage and Land Use Society, 4th meeting/Soil Science Society of Ireland/19th Annual Research Meeting: held at Faculty of Agriculture UCD, Belfield, Dublin on Thursday and Friday 28th & 29th March 1996. (Edited by P. O'Kelly, J.F. Collins & P. Storey)

**Key Word**

cut foliage, plant production systems, silviculture, Eucalyptus gunnii, Eucalypts, forest products, pruning

**Abstract**

The aim of this experiment was to determine the effects of growing system row number on the marketable yield of cut foliage. The experiment was conducted between 1990 and 1996. In April 1990 single stem one year old Eucalyptus gunnii were planted in single, double, triple and quadruple rows at a spacing of 1.75m between plants both between and within rows. On the basis of an alley width of 1.2m the treatments represented densities of 1937, 2431, 2657 and 2787 plants per hectare. The triple row produced the greatest cumulative yield, 7.94 kg. The mean yield per plant was greatest in the second year, 1.92kg. With the exception of year 1995-96 there was an upward trend in the production of juvenile foliage and a downward trend in the numbers of discard stems in the years of the experiment. The yields achieved in this experiment compare reasonable well with yields reported from England and Germany. As the market prefers juvenile foliage, it is important to increase the number of juvenile stems. Suggestions are made as to how to deal with problem of plant loss after pruning. It is

concluded that a cut foliage enterprise is a feasible proposition.

**Page**

pp 221 - 222

**Location**

Dept. of Forestry, UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Agriculture Building, Belfield, Dublin 4

---

**Number**

855

**Author**

Kent T., Bulfin M.

**Title**

The economics of wood energy crops in Irish agriculture.

**Place**

Dublin

**Date**

1996

**Source**

Papers presented at Agricultural Research Forum Incorporating the Annual Research Meetings of the Irish Grassland and Animal Production Association, 22nd meeting/Irish Tillage and Land Use Society, 4th meeting/Soil Science Society of Ireland/19th Annual Research Meeting: held at Faculty of Agriculture UCD, Belfield, Dublin on Thursday and Friday 28th & 29th March 1996. (Edited by P. O'Kelly, J.F. Collins & P. Storey)

**Key Word**

short rotation forestry, biomass production, renewable energy, energy crops, land use, agriculture, farm forestry, economics, subsidies, grants, production costs

**Abstract**

The potential contribution of short rotation forestry (SRF) to the production of renewable energy from biomass, and the costs and employment opportunities involved are assessed. This study examines the economics of wood energy crops by estimating the production costs of wood energy crops and calculating the current returns from the agricultural systems that energy crops would most likely displace. An estimate of the overall price of energy crops to the end-user can then be obtained, and this can be compared with conventional fuels. The price per oven dry tonne which woodfuel would need to reach before farmers could be persuaded to change from other agricultural enterprises is estimated. Indications are that without financial subsidisation of the farmers income, woodfuel from short rotation coppice is not a viable enterprise currently. The level of subsidisation necessary to make woodfuel competitive as a fuel for electricity generation in the current market is substantial.

**Page**

pp 223 - 224

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

Available

**Address of author**

ESB International, Stephens Court, 18/21 St. Stephens, Green, Dublin 2

---

**Number**

856

**Author**

Culleton N., Murphy W.E., McLoughlin A.

**Title**

Effects of quality of Fraxinus excelsior saplings on growth rates in the establishment phase.

**Place**

Dublin

**Date**

1996

**Source**

Papers presented at Agricultural Research Forum Incorporating the Annual Research Meetings of the Irish Grassland and Animal Production Association, 22nd meeting/Irish Tillage and Land Use Society, 4th meeting/Soil Science Society of Ireland/19th Annual Research Meeting: held at Faculty of Agriculture UCD, Belfield, Dublin on Thursday and Friday 28th & 29th March 1996. (Edited by P. O'Kelly, J.F. Collins & P. Storey)

**Key Word**

ash, *Fraxinus excelsior*, growth rate, plantation establishment, weed control, saplings, forest nurseries, nursery practice, silviculture

**Abstract**

The increase in planting of *Fraxinus excelsior* has resulted in the demand for saplings exceeding supplies. A recent study investigated the effects of planting ash saplings of varying size on mortality and growth rates in the establishment years. The first part of the study examined the effects of sapling size on subsequent performance in trees that grow in a weed free environment. It was found that the bigger the tree at planting, the greater was its chance of survival. Mortality was 15% in the 30 - 50 cm range trees and 4% in the 71 - 95 cm range. The larger trees also tended to grow significantly faster than the smaller saplings. The second part of the study examined the effects of sampling size on subsequent performance in trees that grew in an environment where no weed control was practiced. Mortality rates across all heights were high when compared to sites where weed control was practiced.

**Page**

pp 225 - 226

**Location**

Coillte library

**Notes**

Available

**Address of author**

Teagasc, Johnstown Castle, Co. Wexford

---

**Number**

857

**Author**

Collins A., Stanley W., MacSiurtain M.

**Title**

Airborne and satellite derived vegetation indices for forest productivity mapping.

**Place**

Dublin

**Date**

1996

**Source**

Papers presented at Agricultural Research Forum Incorporating the Annual Research Meetings of the Irish Grassland and Animal Production Association, 22nd meeting/Irish Tillage and Land Use Society, 4th meeting/Soil Science Society of Ireland/19th Annual Research Meeting: held at Faculty of Agriculture UCD, Belfield, Dublin on Thursday and Friday 28th & 29th March 1996. (Edited by P. O'Kelly, J.F. Collins & P. Storey)

**Key Word**

forest conditions, aerial photography, Landsat TM data, satellite imagery, remote sensing, forest health, high resolution airborne data

**Abstract**

A major use of remote sensing data is the classification of crops, based on the spectral responses of vegetation. Forests in Ireland are being monitored using a combination of Landsat TM data and high resolution airborne data. The airborne data were acquired using a Compact Airborne Spectrographic Imager (CASI) instrument. The objectives of this project were to computerise the satellite and airborne data, derive relative productivity maps based on automatic computer analysis of forested areas and verify the results on the ground. The results from the analysis of the CASI data for forests were used to analyse the vegetation index derived from the satellite data and produce a corresponding cut-off point for healthy and unhealthy forest for the entire area covered by

satellite data. A comparison of the CASI derived productivity map with the actual situation on the ground indicated a good relationship with forest crop productivity. Unhealthy crops on the ground were associated with a low vegetation index derived from the CASI data. The results indicate that vegetation indices may be applied to classify relative productivity within forest crops. Vegetation indices derived from airborne or satellite data, should equally apply to mapping relative productivity within agricultural crops.

**Page**

pp 227 - 228

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

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**Number**

858

**Author**

Bulfin Michael, Gallagher Ray, Joyce Jim, Kelleher Carmel

**Title**

Proposal for a pilot project in co-operative forestry in Ireland to be financed under Article 22 of EEC Regulation 797/85 submitted by the Irish Co-operative Organisation Society Limited on behalf of the Western Forestry Co-operative Society Ltd.

**Publisher**

Western Forestry Co-operative Society Ltd.

**Date**

1985

**Key Word**

farm forestry, marginal land, land use, wet mineral lowland, co-operative forestry, grants, subsidies, afforestation, rural development

**Abstract**

There are over 1 million hectares of wet mineral lowland in the West of Ireland which are not suitable for agriculture but which are ideally suited for forestry. This proposal is aimed at developing a Co-operative approach towards small farmer co-operative afforestation in small farming areas in the west of Ireland. The approach is based on local farmer forestry groups backed up by a Central Farmers Forestry Co-operative. Along with the incentives available under regulation EEC/1820/80, the Central Co-operative will provide the back-up organisational, supply, technical and management services to local groups. It is estimated that, through this approach, 3000 hectares per annum could be planted by farmers. The importance of overcoming opposition to farm forestry through the provision of information and by demonstrating the economic feasibility of planting on marginal land is stressed. It is hoped that this approach could be applied throughout the EC.

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30p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

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**Address of author**

Teagasc, Kinsealy Research and Development Centre, Malahide Road Dublin 17

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**Number**

859

**Author**

Irish Timber Growers Association

**Title**

Irish Timber Growers Association: forestry policy.

**Publisher**

Irish Timber Growers Association

**Date**

1985

**Key Word**

Irish Timber Growers Association, forestry policy, private forestry, farm forestry, forestry development, State support, grants, subsidies

**Abstract**

This policy statement by the Irish Timber Growers Association, the representative body for owners of commercial forests in Ireland other than those owned by the State, sets out a number of recommendations for expansion of the sector. These include: a new planting target of 20,000 ha per annum, 50% by the private sector; grants equal to those available under the Western Package should be made available throughout the country; special assistance for broadleaf planting; and the encouragement of forestry on smaller holdings through the medium of the co-operatives. Recommendations are also made for the future development of the industry including the need for increased research and development, greater species diversification and the need to deal with the difficulties faced on wet mineral lowland sites.

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**Location**

Teagasc, Kinsealy Research Centre

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**Number**

860

**Author**

Boyle G.E., McCarthy T.G.

**Title**

Forestry policy, the CAP and land prices in Ireland.

**Date**

1993

**Source**

Presented to the Annual Meeting of the European Public Choice Society, Portrush, Co. Antrim 14-17, 1993.

**Key Word**

economics, forestry policy, Common Agricultural Policy, CAP, land prices, land use, agriculture, farm surpluses, private afforestation, farmer forestry, computable general equilibrium model, grants, subsidies, economic models

**Abstract**

As part of the recent reform of the Common Agricultural Policy, there is increased support for private afforestation which, it is hoped, will encourage diversification from agriculture to forestry. This paper examines the extent to which agricultural and private afforestation policies are in conflict with the public sector's afforestation programme, and the effect that the new policies will have on the price of farmland. A dynamic two-sector computable general equilibrium model, incorporating a number of policy changes and shocks, is used in the analysis. Simulations classify the determinants of land price changes that will result from changes in policy and market conditions. It was found, as expected, that changes in the agricultural sector are the driving force in price change. It is concluded that agricultural policies militate against land use diversification in forestry, and also impairs the State's public afforestation objectives by raising the price of farmland. It is also concluded that State subsidies for private afforestation are not capitalised into farmland prices.

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14p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available

**Address of author**

Dept. of Economics, St. Patrick's College Maynooth, Co. Kildare

---

**Number**

861

**Author**

McCarthy R.

**Title**

Forest biomass as an energy source.

**Publisher**

Solar Energy Society of Ireland

**Place**

Dublin

**Date**

1979

**Source**

The Key Role of Biomass in Ireland's Energy Future: Thursday, 10 May, 1979 I.M.I. Conference Centre, Sandyford, Co. Dublin.

**Key Word**

forest biomass, energy requirements, alternative energy, coppicing, short rotation forestry, silviculture

**Abstract**

This paper gives details of the Forest and Wildlife Service's contribution to an EEC energy project aimed at investigating the energy potential of forest biomass. The first phase of this project, consisting of growth trials of a range of woody species at four representative forest sites (western blanket peat, midland raised bogs, Old Red Sandstone, podzol and drumlin-gley) was established in 1977. Plant spacing was narrower than that used in conventional forest management practice in order to increase productivity per unit area. Early results of plant survival and dry matter production from the growth trials indicated that, of the species being investigated, lodgepole pine, Sitka spruce and Eucalyptus are performing best. Above average forest land is required for satisfactory growth of species capable of coppicing and, of the four sites, only the drumlin-gley appears to fulfil this requirement. The possibility of direct seeding reducing the establishment costs of the successful, though non-coppicing conifers, is being tested. Preliminary results from these trials of seedling emergence, are encouraging. Yields of forest biomass range from 25-40 tonnes dry matter/ha/year have been obtained on productive forest lands in the United States; this is a productivity almost competitive with coal at 1974 prices. Similar yields are possible in Ireland on comparable sites. Estimates of the possible energy contribution of forest biomass, as waste materials and as pure energy plantations, are made. It is postulated that the energy import demands of this country could be reduced by 27% based on 1977 imports and assuming half the total forest area were managed on a 20 year rotation.

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16p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

862

**Author**

Hussey Brian

**Title**

Woodland or farmland as an investment.

**Publisher**

Irish Timber Growers Association

**Date**

1981

**Source**

Your Woodlands as an Investment. Irish Timber Growers Association - Seminar, Old Ground Hotel, Ennis, Co.

Clare. September 17, 1981.

**Key Word**

private forestry, agriculture, land use, farmer forestry, beef production, investment, economics

**Abstract**

A comparison is made between the potential returns on investments in beef production and forestry. After examining the return on beef at prevailing price levels, it is concluded that cash flow from beef and the ability to switch from beef quickly offers considerable advantage over forestry. A comparison of returns set out in tabular form shows that, at somewhere between 3 and 4% discount, the forest apparently begins to be a more attractive investment than the beef enterprise. The factors which affect the ability of small forests to benefit from this advantage are explained.

**Page**

pp 15 - 23

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available

**Address of author**

Woodland Investments Ltd., Courthouse Blessington, Co. Wicklow

---

**Number**

863

**Author**

Phillips John

**Title**

Planning a plantation.

**Publisher**

Irish Timber Growers Association

**Date**

1981

**Source**

Your Woodlands as an Investment. Irish Timber Growers Association - Seminar, Old Ground Hotel, Ennis, Co. Clare. September 17, 1981.

**Key Word**

forest plantations, establishment, planting, private forestry, conservation, amenity forestry, forest wildlife, environment

**Abstract**

This paper briefly outlines the factors which should be considered when a plantation is being planned. Trees are planted for the following reasons: commercial return; amenity; nature conservation; and improvement of shooting potential. The various factors influencing the suitability of the site selected for planting are outlined. The choice of species depends on the reasons for planting in the first place. Advice is given on how to plant in a way that assists conservation and provides a high degree of habitat diversity.

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pp 11 - 14

**Location**

Teagasc, Kinsealy Research Centre

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**Number**

864

**Author**

Mulloy Fergal

**Title**

Urban forestry - the concept.

**Publisher**

Tree Council of Ireland

**Place**

Dublin

**Date**

1991

**Source**

Tree Council of Ireland. Urban Forestry Conference. Theatre R, Arts Block University College Dublin, Belfield. Friday 7 June 1991.

**Key Word**

urban forestry, tree planting, environment, conservation, amenities, recreation, urban planning, community activity

**Abstract**

The urbanisation of Ireland and the role which trees have played in environmental planning in Irish cities is briefly outlined. The massive level of afforestation in rural areas, especially over the last two decades, has altered the perception of trees in cities also. The various positions held by the forester, arboriculturalist, climatologist and conservationists regarding the role of trees are described. The objectives of urban forestry in Ireland are identified as follows: to establish and maintain urban woodlands through the medium of community initiatives; to optimise aesthetic, conservational, recreational and wood production potential within the urban environment; to provide education and training; to dedicate urban woodlands to the concept of sustained yield and ultimate production of wood for furniture etc. Urban forestry is seen as an expression of involvement by the community closest to the establishment of this collection of trees. The importance of establishing a tree culture is stressed.

**Page**

pp 9 - 22

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available

**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield Dublin 4

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**Number**

865

**Author**

Teagasc

**Title**

Strategy for the development of the forest industry to the year 2015. Submission from Teagasc.

**Publisher**

Teagasc

**Place**

Dublin

**Date**

1994

**Key Word**

Teagasc, forestry research, farm forestry, forest development, rural development, forestry policy, land use, agriculture

**Abstract**

This submission deals with a number of areas which are vitally important to the realisation of the Government's planting target of 30,000 hectares per annum. These include forest research, land use studies, socio-economic impacts, the implementation of advisory and educational services. Teagasc policy in the area of forestry development and advisory services to farmers is briefly outlined. The following strategic recommendations are highlighted: an increase in research funding; the development of a policy plan for species diversification; adaptation of development strategies for different regions; the development of a coherent land use policy for forestry; a long term investment programme; and the setting up of a comprehensive database system for all aspects of farm forestry.

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16p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

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**Address of author**

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**Number**

866

**Author**

Dillon J., OCarroll N., Carey M.

**Title**

Problems and options in the afforestation of Old Red Sandstone soils.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication No. 17

**Date**

1976

**Key Word**

Old Red Sandstone soils, soil nutrients, establishment, forest management, silviculture, ploughing, ripping, phosphorus, nitrogen

**Abstract**

Soils derived from the Old Red Sandstone account for about 24% (75,000 hectares) of the total State forest area. Over a 5 year period, from 1957, up to 30 field experiments were laid down by Forest and Wildlife Service Research Branch to investigate the most important aspects of soil preparation and tree nutrition on these sites. Of all the ploughing methods tested, complete Clark tine ploughing gave the best early height growth, but not sufficient to warrant its use on a management scale. Soil disturbance by ripping is most suited to the drier sites and to areas where the iron-pan and indurated layers are within depth range. Nutrition research showed that phosphorus was the primary limiting nutrient and applications of up to 500 kg/ha of rock phosphate have been recommended for the poorer sites. Nitrogen fixing plants are the most effective method of providing this essential nutrient. With current establishment methods species selection is limited on the poorer sites. The coastal form of lodgepole pine grows well on most soils. The choice of Sitka spruce and Douglas fir is confined to the fertile areas.

**Page**

38p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Teo., Plassey Tech. Park, Limerick

---

**Number**

867

**Author**

Convery Frank J.

**Title**

Irish forestry policy.

**Publisher**

National Economic and Social Council

**Place**

Dublin

**Date**

1979

**Source**

Irish forestry policy.

**Key Word**

forestry policy, State forestry, private forestry, forest expansion, investment, economics, forest development, timber processing, forest products, employment, economic development, financial efficiency, costing, marketing, timber trade, marginal land, land use

**Abstract**

This report attempts to: (i) identify some of the major emerging forest policy issues in Ireland which are likely to be of substantial long-term significance, and; (ii) provide suggestions for policy makers concerning opportunities for fruitful action. Section I of the report provides some historical background with the emphasis on institutional arrangements and the economic environment. In Section II policy choices concerning the use of the existing forest resource are discussed, while in Section III options relating to the extension of the forest estate are examined. The author argues that major policy initiatives are required, especially in the areas of timber processing and farmer forestry. Specific recommendations include: doubling the level of analysis now being carried out on the State's forestry investments; the preparation of an integrated land acquisition procedure; increasing the level of negotiated pricing for wood; as regards private forestry, policies should be directed towards increasing the annual harvest rate from 1.6% to 3.0% of standing volume through the provision of information in the areas of harvesting and sales. The forest industry must be transformed from its present cottage industry type of wood processing structure to a fully integrated, horizontally and vertically export oriented complex. This development would result in substantial economies in both production and marketing. The establishment of a Forest Products Development Board is recommended. The existing forest estate can be substantially extended by optimum use of cutaway bogs for State forestry and drumlin and other marginal soils for private forestry. The type of structures which are most suitable for the most efficient running of a Forest Products Development Board and a Tree Farming Development Board and the manner in which these new units would relate to existing organisations are outlined. Finally the issues of deciding on which initiatives should take priority and costing these initiatives are dealt with.

**Page**

pp 21 - 225

**Location**

Coillte library

**Notes**

Available

**Address of author**

UCD Environmental Institute, Richview, Clonskeagh Drive Dublin 14

---

**Number**

868

**Author**

Convery Frank

**Title**

Impact of farm retirement and forestry measures.

**Publisher**

RDS

**Place**

Dublin

**Date**

1994

**Source**

Royal Dublin Society Agricultural Conference Proceedings Number 2. Agriculture and the Environment: the proceedings of a conference on the integration of EC environmental objectives with agricultural policy, held in the Royal Dublin Society from March 9 - 11, 1994. (Edited by Michael Maloney)

**Key Word**

farm forestry, CAP reform, agriculture, EU, EC, forest investment, private forestry, land use, land prices, environment, agri-environment programme, grants, forest premia, subsidies, European Union, European Community

**Abstract**

The author reviews the opportunities available to farmers to maximise the use of marginal land through forestry.

However, he warns that area based forest payments, while proving very profitable to investors, could be environmentally damaging. New environmental provisions are going to put the Forest Service under pressure both technically - they will need to initiate a major programme to diversify from conifers - and politically as private investors and farmers increase pressure to maximise their annual premium income on poor land not suited to broadleaf planting or insist on payments for plantations not adequately maintained. High investor interest in forestry is likely as planting costs will be covered by a planting grant and the premia can be used to pay for the land. The need to develop a coherent land use policy is explained

**Page**

pp 87 - 101

**Location**

Teagasc, Research Centre Kinsealy

**Notes**

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**Address of author**

UCD Environmental Institute, Richview, Clonskeagh Drive Dublin 14

---

**Number**

869

**Author**

IDA Ireland

**Title**

Developing the Irish timber industry for the 80s.

**Publisher**

IDA Ireland

**Place**

Dublin

**Date**

1981

**Key Word**

industrial development, IDA, timber industry, timber processing, forest products, timber trade, sawmilling, investment, forestry policy, pulpwood industry

**Abstract**

This report details the findings of a sectoral study on the timber industry carried out between 1977 and mid-1978 and a study of existing board mills in 1977. The objectives of the sectoral study were: (1) to draw up a medium term development plan for the national softwood timber industry, which would ensure that the increasing timber resources would be utilised to the best national advantage and; (2) to devise an implementation programme for the development plan. The topics covered in the study were: an overview of the various sections in the timber sector and their interdependence; the impact of international trends on the development of the Irish timber industry; industrial size and timber supplies; development of the sawmilling industry and; development of the pulpwood industry. In the late seventies the IDA initiated studies into the chipboard and wallboard industries. The implementation section of the report dealt with the areas, identified in the sectoral report, which would have to be acted upon if the sector was to be developed during the 80s. The main areas included: development of the sawmilling industry; restructuring of the existing board producing industries; progressing the development plans of the existing paper industry; discussions with potential investors in the selected product areas; selecting a single pulpwood industry strategy and the implementation of that strategy; developing a system which would give timber users a greater sense of security regarding supplies, without distorting the basic commercial relationship between supplier and user and; developing the harvesting infrastructure in Ireland.

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264p

**Location**

Coillte library / Teagasc, Kinsealy Research Centre

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**Number**

870

**Author**

Teagasc

**Title**

Farm shelter belts.

**Publisher**

Teagasc

**Place**

Dublin

**Series**

Misc. Series No. 1

**Date**

1989

**Key Word**

farm shelter belts, farm forestry, agriculture, livestock, planting

**Abstract**

This booklet explains the importance of providing farm shelter belts, especially in the west of Ireland. The effect of the shelter belt is demonstrated and advice is given on layout, siting, width/length, species selection, planting and maintenance.

**Page**

11p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available

---

**Number**

871

**Author**

Bulfin Michael, ni Fhlaithbheartaigh Nuala

(Teagasc)

**Title**

Evaluation of the new poplar clones as a tree for Irish conditions.

**Publisher**

Teagasc

**Place**

Kinsealy

**Date**

Nov/1994

**Key Word**

poplar clones, Populus, afforestation, farm forestry, timber trade, timber processing, timber market, economics, diseases, grants, broadleaves

**Abstract**

This report is an evaluation of new poplar clones and examines their suitability as forestry species for Irish conditions. The results of a survey which sought to find the location and assess the condition of existing poplar plantations in Ireland are given. There are a number of disease problems associated with poplar cultivation and there is a need to continuously introduce new clones into the country. The position of poplar in the forest estates and timber industries of several European and North American countries is assessed. All the poplar species and clones which have been tested and grown in Ireland have been imported. Many have proved unsatisfactory to Irish conditions. It is therefore important to examine the species and timber composition of clones before selection. The suitability of a number of types of poplar including section leuce, subsection Trepidae, section aigeros, section tacamahaca and hybrids between aigeros and tacamahaca is explored. Advice is given on silvicultural and management issues such as site selection, spacing and thinning. The yield and physical properties of various species in different locations are examined. Poplar timber is at present used in the following categories: sawn timber, pallets and crates; pulpwood; plywood panels; particleboard; paper manufacture and; biomass production. An assessment of poplar's economic potential is influenced by three factors: the yield that can be achieved; the value of the timber produced and; the rate of grant and premium

payable. The conclusion of the report compares the disadvantages of poplar as a forestry tree with its disadvantages. While it is easy to breed, grows very fast and is an excellent tree for farm forestry, its clonal material is susceptible to disease, it is unsuitable for many marginal land types and there is at present no market in Ireland for poplar. It is recommended that poplar should be grant aided and a premium paid under the following conditions: only the best clones will be specified and grant aided; a minimum number of clones must be used for each plantation and; only plantations on suitable soils be will be aided.

**Page**

70p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available (Funded by the Forest Service under Grant No. 6 'Back up Measures' of the Forestry Operational Programme)

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

872

**Author**

Andersohn Cornelia

**Title**

Phosphate cycling in energy crops with emphasis on the return of ash to the growing crop.

**Place**

Dublin

**Date**

1994

**Key Word**

phosphate cycling, energy crops, willow, biomass energy, ash fertilisers, energy forestry cultivation, thermal biomass conversion

**Abstract**

Two totally different crops, willow clones (*Salix viminalis* '683' and *Salix x dasyclados*) and a C4 - grass species were investigated in this study. The sampling locations were Castle Archdale, Co. Fermanagh and Kinsealy, Co. Dublin for the willow crops and Cashel, Co. Tipperary for the grass crop (*Miscanthus sinensis* 'Giganteus'). The soil types were gleys and grey brown podzolics. Sampling for this study took place once at each site during the most active growing season in June and July. Above and below ground biomass was collected, three replicates per species and site. In addition ten soil samples were taken at each site. Samples were analysed for total P, N, Fe. P-fractionation was undertaken to detect plant available pools and the organic and inorganic fractions. Models were drawn to show the P-distribution within the crop system, the yearly P-fluxes and P-export through harvest. The findings were that the P-fractionation extraction method showed very high total P levels in contrast to acid digestion total P determination method. There was a 'new' fraction found, the resin Po-fraction. The degree of plant availability of this fraction is still unclear. Outputs of phosphate through harvest consists of only 3% to 22% of the P-cycle, or 35-245 kg/ha. Return of ash was found to theoretically refill the readily available P-pool of the soils. Nevertheless calculations showed ash quantity production in the order of 0.4t/ha. This makes recycling of phosphates in the form of ash-application questionable. Recovery of available P in ash was found to be very low in the experiment undertaken in this study, only 18.9%.

**Page**

110p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available (A thesis submitted to the University of Dublin in part fulfillment of the requirements for the degree of Master of Science in Environmental Science).

**Thesis**

M.Sc. Thesis, UCD

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**Number**

873

**Author**

Bulfin Mike, Radford Toddy  
(du Quesne Ltd./ Teagasc)

**Title**

Report 1.5: A model woodfuel supply system.

**Publisher**

Netherlands Energy Research Foundation

**Place**

Petten, NL.

**Date**

1995

**Source**

Energy from biomass: an assessment of two promising systems for energy production. Project carried out within the framework of the EC JOULE II+ programme. EC contract nr: JOU2 - CT93 - 0397.

**Key Word**

biomass energy, alternative energy sources, willow, energy production, biomass electricity, CO2 emissions, environmental protection, energy farming, EU, woodfuel supply system, agriculture, farm forestry, land use, economics, labour costs, transport costs, European Union

**Abstract**

This report proposes a woodfuel supply strategy to supply the power stations at Ferbane and Lanesboro. The woodfuel would be supplied from a study area of two intersecting subsets, defined by 50km radii centred on Ferbane and Lanesboro. Willow is selected as potentially the most productive species due to its excellent coppicing characteristics and its ability to thrive on a broad range of land types. An examination of the existing system of agriculture in the region reveals that, despite the present low returns per hectare, financial support may be necessary to compete with existing land usage. The weighted average productivity of willow in the study area ranges from 8 to 11 oven dry tonnes per hectare per annum. Best practices in establishment, management, harvesting, transport, storage and clipping are defined and assessed. A detailed economic analysis of planting, harvesting and chipping machinery is carried out. The logistics of woodfuel supply is assessed. A dynamic computer model was developed to determine the optimum appropriate woodfuel supply route and the associated delivered cost of woodfuel. The labour requirements needed for the supply of woodfuel are calculated and their seasonality assessed. Potential structures for the co-ordination of woodfuel supply to the power stations are suggested. The robustness of the woodfuel supply strategy is discussed, including the issues of structures, contracts and the possible development of competing uses for biomass.

**Page**

Section 4.3 (viii, 60p)

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17.

**Number**

874

**Author**

Van den Broek Richard, Faaij A., Kent Tom, Healion Kevin, Dick William, Blaney Garrett, Bulfin Mike

**Title**

Willow firing in retrofitted Irish peat plants: overall economic evaluation and integration of background studies.

**Publisher**

Netherlands Energy Research Foundation

**Place**

Petten, NL.

**Date**

1995

**Source**

Energy from biomass: an assessment of two promising systems for energy production. Project carried out within

the framework of the EC JOULE II+ programme. EC contract nr: JOU2 - CT93 - 0397.

**Key Word**

biomass energy, alternative energy sources, willow, energy production, biomass electricity, CO2 emissions, environmental protection, energy farming, wood-fuelled power, EU, European Union

**Abstract**

The technical and economic feasibility of wood-fuelled power production using willow from energy farming in existing peat-fired plants in Ireland is being studied within the framework of the EU JOULE II+ programme. Input data in the calculations in this part of the programme are presented in ranges which leads to a kWh costs in the form of a low and high cost estimation. In the least cost supply scenario storage and chipping of wood is done at the power station. Wood will only be stored in the form of sticks. Chips harvesting is assumed to be done for that amount of wood that can be processed directly during the harvesting season. For the case studies in the present project the locations of Lanesborough and Ferbane were considered. Calculations of kWh costs for the different power plant options that were considered are presented in tabular form. The difference between the high and low kWh costs estimation appeared to be very large. The cheapest proven retrofit option is the conversion of the existing milled peat Lanesborough unit 3 into a bubbling fluidized bed. For this plant costs per tonne of avoided CO2 emissions varied between 1 and 70 ECU. Especially for the retrofitted plants the fuel costs are by far the largest cost component, resulting from their relatively low efficiencies. A biomass integrated combined cycle system (BIG/CC) appeared to have lower kWh cost than all biomass combustion plants, especially in the high costs estimation. All technologies considered have the possibility of co-firing peat and biomass. From the sensitivity analysis it becomes clear that the yields (ranging from 8 to 11 ton db/ha./yr) and the annual income for land to farmers (ranging from 150 to 600 ECU/ha/yr) are the dominating factors in the kWh costs. It is notable that raising the average transport distance 100% (up to 80 kilometres), only raises the kWh price less than 2%.

**Page**

Section 4.3 (viii, 60p)

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available

**Address of author**

Dept. of Science, Technology and Society, Utrecht University, The Netherlands.

---

**Number**

875

**Author**

du Quense Ltd., Teagasc

**Title**

Report 1.2. Physical and chemical analyses of willow and Miscanthus.

**Publisher**

Netherlands Energy Research Foundation

**Place**

Petten, NL.

**Date**

1995

**Source**

Energy from biomass: an assessment of two promising systems for energy production. Project carried out within the framework of the EC JOULE II+ programme. EC contract nr: JOU2 - CT93 - 0397.

**Key Word**

biomass energy, alternative energy sources, willow, Miscanthus, energy production, biomass electricity, CO2 emissions, woodfuel, European Union, environmental protection, energy farming, wood-fuelled power, EU, chemical analysis, land use,

**Abstract**

Two species have been selected for investigation as potential biomass crops in the Irish context. They are the C4 grass Miscanthus and several clones of the species Salix. Preliminary to an examination of their use as an energy crop is the assessment of their physical and chemical composition. Insight into positive and negative characteristics of the crops is thus gained with regard to the production, supply, utilisation and sustainability of the crops. This is in the context of developing appropriate alternative land uses to diversify from unsustainable support-driven agriculture and to source energy possibilities that can replace fossil fuels. Moisture content for

both species are compared using samples taken from different sites. Moisture content for both species varied according to the location where the sample was taken and the time of year. Figures are given for the amount of above-ground biomass contained in the stem, branch material and leaf material. Samples were also analysed for carbon, nitrogen, potassium, phosphorus, sulphur, chlorine and cadmium. If either energy crop is combusted completely in excess oxygen then the amount of carbon dioxide released is approximately 1.8 kg per dry tonne of crop. The dataset created of the nature of these two energy crops should prove useful to those working on all aspects of energy crop production and utilisation.

**Page**

Section 4.3 (viii, 60p)

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

---

**Number**

876

**Author**

Knaggs G.R., Wright L.

**Title**

The requirement for timber for the joinery trade.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1989

**Source**

Lodgepole Pine Workshop '88. Proceedings of a workshop on the potential of fast grown Irish lodgepole pine, held at the Forest Products Department, EOLAS, The Irish Science and Technology Agency, Dublin, Ireland, on the 11th November 1988. (Edited by J.A. Evertsen)

**Key Word**

timber processing, forest products, lodgepole pine, window joinery, joinery trade, Pinus contorta, timber end use

**Abstract**

This paper describes the manufacture of Standard IS63 type windows from lodgepole pine as part of the Lodgepole Pine Taskforce set up by EOLAS in 1986. The current requirements of joinery manufacturers are outlined. While some defects, such as knots and the presence of sapwood, may be permitted excessive blue stain cannot. The various stages of the manufacture at Leo Wright Ltd. are described: moulding; cross-cutting; tenoning; morticing; preservative treatment; assembly and fitting of hardware. Treatment with Protim Prevac preservative achieved a loading comfortably in excess of the required value of TBTO in sapwood. A visual assessment of the completed windows indicated that they generally met the requirements of IS 63.

**Page**

pp 115 - 121

**Location**

Forbairt library

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

877

**Author**

Forest and Wildlife Service

**Title**

Revised Yield Tables for coastal lodgepole pine.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Series**

Forest and Wildlife Service Research Communication No. 16

**Date**

1975

**Key Word**

yield class, yield tables, Forest and Wildlife Service, State forestry, crop structure, forest management

**Abstract**

These tables, which are derived from data from stands of coastal lodgepole pine grown in the Republic of Ireland, are to replace the tables given in the Forest Management tables (British Forestry Commission Booklet 34). In these tables the thinning regime assumed is the removal of one third of the crop in lines at first thinning stage and 70% of the Yield Class, selectively thereafter.

**Page**

8p

**Location**

Coillte library

**Notes**

Available

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**Number**

878

**Author**

Institute for Industrial Research and Standards/ National Board for Science and Technology

**Title**

Retrospective search on the harvesting of forest residues.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

1979

**Key Word**

forest residues, biomass, research, small wood harvesting, stump wood harvesting, branchwood harvesting

**Abstract**

This literature search covers the period 1968 - 1978. Topics covered include whole/complete tree utilisation, small wood harvesting, stump wood harvesting and branchwood harvesting.

**Page**

249p

**Location**

Forbairt library

**Notes**

available

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**Number**

879

**Author**

Bulfin M.

**Title**

An analysis of economic returns from forestry and agriculture on soils which are marginal for agriculture but highly productive for forestry.

**Publisher**

Association of European Agriculturists

**Date**

1983

**Source**

Association of European Agriculturalists Seminar on Agriculture and Forestry, Nancy, France 1983.

**Key Word**

agriculture, land use, farm forestry, marginal land, drumlin soils, economics, agriculture, net present values

**Abstract**

The comparison of agriculture and forestry presented in this paper is a summary of the findings of the study on the agricultural, social and economic resources of Co. Leitrim carried by An Foras Taluntais between 1970 and 1978. The soils of this area consist of heavy, impermeable, poorly drained gleys and only 6% of the land is classed as good for grassland. While the agricultural sector faces considerable difficulties in Leitrim, its wet drumlin soils are ideally suited for growing Sitka. In some areas growth rates of 24 to 26 cubic metres per hectare per annum are reported. A comparison between net present value (NPV) for forestry and agriculture, based on 1973 prices, reveals that the difference in favour of forestry at 3% discount is £43.2 per ha for the drumlin area without charging for labour. At 6% discount the difference is £7.7. While forestry has a distinct economic advantage over agriculture in Leitrim, several economic and institutional changes will be needed to encourage the level of private forestry which will be necessary if social upheaval is to be avoided.

**Page**

17p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available (This is the text of a paper delivered to the Association of European Agriculturists seminar on agriculture and forestry in Nancy, France 1983)

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

---

**Number**

880

**Author**

Bulfin M.

**Title**

Forest productivity on land used previously for agriculture.

**Publisher**

Office for Official Publications of the European Communities

**Place**

Luxembourg

**Date**

1990

**Source**

Marginal agricultural land and efficient afforestation. Proceedings of a workshop in the CEC land and water use research programme, held in Gembloux (Belgium), 20 and 21 October 1988. EUR-Report 1990.

**Key Word**

land use, economics, agriculture, farm forestry, private forestry, marginal land, drumlin soil, wet mineral soils, peatlands, forest productivity, wet lowland soils, Sitka spruce, *Picea sitchensis*

**Abstract**

This paper provides a summary of the findings of a forest productivity survey of 1200 plots of pure Sitka spruce grown on wet mineral lowlands in the west of Ireland. The survey attempted to assess quantitatively the link between the intensity to which land had been worked for agriculture and the subsequent productivity for forestry on that land. It was found that, using five broad previous usage categories, there is a considerable degree of correlation between forest productivity and the degree of agricultural usage. An analysis of productivity on different soil types revealed that the mineral soil component of wet lowland soils are highly productive, while peat is far more variable in productivity. A number of separate aspects of the peat soils are also related to productivity. These findings make it possible to advise a farmer of the expected yield class of his land.

**Page**

pp 45 - 52

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

---

**Number**

881

**Author**

An Foras Taluntais

**Title**

Proposal for a pilot scheme to demonstrate to farmers the real possibilities for farm forestry in the West of Ireland. (to be financed under Article 22 of Council Regulation (EEC) No. 797/85.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1985

**Key Word**

farm forestry, disadvantaged areas, EC, EU, training, education, demonstration models, forestry pilot scheme, afforestation, private forestry, State aid, grants, subsidies, European Union, European Community

**Abstract**

This proposal is aimed at the establishment of a system of demonstration farm forests in the West of Ireland and the establishment of regional information, training and education resource centres to promote farm forestry. It is envisaged that farmers will be more receptive to afforestation when they can see a practical demonstration on neighbouring farms supported by relevant information and services. Under the pilot scheme three regional farm forest resource centres are proposed: in the Northwest; the West and; in the Southwest. These are regions which have extensive areas of land suitable for forestry. Demonstration farm forests will be established on lands of progressive farmers who have already shown an interest in forestry.

**Page**

12p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available (Submitted for and on behalf of ACOT and the FWS)

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

---

**Number**

882

**Author**

Bulfin Michael

**Title**

Private forestry in Ireland: progress and problems.

**Publisher**

Teagasc, Kinsealy Research Centre

**Place**

Dublin

**Date**

1992

**Source**

Afforestation of Agricultural Land: proceedings of a workshop in the Community programme of research and technological development in the field of competitiveness of agriculture and management of agricultural

resources, held in Brussels on 12 and 13 December 1991. (Edited by K.R. Volk & N. Weber).

**Key Word**

farm forestry, agriculture, marginal land, grants, premiums, State support, afforestation, land prices, land use, forestry policy, Western Package, forestry co-operatives, wet mineral lowlands advisory services, private forestry, environment

**Abstract**

This paper outlines the development of Irish forestry, both State and private, since the early 1980s. The basic aspects of farm structures and land use prevailing in Ireland are summarised and displayed in tabular form. These cover the proportion of different soil types, patterns of ownership and farm size. Private forestry has increased dramatically in the last 10 years from 275 hectares in 1981 to 13,000 hectares in 1991. This increase is largely attributable to the fall in agricultural incomes and land prices and the increase in forestry grants, despite the pessimistic forecasts that planting grants and aid under the Western Package would not significantly alter the pattern of afforestation. The problems facing farmers interested in becoming involved in forestry, and the various schemes and programmes which provide a system of annual income support for farmers are outlined. The efforts that are being made to establish forestry co-operatives, involving farmers with adjoining lands who are interested in planting, are explained. The structure and operation of the Western Forestry Co-operative is outlined. A professional advisory service is a necessity in any programme which seeks to promote farmer forestry, especially among farmers with no tradition of forestry. It is vital that farmers be informed of the services which are available. The major problems associated with rapid afforestation are identified as: lack of diversity; stability on wet soils in windy areas; socio-economic difficulties - which can be alleviated to an extent if farmers are encouraged to plant their own land, rather than sell to another agency - and; environmental aspects. It is concluded that the wet mineral lowlands offer the greatest potential for afforestation.

**Page**

22p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available.

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

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**Number**

883

**Author**

An Foras Taluntais

**Title**

Forestry.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1986

**Source**

Seminar on Agricultural Policy, Royal Hospital Kilmainham, Nov. 20-21, 1986

**Key Word**

farm forestry, private forestry, timber market, EC, European Community, grants, forestry policy, afforestation

**Abstract**

Market prospects and European Community policy both contribute to a climate which is favourable to the promotion of forestry. Ireland has large areas of land which are marginal for agriculture, but highly productive for forestry. A combination of schemes is required to make the establishment of forests attractive to the current owners. Given favourable circumstances, it is feasible to plan for an annual planting rate of 20,000 hectares, more than half of which would be undertaken by private, institutional or farmer interests.

**Page**

5p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available (This is the text of a paper given to the Seminar on Agricultural Policy, Royal Hospital Kilmainham, Nov. 20-21, 1986).

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17.

---

**Number**

884

**Author**

Farrell Edward P., Boyle Gillian Boyle, Cummins Thomas, Aherne Julian, van den Beuken Roel

**Title**

European Community Scheme for the Protection of the Community's Forests against Atmospheric Pollution: Council Regulations 3528/86 and 1613/89. Continued monitoring of a forest ecosystem in Ireland. Project Number 9160 IR 0020 Final Report.

**Publisher**

UCD. Department of Environmental Resource Management

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report Number 17, Ballyhooly

**Date**

1996

**Key Word**

forest health, forest ecosystems, forest ecology, water chemistry, climate, atmospheric pollution, environment, land use, forest protection

**Abstract**

The aim of this project was to monitor the impact of atmospheric deposition on a coniferous forest ecosystem. The project was based in a stand of 50 years old Norway spruce on an orthic podzol soil derived from sandstone till/colluvium. The project consisted of a series of site studies investigating the edaphic and vegetation components of the ecosystem and the intensive monitoring of the chemistry of the water. These studies have enabled the establishment of a large record of continuous, intensive, high-quality measurements of water chemistry over a six-year period. The conclusions of this project are: that precipitation is dominated by seasalts, with an anthropogenic component; that ammonium deposition in this region of moderately intensive dairy farming is a potential pollution effect, and ammonia deposition needs closer study; that the forest floor is central to the forest nutrient cycles; and will be crucial in the redistribution of nutrient pools following clearfelling; that the soil solution is dominated by aluminium; that seasalt inputs are important in the Irish environment; that solute movement through the root zone is very slow. The study concludes that the forests at Ballyhooly and in the region are healthy, and there is little cause for concern for the viability in the medium term.

**Page**

ix, 122p

**Location**

Coillte Research/UCD. Department of Environmental Resource Management

**Notes**

Available

**Address of author**

Department of Environmental Resource Management, UCD, Belfield, Dublin 4

---

**Number**

885

**Author**

Bulfin M., Connolly J.

**Title**

The response of Irish landowners to forestry incentives for afforestation and management.

**Publisher**

Wissenschaftsverlag Vauk Kiel

**Place**

Kiel

**Date**

1987

**Source**

Multipurpose Agriculture and Forestry: proceedings of the 11th seminar of the European Association of Agricultural Economists (EAAE) 28 April - 3 May, 1986. (Edited by M. Merlo, G. Stellin, P. Harou & M. Whitby)

**Key Word**

afforestation, private forestry, incentives, grants, State support, tax relief, farm forestry, agriculture, 'Western Package', EEC, EC, land use

**Abstract**

Since 1980 there has been a major incentive programme for private afforestation in the West of Ireland. The method of payment of State forestry grants is explained. The role of 'Western Package', an overall Irish government/EEC Regional Development Programme for the twelve western counties, in promoting private forestry is examined. This scheme is aimed at the afforestation of land which is marginal for agriculture but suitable for forestry. The extent of uptake of grants under this scheme and the pattern of ownership amongst participating landowners is outlined in tabular form. The operation of State advisory services for landowners is dealt with. The recognition that forestry is a long term capital appreciation enterprise is reflected in the tax incentives applied to the private forestry sector.

**Page**

pp 399 - 407

**Location**

Teagasc, Kinsealy Research Centre

**ISBN**

3922553931

**Notes**

available

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd. Dublin 17

---

**Number**

886

**Author**

Ni Fhlaitheartaigh Nuala B.

**Title**

The productivity of poplar and willow clones as influenced by varying edaphic and climatic factors.

**Place**

Dublin

**Date**

1991

**Key Word**

short rotation forestry, pulpwood production, biomass energy, energy crops, poplar, *Salix viminalis*, soil nutrients, *Populus trichocarpa*, nutrient deficiency, dry matter production

**Abstract**

Short rotation forestry (SRF) is the growing of trees on rotations of two to ten years for the production of pulpwood or of biomass for energy. High quality agricultural soils are required to produce yields in excess of 12 dry tonnes per hectare. Sites that are of similar agricultural potential have produced significantly different yields under SRF. This study examines some of the factors that contribute to those yield differences. Poplar cuttings were planted in containers and field plots at two sites. Moisture levels and temperature in the early months of growth were found to have an effect on yield. A soil pH greater than 5.1 and between pH 6.1 and 7.1 in mineral soil was optimal for growth of *Populus trichocarpa* 'Fritzi Pauley.' The optimum pH was 6.8 in mineral soil and between pH 4.9 and 5.8 in organic soil for the growth of *Salix viminalis* 'Bowles Hybrid.' Phosphorus deficiencies did not occur in the establishment year in poplars and willows grown on good agricultural soils. The nitrogen availability to both species was a major growth determinant in soils of low nutrient status. On good agricultural soils adding nitrogen at various levels and frequencies in the establishment year had very little effect on the growth of *Populus trichocarpa* x *deltoides* 'Beaupre.' The optimum establishment year mid-July foliar nitrogen concentration is 3.5% dry matter in *Populus trichocarpa* 'Fritzi Pauley', 3.75% in *Populus trichocarpa* x *deltoides* 'Beaupre' and 4.50% in *Salix viminalis* 'Bowles Hybrid'.

Relative concentrations (N = 100) in mid-July of N = 100, P = 7, K = 59, Mg = 5 and Ca = 58 are optimal for the growth of *Populus trichocarpa* 'Fritzi Pauley', relative concentrations of N = 100, P = 7, K = 52, Mg = 8 and Ca = 51 are optimal for *Populus trichocarpa* x *deltoides* 'Beaupre' and—relative concentrations of N = 100, P = 7, K = 54, Mg = 3 and Ca = 27 are satisfactory for the growth of *Salix viminalis* 'Bowles Hybrid'.

**Page**

392p

**Location**

Teagasc, Kinsealy Research Centre

**Notes**

available. (Thesis submitted to the Faculty of Agriculture, UCD for the award of the degree of Doctor of Philosophy).

**Thesis**

Ph.D. Thesis, UCD

---

**Number**

887

**Author**

O'Driscoll J.

**Title**

Sitka spruce international ten provenance experiment nursery stage results in Ireland.

**Publisher**

Department of Lands, Forest and Wildlife Service

**Place**

Dublin

**Date**

1976

**Source**

IUFRO Sitka spruce *Picea sitchensis* (Bong.) Carr. International Ten Provenance Experiment: nursery stage results.

**Key Word**

Sitka spruce, broad sense heritability, nursery experiments, seed characteristics, germination rates, maternal effect, growth characteristics, seeds, *Picea sitchensis*

**Abstract**

Details on the introduction of Sitka spruce to Ireland and examples of heights and diameters it has attained are given. The background to the present experiment is given in the form of a review of early provenance research with the species. Results are grouped under the three broad phases of the experiment. All data were subjected to an analysis of variance. Broad sense heritability estimates for each characteristic are given. A correlation matrix was calculated for each year's set of data and where appropriate regression lines were calculated for specific sets of data. All parameters assessed showed a significant difference between provenances. Broad sense heritability estimates were extremely high ranging from 0.82 for root collar diameter to 0.96 for height at 2 years. Seed characteristics, though significantly different, showed no pattern of clinal variation nor did they appear to have any significant effect on first year growth. Relationships between germination rate, germination percentage and height growth suggested that these could be used as a measure of fitness. Cotyledon numbers, based on the small sample, could not be used as a means of identifying provenances. Height growth was measured at the end of 2 months, 1 and 2 years. Clinal variation was observed at all stages and increased with age. Maternal effect, as measured by germination rate appeared to have been eliminated by 2 years. Though root collar diameter was strongly correlated to height growth it had only a weak negative correlation with latitude.

**Page**

pp 140 - 163

**Location**

Coillte library

**Notes**

available

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**Number**

888

**Author**

Savill P.S.

**Title**

Sitka Spruce International Ten Provenance Experiment nursery stage results from Northern Ireland.

**Publisher**

Department of Lands, Forest and Wildlife Service

**Place**

Dublin

**Date**

1976

**Source**

Sitka Spruce *Picea sitchensis* (Bong.) Carr. International Ten Provenance Experiment nursery stage results.

**Key Word**

Sitka spruce, *Picea sitchensis*, provenance comparisons, nursery experiments, germination, seeds, growth characteristics, planting, cultivation, silviculture

**Abstract**

The experiment was laid down and carried out according to the working plan. Seed measurements showed that the two Alaskan provenances were significantly heavier than the other provenances but no clear relationship was found. Germination was exceedingly poor with less than 50% germination in most provenances. Surplus plants sown in the open were used to make up losses. This resulted in large differences in growth within provenances at the end of one year. Scheduled growth assessments were postponed until the end of the second year.

Coyledon numbers ranged from 3 to 7 with a mean of 5.2, differences between provenances were not significant. Due to different origin of lining out stock, two year assessments must be interpreted with some caution. Provenance 3062 was the best at 2 years while Alaskan ones were the least vigorous. It appears at this stage that the vigour of Sitka spruce, based on height growth, tends to reach its maximum in the provenances from South British Columbia and North Washington. Evidence from older experiments supports this view.

**Page**

pp 205 - 214

**Location**

Coillte library

**Notes**

available

**Address of author**

Oxford Forestry Institute, Dept. of Plant Sciences, University of Oxford, South Parks Road, Oxford OX1 3RB, England

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**Number**

889

**Author**

O'Driscoll J.

**Title**

IUFRO S2. 02. 12 Sitka Spruce Provenance: Working Plan for International Ten-Provenance Experiment.

**Publisher**

Forest & Wildlife Service

**Place**

Dublin

**Date**

1976

**Key Word**

Sitka spruce provenance experiments, nursery experiments, seeds, germination, planting out, IUFRO, *Picea sitchensis*

**Abstract**

This report describes the background to the establishment of the IUFRO Working Party to co-ordinate the collection of seed lots for provenance trials of the most important tree species in North West America. The collection of *Picea sitchensis* began in 1968. It was agreed to pick ten provenances which would be common to all the participants. The overall object of the projects was to study provenance by site interaction between countries plus genotype stability under different ecological conditions. The experiment was to be divided into

three phases: 1. Seed beds, three hundred full seed per provenance to be sown in paper pots; 2. Lining out, lining out of germinated plots and; 3. Outplanting, eighty one plants per provenance to be outplanted using the method of the country concerned. The various assessments to be made at each phase are outlined.

**Page**

40p

**Location**

Coillte library

**Notes**

available

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**Number**

890

**Author**

Anon

**Title**

Coillte nurseries.

**Place**

Birr

**Date**

Oct/1995

**Source**

Irish Timber and Forestry

**Volume**

Vol. 4, No. 7

**Key Word**

Coillte Teoranta, forest nurseries, nursery practice, Forest Service, seeds, cultivation

**Abstract**

This article traces the development of forest nurseries in Ireland since 1979 when almost all planting was carried out by the Forest Service's 14 nurseries. Private nurseries began to expand during the mid 1980s, and in 1989 Coillte's new commercial mandate allowed for the setting up of the company's nurseries' business. At present Coillte has 6 nurseries which produce 50 million plants a year and employ 250 full time staff. The work of the nurseries at Ballintemple, Rathluirc and Aughrim is briefly described. The process of growing trees from seed is described and the market for young trees is analysed.

**Page**

pp 8 - 9

**Location**

Coillte library

**Notes**

available

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**Number**

891

**Author**

Louder L.F.

(Crann Woodlands Management Trust)

**Title**

Markets for broadleaf forest products and other considerations.

**Publisher**

Crann Woodlands Management Trust

**Place**

Aughavas, Leitrim

**Date**

Nov/1989

**Key Word**

broadleaf forest products, timber processing, CRANN, broadleaves, hardwoods, marginal land, drumlin soils

**Abstract**

The initial terms of reference for this study were to provide assistance in identifying future markets for timber developed from thinnings and the final cut of broadleaf plantations located on private farm woodlots in the western and northern counties and in particular Co. Leitrim. The study also provided assistance to CRANN in pursuing its goals of broadleaf planting. The market for broadleaf thinning from felling is analysed and the steps necessary to ensure that Irish timber would be of the highest quality in soundness, durability and aesthetic appearance are outlined. The various considerations necessary to assess the economic viability of growing hardwoods are outlined and the suitability of Leitrim drumlin soil for broadleaved planting is examined. Comparisons are made with hardwood trials in Finland. A plan for implementing research in broadleaves is outlined. During the course of the study the author toured a number of timber processing industries and inspected a number of forest operations, and his findings are summarised.

**Page**

44p

**Location**

Coillte library

**Notes**

available

**Address of author**

Aughavas, Country Leitrim.

**Number**

892

**Author**

Finch T. F.

**Title**

Soil survey of some forest areas around Scarrif, Co. Clare.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Series**

An Foras Taluntais. Soil Survey No. 34

**Date**

1979

**Key Word**

soil surveys, Old Red Sandstone, forest soils, soil analysis

**Abstract**

Four forested areas around Scariff, Co. Clare were selected for detailed soil surveys. These were located in the townlands of Bohatch, Sellernaun, Ballymalone, and Raheen. The first three areas are underlain by Old Red Sandstone bedrock, and are covered with mixed glacial till of dominantly Old Red Sandstone composition. The fourth area lies on a Carboniferous limestone-Old Red Sandstone boundary, and contains soils derived from mixed till derived from both these rocks. The till is of Midlandian (Devensian/Weichsel) age. The areas were surveyed at a scale of 1 : 10,560 and the soils were separated on the basis of parent material and pedological characteristics. The analytical methods used were: particle size analysis; total neutralising value; organic carbon; total nitrogen; free iron. The following are the different soil types found in the area: gleys; grey brown podzolic; brown earth; brown podzolic; podzol; lithosol; regosol; and peat.

**Page**

50p

**Location**

Coillte library

**Notes**

Available

**Number**

893

**Author**

Gardiner John J.

**Title**

Land availability for afforestation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1991

**Source**

Society of Irish Foresters. Symposium: Challenges and Perspectives in Irish Forestry. Friday 5th April, 1991.

**Key Word**

land use, agriculture, marginal land, land acquisition, planting targets, land prices, afforestation

**Abstract**

Despite the fact that 50% of Ireland's land is classified as marginal, it is estimated that only 3% of land changes ownership. The various factors which affect the extent to which forestry can compete for land are examined. Despite falls in agricultural prices and changes in the Common Agricultural Policy, farmer confidence remains high and it may be difficult to acquire the land needed to meet annual afforestation targets.

**Page**

pp 10 - 14

**Location**

Coillte

**Notes**

available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Belfield Dublin 4

---

**Number**

894

**Author**

Wright Bill

**Title**

Species diversification - a strategy for the future.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1991

**Source**

Society of Irish Foresters. Symposium: Challenges and Perspectives in Irish Forestry. Friday 5th April, 1991.

**Key Word**

species diversification, broadleaved species, environment, landscape, mixtures, broadleaf planting, economics, broadleaves

**Abstract**

The author encourages the idea of forestry as a responsible management of a resource for multiple use. Recreation, wildlife and landscape must be considered along with timber production. The goal should be a reasonable balance between timber production and social and environmental objectives. The main factors which should influence species selection are as follows: site selection; the needs of the customer; public considerations; natural regeneration; disease and; economic considerations, which depend heavily on the species' potential yield class. A brief comment is made on the 5 most frequently planted trees in Irish forests: Sitka spruce; Norway spruce; Douglas fir; hybrid or Japanese larch and; lodgepole pine. The economics of broadleaf planting is considered in regard to return from investment and considerations of interest to the general public such as the environment and conservation. New developments in species diversification, including the introduction of genetically improved Sitka spruce and hybrid larch and experiments with Washington provenances of Sitka spruce are examined. The potential yield of poplars is also assessed.

**Page**

pp 15 - 26

**Location**

Coillte

**Notes**

available

**Address of author**

NI Forest Service, Dundonald Hse., Newtownards Rd., Belfast

---

**Number**

895

**Author**

Lyons John

**Title**

National status report for Ireland.

**Publisher**

Danish Forest and Landscape Research Institute

**Place**

Horsholm

**Date**

1995

**Source**

Harvesting early thinnings cost effectively: the present and the future. A report from Concerted Action 'Cost Effective Early Thinnings' AIR - CT93 - 1538. (Edited by Luc Bouvarel & Pieter Kofman).

**Key Word**

thinning, harvesting, forest transportation, logging operations, timber sales, timber prices

**Abstract**

The problems which causes delayed first thinning in the past have largely been overcome. There is now a strong demand for all wood produced from first thinnings, and changes in planting practices have made extraction much easier. The prevailing pattern of thinning in most forests is outlined, and the thinning operation itself is described. The separation, collection and transportation of the various product categories from early thinning is described. The system of selling the products from thinning is outlined and figures are provided for harvesting costs and timber values.

**Page**

pp 330 - 337

**Location**

Coillte library

**ISBN**

8789822412

**Notes**

Available

**Address of author**

Coillte, Government Buildings, Sullivans Quay, Cork

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**Number**

896

**Author**

Evertsen J.A.

(EOLAS. Forest Products Department)

**Title**

The effect of modern forest practices on the wood quality of fast grown spruces. Final report: CEC Contract MAIB-0031-IRL (BA).

**Publisher**

EOLAS

**Place**

Dublin

**Date**

1991

**Key Word**

wood quality, timber properties, forest practices, silviculture, Sitka spruce, fast grown species, X-ray microdensitometry, quadratic regression analysis, growth rate, Picea sitchensis

**Abstract**

The objective of this programme was to determine whether a juvenile wood/adult wood boundary could be established by analysing ringwidth, wood density and ultrasound properties of wood on an annual ring basis. X-ray microdensitometry was used to analyse ringwidth and annual density pattern, while a customised ultrasound technique was used to measure latewood density. Quadratic regression analysis was applied to the curved data patterns. Patterns with cut-off points could only be found for average annual density and minimum annual density. The cut-off point between juvenile and adult wood, when determined by quadratic regression analysis, is year 17 for average annual density and year 16 for a minimum average density.

**Page**

46p

**Location**

Coillte Research, Bray

**Notes**

Available

**Address of author**

Forbairt, Forest Products Dept., Glasnevin Dublin 9

---

**Number**

897

**Author**

Evertsen J.A.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

The potential of home-grown lodgepole pine. Taskforce Report No. 1.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1987

**Key Word**

lodgepole pine, timber processing, timber end-uses, joinery, forest products, sawlog, preservative uptake, stem form, timber degrading, lodgepole pine, Pinus contorta, preservatives

**Abstract**

Stem form, as determined by stem sweep and/or lean, is the principal log degrading parameter/s in home-grown lodgepole pine. When stems with a maximum sweep/lean of 10 - 15 degrees are selected during the cultivation period, between 75-95% of the lodgepole pine stands can deliver acceptable sawlog quality material. In the drying process, twist of boxed heart sections and splitting appear to be the principal factors causing degrade. No blue-stain was observed. In the assessment of machinability, selected home-grown lodgepole pine appears to potentially qualify for the use in joinery manufacture. An evaluation of preservative uptake by home-grown lodgepole pine, shows that the uptake of TBO containing preservative is similar to that of imported red deal.

**Page**

10p

**Location**

Coillte, Bray, Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forbairt, Forest Products Dept., Glasnevin Dublin 9

---

**Number**

898

**Author**

Day K.R.

(International Union of Forest Research Organisations. Sitka Spruce Working Group)

**Title**

Systematic differences in the population intensity of green spruce aphid, *Elatobium abietinum* (Walker), in a provenance trial of Sitka spruce, *Picea sitchensis* (Bong.) Carr.

**Publisher**

British Columbia Ministry of Forests / Irish Forestry Board

**Place**

Edinburgh

**Date**

1993

**Source**

Proceedings of the IUFRO International Sitka Spruce Provenance Experiment. Sitka Spruce Working Group S2.02.12. (Edited by C. Ying Cheng & Lesly A. McKnight)

**Key Word**

aphids, seed origin, Sitka spruce provenances, IUFRO experiments, insect pests, forest protection, *Picea sitchensis*

**Abstract**

Aphid populations were evaluated on foliage samples within an experimental forest area. There were marked differences in aphid intensity between three areas within the experiment and between individual trees. Significant differences between provenances of Sitka spruce were of particular interest, since aphid intensity appeared to be related to the latitudinal origin of the seed. The more southerly provenances were especially susceptible. The accumulated evidence suggests that no single physiological difference between trees will account for all observed variations in aphid intensity, although the later growth cessation of susceptible provenances deserves further study.

**Page**

pp 151 - 163

**Location**

Coillte Research

**Notes**

Available

**Address of author**

School of Biological and Environmental Studies New University of Ulster, Coleraine, Northern Ireland.

**Number**

899

**Author**

Pfeifer A.R.

(International Union of Forest Research Organisations. Sitka Spruce Working Group)

**Title**

Sitka spruce IUFRO provenances in Ireland: results to 9 years.

**Publisher**

British Columbia Ministry of Forests / Irish Forestry Board

**Place**

Edinburgh

**Date**

1993

**Source**

Proceedings of the IUFRO International Sitka Spruce Provenance Experiment: Sitka Spruce Working Group S2.02.12. (Edited by Cheng C Ying, Lesley A. McKnight)

**Key Word**

Sitka spruce provenances, IUFRO experiments, provenance comparisons, growth rate, seed origin, *Picea sitchensis*

**Abstract**

The results of the nursery and field performance of 67 Sitka spruce IUFRO provenances are presented. Data

collected throughout a 12 year period from seed show: 1) Height at 3 years was closely correlated with latitude of seed origin, with the northern provenances from Alaska and the Nass and Skeena River areas being the least vigorous. 2) Southern provenances from mid-Oregon to northern California showed exceptional vigour, but as 2 year seedlings, suffered increasing autumn frost damage with decreasing latitude of seed origin. 3) The pattern of height growth after 9 years in the field was very similar to that at the end of the nursery stage. 4) All provenances were hardy in the field once past the tender seedling stage. 5) A strong genotype by environment interaction was detected due to the response by the southern provenances to the mild climate of low elevation coastal test sites. On the basis of this study it was concluded that the current provenance recommendations of Queen Charlotte Islands and Washington sources are perhaps too conservative and mid-Oregon material should be tested on an operational pilot scale.

**Page**

pp 151 - 163

**Location**

Coillte Research, Bray

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

900

**Author**

Keane M.G., McCarthy R., Pfeifer A., Ward D.

**Title**

Forestry.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1991

**Source**

Climate change: studies on the implications for Ireland. (Edited by B.E. McWilliams)

**Key Word**

climate, environment, global warming, greenhouse effect, climatic change, carbon dioxide emissions, CO2 gases, forest productivity, weather

**Abstract**

Any change which occurs in the Irish climate over the next forty years or so will influence not only the tree crops being planted today, but also many of the trees and forests already growing in Ireland. Irish forestry, moreover, is currently going through a major transition and any future effects brought about by a changing climate may well be superimposed on even greater changes due to socio-economic causes. The possible effects of higher temperatures and carbon dioxide levels on forest productivity are examined. Of the variables likely to affect growth, temperature is thought to be the most important and will result in increased productivity where soil water is not a limiting factor and where nitrogen availability is enhanced. The effects of climate change on forests on different soil types is examined. Peat soils in particular could be expected to produce more productive forests as the climate becomes drier and warmer. However, proper draining is essential if any benefit is to be derived. Moisture deficiency on mineral soils will mean that climate changes will have a limiting effect on growth. The effects of increased winter-time temperatures on growth and on forest diseases is examined. Seed production is likely to be enhanced and excessive natural regeneration of some species may produce problems.

**Page**

pp 45 - 68

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

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**Number**

901

**Author**

O'Driscoll J.

**Title**

Tree improvement, its role and future in Ireland.

**Publisher**

Ryoodkiti Toda

**Place**

Tokyo

**Date**

1974

**Source**

Forest tree breeding in the world. (Edited by Ryookiti Toda).

**Key Word**

tree breeding, tree improvement, genetics, clones, inter-provenance hybridisation, wood properties

**Abstract**

The initial object of the Irish tree improvement programme is to select the most suitable provenances of those exotic species being used in the afforestation programme. The selection of superior phenotypes will be carried out within the better provenances and these will be incorporated into orchards. The type of orchard established will be decided by the ease with which vegetative reproduction can be achieved. The number of orchards and the species for which they are established will be dependent on the demand for the species concerned in the afforestation programme. The first cycle of orchards will contain clones selected for good form and growth. Later specialised orchards will be established for specific characteristics such as high density and fibre length. All the clones will be progeny tested and based on the performance of the progeny orchards will be rogued. The second cycle of selection will be carried out within the progeny of the rogued orchards will be based on best individuals within best families. Hybridisation work will not play a major role in the overall scheme. Consideration will be given to the possibility of using inter-provenance hybridisation when breeding for specific characteristics.

**Page**

pp 37 - 52

**Location**

Coillte library

**Notes**Available

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**Number**

902

**Author**

Pfeifer A.R., Murphy P.G.

**Title**

Wood as a renewable resource. Project 099 EIR: The development of a high yielding multi-clonal variety of Sitka spruce.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Internal Report

**Date**

1986

**Key Word**multi-clonal varieties, Sitka spruce, seeds, seedlings, genetics, genetic variation, breeding, growth rate, wood density, tree improvement, *Picea sitchensis*

**Abstract**

This report describes the first stages in the programme to develop a high yielding multi-clonal variety of Sitka spruce. This 2 year period of the project concentrated on the selection, collection and propagation of genetic material from which a multi-clonal variety will be developed. Plant material and seeds were collected from several sources including mature and semi-mature forest stands, transplant lines in commercial nurseries, progeny tests and seed and plant exchange with AFOCEL, France. A breeding strategy was designed to include the means by which new and more refined genetic variation can be developed and incorporated into the variety. A study which investigated both inter and intra provenance variation in wood density was also undertaken. This was initiated to determine the possible effects on wood quality in developing a rapidly growing variety of Sitka spruce. Results from the study show that within Sitka spruce a close negative correlation exists between growth rate and wood density at the provenance level. However, this relationship is not as pronounced at the individual tree level within provenances. This finding, together with the extensive variation in density found between trees, will enable genetic gains to be achieved in this trait by the selection and breeding from trees with superior growth rate and average or above average wood density. A Pilodyn 6J Wood Tester was also evaluated as a field tool for rapidly assessing the wood density in standing trees.

**Page**

ix, 125p

**Location**

Coillte, Bray

**Notes**

Available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

903

**Author**

Coillte Teoranta

**Title**

The case for afforestation by Coillte Teo. on Bord na Mona cutaway bogs.

**Publisher**

Coillte Teoranta

**Place**

Dublin

**Date**

1990

**Key Word**

cutaway bogs, peatlands, Bord na Mona, Coillte Teoranta, peatland forestry, forestry policy, land use, economics, forest development, land acquisition, afforestation

**Abstract**

This submission argues that cutaway bogs coming out of peat production should continue to be transferred to Coillte Teo. for forest development. Ireland's climate is very suitable for forestry and growth rates are among the highest in Europe. The suitability of cutaway bog for tree growing and Coillte's long experience of peatland forestry are examined. The availability of land for planting is a key factor in forestry expansion and the optimum use of worked out commercial peatlands is an essential ingredient to this. A number of pilot and experimental plantations on Bord na Mona cutaway bogs established between 1955 and 1987 are examined. The findings on establishment, growth, vegetation control and wind damage provided by these experiments are outlined. Timber prices, forest management, and administration details on forest established by Coillte on cutaway bogs, 1988-1989, are provided. The benefits of Coillte forests on cutaway bogs to both the local and national economies include wood self-sufficiency, reduction of imports and development of exports. It is concluded that forestry is a viable, and in most cases the optimum, use for Bord na Mona cutaway bogs in the light of most recent information.

**Page**

30p

**Location**

Coillte Research

**Notes**

available

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

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**Number**

904

**Author**

Farrell E.P., Boyle G.M. (eds.)  
(UCD. Department of Environmental Resource Management)

**Title**

European Community Programme on the Protection of the Community's Forests Against Atmospheric Pollution. Monitoring of a forest ecosystem in a region of low-level anthropogenic emissions Ballyhooly project. Project number 8860IR001.0. Final report.

**Publisher**

UCD. Department of Environmental Resource Management

**Place**

Dublin

**Series**

Forest Ecosystem Research Group. Report No. 4

**Date**

1991

**Key Word**

atmospheric desposition, coniferous forest ecosystems, Norway spruce, Picea abies, water analysis, atmospheric gas concentrations, atmospheric pollution, anthropogenic emissions, chemical analysis composition, environment, forest ecology

**Abstract**

The Ballyhooly project (number 8860IR001.0) was initiated in 1988 under European Community Council Regulation 3528/86. The project was begun late in 1988, and the period of measurement now reported covers the years 1989 and 1990. The aim of the project was to monitor the impact of atmospheric desposition on a coniferous forest ecosystem. The project was based in a plantation stand of Norway spruce (*Picea abies* (L.) Karst.), approximately 50 years old on an Orthic podzol (FAO) derived from sandstone till/colluvium, in a location relatively remote from pollution sources and about 30 km from the sea. The project consisted of a series of site studies covering the edaphic and vegetation components of the ecosystem and the intensive monitoring of the chemistry of water with continuous collections being made at its point of entry to the ecosystem (precipitation) and at various points on its passage through it (throughfall, humus water and soil water). Atmospheric gas concentrations were also monitored at intervals. The results confirm that the Ballyhooly stand is healthy and the level of pollutants in the atmosphere is low. Only ammonium desposition shows a significant anthropogenic influence, the result of animal production on surrounding farms. The most obvious feature of the ionic composition of the ecosystem waters is the concentration of ions of marine origin principally sodium, chloride, magnesium and sulphate. Levels are very high by comparison with Central European locations but low compared to extreme coastal situations in Ireland. Calcium is the one element which appears to be in short supply in the ecosystem. Concentrations in both foliage and litter and in soil water are low. Molar ratios of calcium to magnesium are also low, in the upper soil, well below reported critical levels. This might be expected to presage fine root damage, but the limited studies conducted to date suggest that the root system is healthy.

**Page**

52 p

**Location**

Coillte, Bray

**Notes**

available (A. Pfeifer)

**Address of author**

Department of Environmental Resource Management, UCD, Belfield Dublin 4.

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**Number**

905

**Author**

An Foras Taluntais

**Title**

The research needs of forestry.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1978

**Key Word**

forestry research needs, soil research, nutrition, tree improvement, cutover peats, management research, silvicultural practices, land use, agriculture, economics

**Abstract**

This report presents the findings of a liaison committee set up by An Foras Taluntais and the Forestry Division of the Department of Lands and charged with investigating the research needs of Irish forestry and formulating a research programme to meet these needs. The issue of soil research is considered under the following headings: soil survey investigations; selection of forest sites; soil problems in existing plantations; integration of forestry and farming and; economic considerations. The question of the nutritional requirements of forest trees is considered under the two stages in forest tree culture, propagation and existing forest stands. Other issues discussed include: afforestation of cutover peats; nursery research; tree improvement; forest pathology; climatic effects; weed control and; management research, which deals with silvicultural and other practices which have vital influences on the volume, quality, economy and planning of forest production. Another issue which needs careful investigation is the comparison of the economics of land use under agriculture and forest production.

**Page**

24p

**Location**

Coillte Research

**Notes**

available

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**Number**

906

**Author**

Kerrigan John

**Title**

A growing resource.

**Publisher**

EOLAS

**Place**

Dublin

**Date**

Aug/1993

**Source**

Technology Ireland

**Volume**

Vol. 25, No. 4

**Key Word**

timber industry, timber processing, planning, economics, timber market, pulp processing, forest products, Medite, OSB, sawmilling

**Abstract**

This article stresses the integrated nature of the forestry industry in Ireland and the contribution that each sector makes to employment and the economy generally. It is estimated that the amount of timber available for processing will double over the next decade and more pulp processing plants will be needed to deal with expected output. The record and future prospects of Irish timber exports is assessed. Although Ireland will never match competing wood producing countries in terms of the size of the industry, rapid growth rates and nearness to major markets are important advantages. New developments, including the implementation of the Operational Forestry Programme, rationalisation of the sawmilling industry and the establishment of a National Forestry Institute are discussed.

**Page**

pp 51 - 52

**Location**

Coillte library

**Notes**

available

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**Number**

907

**Author**

Kennedy Tom

**Title**

Fat profits from forest thinnings.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

Feb/1985

**Source**

Technology Ireland

**Key Word**

Medite, timber processing, forest residues, wood residues, Medium Density Fibreboard, MDF, forest products, forest thinnings, small diameter pulpwood, thinning

**Abstract**

This article describes the operation of Medite, the Medium Density Fibreboard (MDF) plant in Clonmel which processes small diameter pulpwood and sawmill residues. The plant was established by the American company Medford in 1983 and has a processing capacity of 140,000 cubic metres per year. The various stages of loading, bark stripping and chipping are described. The chips are compressed and the bond is strengthened by the addition of a urea formaldehyde resin. The market for wood residues will expand as the demand for bark-free chips increases. The article concludes that Medite's success in the European market may encourage the setting up of a second major international mill in some other timber rich region of Ireland.

**Page**

pp 45 -47

**Location**

Coillte library

**Notes**

available

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**Number**

908

**Author**

Moloney Sean

**Title**

Report to Forest and Wildlife section of the Department of Energy. Study on the machine planing of Irish native Sitka spruce.

**Place**

Limerick

**Date**

1989

**Key Word**

finishing quality, machined wood, Sitka spruce, Picea sitchensis, planing, surface smoothness, sawmilling industry, timber processing

**Abstract**

The objectives of this study were to provide forest growers with data on the factors which influence the

finishing quality of machined spruce wood, and to provide the sawmilling sector with data on the drying of Sitka in relation to machining and machining criteria for the planning of Sitka spruce. In order to obtain satisfactory data it was considered essential to identify critical parameter settings which would guarantee consistent planned surface finish. The methodology employed was one of statistically designed experiments using orthogonal assays. Four factors were identified: yield class; moisture content; rake angles and; feed speeds. Trees were selected from 4 different yield classes and processed samples were planed using a Wilson spindle moulder. The quality of the surface was measured in four scoring zones, the finish value being the mean of all four measurements. Because no satisfactory means exists of measuring the surface smoothness of planed timber which can take into account variability, the testing was carried out visually and tactilely by five judges. The analysis of the surface quality of the clearwood indicated that yield class, moisture content and feed speed were not significant factors. However, rake angle proved to be significant indicating an optimum value between 22.5 degrees and 23.5 degrees. Neither feed speed nor yield class were significant

**Page**

19p

**Location**

Coillte Research

**Notes**

available

**Address of author**

Dept. of Wood and Building Technology, University of Limerick.

---

**Number**

909

**Author**

Simons Strategic Services Division.

**Title**

A strategy for the Irish timber industry: A proposal for Coillte Teoranta the Irish Timber Council the Industrial Development Authority Coras Trachtala.

**Publisher**

Simons Strategic Services Division.

**Place**

Vancouver, BC

**Date**

1991

**Key Word**

timber industry, timber processing, forest products, marketing strategy, softwood sector, product specifications, distribution, economics, exports, timber trade

**Abstract**

The objective behind the commissioning of this study was to identify, structure and resolve the issues and opportunities facing the Irish softwood sector in its drive to further penetrate export markets. The study attempts to formulate a marketing strategy which would help provide realistic linkages between available resources, the probable market place demands and the policies and initiatives needed to ensure a proactive transition. The report focuses on the following strategic elements: market strategies for Irish producers to achieve cost, delivery and quality competitiveness in the post 1991 UK market place and specified alternative market places; identification of those product areas for which the available timber resource is appropriate; detailing of product specifications for different and achievable market segments; identification of alternative marketing and distribution strategies; development of a detailed and specific export and promotion plan and; identification of the limiting success factors and strategies to minimise or overcome them.

**Page**

80p

**Location**

Coillte Research

**Notes**

Confidential - restricted circulation

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**Number**

910

**Author**

Adams S.N., Dickson D.A.

**Title**

Some short-term effects of lime and fertilisers on a Sitka spruce plantation. 1. Field studies on the forest litter and the uptake of nutrients by trees.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1973

**Source**

Forestry

**Volume**

Vol. 46, No. 1

**Key Word**

fertilisers, fertilisation, nutrients, foliar mineral concentration, lime, nutrient uptake

**Abstract**

A factorial experiment tested the effects of three rates of ground limestone and two rates of NPK fertiliser on two Sitka spruce plantations on sites with poorly drained soils. There was no N or K fertiliser remaining in the litter layer 8 months after application and the nutrient status of the trees had been increased. The P fertiliser remained in the litter layer and had not been taken up by the trees. Nine months after application, lime had remained in the litter layer and had significantly reduced the foliar N and P concentration of the trees.

**Page**

pp 31 - 37

**Location**

Coillte library

**Notes**

available

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**Number**

911

**Author**

Adams S.N., Cornforth I.S.

**Title**

Some short-term effects of lime and fertiliser on a Sitka spruce plantation. II. Laboratory studies on litter decomposition and nitrogen mineralization.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1973

**Source**

Forestry

**Volume**

Vol. 46, No. 1

**Key Word**

fertilisers, fertilisation experiments, lime, litter decomposition, carbon dioxide production, nutrients, nutrient uptake

**Abstract**

Laboratory incubation experiments show that lime, applied in the field or immediately before incubating, increases the rate at which Sitka spruce needles and forest floor litter decompose. The presence of lime resulted in an increase in carbon dioxide production and this was accompanied by the rapid assimilation of both native and added mineral N. The application of mineral N also increased carbon dioxide production from lime-treated spruce needles.

**Page**

pp 39 - 47

**Location**

Coillte library

**Notes**

available

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**Number**

912

**Author**

Dickson D.A., Savill P.S.

**Title**

Early growth of *Picea sitchensis* (Bong.) Carr. on deep oligotrophic peat in Northern Ireland.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1973

**Source**

Forestry

**Volume**

Vol. 47, No. 1

**Key Word**

fertilisers fertilisation experiments, nutrients, nutrient uptake, Sitka spruce, tree growth, oligotrophic blanket peat, herbicides, minerals, peatlands, *Picea sitchensis*

**Abstract**

The relationship between growth of young Sitka spruce, planted on deep oligotrophic blanket peat, and uptake of N, P, and K by the trees under various fertiliser and herbicide regimes is examined. Despite the provision of adequate P, tree growth eventually becomes limited by a shortage of available N. This can be overcome at present only by repeated applications of fertiliser N. The use of herbicides to kill heather in checked crops increases the availability of N temporarily, and fertiliser K in all situations improves growth, though often only slightly. It is suggested that following the initial application of phosphate a finite fraction of the total N content of the peat becomes available to the trees. Once this has been used the release of mineral nitrogen is so slow that crops become N-deficient and growth is limited. There is no evidence to suggest that once canopy closes the situation will change, so that on oligotrophic peat sites managers are faced with the possibility of having to apply nitrogen fertilisers every 3 or 4 years to maintain growth at a satisfactory level. Although there is as yet no direct evidence on oligotrophic peat that there will not be an increase in the rate of N mineralization once crops reach 5 - 7 metres in height, work on other poorly drained soils in Northern Ireland indicates that it is unlikely to happen.

**Page**

pp 57 - 88

**Location**

Coillte library

**Notes**

available

**Address of author**

Northern Ireland Dept. of Agriculture, Agricultural and Food Chemistry Research Division

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**Number**

913

**Author**

Savill P.S.

**Title**

The effects of drainage and ploughing of surface water gleys on rooting and windthrow of Sitka spruce in

Northern Ireland.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1976

**Source**

Forestry

**Volume**

Vol. 49, No. 2

**Key Word**

rooting depth, root stability, Sitka spruce, Picea sitchensis, ploughing, surface root-plates, windthrow, cultivation

**Abstract**

Because it is unlikely that rooting depth of Sitka spruce on surface water gleys will be increased by intensive deep drainage, it is necessary to encourage trees to develop wide-spreading surface root-plates to maintain stability. Plough furrow and even shallow turf ditches severely restrict root-plate development. Thus crops planted on ploughed sites are likely to suffer from windthrow much sooner and more seriously than those on turf-planted sites, where there are considerably fewer ditches. It is recommended that single mouldboard ploughing should be replaced either by double mouldboard ploughing or turf planting on gleys.

**Page**

pp 133 - 141

**Location**

Coillte library

**Notes**

available

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**Number**

914

**Author**

Anon.

**Title**

Pragmatic approach will pay dividends.

**Publisher**

Benn Industrial Publications Ltd.

**Place**

Tonbridge

**Date**

Dec/1990

**Source**

Forestry and British Timber

**Volume**

Vol. 19, No. 12

**Key Word**

Coillte Teoranta, forest products, timber processing, timber trade, State forests, business organisation, marketing, afforestation, forestry policy

**Abstract**

This article describes the challenges facing Coillte Teoranta, the new company which has taken charge of Ireland's State-owned forests. From operating as a centralised government organisation, the new company now functions within seven regional business units with their own budgets. Issues covered include rationalisation and staff reductions, continued afforestation and marketing of the forests' rapidly increasing timber output. The relationship between Coillte and the Irish sawmill sector, in particular regarding inspection for compliance with structural timber standards, is also discussed.

**Page**

pp 41 - 42

**Location**

Coillte library

**Notes**  
available

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**Number**

915

**Author**

Guyer C.F., Edwards C.J.W.

**Title**

The role of farm woodland in Northern Ireland: an appraisal.

**Publisher**

Geographical Society of Ireland

**Place**

Dublin

**Date**

1989

**Source**

Irish Geography

**Volume**

Vol. 22, No. 2

**Key Word**

farm woodlands, woodland management policy, farm forestry, forestry policy, CAP, land use, agriculture, Common Agricultural Policy

**Abstract**

This paper examines the role of farm woodland in Northern Ireland, one of the most sparsely wooded areas of Europe. Census data reveals that woodland occupies only 1.01% of all agricultural land; less than one quarter hectare per holding. Furthermore under CAP pressures to increase agricultural land a scarcely adequate resource declined by nearly 18% between 1975 and 1986, though rates of change are seen to vary spatially. The paper reviews past farm woodland policies and assesses their performance, and discusses the likely effects of recently introduced woodland policy.

**Page**

pp 79 - 85

**Location**

Dept. of Agriculture library

**Notes**

available

**Address of author**

Dept. of Environmental Studies, University of Ulster, Coleraine, Northern Ireland

---

**Number**

916

**Author**

Gillmor Desmond A.

**Title**

The upsurge in private afforestation in the Republic of Ireland.

**Publisher**

Geographical Society of Ireland

**Place**

Dublin

**Date**

1992

**Source**

Irish Geography

**Volume**

Vol. 35, No. 2

**Key Word**

private forestry, farm forestry, land use, EC, EU, European Union, European Community, subsidies, grants, private afforestation, agriculture, farmer incomes, State support, Western Package, marginal land, economic development, rural development, employment

**Abstract**

There has been a dramatic growth in the annual rate of private afforestation, from a mean of 193 ha over the period 1930-79 to 9217 ha in 1990. The reasons for the very low level of non-State involvement in forestry before the 1980s are examined. These include the small size of most farm holdings, the absence of 'forest consciousness' in Ireland and the lack of a clear policy regarding private forestry during the first decades of the new State. From the late 1970s there was an increasing realisation of the economic potential of Irish forestry, both because of the fast rate of growth on Irish soils and the favourable market conditions for timber. The comparative advantage of forestry over agriculture on marginal lands was demonstrated, and this was particularly true in lowland mineral soils. Government and European incentives, especially the Western Package, played important roles in expanding the private forestry sector. Disincentives for farmers to switch from livestock farming were gradually removed during the mid to late 1980s and in 1987 the government identified forestry as one of the main areas for development in its Programme for National Recovery. Expenditure on forestry greatly increased under the Forestry Operation Programme 1989 - 1993. The distribution and type of private afforestation is examined. The piecemeal nature of a major change in land use and landscape is noted and the development of a coherent land use policy is encouraged.

**Page**

pp 89 - 97

**Location**

Dept. of Agriculture library

**Notes**

available

**Address of author**

Dept. of Geography, Trinity College, Dublin 2

---

**Number**

917

**Author**

Convery Frank J.

**Title**

The potential of forestry to contribute to rural development.

**Publisher**

Agricultural Science Association

**Place**

Dublin

**Date**

Sept/1981

**Source**

Agricultural Record

**Key Word**

farm forestry, private forestry, rural development, employment, economics, agriculture, land use, marginal land, farm incomes, tree farming, forestry policy

**Abstract**

This paper assesses the development consequences of a vigorous afforestation programme. It is estimated that the total employed in all sectors of the forest industry - including in-forest and wood harvesting, transportation and processing - will reach 8,800 by the year 2000. A further 9,000 jobs will be indirectly created in other parts of the rural economy. It is recommended that a Forest Products Development Board be established to support the forest products sector through research and marketing assistance. Much of the 8 million acres classified as marginal in Ireland is extremely productive for tree growth. It is estimated that, on at least one million acres of this land, net income could be increased by £50 an acre if it were converted to tree farming. Adjusting for the long time required for forests to yield a return is necessary if this additional potential revenue is to be realised. The advice and support of agricultural science graduates is needed if the tree-farming concept is to succeed.

**Page**

pp 36 - 40

**Location**

Dept. of Agriculture Library

**Notes**

available

**Address of author**

UCD Environmental Institute, Richview, Clonskeagh Drive, Dublin 4.

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**Number**

918

**Author**

O'Dwyer Kieran

**Title**

The production and use of wood residues by the Irish timber industry.

**Place**

Dublin

**Date**

1984

**Key Word**

wood residues, timber industry, timber processing, sawmilling, debarking, forest products, timber markets, timber trade, timber end use

**Abstract**

This study examines the production of wood residues by the Irish timber industry and the uses to which they are put. The aims of the study were to provide information on the volumes of each type for residue currently produced and to estimate future production in the light of changing market outlets and production processes. Of particular interest was the quality of residues and the means by which they could be upgraded by incorporating debarking machinery into sawmill processes. The results of the study show that a small but increasing number of sawmills operate debarking machinery and are thus capable of producing higher quality, bark-free residues. The study shows that it can be economic for even moderately sized mills to install such machinery but that distance from residue markets is of central importance. Estimates of volumes of each type of residue are derived, the estimates being based mainly on the application of conversion yields to estimated future sales of roundwood.

**Page**

120p

**Location**

Dept. of Agriculture Library

**Notes**

available (M.Sc. Thesis, 1984. Dept. of Statistics, Trinity College, Dublin)

**Thesis**

M.Sc. Thesis, TCD

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**Number**

919

**Author**

Ward Sean

**Title**

Review on policy on private forestry.

**Place**

Dublin

**Date**

1983

**Key Word**

private forestry, investment, economics, private afforestation, forestry policy, Forest and Wildlife Service

**Abstract**

The purpose of this study was to examine the role of private forestry in Ireland, the impact of existing policies, the possible impact of alternative policies and to make policy recommendations. Private afforestation has been at a low level for many years. Those groups of people with a potential interest in forestry are identified in the report and it is recommended that the Forest and Wildlife Service prepare information and publicity material

directed at these groups. However, there are no grounds for believing that private afforestation will increase markedly. A small proportion of the assets of pension funds is available for the acquisition of immature forest crops. It is recommended that the Forest and Wildlife Service capture this funding by the lease of young State forests to financial institutions and that the funds realised be used to increase State afforestation.

**Page**

80p

**Location**

Dept. of Agriculture Library

**Notes**

available (M.Sc. Dissertation, 1983. Dept. of Statistics, Trinity College Dublin 2)

**Thesis**

M.Sc. Thesis, TCD

---

**Number**

920

**Author**

Rea Thomas

**Title**

A new pulpwood industry: its timing and location.

**Place**

Dublin

**Date**

1976

**Key Word**

timber processing, timber industry, pulpwood, forest products, economics, wood residues, private forestry

**Abstract**

The aim of this project was to identify when and where a new pulpwood industry would be justified, having regard to the projected raw-material availability and the projected capacity of the existing plants. A forecast of pulpwood availability over the next 15 years, by region, was built up by evaluating the effects of an alternative felling policy in State forests, by quantifying the consequences of increased growth rate evidenced in younger plantations, by assessing the volume of wood residues and by including pulpwood production from private woodlands. The conclusion is that by the early 1980s sufficient material will exist to support two new industries.

**Page**

90p

**Location**

Dept. of Agriculture Library

**Notes**

available (M.Sc Thesis, Department of Statistics, Trinity College, Dublin)

**Thesis**

M.Sc. Thesis, TCD

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**Number**

921

**Author**

O'Connor Robert, Kearney Brendan  
(Statistical & Social Society of Ireland)

**Title**

Economic issues in Irish forestry.

**Publisher**

Statistical & Social Society of Ireland

**Place**

Dublin

**Date**

1993

**Key Word**

forestry policy, economics, land use, rural development, timber processing, forestry history, planting targets, private forestry

**Abstract**

The main objective of this paper was to show the extent to which forestry can provide income and employment in Ireland. The paper begins by placing the position of forestry in Ireland in relation to other European countries. A summary of the history of forestry in Ireland from the beginning of the 17th century is provided. Recent developments in forestry are examined including the introduction of the current forestry operation programme and the problems of achieving planting targets. The issues associated with the impact of forestry on rural areas, with particular emphasis on land use and rural employment, are discussed. The economics of private planting is also examined. In the concluding section, which deals with the timber trade, the authors stress the need for additional pulp processing capacity to deal with the additional pulpwood and residues from sawmilling.

**Page**

35p

**Location**

Dept. of Agriculture Library

**Notes**

available (Paper read before Statistical & Social Inquiry Society of Ireland, 22 April 1993)

---

**Number**

922

**Author**

Nugent Helen

(Department of Finance. Analysis Section)

**Title**

Forestry and infrastructural aid under the Western Package programme.

**Publisher**

Department of Finance

**Place**

Dublin

**Date**

1985

**Key Word**

Western Package, EC, EU, European Community, European Union, forestry policy, grants, subsidies, private forestry, land use, farm forestry, co-operative forestry

**Abstract**

This report examines six schemes operating under the Western Package. The operation of the forestry scheme and the main aims which underlie it are briefly explained. The initial response to the scheme was very slow. This is due to the following factors: 1. The unfavourable attitude to forestry in Ireland; 2. The length of the investment period; 3. The lack of technological know-how and scarcity of suitable machinery; 4. Insufficient publicity for the Scheme; 5. Insufficient grants to encourage investment. A new approach to deal with the lack of progress of the scheme has been proposed by the Irish Co-operative Organisation Society. The ICOS suggest a co-operative forestry venture using existing co-operative structures as a basis. The author argues that there is a case for using State owned machinery to help in soil preparation for forestry on farms.

**Page**

157p

**Location**

Dept. of Agriculture Library

**Notes**

available

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**Number**

923

**Author**

Coillte. Research & Development

**Title**

Report to the Forest Service, Department of Agriculture, Food and Forestry on forest research 1995.

**Publisher**

Coillte Teo.

**Place**

Bray

**Date**

1995

**Key Word**

forestry research, silviculture, forest protection, genetics, tree improvement, Coillte, State forestry, remote sensing

**Abstract**

This report on the work carried out by Coillte's Research & Development branch is divided into four sections. 1. Genetics and tree improvement. The major project in this area was the continuing Sitka spruce improvement study. During 1995 the emphasis in this study changed from growth and productivity measurements to wood quality research. 2. Silviculture. The following tasks were undertaken by researchers in the area of CIR aerial photography and remote sensing of forest health: national inventory of forest condition using CIR; evaluation of CASI imagery for the classification of damaged forests; the use of satellite imagery to identify forest damage in the midlands; the evaluation of long term fertiliser trials using CIR aerial photography. Other silvicultural projects included windthrow, root development, and ploughing. 3. Site studies. In the area of forest nutrition, work was concentrated on tree growth on high pH soils, laboratory services, and phosphorus fertilisation. 4. Forest protection. Further work on developing pest management strategies for the forest pests large pine weevil, Fomes, the pine beauty moth and Phytophthora were undertaken.

**Page**

41p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow

---

**Number**

924

**Author**

Gray H.J.

**Title**

The economics of Irish forestry.

**Publisher**

Statistical and Social Enquiry Society of Ireland.

**Place**

Dublin

**Date**

1963

**Source**

Journal of the Statistical and Social Enquiry Society of Ireland. 117th Session, 1963 - 64.

**Volume**

Vol. 21, Part 2

**Key Word**

State forestry, afforestation, forestry development, forestry policy, economics, revenue, costs, expenditure, timber processing, timber trade, finance

**Abstract**

This paper deals with the development of State forestry in Ireland, particularly in regard to economic implications. Three main periods of development - 1908-1922, 1922-1958 and from 1958 onward - are dealt with. The ambitious programme put forward in 1908 by the Departmental Committee on Irish Forestry, under the auspices of the Department of Agriculture and Technical Instruction for Ireland is examined. In this section, special emphasis is placed on the question of financial returns on State investments in forestry. In 1917 the Forestry sub-Committee of the British Reconstruction Committee examined the financial implications of afforestation and recommended that State forestry development should concentrate on supplying future timber

demands rather than setting any financial objective. This outlook informed State forestry policy during the second period under review. The third section of the period examines the new methods of cost control and increasing revenue introduced in the later period. Future prospects for timber price rises are also examined and the current state of operational planning in the State forestry sector is assessed.

**Page**

pp 18 - 44

**Location**

RIA library

**Notes**

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**Number**

925

**Author**

Brennan David

(Department of Finance. Analysis and Operations Research Section)

**Title**

Timber harvesting policy in the Irish Forest Service

**Publisher**

Department of Finance

**Place**

Dublin

**Series**

Report No. 162

**Date**

1988

**Key Word**

Forest Service, semi-state companies, harvesting, forestry policy, finance, costs, staffing, State forestry, economics, operating efficiency, timber sales, timber trade

**Abstract**

The purpose of this study was to conduct a commercial appraisal of the timber harvesting policy of the Irish Forest Service. From Jan 1989 the Forest Service will operate as a commercial semi-State company and its objectives will be primarily concerned with making profits on investments. The study concludes that the existing harvesting operations of the Forest Service are inherently very inefficient and consequently will lead to considerable commercial losses if radical changes are not brought about. Revenue from 1987 harvesting operations was £3.5 million less than the costs incurred. It was found that money spent on this operation was excessive because: (i) the output levels of State forest workers was very low; (ii) the overhead costs are extremely high. This is primarily due to the employment of excessive numbers of supervising and managerial staff. To operate as a commercial concern, the Forest Service will have to significantly reduce staffing. This conclusion has major implications for all areas of forestry activity, not just the harvesting policies.

**Page**

iv, 66p

**Location**

Dept. of Agriculture Library

**Notes**

available

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**Number**

926

**Author**

Culleton N., Murphy W.E., McLouglin A.

**Title**

Deciduous tree growing for rural development.

**Publisher**

Teagasc

**Place**

Dublin

**Date**

Jan/1993

**Source**

Farm & Food

**Key Word**

farm forestry, private forestry, weed control, deciduous trees, hardwoods, rural development

**Abstract**

This article traces the development in farm forestry from the early 1980s. At that time a change in national forestry policy and EC funded incentives resulted in a rapid increase in private afforestation. The trend towards using better quality land for planting has meant that a broader choice of tree species is being considered. The most popular deciduous species being planted on Irish farms are surveyed with brief notes on weed control and the uses to which timber can be put on farms.

**Page**

pp 8 - 9

**Location**

Coillte library

**Notes**

available

**Address of author**

Johnstown Castle Research Centre, Co. Wexford

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**Number**

927

**Author**

Anon

**Title**

Investing in forestry.

**Publisher**

Belenos Publications Ltd.

**Place**

Dublin

**Date**

24 Dec/1992

**Source**

Business & Finance

**Key Word**

private forestry, State aid, taxes, grants, investment, economics

**Abstract**

The various financial incentives for private investors in forestry are examined. Grant aid, premia and taxation benefits assist establishment of plantations and help to make the long delay on returns from investment less burdensome. Brief notes are provided on institutional investment, taxes on private forestry and private forestry companies are included in this feature.

**Page**

pp 21 - 23

**Location**

Coillte library

**Notes**

available

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**Number**

928

**Author**

Anon

**Title**

Managing Ireland's forests.

**Publisher**

Belenos Publications

**Place**

Dublin

**Date**

18 Nov/1993

**Source**

Business & Finance

**Key Word**

forest management, recreation, tourism, research, woodland heritage, business, economics

**Abstract**

This special feature on forestry includes short articles on the management of Irish forests, recreation and tourism based on forestry, forest research and Ireland's woodland heritage.

**Page**

pp 35 - 38

**Location**

Coillte library

**Notes**

available

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**Number**

929

**Author**

Anon

**Title**

Coillte: the wood for the trees.

**Publisher**

Belenos Publications

**Place**

Dublin

**Date**

18 Oct/1993

**Source**

Business & Finance

**Key Word**

Coillte Teoranta, State forestry, investment, economics, timber trade

**Abstract**

This article assesses the business performance of Coillte Teoranta since its establishment as a commercial semi-state company in 1989. Between 1922 and 1983 the State has spent £261million on forestry but it is likely to be a number of years before the company can provide a return on this investment. While profits have been slow in coming, the growth in the company's forest and land assets has been significant. These were worth £754 million in Dec. 1993.

**Page**

pp 12 - 16

**Location**

Coillte library

**Notes**

available

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**Number**

930

**Author**

McCracken Eileen

**Title**

Tenant planting in 19th century Ireland.

**Publisher**

Royal Forestry Society

**Place**

Tring, Herts.

**Date**

1973

**Source**

Quarterly Journal of Forestry

**Volume**

Vol. LXVII

**Key Word**

forestry history, tree planting, landlords, tenants, land use, private forestry, landlord-tenant relations, estate planting

**Abstract**

The first half of the 19th century was an era of planting in Ireland and landlords and tenants between them planted the same acreage as the State in the first half of the 20th century. Analysis of the numbers and types of trees planted by tenants shows that most tenants put in under 5,000 trees and that conifers and deciduous trees were equally favoured. Tenant planting practically ceased after the 1830s.

**Page**

pp 220 - 226

**Location**

Coillte library

**Notes**

available

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**Number**

931

**Author**

Seaby D.

**Title**

Rhizina undulata on Picea abies transplants.

**Publisher**

Paul Parey

**Place**

Hamburg

**Date**

1977

**Source**

European Journal of Forest Pathology

**Volume**

Vol. 7, No. 3

**Key Word**

scrub clearance, slash burning, Rhizina undulata colonisation, Picea abies transplants, fire sites

**Abstract**

At least three quarters of the sites of brash fires in a mainly coniferous area on peat in Co. Tyrone were colonised by Rhizina undulata. On each of these sites an average of eight newly planted Picea abies died within five years. No more deaths were recorded during a further three years. Deaths of Picea abies seldom occurred where there had been no fire or on fire sites on hardwood stumps in the same area.

**Page**

pp 186 - 188

**Location**

Coillte library

**Notes**

available

**Address of author**

**Number**

932

**Author**

Seaby D.A., Dickson D.A.

**Title**

A pruning device for sampling tree crowns.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1977

**Source**

Forestry

**Volume**

Vol. 50, No. 2

**Key Word**

tree foliage sampling, pruners, pruning cutter, sample collection, foliar nutrient concentration

**Abstract**

This article describes a device for retrieving foliar samples from the crown of trees. It consists of 3.3m long bamboo pole fitted with a pruning cutter and spring clips and can retrieve up to three samples simultaneously.

**Page**

pp 143 - 144

**Location**

Coillte library

**Notes**

available

**Address of author**

Plant Pathology and Agriculture and Food Chemistry Research Division, Dept. of Agriculture of N. Ireland, Newforge Lane, Belfast 9

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**Number**

933

**Author**

Seaby D.A.

**Title**

Suggestions for 'automatic forest fertilisation' by a wind-operated system.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1977

**Source**

Forestry

**Key Word**

fertilisation, wind-operated fertiliser application, fertilisers, helicopter applications, foliar nutrient deficiencies

**Abstract**

A system which may be used to automatically fertilise a large area by small regular applications is described. This involves using a rotary atomiser attached to a mast 40m above tree level to disperse minute droplets of fertiliser over a distance of 2 km. Fertiliser could be released using an electric wind powered mechanism. The advantages of the system include rapid adjustment of fertiliser application to foliar nutrient deficiencies,

reduction of waste and considerable costs reduction on helicopter based application systems.

**Page**

pp 165 - 168

**Location**

Coillte library

**Notes**

available

**Address of author**

Plant Pathology Research Division, Dept. of Agriculture for Northern Ireland, Newforge Lane, Belfast BT9 5PX

---

**Number**

934

**Author**

Savill P.S., Weatherup S.T.C.

**Title**

The effect of afforestation on water runoff in the Woodburn catchment area.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1974

**Source**

Forestry

**Volume**

Vol. 47, No. 1

**Key Word**

afforestation, water runoff, hydrological factors, water relations, hydrology, Larix leptolepis

**Abstract**

This paper analyses weekly runoff and rainfall records for 1960-71 for two catchments: a forest area, planted between 1958 and 1960, of 111.5 ha and a grass area kept permanently for grazing of 26.5 ha. No significant changes were detected in water yield from the forest catchment over the 12 years. The experiment demonstrates the difficulties in making precise measurements and comparisons from data collected in areas of rolling topography where soils among other factors differ.

**Page**

pp 45 - 56

**Location**

Coillte library

**Notes**

available

**Address of author**

Forestry and Biometric Division, Dept. of Agriculture, Northern Ireland

---

**Number**

935

**Author**

Dickson D.A.

**Title**

The effect of form, rate, and position of phosphatic fertilisers on growth and nutrient uptake of Sitka spruce on deep peat.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1971

**Source**

Forestry

**Volume**

Vol. 44, No. 1

**Key Word**

fertilisation, phosphatic fertilisers, growth rate, nutrient uptake, phosphatic compounds, fertiliser application, foliar nutrient concentration, deep peats, peatlands

**Abstract**

This study compares the effects of superphosphate, ground rock phosphate and basic slag on the growth of Sitka spruce up to the eighth year on deep oligotrophic blanket peat in Northern Ireland. Three separate application systems were examined. It was found that broadcast application was initially the most effective, but no significant difference in mean tree height was found between this method and placement on top of the ribbon. Both were found to be significantly more effective than application of fertiliser below the ribbon. Fertiliser position had little effect on foliar nutrient concentration in either the fifth or eighth growing seasons. In all treatments, concentrations of all foliar nutrient elements, except K, decreased significantly between the fifth and eighth growing seasons. The broadcast application of ground rock phosphate at not less than 50 kg P/ha is recommended for the establishment of Sitka spruce on deep blanket peat, but supplementary fertilising with K, and possibly P, may be necessary about 8 years after planting.

**Page**

pp 17 - 26

**Location**

Coillte library

**Notes**

available

**Address of author**

Chemical and Animal Nutrition Research Division, Ministry of Agriculture, Northern Ireland

---

**Number**

936

**Author**

Nieuwenhuis Maarten A., MacSiurtain Mairtin  
(UCD. Department of Forestry)

**Title**

Tree by tree data and results of the precise volume estimation by end product, of the standing timber in Tomnafinnog Wood, Coolatin, Co. Wicklow.

**Place**

Dublin

**Date**

1994

**Key Word**

price volume estimation, forest management

**Abstract**

This report contains a complete printout of the data and results relating to the volume estimation of the standing timber at Tomnafinnog Wood. The data and results are stratified by species, into: (i) Oak; (ii) Beech; (iii) Other species; (iv) Douglas fir plantation; (v) Norway spruce plantation. In each strata the data and results are presented on a tree by tree basis and identified by a tag number specific to the tree. All trees were numbered sequentially with coloured tags from north to south in three blocks: 1. West of Derry River; 2. East of Derry River and east of the main ride; 3. East of the main ride. The results include, for each product, diameter (cm) and length (m) 3P estimations and measurements, the associated volume calculations (cubic metre), the ratios of measured volume to predicted and the presentation of each product volume (cubic metre) and volume ratio. These data and results provide the basis for the management of the wood.

**Page**

150p

**Location**

Dept. of Forestry, UCD

**Notes**

Not available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

937

**Author**

McConnen Richard J., Amidon Elliot L.

**Title**

A computer-based approach for evaluating plantation alternatives - a case study of Pinus contorta in Ireland.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1970

**Source**

Forestry

**Volume**

Vol. 43, No. 1

**Key Word**

computer applications, information technology, economic models, Faustmann model, data processing, planning, Pinus contorta, lodgepole pine, finance, costs, revenue, forest management, thinning schedules

**Abstract**

This paper describes the use of a computer programme to calculate discounted net revenues for 432 combinations of sites, costs, and returns with fixed thinning schedules. The calculations were carried out using the Faustmann economic model. The tabulated outputs correlated net revenue/acre with different rotations and interest rates. The numerical results will be helpful in allocating funds between planting sites and in setting rotation length for a given site.

**Page**

pp 31 - 43

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Agric. Economics, Montana State University, Bozeman, Montana

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**Number**

938

**Author**

Simpson A.W.

**Title**

State forest working plans in Northern Ireland.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1965

**Source**

Forestry

**Volume**

Vol. 38, No. 1

**Key Word**

forest working plans, State forestry, forest management, working-plan units, long-term management plans,

planning

**Abstract**

The author provides a brief overview of the evolution of working plans in Northern Ireland's State forests. The structure of these plans and modes of implementation are discussed. Various aspects of the different management plans used are outlined. The procedure for revising and amending the plan is described. The size of the working-plan is described, and the extent to which staff are allowed to deviate from it is examined.

**Page**

pp 41 - 58

**Location**

Coillte library

**Notes**

available

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**Number**

939

**Author**

Mangan Aedine, Walsh P.F.

**Title**

Some observations on the spread of Dutch elm disease in Ireland, 1978-79.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1980

**Source**

Irish Journal of Agricultural Research

**Volume**

Vol. 19, Nos 2 & 3

**Key Word**

Dutch elm disease, fungal diseases, fungi, forest protection, forest pathogens, *Ceratocystis ulmi*, plant pathology, wilt diseases

**Abstract**

Results of laboratory examinations of elm twig samples received during 1978 and 1979 are presented. Sampling was designed to monitor the spread of the aggressive strain of Dutch elm disease fungus from the three foci of infection identified in 1977. Some information is also given on the distribution of the Eurasian and North American races of the aggressive strain in Ireland.

**Page**

pp 133 - 140

**Location**

Teagasc library

**Notes**

available

**Address of author**

Seed Testing Station, Dept. of Agriculture, Abbotstown, Co. Dublin

---

**Number**

940

**Author**

Cooper A.

**Title**

The composition and structure of deciduous woods in County Down, Northern Ireland.

**Publisher**

Elsevier Science Publications

**Place**

Amsterdam

**Date**

1986

**Source**

Forest Ecology and Management

**Volume**

Vol. 14, No. 3

**Key Word**

ecological studies, deciduous woods, broadleaves, forest ecology, *Fagus sylvatica*, beech, *Acer pseudoplatanus*, sycamore, *Pinus sylvestris*, Scots pine, *Fraxinus excelsior*, ash, ground vegetation, broadleaf forests, soil mineral nutrient status, woodland clearance, agriculture, environment

**Abstract**

The results of an ecological survey of deciduous woods in north County Down showed that variation in the composition of the ground flora, canopy composition and structure, and patterns of tree regeneration was related to environmental gradients of soil mineral nutrient status, the intensity of grazing and the degree of soil water-logging. It was shown that the effects of the dominant species of the tree canopy on the ground flora were secondary. Deciduous woodland had been cleared at some lowland sites and replaced by conifers or agriculture. The woods surveyed are very different from native Irish *Blechno-Quercetum* and *Corylo-Fraxinetum*, but are very closely related to mixed deciduous woods in England and Scotland. *Fagus sylvatica* and *Acer pseudoplatanus* have naturalised and have regeneration patterns related to edaphic factors. However, the regeneration status of the current canopy dominants and associated trees suggests that other changes in canopy composition will take place if the woods are not managed further. Replacement of *Pinus sylvestris* and *Fagus sylvatica* by *Fraxinus excelsior* and *Acer pseudoplatanus* is predicted, particularly at higher elevation sites.

**Page**

pp 219 - 234

**Location**

Coillte library

**Notes**

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**Address of author**

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---

**Number**

941

**Author**

Carey M.L., Hendrick E.

**Title**

Lodgepole pine in the Republic of Ireland 1. Site type, ground preparation and nutrition.

**Publisher**

Elsevier Science Publishers

**Place**

Amsterdam

**Date**

1986

**Source**

Forest Ecology and Management

**Volume**

Vol. 15, No. 4

**Key Word**

lodgepole pine, *Pinus contorta*, ground preparation, site types, marginal land, basal sweep, seedling experiments, fertilisation, fertilisers, soil nutrition, silviculture

**Abstract**

Over the past 30 years about 80,000 ha of lodgepole pine have been planted in the Republic of Ireland. The species is popular for its high growth potential (yield class 14-18 cubic metres) on poor sites, many of which would have been considered unsuitable for afforestation 20 years ago. Most sites are ploughed and treated with about 350 kg/ha rock phosphate before planting. Bare-rooted seedlings are used almost exclusively. However, results from experiments using containerised plants are promising, particularly with regard to reducing the incidence of basal sweep, a problem with the south coastal provenance. Many foresters consider the species as a

pioneer, the assumption being that it will be possible to grow more demanding species such as Sitka spruce for the second rotation on sites which have carried a first rotation of lodgepole pine. On poor soils these more demanding species normally require regular inputs of fertiliser nitrogen to sustain an acceptable growth pattern.

**Page**

pp 302 - 317

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

---

**Number**

942

**Author**

Kilpatrick D.J., Sanderson J.M., Savill P.S.

**Title**

The influence of five early respacing treatments on the growth of Sitka spruce.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1981

**Source**

Forestry

**Volume**

Vol. 54, No. 1

**Key Word**

Sitka spruce, *Picea sitchensis*, stand densities, spacing, growth rate, yield forecasting, form, yield models

**Abstract**

This article describes an experiment to test the effect of different stand densities on the growth of Sitka spruce. Trials were established at Baronscourt, Northern Ireland in 1960. Five respacing treatments applied to an 11-year old stand gave stand densities between 320 and 2900 stems per ha. Results up to an age of 31 years are presented when average top height was 18.5m. A yield model is developed based on the experimental results to estimate volume and other crop variables for initial crop densities of 1000-3000 stems per hectare and for top height of 15 to 22m.

**Page**

pp 17 - 29

**Location**

Coillte library

**Notes**

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**Address of author**

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---

**Number**

943

**Author**

Kilpatrick D.L., Savill P.S.

**Title**

Top height growth curves for Sitka spruce in Northern Ireland.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1981

**Source**

Forestry

**Volume**

Vol. 54, No. 1

**Key Word**

yield studies, Sitka spruce, *Picea sitchensis*, tree height, growth rate, yield tables, statistics, Forestry Commission curves, data representation

**Abstract**

An asymptotic relationship is fitted to top height-age measurements from a wide range of sites. A method of generating top height growth curves corresponding to different site indices is presented. By letting one parameter in the relationship be site specific it is shown how to obtain a system of either similar (anamorphic) or different (polymorphic) shaped curves. These may be used to allocate stands to site quality classes. The method may be applied to any data set consisting of pairs of top height-age measurements from different sites; the only proviso being that the curves obtained apply only within the range of the data and to the site quality classes represented.

**Page**

pp 31 - 39

**Location**

Coillte library

**Notes**

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**Address of author**

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**Number**

944

**Author**

Saieed N. Th., Douglas G.C., Fry D.J.

**Title**

Induction and stability of somoclonal variation in growth, leaf phenotype and gas exchange characteristics of poplar regenerated from callus culture.

**Publisher**

Heron Publishing

**Place**

Victoria

**Date**

1994

**Source**

Tree Physiology

**Volume**

Vol. 14, No. 1

**Key Word**

*Populus trichorpa*, *Populus balsamifera*, regeneration, leaf phenotype, gas exchange, poplar, callus culture, growth regulators, somaclonal variation, tree breeding, genetics, plant physiology, plant morphology

**Abstract**

*Populus trichocarpa* Torr. and Grey X *P. balsamifera* L. TT32 lines were generated from calli that had been maintained under differing in vitro conditions for sixteen months. In the final months, calli were maintained with one of six concentrations of 2, 4-dichlorophenoxyacetic acid (2,4-D, 0.1, 0.2, 0.3, 0.4, 0.5 or 0.6 per mg.) and regenerated with 0.25, 0.50 or 1.0 per mg benzylaminopurine (BA). Regenerant lines were obtained from 15 of these 18 treatments. The spectrum of variation in several morphological, physiological and leaf gas exchange traits was evaluated in the primary regenerants in 1986, and in their secondary vegetative propagules in the two subsequent years, in relation to differences in the original culture conditions. The results indicate that somaclonal variation was induced largely as a result of prolonged culture in the presence of 2,4-D, but that the terminal maintenance and regeneration phases also induced changes in the regenerants. Qualitative differences among the regenerant lines were detected by the end of 1986. For most traits, these differences were statistically

confirmed within the 3 year period. The treatment lines ultimately diverged sufficiently to produce lines showing general performance that was either above or below that of the original TT32 clone. An early visible indicator of this divergence was variation in leaf shape (leaf length/width ratio), which could be related to 2,4 - D. Significant correlations were detected between gas exchange parameters and morphological characteristics representing leaf form and stem development. Overall, results indicated the presence of somoclonal lines that offer potential for the selective improvement of growth using morphological and gas exchange parameters as screening tools.

**Page**

pp 1 - 16

**Location**

Coillte library

**Notes**

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**Address of author**

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**Number**

945

**Author**

Saieed N. Th, Douglas G.C., Fry D.J.

**Title**

Somoclonal variation in growth, leaf phenotype and gas exchange characteristics of poplar: utilisation of leaf morphotype analysis as a basis for selection.

**Publisher**

Heron Publishing

**Place**

Victoria

**Date**

1994

**Source**

Tree Physiology

**Volume**

Vol. 14, No. 1

**Key Word**

leaf morphology, Populus trichocarpa, Populus balsamifera, somaclones, gas exchange, morphological characteristics, somaclonal variation, leaf phenotype, leaf morphotype analysis

**Abstract**

Populus hybrid TT32 (Populus trichocarpa X P. balsamifera) lines produced from 15 treatment tissue culture regimes exhibited somoclonal variation in morphological and gas exchange parameters. Within four years of regeneration, discrete lines showing statistically validated superior, or inferior, growth performances relative to the parental reference clone were identified. Significant differences in the ratio of leaf length/width between treatment lines provided the earliest reliable indicator of the divergence in overall growth performance. Despite discernible variation in leaf phenotype among primary regenerants and secondary propagules within individual lines, the leaf length/width ratio was identified as a potential parameter for predicting growth performance. Its subsequent use led to the recognition of four distinct leaf morphotypes; cordate; ovate; reniform and oval. Two or more of these morphotypes were distributed within each of the original 15 treatment lines. Regrouping the data on the basis of leaf morphotype resulted in a clear segregation of the morphological traits, and revealed difference that were not readily apparent by statistical analysis based on treatment groups. The demonstration of similar relative performances by individual morphotypes with respect to a range of growth and gas exchange parameters confirmed that variation in leaf morphology was indicative of differential photosynthetic performance. Somaclonal variants with a leaf morphotype closest to that of the parental line showed the highest overall potential for selection, suggesting that the greatest benefits accrue from a minimal disturbance of the parental leaf phenotype.

**Page**

pp 17 - 26

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield Dublin

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**Number**

946

**Author**

Farrell, Edward P.

**Title**

Forest fertilization in Ireland.

**Publisher**

Canadian Institute of Forestry

**Place**

Quebec

**Date**

1976

**Source**

Forestry Chronicle

**Volume**

Vol. 52, No. 4

**Key Word**

phosphatic fertilisers, fertilisation, peatlands, marginal land, peat soils, soil nutrition, nutrient deficiencies

**Abstract**

This article provides a brief account of the use of fertilisers in Irish forestry over the last 25 years. Between 12,000 and 16,000 ha of forest land are fertilised annually. Deficiencies of nitrogen and phosphorus are widely encountered, particularly in Sitka spruce on infertile peatland sites. Forest fertilisation research in Ireland has been centred to a large extent, on the nutrition of this species on peat soils. Current work on mineral soils includes the investigation of the response to fertilisers on moderately fertile sites. Preliminary results indicate that phosphoric fertilisers may be effective in these situations.

**Page**

pp 194 - 196

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield Dublin 4

---

**Number**

947

**Author**

Hendrick Eugene, Ryan Deirdre (Eds.)

**Title**

Directory of forest research in Ireland: 1996.

**Publisher**

Coford. National Council for Forest Research & Development

**Place**

Dublin

**Date**

1996

**Key Word**

forest research, product development, timber processing

**Abstract**

This directory provides a comprehensive list of research projects in the Irish forest industry and related fields, and the names and addresses of those involved in them. The material is listed by research project, and almost all

of the projects listed have objectives and a timeframe for completion.

**Page**

183p

**Location**

Coford/Coillte library

**ISBN**

0952393816

**Notes**

Available

**Address of author**

National Council for Forest Research & Development, Agriculture Building, UCD, Belfield, Dublin 4

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**Number**

948

**Author**

duQuesne Limited.

**Title**

Midlands broadleaved forest: the feasibility of establishing a broadleaved forest co-operative in the Irish midlands - submitted under the forestry section of the Operational Programme for Rural Development.

**Publisher**

duQuesne Ltd.

**Place**

Dublin

**Date**

1992

**Key Word**

rural development, broadleaf forests, broadleaved afforestation, economics, land use, agriculture, land evaluation methods, land conversion, economic development, forestry suitability strategy, capability classes, Offaly, Midlands, feasibility study, co-operative forestry, environment, broadleaves

**Abstract**

The objective of this study was to examine the potential for a midland broadleaved forest, which would form part of an integrated rural development plan for the central midlands. To achieve its objectives, the study aimed to evaluate the feasibility of converting land to forestry use and establishing a farm forest cooperative to help realise maximum socio-economic benefit to the farmer and rural community. The study was concentrated in an area covering approx. 48 square miles in Co. Offaly which was considered a reasonable base from which conclusion could be drawn on the Midlands region as a whole. A detailed survey of the area providing economic, environmental and scientific data is summarised. In the section dealing with the methodology employed by the study, the concept of indicative land evaluation strategies is reviewed with particular reference to the assessment of land suitability for forestry, based on physical limitations and economic, social and environmental constraints. The development of a methodology for the multivariate classification of forest suitability (including an evaluation of agricultural capability) for a defined study area in Co. Offaly within the central midlands of Ireland is outlined in detail. The rationale of the classification, which is based on the division into capability classes of carefully selected environmental attributes, is explained fully. The report outlines the value of forestry development within the area as a method of providing economic and social benefit to the community, considering local landowners in particular. The final discussion includes a full analysis of the results of the forestry suitability strategy, with a detailed breakdown of silvicultural and management practices, including proposals for the establishment of a locally based forestry co-operative. In summary, the findings of the study support the proposal to establish a broadleaved forestry cooperative in the Irish Midlands based on better quality broadleaved and coniferous timbers, that will ultimately support important local value-adding industries.

**Page**

160p

**Location**

Forest Service

**Notes**

available

**Address of author**

duQuesne Limited: Economic and Environmental Consultants, 4 Merrion Square Dublin 2

---

**Number**

949

**Author**

Jones S.M., Farrell E.P.

(UCD. Department of Environmental Resource Management. Forest Ecosystem Research Group)

**Title**

Survey of plantation forests on Bord na Mona. Report on minor species.

**Place**

Dublin

**Date**

1994

**Key Word**

Bord na Mona cutaway bogs, lodgepole pine, Norway spruce, oak, peatlands, peat soils, soil properties, nutrient deficiency, pest damage, afforestation, vegetation control, Pinus contorta, Picea abies

**Abstract**

This survey was confined to areas planted with species other than Sitka spruce. The main species assessed were lodgepole pine, Norway spruce and oak. Factors examined included health and productivity of the forest crops as well as various soil properties. The following are the recommendations for the reconstitution and afforestation of milled cutaway bog: 1. Reconstitution. Lodgepole pine would appear to be the only option for the reconstitution of failed areas. The minimum peat depth required for this species is uncertain but current indications are that a minimum of 60 cm of peat (irrespective of peat type) is needed for satisfactory growth. Total vegetation control must be achieved before replanting commences. No firm recommendations can be made for the reconstitution of shallow peat areas. Therefore these areas should remain as they are for the present time; 2. Afforestation. The numerous problems associated with the afforestation of shallow peat areas have yet to be resolved. Consequently no prescriptions can be drawn up for the treatment of these areas as yet. Large scale afforestation should be concentrated on the deeper peat (greater than 60 cm in depth) areas. It is recommended that lodgepole pine and Norway spruce be planted in these areas. Norway spruce has clear potential on all peat types greater than 60 cm in depth. However, large scale planting of this species should not be undertaken until the considerable problems of vegetation control have been resolved. Oak has potential on shallow peats and on sub-peat mineral soils. Good protection against hares will be essential for its survival. Cultivation of sub-peat mineral soil will probably be required and trials to develop optimal site preparation techniques for a range of potentially suitable species, including oak, should be undertaken immediately.

**Page**

42p

**Location**

Forest Service, Coillte Research

**Notes**

available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield, Dublin 4

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**Number**

950

**Author**

Atanackovic Andreja

(Forbairt. Forest Products Department)

**Title**

Long term investigation into durability of Irish timbers in service or ground contact. (Report for 1994).

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Annual Report for 1994: Technical support for Irish timber.

**Key Word**

timber durability, forest products, timber life expectancy, decay, preservation treatment, preservatives, physical properties, physical deterioration, pendulum impact test, pilodyn test

**Abstract**

The project originally commenced in 1987 at a site in Glenealy Co. Wicklow and this report presents the summary of the work carried out in 1994. The objectives of the project can be summarised as follows: 1. To obtain information on durability and life expectancy of various timber species in service or in ground contact; 2. To assess life expectancy of treated and untreated timber; 3. To evaluate the effect of preservatives and treatment schedules on timber durability; 4. To record the progress of physical deterioration of observed samples each year; 5. To assess the results of these yearly inspections; 6. To revise the test procedure and frequency of the inspection if it is required after the assessment of the results. In order to measure the reduction in strength or density caused by decay, a pendulum impact test and a pilodyn test are carried out. During these tests all samples are visually inspected to observe changes in physical appearance or decay due to external exposure. The results of these tests and visual examination for treated and untreated timber are compared.

**Page**

18p

**Location**

Forest Products Dept., Forbair, Forest Service

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin Dublin 9

---

**Number**

951

**Author**

Picardo Valez

(Forbairt. Forest Products Department)

**Title**

Effects of thinning on yields of SR11 strength classes. (Study 93-61.03).

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Technical support for Irish timber. (Annual reports, 1994)

**Key Word**

thinning, flexural strength, Sitka spruce, Picea sitchensis, visual grading, pruning, grading yields, modulus of rupture, modulus of elasticity, MOR, MOE, standards, density, timber properties, forest products, timber processing, timber strength

**Abstract**

This study reports on the effect of different thinning treatments on the flexural strength and visual grading yields of Sitka spruce taken from two experimental plots located in Clonegal and Forth. Visual grading was done on the basis of knot assessment only and in accordance with IS127. Four treatments were used on each site. The treatments were replicated in randomised plots at each site. In addition to thinning three other classifying variables - site, visual grade and pruning - were used in the analyses. Three properties were analysed - modulus of rupture (MOR), Modulus of Elasticity (MOE) and density. The results indicate that the effects of site, pruning and differences between visual grades were significant but the effects of thinning were confounded by the effects of pruning. Taken on its own thinning had no significant effect on the properties or yields in either site. However, thinning does appear to have an effect on the stronger material (SS grade) - thinning treatments 1 and 2 (50% line and selective respectively) were better than 3 and 4 (33% line and selective respectively). The grading yields were better from the Clonegal site but compared to Study 2 (1986) the yields for the SS grade were significantly lower. However, this study indicates that the bending strength properties for the grades are better than the Study 2 material.

**Page**

52p

**Location**

Forest Products Dept., Forbairt/ Forest Service

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**Address of author**

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**Number**

952

**Author**

Cahill Declan C.

(Forbairt. Forest Products Department)

**Title**

Monitoring of new European standards on wood preservation (Study No 93.31.05).

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Technical support for Irish timber. (Final reports, 1994).

**Key Word**

forest products, timber processing, standards harmonisation, EC, EU, European Community, European Union, building materials, wood preservation treatment, preservatives, standards

**Abstract**

As part of the programme on harmonisation of standards on wood preservation operating in member countries, this work set out to: to monitor European standards on wood preservation produced by CEN/TC 38; to advise the Forest Service of developments as they occur; to disseminate, when appropriate, information to relevant sectors of the industry in Ireland.

**Page**

20p

**Location**

Forest Products Dept., Forbairt, Forest Service

**Notes**

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**Address of author**

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**Number**

953

**Author**

Wiley Sean

(Forbairt. Forest Products Department)

**Title**

Technical support for Irish timber.

**Publisher**

Forbairt

**Place**

Dublin

**Series**

Promotion of Irish timber. Study No 94.00.01

**Date**

1994

**Source**

Technical support for Irish timber. (Final report, 1994).

**Key Word**

forest products, timber processing, timber promotion

**Abstract**

This report describes the work programme undertaken by the Forest Products Department on the promotion and the support of Irish timber. This programme included holding seminars, publishing the Irish Timber Brochure and the creation of value opportunities in work with sawmillers and others involved in the timber processing industry.

**Page**

15p

**Location**

Forest Products Dept., Forbairt, Forest Service

**Notes**

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**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9.

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**Number**

954

**Author**

Wiley Sean  
(Forbairt. Forest Products Department)

**Title**

Draft IS 444 (Study No 94.00.04).

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Technical support for Irish timber. (Final reports, 1994).

**Key Word**

standards, specifications, IS444, timber quality, timber processing, forest products

**Abstract**

The report assesses the trading performance of Irish timber during 1994. The problem of staining in timber left standing for long periods was of particular concern. The Forest Products Department maintained a technical focal point for the continuing implementation of SR 11 for all sectors of the timber trade. Information is provided on cooperation with other bodies such as the National House Building Guarantee scheme.

**Page**

15p

**Location**

Forest Products Dept., Forbairt / Forest Service

**Notes**

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**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9.

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**Number**

955

**Author**

Wiley Sean  
(Forbairt. Forest Products Department)

**Title**

Development of quality standards for primary processing. (Study No.94.00.05)

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Technical support for Irish timber. (Final reports, 1994).

**Key Word**

quality standards, forest products, sawmilling, sawmill sector, Coillte Allocation Scheme, quality systems, timber processing, timber production, CAS

**Abstract**

The development of quality systems in sawmills, undertaken in association with the Coillte Allocation Scheme (CAS), and its monitoring is described. CAS provides a direct linkage between the development and maintenance of quality systems throughout the entire production cycle and the allocation of raw material supplies. The work undertaken by the Forest Products Department staff in assisting and supporting mills on their quality development programmes. An emphasis was placed throughout the year on achieving consistency between the mills in drying, grading, marking and dimensional accuracy.

**Page**

15p

**Location**

Forest Products Dept., Forbairt/ Forest Service

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9.

---

**Number**

956

**Author**

Knaggs Gordon

(Forbairt. Forest Products Department)

**Title**

Distortion of Sitka spruce, especially of juvenile wood, during drying. (Study 93-61.04)

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

Technical support for Irish timber. (Final reports, 1994).

**Key Word**

forest products, timber processing, juvenile wood, Sitka spruce, Picea sitchensis, distortion measurement, boxed heart, compression wood, drying, Picea sitchensis

**Abstract**

Juvenile wood is generally considered to be less stable and more prone to distortion than adult timber or mature wood from the outer part of older trees. The objectives of this study were: to assess the distortion occurring in sawn Sitka spruce upon drying, and to compare the performance of juvenile wood to adult wood; to assess the effect of such factors as silvicultural practice, orientation of growth rings and the presence of compression wood or other features and, following these assessments; to investigate drying procedures to minimise any such distortion. Preliminary analysis of data obtained from distortion measurement tests on dried timber show that juvenile wood is more prone to distortion than adult wood, but this tendency is masked by other factors, including orientation of cut (in particular the presence of boxed heart) and compression wood.

**Page**

60p

**Location**

Forest Products Dept., Forbairt/ Forest Service

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9.

---

**Number**

957

**Author**

Dodd Peter

**Title**

Geo-referenced forest information for Ireland.

**Publisher**

European Commission. Directorate-General XII.

**Place**

Luxembourg

**Date**

1994

**Source**

International Workshop: Designing a System of Nomenclature for European Forest Mapping. Proceedings, European Forest Institute Joensuu, Finland, 13th - 15th June 1994.

**Key Word**

geo-referenced forest information, forest inventory, State forests, forest mapping

**Abstract**

This paper outlines what geo-referenced forestry data are available for Ireland and the methods by which they are collected, with particular reference to the State owned woodlands. The inventory process currently operating in Coillte is outlined. The important forest inventory parameters recorded are listed. Information on the site survey carried and the crop potential survey carried out in 1990 is included.

**Page**

pp 229 -240

**Location**

Forest Service

**Notes**

available

**Address of author**

Coillte, Sidmonton Place, Bray Co. Wicklow

---

**Number**

958

**Author**

Picardo Valez

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Data bank on physical and mechanical properties of home grown timber. Technical report No. 1. Results from 1981 batches and preliminary results for Avoca timber in green condition.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on home grown timber - Study 2.

**Date**

1982

**Key Word**

physical properties, mechanical properties, modulus of elasticity, ultimate bending strength, machine grading, forest products, timber processing

**Abstract**

This report presents the results obtained from two projects, both of which contribute to the creation of a data bank on physical and mechanical properties of timber being compiled by the Forest Products Dept., IIRS. Samples for the tests described were obtained from a FWS plot in Avoca, Co. Wicklow which is being used as part of a thinning experiment on Sitka spruce. The test procedure is outlined and the data obtained on grading, modulus of elasticity and ultimate bending strength are presented. It is concluded that the strength values of the timber tested is low, and the correlations obtained between E (plank) and E (true) and between E(true) and ultimate bending strength were good. This indicates a definite basis for machine grading of homegrown Sitka spruce.

**Page**

11p

**Location**

Forest Products Dept., Forbairt/ Forest Service

**Notes**

available

**Address of author**

Forbairt, Forest Products Dept., Glasnevin, Dublin 9

---

**Number**

959

**Author**

Picardo Valez

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Technical report No. 2: Pilot study on Avoca timber.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/Research Studies on Avoca timber.

**Date**

1983

**Key Word**

physical properties, mechanical properties, drying, grading, thinning, strength properties, timber processing, forest products, Sitka spruce, Picea sitchensis, timber planing

**Abstract**

This report presents all the results from tests carried out on a sample of timber obtained from a FWS sample plot in Avoca, which forms part of a thinning experiment on Sitka spruce. Data were obtained for the following range of tests: measurement of physical dimensions; determination of moisture content and density; machine grading in the FPD prototype and computermatic grading machines; visual grading; determination of 3 moduli of elasticity; determination of bending strength. Results obtained from an analysis of the data show that the heavier the thinning the lower are the strength properties and yields for the higher strength grades. The strength properties increased in value with drying. The effects of depths and width must be taken into consideration in determining grade and strength properties. The percentage of planks with less than 4 growth rings per inch increased with heavy thinning.

**Page**

32p

**Location**

Forest Service/ Forbairt, Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

960

**Author**

Institute for Industrial Research and Standards. Forest Products Department

**Title**

Technical report on ponding of spruce poles.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1984

**Key Word**

permeability of timber, creosote penetration, strength properties, spruce transmission poles, drying, preservative treatment, ponding, moisture content, modulus of rupture, modulus of elasticity, MOR, MOE

**Abstract**

A series of experiments was undertaken on spruce poles to determine the effects of ponding on: 1. Permeability, creosote penetration and creosote loading; 2. Strength properties of poles; 3. Drying behaviour. The results showed that the required permeability of spruce poles can be obtained by ponding for three months starting in the period April to October or for four months thereafter. A 12% reduction in Modulus of Rupture and Modulus of Elasticity was recorded for the ponded poles. Ponded poles stacked in the open never reached moisture contents as low as 28%, while those stacked under cover readily came below this level.

**Page**

58p

**Location**

Forest Service

**Notes**

available

**Address of author**

Forest Products Department, Forbairt, Glasnevin, Dublin 9

---

**Number**

961

**Author**

Forest and Wildlife Service

**Title**

Report on aerial fertilisation.

**Publisher**

FWS

**Place**

Dublin

**Series**

Forest and Wildlife Service Internal Report

**Date**

1986

**Key Word**

aerial fertilisation, fertilisers, environment, soil nutrients, Forest and Wildlife Service, FWS

**Abstract**

In 1984, aerial fertilisation accounted for almost 20% of the FWS's expenditure on fertilisation. In August 1984 a working party was set up to review aerial fertilisation with regard to methodology, cost effectiveness and environmental influences. This report is a brief summary of aerial fertilisation and serves as an introduction to the Working Party's draft operation specification. The report argues that priority should be given in aerial fertilisation programmes to treating established crops rather than bare ground prior to afforestation, and the nutrient status of these crops should be established before the process begins. Recommendations are also included regarding selection of priority areas for fertilisation, and the amount of time which is needed for

adequate preparation. The delivery of fertiliser and contract specifications are also dealt with.

**Page**

21p

**Location**

Forest Service

**Notes**

available

**Address of author**

Sidmonton Place, Bray, Co. Wicklow

---

**Number**

962

**Author**

McCarthy Dick, Horgan Ted

**Title**

Sludge as a forest fertiliser.

**Publisher**

Coillte Research & Development

**Place**

Bray

**Series**

Coillte Research & Development Information Note No. 11

**Date**

1994

**Key Word**

fertilisers, fertilisation, sludge, tree growth, soil nutrients, tree growth, water quality environment

**Abstract**

This study demonstrates that the application of dairy and domestic sludge results in substantial increases in growth in newly planted trees and poorly performing older trees when compared to trees which only received unground mineral phosphate. Water quality was sampled before and after sludge application and it was shown that there was virtually no effect on the physical or chemical quality of the water.

**Page**

2p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow

---

**Number**

963

**Author**

Gallagher Leonard U.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Drying of home grown timber: Technical report 4.3.1. An evaluation of the rate of drying and the occurrence of degrade in Sikta spruce in steam-kiln drying conditions, using an established schedule.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on home grown timber - Study 4.

**Date**

1982

**Key Word**

drying, degrade, cup, spring bow, twist, fissures, Sitka spruce, Picea sitchensis, distortion, moisture content

**Abstract**

This report describes an evaluation of the rate of drying and the occurrence of degrade in Sitka spruce in steam-kiln drying conditions, using established schedules. The objective was to determine basic information on the unaided drying of Irish timber. Two kiln runs were undertaken, one with each of two sizes of timber. The 115 x 35 mm planks had an average drop of 49.3% moisture content over 3.8 days, the 175 x 50 mm dropped 55.1% over 6.125 days. The length of the drying run was considered too long for economic returns. The results of the tests on the effect of drying on cup, spring bow, twist and fissures are presented in tabular form. Considerable distortion was experienced during drying.

**Page**

7 p

**Location**

Forest Service

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

964

**Author**

Gallagher Leonard U.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Drying of home grown timber: An assessment of moisture content of sawn spruce from a major sawmill - Technical report No. 4.1.1.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on home grown timber - Study 4.

**Date**

1982

**Key Word**

drying, timber degrade, distortion, moisture content, spruce, sawmilling, timber processing, forest products, twist, spring, cup, bow

**Abstract**

The object of this study was to determine the average and range of moisture contents of spruce experienced by sawmillers in operating conditions as a guideline for future evaluation of drying techniques. Also, to establish a system of monitoring degrade due to drying. An assessment of moisture content and degrade on drying was made on a sample of sawn spruce in one sawmill. It was concluded that the wide-ranging moisture content, between 30 and 80%, could pose problems for sawmillers trying to obtain balanced drying. The range was probably due to mixing recently felled timber with timber which had been in storage in log form. Regarding degrade, it was found that in all cases twist contributed most to the rejection of pieces with no such effect caused by either cup or spring, while the amount of bow causing rejection was insignificant. It is concluded that distortion on drying can be a serious problem with Irish timber.

**Page**

8p

**Location**

Forest Service

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

965

**Author**

Bulfin Michael

**Title**

Interim report to Forest Service: indicative forest strategy for Co. Clare.

(Teagasc)

**Publisher**

Teagasc

**Place**

Dublin

**Date**

1994

**Key Word**

GIS, Geographic Information Systems, indicative forest strategy, information technology, computer applications, maps, land use data, data processing

**Abstract**

The ARC INFO package was used to integrate data on land use, soils, topography, slope, elevation and wind hazard classification, as well as infrastructural and demographic information relating to Co. Clare in a GIS system. This information could then be used to indicate different levels of forestry acceptability for the county. The prepared GIS system was found to deal dynamically and interactively with the type of information which is essential in the planning and management of the national forestry programme.

**Page**

8p

**Location**

Forest Service

**Notes**

available

**Address of author**

Teagasc, Kinsealy Research Station, Malahide Rd., Dublin 17

---

**Number**

966

**Author**

Wiley Sean

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Promotion of homegrown timber: survey of usage on local authority building sites.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/research studies on homegrown timber - Study 1.

**Date**

1983

**Key Word**

timber promotion, timber imports, timber exports, building, homegrown timber, timber market, marketing

**Abstract**

A survey was conducted on the utilisation of homegrown and imported timbers on local authority building sites. The views of building contractors on their attitudes and experiences of homegrown timber were obtained. The survey revealed a substantially greater acceptance of homegrown timber on the sites than in previous years.

**Page**

4p

**Location**

Forest Service

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

967

**Author**

McCarthy R.

**Title**

Foliage testing service.

**Publisher**

Forest & Wildlife Service

**Place**

Bray

**Series**

Forest & Wildlife Service Research Note 4/87

**Date**

1987

**Key Word**

foliage testing, soil nutrients, tree growth, silviculture, sample collection, laboratory testing, fertilisers, fertilisation

**Abstract**

The reasons for foliage testing and the manner in which it is carried out are explained. Foliage analysis will show whether 'critical level', the minimum amount of nutrient that must be in foliage to ensure normal healthy tree growth, has been reached. It can then be determined whether fertilisation is needed. The procedure to be followed when collecting foliage samples is outlined, and the treatment of these samples in the laboratory is described. Ideally the first foliage sampling should commence when trees are about 5 - 10 years old, and follow-up samples should be taken at intervals of around five years to measure the effectiveness of the fertiliser last applied and to diagnose other deficiencies at an early stage.

**Page**

4p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, 3 Sidmonton Place, Bray Co. Wicklow

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**Number**

968

**Author**

Forest and Wildlife Service. Research Branch

**Title**

Research report year ended December 1982.

**Publisher**

Department of Fisheries and Forestry

**Place**

Dublin

**Date**

1983

**Key Word**

FWS, Forest and Wildlife Service, forestry research, wildlife, woodland ecology, soil nutrition, fertilisers, water

quality, cutaway bogs, biomass production, crop structure, wood quality, thinning, inventory, genetics research, forest protection, forest pathogens, entomology, silviculture, forest development, planning

**Abstract**

The main article in this annual report of the Research Branch of the FWS is on the subject of the distribution of the pine marten in the Republic of Ireland. In order to determine the present range a survey was carried out between 1979 and 1980 using 10 km squares of the national grid as units. Pine martens were recorded in 97 of the 428 squares surveyed. The results of the survey showed the species now occurs mainly in the region west of the river Shannon stretching from Limerick to Sligo. The species is dependent on broadleaf woodland and scrub for its habitat. The section in the report on soils and nutrients contains brief summaries on current work in the areas of aerial fertilisation, shoot die-back in lodgepole pine and water quality in relation to afforestation. Other sections included in the report deal with research on the following topics: site productivity and biomass; crop structure; inventory; genetics; forest protection; and plant ecology.

**Page**

52p

**Location**

Coillte library

**Notes**

available

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**Number**

969

**Author**

O'Connor Robert, Conlon Fergal

**Title**

Agricultural and forestry land prices in Ireland.

**Publisher**

Economic and Social Research Institute

**Place**

Dublin

**Series**

A report commissioned by the Department of Energy, Forest Service and Coillte Teoranta

**Date**

1986

**Key Word**

agricultural land prices, forestry land prices, agricultural economics

**Abstract**

The purpose of this study was to develop a method of updating the calculation of agricultural land prices initiated by Paul Kelly of An Foras Taluntais in 1978. The procedure adopted by Dr. Kelly is described and the different series of prices he calculated at different times are presented. The approach adopted by the authors of this study is then explained, and a series of agricultural land prices for the years 1988-91 is calculated and compared to Kelly's most recent series. Forestry land prices for 1984 to 1991 and unit prices based on Dept. of Forestry purchases for the years 1978-1983 are presented. The paper concluded by suggesting how the different series might be continued in future years.

**Page**

73p

**Location**

Forest Service

**Notes**

available

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**Number**

970

**Author**

O'Carroll N.

**Title**

Review of forest research: Report to Chief Inspector .

**Publisher**

Forest and Wildlife Service.

**Place**

Dublin

**Series**

Forest and Wildlife Service Internal Report

**Date**

1983

**Key Word**

forestry research, Forest and Wildlife Service, FWS, forest development, communications

**Abstract**

This review identifies the most important areas in forestry research in the 1980s. The principal areas in which the research effort needs to be directed are identified as follows: 1. The effects of silvicultural practices on the quality of wood in use; 2. The methods and problems of forest regeneration; 3. Dealing with *Fomes annosus*; 4. Silviculture of lodgepole pine; 5. Preparation of alternatives to common exotic species; 6. The production of wood as an energy resource; 7. Prevention and control of windblow; 8. Fire damage. The review recommends that the FWS should continue to conduct its own research and should initiate wood quality research at the sawmill level. Other recommendations deal with the issues of co-operative and commissioned research, the establishment of a forest research committee and a FWS scientific journal and the appointment of an extension officer within the research branch.

**Page**

30p

**Location**

Forest Service, Coillte library

**Notes**

available

**Address of author**

UCD Dept. of Forestry, Agriculture Building, Belfield Dublin 4

---

**Number**

971

**Author**

Collins Kevin D.

**Title**

A strategy for urban forestry in Ireland.

**Publisher**

ECO

**Place**

Dublin

**Date**

1995

**Key Word**

urban forestry, landscape, environment, urban woodlands

**Abstract**

The environmental, aesthetic and social benefits of urban forestry are outlined. Emphasis is placed on the importance of involving local communities in the establishment process. The development of urban forestry since the formation of the Crann na Chathair project in 1987 is outlined. The various problems faced by the urban forestry programme are explained. One problem is the difficulty which those traditionally involved in urban forestry planning and maintenance have in understanding the theoretical aspects of urban forestry, and the degree to which local involvement is essential for these programmes to succeed. The study attempts to address these difficulties and looks at a number of existing projects. It also examines specific technical aspects including setting, landscape design and species selection specific to urban woodland development. This review is accompanied by a case study of the development of an urban woodland in Finglas, Dublin.

**Page**

72p

**Location**

Forest Service

**Notes**

available

**Address of author**

ECO, 39 Fleet Street, Dublin 2

---

**Number**

972

**Author**

Wiley S.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Review and applications of timber standards and practice in Ireland.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1985

**Key Word**

timber standards, structural timber, British Standards, quality control, truss manufacture, visual stress grading, machine grading, timber processing, design codes, construction industry

**Abstract**

This paper provides an overview of the standards which apply to the manufacture of timber in Ireland. At present Irish timber is estimated to have a 30 - 35% share of the structural timber market There is a growing number of Irish standards being published and a large number of British standards in use at present. The most significant are design codes, stress grading and fire related standards, and these are briefly outlined. The Forest Products Department of the IIRS, in co-operation with the timber trade, has introduced quality control schemes on truss manufacture, visual stress grading and machine stress grading.

**Page**

16p

**Location**

Forest Service/ Forest Products Dept., Forbairt

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

973

**Author**

Mac Siurtain M.P., Joyce P.M., McCormick N.L.M., Collins A., Patterson D.

(UCD. Department of Forestry)

**Title**

National survey of private woodlands remote feasibility study. Phase one, final report.

**Publisher**

Forest Service

**Place**

Dublin

**Date**

1990

**Key Word**

private woodlands survey, private forestry, remote sensing, geo-referenced satellite images, LANDSAT TM, SPOT XS, GIS, geographic information systems

**Abstract**

Up-to-date, cost-effective, ge-oreferenced satellite images have immediate applications in forest inventory and

management. A feasibility study was commissioned by the Forest Service in order to assess the potential role of satellite remote sensing technology in a national survey of private woodlands in the Republic of Ireland. Three test sites, covering areas of 120,000 ha, 15,000 ha and 2,000 ha were selected from a low-lying area in Co. Offaly in the Irish midlands. The selected test sites correspond geographically to official maps of the proposed Ordnance Survey 1:50,000 and existing General Services Geographical Section 1:25,000 series. LANDSAT TM and SPOT XS and P satellite imagery from two 1988 imaging dates was used in the study. High quality colour hardcopy of the geo-referenced, unclassified and classified LANDSAT TM and SPOT imagery of the test sites was produced at scales of 1:50,000 and 1:25,000. These images show clearly the locations of blocks of coniferous and broadleaved forest within the test sites. Laminated versions of the images were produced for use in the field. Area estimates of forest, and four other broad classes of cover type, were computed for each test site from the classified LANDSAT TM and SPOT imagery, and these are presented as provisional figures. Up-to-date, cost-effective, geo-referenced satellite images and associated classified area estimates can be similarly produced for any area of private woodlands in Ireland.

**Page**

32p

**Location**

Forest Service

**Notes**

available

**Address of author**

Depart. of Crop Science, Horticulture and Forestry, UCD, Belfield, Dublin 4

---

**Number**

974

**Author**

Cooke Eugene

**Title**

The organisation appropriate for the implementation of Ireland's forestry development strategy 1986 - 2000.

**Place**

Dublin

**Date**

1985

**Key Word**

Forest and Wildlife Service, management, State forestry, business organisation, commercial forestry, civil service, Government Departments, FWS, Semi-State companies, management structures

**Abstract**

After 1990, Ireland will have a surplus of timber available for export and will gain substantially from increasing timber prices. This study examines the structure of the organisation charged with the management of this resource, the Forest and Wildlife Service (FWS), which operates as an Executive Branch of the Department of Fisheries and Forestry. The distinguishing organisational feature of the FWS is the dual management structure comprising an administrative stream and a technical and professional stream. Although commercial forest management accounts for approx. 80% of the expenditure of the FWS, the requirement of public accountability as a Government Department, and the bureaucratic environment in which the FWS operates constitute a substantial barrier to efficient and effective management. Problems include duplication of work areas, ill-defined lines of responsibility and authority and other difficulties associated with the dual management structure, and these will prevent the organisation from exploiting the long term prospects of the forestry sector.

**Page**

100p

**Location**

Forest Service

**ISBN**

1870089367

**Notes**

available (A thesis submitted for the Degree of Master of Public Administration, Faculty of Commerce, UCD)

**Thesis**

M.P.A Thesis, UCD

---

**Number**

975

**Author**

Caffery Frank P.  
(Forest Service)

**Title**

An investigation of stump treatment systems.

**Publisher**

Forest Service

**Place**

Dublin

**Date**

1991

**Key Word**

forest protection, forest pathogens, fungal diseases, fungi, stump treatment systems, urea treatment, Heterobasidion annosum

**Abstract**

This study examines the different ways that Heterobasidion annosum, a pathogenic fungus that attacks the lower stem and root systems of trees, can be prevented by treatment of the freshly cut stumps. Treatment with a solution of urea will effectively prevent the stump from being colonised by the pathogen. The study assesses the three main methods of application of this treatment: manual treatment with a hand sprayer; guide bar; and spray nozzle application systems (which are mounted on harvesting heads). In tests the manual system produced the highest number of 100% treated stumps, and the guide bar method produced the lowest.

**Page**

81p

**Location**

Forestry Service

**Notes**

available

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**Number**

976

**Author**

O'Muirgheasa Niall  
(Forest Service)

**Title**

Some aspects of forestry in Ireland.

**Date**

1985

**Key Word**

State forestry, economics, economic development, forestry history, afforestation, timber processing

**Abstract**

The author provides a brief assessment of the current state of forestry in Ireland and outlines the benefits that will accrue to Ireland from a strong forest industry and continued afforestation. Ireland, he points out, is well suited to growing this versatile, renewable and badly need raw material. The existing forest estate is broken down by species, and the various types of employment in forestry and the numbers working in each area outlined. The age distribution and output, as well as future production prospects, of Irish State forests are examined. Other aspects of forestry explained include growth patterns, yield class and timber production and harvesting. The economics of timber growing is briefly dealt with, and the various elements that must be considered when determining financial yield are explained. The issue of land use and the suitability of timber production on marginal lands is examined. The current state of the timber processing industry is assessed and forecasts made for future developments in this sector.

**Page**

50p

**Location**

Forest Service

**Notes**

available

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2.

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**Number**

977

**Author**

Bulfin M.

**Title**

Timber and timber products trade, 1966-1973.

**Place**

Dublin

**Date**

1974

**Source**

Irish Journal of Economic and Rural Sociology

**Volume**

Vol. 5

**Key Word**

timber products trade, imports, wood raw material consumption, Wood Raw Material Equivalents, WRME

**Abstract**

While details of the value of timber products imported into the Republic of Ireland were readily available from statistical abstracts, no measure of the volume of timber involved was available. This paper provides the first estimate of the volume involved in the timber products imported, and of the per capita consumption of wood raw material in this country. The period covered is 1965-1973 inclusive. Using various conversion factors the numerous timber import categories are converted to one basic unit, i.e. a true cubic foot of Wood Raw Material Equivalent (WRME). Once the value and volume of imports is known, calculations of the land area necessary to produce all or part of this volume can be carried out in a more realistic fashion. This paper concentrates, particularly, on softwood imports as these involve an average of 86.3% of the value and 88.2% of the volume of total timber imports. The value of the total timber products has risen from £22 million in 1966 to £67million in 1973, while the volume of softwood imports rose from 34.7m cu.ft. to 56.5 m cu.ft. WRMS. Per capita consumption of timber products rose from 16.6 cu.ft. to 25.8 cu.ft. Timber product imports represent between 5 and 6% of our total annual import bill.

**Page**

pp 239 - 251

**Location**

Forest Service library (reprint)

**Notes**

available

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17.

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**Number**

978

**Author**

Cahalane Denis Gerard

**Title**

A survey of the incidence and control of pests in Irish State forest nurseries.

**Place**

Dublin

**Date**

May/1983

**Key Word**

forest nurseries, chemicals, pathogens, forest protection, fungal diseases, insect pest, weed control, herbicides, insecticides, fungicides

**Abstract**

This report was undertaken to investigate the incidence and importance of insect, fungal and weed pests in Irish State forest nurseries, to establish what chemicals are in use for controlling pests, to examine pesticide use in general, and to consider alternative control strategies. Information regarding these issues was gathered by means of a field study involving a survey of a sample of Forest and Wildlife nursery units. From the data obtained through the survey it was concluded that insect and disease pests can cause serious problems in forest nurseries. Green spruce aphid is identified as the most important insect pest. Damping off is the most serious pathogen. The most significant weed pests are sheep's sorrel, annual meadow grass and groundsel. The most heavily used type of chemical treatment is herbicide. The insecticides used are malathion and lindane. Captan, benomyl and mancozeb are the main fungicides. It is concluded that the benefits from the correct use of pesticides in the nursery far outweigh potential hazards. However, there is a clear need for a more scientific approach to pest control, and greater use needs to be made of biological and economic studies so that smaller quantities of chemicals can be used.

**Page**

119p

**Location**

Forest Service

**Notes**

available (A project submitted in partial fulfilment of the Degree of Bachelor of Agricultural Science, Faculty of Agriculture, UCD)

**Thesis**

B.Ag.Sc. Thesis, UCD

**Address of author**

Forest Service, Leeson Lane, Dublin 2

---

**Number**

979

**Author**

McAree D.T.

**Title**

Guarding against potential threats to Irish forests.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1993

**Source**

Plant Health and 1992: Proceedings of seminar held on 8 and 9 March 1990. (Edited by J.A. Kavanagh & P. Brennan).

**Key Word**

forest protection, forest pests, diseases, forest pathogens, timber imports, forest products trade, plant health, regulatory controls, imports, EC, EU, European Community, European Union

**Abstract**

Irish forests are the healthiest in Europe with relatively few serious forest pests and diseases. To maintain this situation it is vital to guard our vulnerable and increasingly valuable forest estate against the introduction of harmful organisms. A contingency plan, devised to counteract any possible forest pest introduction, is discussed and Irish forest protection policy is outlined. Some of the main forest diseases and insect pests that pose a serious threat to these forest plantations are listed and described. Trade in forest produce is considered to be the main source for possible new pest introductions into the island and underlines the importance of maintaining strict forest plant health regulatory controls. It is proposed that after 1992 the EC Commission should designate the island of Ireland as a unique ecological or isolated zone for forest plant health purposes.

**Page**

pp 83 - 94

**Location**

RIA library

**Notes**

available

**Address of author**

Forest Service, Leeson Lane Dublin 2.

---

**Number**

980

**Author**

Stanley Bill, Dunne Seamus, Keane Michael  
(Coillte Research and Technology)

**Title**

Monitoring forest condition using colour infrared aerial photography.

**Publisher**

Coillte Teoranta.

**Place**

Bray

**Series**

European Community Programme on the Protection of the Community's Forests against Atmospheric Pollution.  
Project Nos: 90.60.IR.004, 90.60.IR.005

**Date**

1993

**Key Word**

CIR, colour infrared photography, aerial photography, forest conditions, forest protection, forest damage, fertilisers, damage classification, health surveys, damage interpretation keys, crown conditions, shape characteristics, colour characteristics

**Abstract**

This report outlines the work carried out by Coillte on two projects involving the use of colour infrared (CIR) aerial photography to monitor the conditions in Irish forests. The objectives of these projects were: 1. to examine the response of an area of damaged forest to the applications of fertiliser; 2. to investigate the use of CIR aerial photography in monitoring any response; 3. to develop interpretation keys for the classification of damage to Sitka spruce and lodgepole pine crowns as displayed on CIR photographs; 4. to assess the role of aerial photographs in complementing ground surveys of health; 5. to enlarge the baseline inventory of forest damage using CIR aerial photographs. In the first project CIR aerial photographs were taken at a scale of 1:5,000 of an experimental site which had received five treatments of fertiliser application. Foliage analysis showed that the problem of potassium deficiency had been overcome. The CIR aerial photographs were able to detect a clear difference in the spectral reflectance of the crops before and after fertiliser application. CIR images showed that there was a significant reduction in the amount of trees showing chlorosis damage in the plots that received fertiliser. In the second project interpretation keys for crown conditions were developed for Sitka spruce and lodgepole pine. These keys were established on the basis of the shape and colour characteristics that are visible on CIR aerial photographs taken at a scale of 1:5,000. Each key details five levels of damage, the shape characteristics of which are described under the headings of course structure and fine structure. Colour characteristics are described under the headings of distribution, saturation, brightness and tone.

**Page**

109p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research and Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

981

**Author**

Ward Declan

**Title**

The large pine weevil - an inevitable forest pest.

**Publisher**

Forest Service

**Place**

Bray

**Series**

Forest Service Research Note 2/88.

**Date**

1988

**Key Word**

Hylobius abietis, large pine weevil, forest protection, pest management, forest pests, insecticides, forest insects

**Abstract**

The distribution, life-cycle and habitat of the large pine weevil, *Hylobius abietis* is described. Weevils can cause up to 90% mortality by the end of the second growing season in unprotected crops. Current pest management strategy consists of chemical protection, through dipping of plants, supported by spraying. In both cases the adult is targeted, as no practical means exist to control the other stages.

**Page**

3p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow

---

**Number**

982

**Author**

Farrell E.P.

**Title**

Interaction of gaseous emissions from agricultural activities with forest ecosystems.

**Publisher**

AGMET

**Place**

Dublin

**Date**

1992

**Source**

Proceedings of Second Scientific Conference on Future of Irish Agriculture - Role of Climate, February 27th and 28th, 1992.

**Key Word**

gaseous emissions, forest ecosystems, atmospheric gases, agriculture, nitrogen gases, livestock production, acidification, air pollution, slurry

**Abstract**

The principal gases emitted to the atmosphere as a result of the utilisation of land for agriculture are those of carbon, sulphur and nitrogen. The most immediate effect of gaseous emissions from agriculture may be attributed to the nitrogen gases and in particular, ammonia. About 90% of  $\text{NH}_3$  emissions to the atmosphere are attributable to livestock production. Ammonia is the most abundant alkaline component of the atmosphere. Its residence time in the atmosphere is only a few days. Ammonium by contrast, is transported considerable distances. High nitrogen inputs can influence forest ecosystems both through direct damage to the foliage and within the plant and soil. Increased acidification occurs whether nitrogen reaches the system as  $\text{NH}_4^+$  or as  $\text{NO}_3^-$ . The potential hazards of pollutant deposition are embraced in the critical load concept. Critical loads for coniferous forest are of the order of 5 - 20 kg N /ha/year. In Ireland, nitrogen deposition in precipitation and throughfall in forests is measured in a series of four ecosystems monitoring plots operated by the Forest Ecosystems Research Group in UCD. The plots are located in Wicklow (Roundwood), Cork (Ballyhooly), Galway (Cloosh) and Mayo (Brackloon). Each site has an open, non-forested counterpart. Deposition of  $\text{NH}_4^+$ -N and  $\text{NO}_3^-$ -N at the two western sites is very low. The values at Roundwood are quite high, in excess of

general estimates of critical load for N. A study is presently underway at Ballyhooly to examine the relationship between slurry and fertiliser spreading and NH<sub>4</sub><sup>+</sup>-N deposition in throughfall. The moderate intensity of animal production at Ballyhooly, coupled with low ambient atmospheric NH<sub>3</sub> concentrations, provide an opportunity to record the effect of individual spreading operations on atmospheric and rainfall chemistry within the boundaries of the forest. The data show clear evidence of locally produced NH<sub>3</sub>. It is intended to conduct a similar survey with more intensive monitoring of rainfall, throughfall, gas concentrations and weather conditions in 1992.

**Page**

pp 78 - 93

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield, Dublin 4

---

**Number**

983

**Author**

O'Carroll Niall

**Title**

Early growth of conifers on machine-cutover peatland.

**Publisher**

International Union of Forestry Research Organisations.

**Place**

Munich

**Date**

1967

**Source**

Proceedings, XIV. IUFRO - Congress Munich 1967: Part IV, Section 23

**Key Word**

*Abies grandis*, grand fir, peatland, fertilisation, fertilisers, nutrient deficiency, soil nutrients, peatlands, peat soil, cutover bogs, growth rate, regeneration, silviculture, *Larix leptolepis*, larch, minerals, raised bogs, early growth, establishment, planting

**Abstract**

Trial plantations were established on an area of cutover bog at Clonast, Co. Offaly. A year after planting it became evident that growth was inferior on unmanured plots. Results after eight years growth indicate that phosphate is necessary at planting time, particularly where the remaining peat is deep (6 - 11 ft.) and composed entirely of raised bog material. Growth is generally better where only a shallow (2 - 5 ft. approx) layer of peat is left. Under such conditions there is a significant curvilinear relationship between height growth of Japanese larch and the amount of calcareous mineral matter added to the rooting zone. Growth is better in the presence of moderate quantities than at zero, very low or very high quantities. This may hold for other species also. Potential mean annual increments of about 200 hoppus feet per acre are indicated for spruces, grand fir, western hemlock and red cedar.

**Page**

pp 471 - 482

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Leeson Lane, Dublin 2

---

**Number**

984

**Author**

Dunleavy J.A.

**Title**

The use of spruce for transmission poles.

**Publisher**

Institute for Industrial Research and Standards

**Place**

Dublin

**Date**

Sept/1973

**Source**

Technology Ireland

**Volume**

Vol. 5, No. 6

**Key Word**

transmission poles, Sitka spruce, Norway spruce, permeability, preservation treatment, preservatives, water storage, bacteria, strength properties, physical properties, forest products, timber processing, *Picea sitchensis*, *Picea abies*

**Abstract**

This article provides a summary of the results of experiments on the permeability of Irish-grown Sitka spruce and Norway spruce. In preliminary tests water-stored poles were successfully treated with creosote in normal commercial schedules. Adequate penetration and loading was obtained in Sitka spruce poles stored for two months between April and December or 4 months starting between January and March. The strength properties of the poles after water storage compared favourably with those of other commonly used species.

Microbiological studies showed the changes in bacterial counts and pH in bolts of both species stored in water or sprayed. Three organisms isolated from sapwood produced pectinase. The results show that bacterial isolates can be used to improve permeability.

**Page**

pp 9 - 17

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

985

**Author**

Forest Service

**Title**

Noble fir for Christmas trees.

**Publisher**

Department of Energy

**Place**

Dublin

**Date**

1986

**Key Word**

noble fir, *Abies nobilis*, Christmas trees, seed supply, site preparation, site selection, planting stock, fertilisation, vegetation control, crop rotation, harvesting, silviculture

**Abstract**

This booklet describes various aspects of the research programme in Christmas tree production which are being conducted. Brief notes are provided on the establishment and care of noble fir plantations as a guide to growers.

**Page**

8p

**Location**

Forest Service

**ISBN**

07910207

**Notes**  
available

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**Number**

986

**Author**

O'Connor J.P., Winter T.G., Good J.

**Title**

A review of the Irish Scolytidae (Insecta: Coleoptera).

**Place**

Dublin

**Date**

1991

**Source**

Irish Naturalists Journal

**Volume**

Vol. 23, No. 10

**Key Word**

Irish Scolytidae, forest protection, forest pests, Coleoptera, bark beetle

**Abstract**

In this paper, the Irish literature on the family Scolytidae is reviewed, and a modern list of the family is provided. The list contains 26 accepted species of Irish Scolytids of which seven are only known from importations. Despite the economic importance of the Scolytidae, this is the first list to be drawn up in 90 years.

**Page**

pp 403 - 409

**Location**

Forest Service/ RDS library

**Notes**

available

**Address of author**

National Museum of Ireland, Kildare St., Dublin 2

---

**Number**

987

**Author**

Department of Environment

**Title**

Tree preservation: guidelines of planning authorities.

**Publisher**

Department of the Environment

**Place**

Dublin

**Date**

1994

**Key Word**

planning authorities, environment, amenities, tree preservation, law, planning legislation, local government

**Abstract**

These guidelines on tree preservation drawn up by the Dept. of the Environment update and expand the 1986 guidelines and incorporate a new Tree Preservation Order. The means by which the development plan can be used by the planning authority to enhance amenities through the protection and preservation of trees is explained. The protection mechanism specifically aimed at tree preservation in the Planning Acts is outlined, and the circumstances in which the planning authority may intervene in the public interest, and the compensation it may entail, are identified. The enforcement powers available to planning authorities under the planning legislation are summarised. Practical suggestions on the use of all of these guidelines are included.

**Page**

33p

**Location**

Forest Service

**Notes**

available

**Address of author**

Dept. of the Environment, Custom House, Dublin 1.

---

**Number**

988

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1960 to 31st March, 1961.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1961

**Key Word**

land acquisition, plantation establishment, forestry policy, forest management, harvesting, timber marketing, wildlife conservation, forest protection, amenities, public relations, State forestry, private forestry

**Abstract**

The total productive area acquired for State forestry purposes during the year was 25,504 acres. The total area planted was 26,000 acres, the highest area planted in any single year to date. The area recorded as thinned in the year was 8,572 acres, yielding 2.6 million of produce. Felling of mature timber yielded 3.6 million cubic metres of material. The campaign for more private planting was continued during the year. Special campaigns were conducted in Cos. Mayo, Kerry, Laois and Offaly.

**Page**

44p

**Location**

Coford library

**Notes**

Available

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**Number**

989

**Author**

Murphy G.

**Title**

Workshop on establishment problems on the BNM cutaway bogs: Report and recommendations.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research Report No. 20/91

**Date**

1991

**Key Word**

cutaway bogs, silviculture, establishment problems, land acquisition, land use, soil nutrition, peatlands, frost, vegetation management, peat soils

**Abstract**

This report contains summaries of papers given at a workshop on the establishment problems on BNM cutaway bogs. The following are topics covered: acquisition of BNM cutaway peats; research work on vegetation management on the BNM cutaway bogs; nutritional issues on cutaway bogs; late spring frosts.

**Page**

25p

**Location**

Coillte Research & Technology, Forest Service

**Notes**

available

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

---

**Number**

990

**Author**

Pfeifer A.

**Title**

Report of working party on broadleaves.

**Publisher**

Coillte

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No. 21/9

**Date**

1990

**Key Word**

broadleaves, hardwood timber supply, silviculture, plantation establishment

**Abstract**

In order to satisfy home demand for hardwoods in the future, 3% of the national planting programme of 30,000 ha. is required to be planted with broadleaves. A number of broadleaved species, both native/naturalised and exotic, are suitable for planting in Ireland. These include oak, beech, ash and sycamore which have proven timber qualities and should form the basis of a broadleaved planting programme. Mixed planting of broadleaves and conifers is a financially attractive approach to broadleaved establishment. While mixtures have proved difficult in the past, more research on compatibility of species could make mixtures more viable in the future. The cost of planting broadleaves, taking into account loss of revenue from Sitka crops, is calculated. A series of recommendations on how Coillte's broadleaved planting programme should proceed are included. Although many non-commercial benefits will accrue from increased planting, timber production must remain the primary objective. The feasibility of planting a number of native and exotic species, including beech, eucalyptus and walnut, is examined.

**Page**

30p

**Location**

Coillte library, Forest Service

**Notes**

available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray Co. Wicklow

---

**Number**

991

**Author**

McCarthy R.

**Title**

Influence of mycorrhizae on nitrogen nutrition & wood protection in mixed stands.

**Publisher**

Coillte

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No 19/90

**Date**

1990

**Key Word**

fungus, mycorrhizal fungi, mycorrhizae, wood protection, forest protection, mixed stands, nurse trees, soil nutrition, nitrogen, phosphorus

**Abstract**

This report forms part of a series of studies on mycorrhizae and provides details of a number of experiments being carried out at Avondhu Forest and Ballyhoura Forest. These experiments provided further evidence of a nurse tree effect in enhancing nitrogen concentration of Sitka spruce, in this case in a Sitka spruce/lodgepole pine mixture. All four fungi, which were previously used in inoculation studies of Sitka spruce and Japanese larch, formed mycorrhizas in lodgepole pine seedlings. Examination of fungal hyphae for polyphosphate granules has confirmed previous conclusions of the reduced ability of Sitka spruce isolates to utilise the more recalcitrant phosphorus forms. It appears that the two main isolates (yellow fluffy, fluffy brown) from excised Sitka spruce mycorrhizas and probably from Type B mycorrhizas have limited ability to utilise protein-N and organic phosphorus and are unsuccessful as mycorrhizal fungi on organic soils. Both Paxillus and Suillus were demonstrated to be 'protein fungi' but although only found in mixed stands, these formed a small proportion of the mycorrhizas. It is concluded that Sitka spruce in Ireland is heavily dependent on the mycorrhizal fungi, which have either been picked up in the nursery or are present at the site. Sitka spruce may require the presence of another tree acting as a nurse in providing a more diverse mycorrhizal flora, some of which may be capable of exploiting organic nitrogen and phosphorus sources in the soil.

**Page**

14p

**Location**

Coillte library/Forest Service

**Notes**

available

**Address of author**

Coillte Research & Technology

---

**Number**

992

**Author**

Hendrick E.

**Title**

Field performance of containerised seedlings planted in 1988 and 1989.

**Publisher**

Coillte

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No. 11/90

**Date**

1990

**Key Word**

containerised seedlings, survival rates, cultivation, silviculture, containers, nursery practice, forest nurseries, site factors, soil types, young plants, lodgepole pine, Pinus contorta, field performance, plant vigour

**Abstract**

Containerised seedlings have obvious advantages in countries where planting is confined to the summer months. Containers also reduce basal sweep in south coastal lodgepole pine. In order to isolate factors for poor survivals in containerised seedlings used in Ireland, and to obtain an overall picture of their performance, a survey of sites planted with containers in 1988 and 1989 was carried out. For each plot selected in the various sites being surveyed, survival, appearance and a range of site and treatment variables were recorded. Several site factors

showed a significant relationship with survival and plant vigour. Elevation had the most clearcut effect. For each 10m increase in elevation survival increased by 1% on average. High survivals were associated with raised and cutaway bogs, and with mounding and no cultivation treatments. Tunnel and single mouldboard ploughing were associated with poor survival. Survival declines by about 0.1% for each day delay in planting from mid March to the end of the year. Recommendations aimed at maximising survival rates based on these findings are included.

**Page**

50p

**Location**

Coillte library / Forest Service

**Notes**

available

**Address of author**

Coillte Research & Technology

---

**Number**

993

**Author**

Lynch T.J.

(Coillte Research & Technology)

**Title**

A report on cost-effective timber measurement systems.

**Publisher**

Coillte

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report No. 16/90

**Date**

1990

**Key Word**

timber measurement, production costs, timber volume, basal area

**Abstract**

This report examines a new approach to timber measurement which aims to be faster and more cost-effective than previous methods, while retaining accuracy. Measurement can be made at three possible stages during the timber production cycle: point of use; point of production and; points between production and use. The new method involves calculating for each stand from the sample the single regression line that best fits all the data pairs taken together, and not as before as a set of individuals. This regression line is free of the artificial constraint of an assumed fixed point and the compromises necessary to fit a rigid table. The advantages of the new approach viz a viz the old manual approach are outlined.

**Page**

18p

**Location**

Coillte library / Forest Service

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray Co. Wicklow

---

**Number**

994

**Author**

Gillespie John

**Title**

Wood markets and silvicultural practice.

**Place**

Dublin

**Series**

Forest Service internal report

**Date**

1979

**Key Word**

statistical analysis, marketing practice, silviculture, timber demand, economics, pulpwood market, management, forest output, timber market

**Abstract**

This project examines the silvicultural and marketing practices of the Forest and Wildlife Service. Its purpose is to examine how the Service might adapt its practice to the changing demand for the produce of its forests. The trend in demand over the next decade is assessed and compared with forecast output from the Service's estate. This investigation indicated that the present lack of demand for pulpwood can be expected to continue for at least three years nationally and for longer time periods in some regions. The lack of demand for pulpwood will tend to recur at intervals in the decades ahead, because of the nature of the pulpwood using industry. An examination of the silvicultural practices showed that they can be adapted to meet such fluctuations in demand but that such adaptations require the use of demand forecasts as an input to management decisions on silvicultural practice. It is concluded that the Service should prepare, as a matter of course, forecasts setting out the expected demand for its products on a regional basis. These forecasts should then be used by management to decide on the most suitable mix of silvicultural practices for each region.

**Page**

150p

**Location**

Forest Service

**Notes**

Confidential - not available

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**Number**

995

**Author**

Hassard Thomas

**Title**

The application of some methods of multivariate statistical analysis to the study of the growth-environment relationships of Sitka spruce in Northern Ireland.

**Place**

Belfast

**Date**

1978

**Key Word**

multivariate statistical analysis, growth-environment relationships, Sitka spruce, Criterion-Specific Factor Analysis, multivariate predictive relationships, growth rate, soil nutrients, phosphorus availability, surface water flushing, peatlands, peat soils, bogs, clustering, correlational methods, statistics, *Picea sitchensis*

**Abstract**

A number of multivariate statistical methods are applied to the study of the environmental influences controlling the growth of Sitka spruce in the State forests of Northern Ireland. The theoretical principles of multivariate statistics are derived and their potential contribution to environmental studies assessed. A set of data collected on a province-wide basis is examined with the objectives of determining the extent to which growth is uniquely controlled by various environmental factors and deriving a prediction system which would enable the potential productivity of an unplanted site to be assessed from its environmental characteristics. Two prediction systems of equivalent power are obtained using multiple regression and automatic interaction detection procedures. A new multivariate method, Criterion-Specific Factor Analysis, is presented as an aid to the interpretation of multivariate predictive relationships. This technique indicates that the forest environment may be effectively summarised by four axes relating to edaphic, climatic, regional and topographic variation of which the first three show significant relationships with growth. The relationships between growth and environment of Sitka spruce in a west Tyrone peatland forest are examined in detail. Growth is shown to be primarily related to phosphorus availability, exposure and intensity of surface water flushing. The existence of considerable heterogeneity in the peatland environment is demonstrated and related to the nature of the pre-planting vegetation. A number of

ordination, clustering and correlational methods are utilised and their relative efficiencies assessed. The power of rotational procedures in improving the interpretability of certain multivariate procedures is demonstrated.

**Page**

315p

**Location**

Forest Service

**Notes**

Available (Thesis submitted for the Degree of Doctor of Philosophy to the Faculty of Science, The Queen's University of Belfast).

**Thesis**

Ph.D. Thesis, QUB

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**Number**

996

**Author**

Renehan William G.

**Title**

The decision making process of an individual appraising a forestry investment.

**Place**

Dublin

**Date**

1995

**Key Word**

decision-making process, investment, economics, risks, rational decision making model, timber production industry, private forestry, Picea sitchensis

**Abstract**

The objectives of this study were to develop a decision-making process which could be followed in the appraisal of investments in forestry, and to determine the factors influencing the decisions relating to these investments. Four case studies are examined and the decision making process adopted in each case is described and compared to the theoretical decision-making process.

**Page**

75p

**Location**

Forest Service

**Notes**

available (Thesis submitted for the award Masters of Business Studies in Accounting, Dublin City University).

**Thesis**

M.B.S. Thesis, DCU

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**Number**

997

**Author**

Clear T.

**Title**

Forestry in land use in Ireland.

**Publisher**

Agricultural Science Association.

**Place**

Dublin

**Date**

1961

**Source**

Agricultural Record

**Volume**

Vol. XVII

**Key Word**

forestry history, forestry policy, New Zealand forestry, agriculture, State forests, afforestation, land use, land planning, resource development, rural development, economics, timber processing, timber trade

**Abstract**

The issue of afforestation in Ireland, and the extent to which stated government policy on forestry is actually implemented are examined. Central to this assessment is the question of land use and land planning, which has now become a very specialised area. In a period of rapid change in agriculture, the issues of land planning and resource development require more attention than ever before. The development of forestry policy in Ireland from the early days of the State is traced, and the history of afforestation in New Zealand during the same period is cited as a useful comparison. The approach of that country, with its extensive coniferous plantations of high yielding species on productive ground, is a suitable model for Ireland. The question of land classification, and how this affects selection of sites for specific species is examined. The difficulties facing foresters in Ireland as a result of being largely confined to land marginal or unsuitable for agriculture has resulted in high level of skill and competence. The likelihood of more land being taken out of agriculture is good news for foresters. However, there is a greater need for co-operation between forestry and agricultural interests. Finally, the impact of State forestry acquisition and planting programme on the economy of the country is considered.

**Page**

pp 23 - 37

**Location**

Teagasc library

**Notes**

available

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**Number**

998

**Author**

McEvoy T.

**Title**

Forestry in the context of regional development.

**Publisher**

Agricultural Science Association

**Place**

Dublin

**Date**

1968

**Source**

Agricultural Record

**Volume**

Vol. 26

**Key Word**

regional development, rural development, economic policy, forestry policy, afforestation, land use, agriculture, economic planning, government intervention, timber processing, State forestry, marginal land

**Abstract**

The author looks at how forestry is dealt with by governments in the context of regional development. Forestry is a production enterprise which necessitates direct intervention by government, and thus provides the State with an instrument which it can use to encourage rural economic growth in less economically developed regions. While wood production is of primary importance, central authorities must take into account the environmental, scenic and recreational roles which the forest plays in a particular region. An important issue is the interrelationship between the forest and wood processing industries. The various timber products are considered, and the most important changes in the pattern of wood use this century are outlined. The extent of afforestation and the degree of industrialisation in Ireland are linked. The issue of land use and converting agricultural land to forestry is considered and the likely extent and pattern of afforestation in several regions is examined. The extent to which the local economy affects and is affected by forestry is explained. While nationally forestry will always play a secondary role in land use, there are regions in which forestry will be the chief source of production and employment as well as a dominant feature of the landscape.

**Page**

pp 49 - 56

**Location**

Teagasc library

**Notes**  
available

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**Number**

999

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report Minister for Lands forestry for the period from 1st April, 1964 to 31st March, 1966.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1966

**Key Word**

land acquisition, plantation establishment, forestry policy, forest management, harvesting, timber marketing, wildlife conservation, disease control, forest pests, forest protection, amenity forestry, forestry research, State forestry, private forestry

**Abstract**

The total productive area acquired for State forestry purposes in 1964/65 was 21,004 acres and in 1965/66 was 18,257 acres. The total area planted was 25,054 acres in 1964/65, and 23,390 acres in 1965/66. A total of 22,300 acres was thinned during this period producing a yield of 8 million cubic feet. Details of the volume and value of timber sold, the numbers employed in State forests, and figures for expenditure and income are provided. Other areas covered are the continuing development of JFK Memorial Park, the increasing use of State forests for purposes other than timber production, and developments in private property.

**Page**

41p

**Location**

Coford library, Coillte library

**Notes**

Available

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**Number**

1000

**Author**

Boyle K.E., Storey D.  
(DIT. School of Food Science and Environmental Health)

**Title**

A report on a survey of amenity forest users at six forests in the Greater Dublin area and on the impact of forest recreation on the residents of Enniskerry, Co. Wicklow.

**Publisher**

Dublin Institute of Technology. School of Food Science and Environmental Health

**Place**

Dublin

**Date**

1993

**Key Word**

forest amenities, recreational forest use, forestry policy, tourism, environment, forest maintenance, State forestry

**Abstract**

A survey of forest users at six forest sites was carried out during the summer of 1993. The residents of Enniskerry, Co. Wicklow were surveyed on their attitudes to local forests and their value to the community. A total of 459 questionnaires were administered in the forest user survey and 103 in the Enniskerry residents survey. Forest users were generally satisfied with the forest sites they visited. The forests were used mainly as

sites for passive recreation, walking, admiring scenery and nature and taking fresh air. Most users considered that forests have a dual role, and should provide both timber and amenity products. The control of litter and vandalism were identified in both surveys as the areas where most improvement was needed. The respondents were generally unwilling to pay for the use of the forest or would only pay a low fee. It was felt that forests should be subsidised to provide public access, and that at least one forest in the south Co. Dublin area should be developed to cater for amenity use in the region. The forest at Massey's Estate is identified as an ideal candidate for this development.

**Page**

82p

**Location**

Forest Service

**Notes**

available

**Address of author**

School of Food Science and Environmental Health, College of Catering, Cathal Brugha Street, Dublin 1

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**Number**

1001

**Author**

O'Reilly Connor

**Title**

Influence of nursery practice on the development and physiology of Douglas fir seedlings.

**Place**

Tralee

**Date**

1992

**Key Word**

Douglas fir, *Pseudotsuga menziesii*, establishment, early growth, seedlings, nursery practice, cultivation, cultural treatments, bud development, mitotic activity, shoot apices, root apices, cold hardiness, root growth, bud dormancy, transplant seedlings, precision sown seedlings, seedling physiology, silviculture, forest protection

**Abstract**

In order to find the reasons for the high mortality rate of Douglas fir (*Pseudotsuga menziesii* (Mirb) Franco) during early establishment, information was sought on the physiology of Douglas fir seedlings. In this report the seasonal course of bud development, mitotic activity of shoot and root apices, shoot cold hardiness, root growth, and bud dormancy intensity in 1991/92 of two stock types of Douglas fir are described. Samplings of transplant seedlings, sown in 1989, and precision sown seedlings (PS), sown in 1990, were supplied by two nurseries both applying similar cultural treatments. It was found that there were large differences between stock types and between years for most morphological variables. The transplant stock was larger, but less heavily branched. Bud development, and dormancy and cold hardiness development began sooner in the transplant stock than in the PS stock. RGP of the transplant stock was low at all times in 1991/2, indicating a generally low quality, and lower potential for survival and growth than the PS stock in both years and in the transplant stock in 1991. The root system did not become fully dormant in 1991/92, indicating that this may be a contributing factor to the poor performance of Douglas fir in some years. Because of annual variations in climatic conditions, large year-year changes in the timing of the physiological changes can be expected.

**Page**

21p

**Location**

Forest Service

**Notes**

Available (Report prepared for Forest Service)

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Belfield, Dublin 4

---

**Number**

1002

**Author**

Department of Lands. Forestry Division

**Title**

Forest Research Review 1957- 1964.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1964

**Key Word**

Department of Lands, forestry research , silviculture, forest protection, timber testing, tree growth, inventory

**Abstract**

This report covers the activities of the Research Branch of the Forestry Division, Dept. of Lands from its establishment in 1957 to 1964. A brief background to the setting up of the Branch is provided. The following are the areas in which the Research Branch was involved during the period under review: tree improvement; crop establishment; improvement of unsatisfactory crops; forest protection; species trials and silvicultural control of mixed species; chemical control of weeds; timber testing and utilisation; spacing; thinning; pruning; inventory and; growth studies.

**Page**

157p

**Location**

Forest Service

**Notes**

available

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**Number**

1003

**Author**

Department of Lands. Forestry Division

**Title**

Forest Research Review 1964-70.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1970

**Key Word**

Department of Lands, forestry research , silviculture, forest protection, timber testing, tree growth, soil nutrients

**Abstract**

This report covers the activities of the Research Branch of the Forestry Division, Dept. of Lands from 1964 to 1970. During this period the Branch concentrated efforts on experimentation with the main species in relation to nutrients and site improvement, genetic improvement of planting stock and crop structure which promise more immediate economic returns and greater silvicultural advantages. Research in forest entomology and pathology has led to new protective measures and to a monitoring of forest diseases. The main areas of activity are as follows: species trials and silvicultural control of mixed species; genetics; crop establishment; ecology, spacing thinning, pruning; forest protection; inventory and; growth rates.

**Page**

117p

**Location**

Forest Service

**Notes**

available

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**Number**

1004

**Author**

Forest and Wildlife Service

**Title**

Plant health contingency plan - forestry.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication No. 25

**Date**

1986

**Key Word**

plant health, forest protection, forest management, Forest & Wildlife Service, forestry policy, forest pests, forest pathogens, disease management

**Abstract**

This contingency plan outlines the practical steps which need to be taken against suspected or identified outbreaks of forest insects and diseases, particularly those of a non-indigenous nature in forests or timber products. Specifically the plan details: statutory responsibility for plant health matters; Forest & Wildlife Service policy in responding to a forest pest or disease emergency; implementation procedures to be adopted in the event of an outbreak; how FWS local staff and other bodies have a positive role to play in helping to deal with an outbreak; and relevant legislation.

**Page**

23p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidminton Place, Bray Co. Wicklow

---

**Number**

1005

**Author**

Government of Northern Ireland

**Title**

Forestry in Northern Ireland: presented to Parliament by command of His Excellency the Governor of Northern Ireland, November 1970.

**Publisher**

HMSO

**Place**

Belfast

**Date**

1970

**Key Word**

forestry policy, forestry history, silviculture, timber market, timber processing, land use, forest products

**Abstract**

This white paper on the Government of Northern Ireland's forestry policy sets out the primary objectives of that policy for the future. It has been decided to establish 120,000 hectares of State and privately owned forests by the end of the century on land where forestry is considered to be the most appropriate long-term land use. A further aim is to manage the State owned forests in order to achieve maximum value wood production subject to a co-ordinated programme of recreational use, conservation, educational and scenic considerations, designed to provide the greatest national benefits from the forests. It is also planned to carry out detailed investigations of the market for the forest products.

**Page**

47p

**Location**

RDS library

**Notes**

available

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**Number**

1006

**Author**

McCracken Eileen

**Title**

The Londonderry Woodlands.

**Place**

Derry

**Date**

1964

**Source**

County Londonderry Official Handbook, 1964.

**Key Word**

Londonderry woodlands, Ulster plantation, forest history, legislation, deforestation, timber industries, forest products, tanning, ironworks, ancient woodlands, forest clearance, natural forests, landscape, native woodlands

**Abstract**

The woods of Glenconkeyne and Killetra in Co. Derry were two of only a handful of ancient woodlands that survived in Ireland at the end of the sixteenth century. There were several smaller woods and a number of wooded valleys between Lough Neagh and the Sperrin Mountains. These woodlands supplied a number of industries, especially ironworks, but gradually disappeared over the next two centuries. Other industries for which the woods were cleared included pipestave making, shipbuilding, tanning and housing. A brief account of the operation of each of these industries, and their effect on the woodlands in the area is provided. Plantation was a major cause of the destruction of the woodland. Between 1689 and 1791 legislation was enacted to protect what timber remained and to enforce planting.

**Page**

pp 63 - 72

**Location**

RDS library

**Notes**

Available (A copy of this article is among the Irish Misc. Pamphlets collection, Vol. 75, in the RDS)

---

**Number**

1007

**Author**

Cooper Robert T.

**Title**

Forestry in Ireland.

**Publisher**

The Official Guide

**Place**

Dublin

**Date**

1902

**Key Word**

forestry history, forestry policy, afforestation, deforestation, economics, politics, State forestry, native woodlands

**Abstract**

This is a collection of pamphlets decrying the destruction of Irish forests, and appealing to the Government of Ireland to begin the reforestation of the country. The author provides an account of the topography and landscape of Ireland and stresses how suitable the Irish climate and soil is for tree growth. He appeals to the

patriotic sentiments of his countrymen to encourage them to begin the process of planting. He refers to several other parts of the world to illustrate the important role that trees play in the social, economic, environmental, aesthetic and political life of a community.

**Page**

72p

**Location**

RDS library

**Notes**

available

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**Number**

1008

**Author**

Food and Agriculture Organisation of the United Nations.

**Title**

Report on forestry mission to Ireland.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1951

**Key Word**

forestry policy, forestry history, afforestation, forestry development, silviculture, land use, FAO, Irish Afforestation Programme, forests products, timber market, politics, State forestry

**Abstract**

This report was compiled by Mr. D. Roy Cameron on behalf of the FAO in response to a request by the Irish Government to review a survey on forestry plantationS which they had recently carried out. The Plantable Land Survey was the first part of the proposed Irish Afforestation Programme. It is recommended that this programme be divided into two categories, a commercial programme and a social programme. It is estimated that the sawn softwood needs of Ireland will not exceed 200,000 standards per annum and that 100,000 standards should suffice for emergency requirements. The objective of the commercial programme should be provision of the roundwood equivalent of that quantity of sawn timber. It is necessary to acquire and maintain a three years supply of plantable land, and the commercial programme will require a total of 500,000 acres. A separate Department of Forests is recommended. A new acquisition programme, which should resolve the conflicting demands on land use, should be developed. Recommendations on expropriation proceedings are also included. It is necessary to takes steps to inculcate a forestry consciousness among the people of Ireland. The establishment of a strong research organisation is a necessity. The issues of labour supply, rates of payment and educational facilities for foresters are also dealt with. A review should be made of the fifty-year rotation adopted for the afforestation programme.

**Page**

44p

**Location**

RDS library/ Coillte library

**Notes**

Available

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**Number**

1009

**Author**

Mackay John

**Title**

The rape of Ireland or Irlanda Irredenta.

**Publisher**

Talbot Press

**Place**

Dublin

**Date**

1940

**Key Word**

forestry policy, forest history, politics, soil-utilisation, land use, agriculture, economics, timber processing, forest products

**Abstract**

This book is primarily concerned with the issue of soil-utilisation and the most profitable and just use for the land of Ireland. The author is critical of the Government's plans for afforestation because they will do nothing to relieve the present unjust state of land distribution, but simply serve to entrench privilege. The policy of acquiring land voluntarily for planting serves no purpose when there are over 6 million acres of rich land idle in estates and cattle ranches. The role of forestry in other countries is examined, and the potential contribution of forestry to the Irish national economy is compared with the part played by existing land uses, such as dairy and sheep farming.

**Page**

280p

**Location**

RDS library

**Notes**

available

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**Number**

1010

**Author**

Mckay John

**Title**

Trodden gold: merchandise of silk and paper and wood and the glory of the Arar-tree.

**Publisher**

Talbot Press

**Place**

Dublin

**Date**

1928

**Key Word**

forestry history, forestry policy, Douglas fir, Pseudotsuga menziesii, Sitka spruce, Sitka spruce, Yew, oak, silviculture, forest lore, culture, mythology, politics, land use

**Abstract**

Several aspects of forestry practice and forest lore and customs are examined. The part that trees and forestry play in the economy and culture of other countries is explained and contrasted with the situation in Ireland. The botany and physiology of the yew, Douglas fir, oak and Sitka spruce trees are considered in detail, and their role in the culture and mythology of countries to which they are native described. Recent afforestation programmes in England, and the implications that they have for any future afforestation programme in Ireland, are considered. The cost of such a programme is estimated.

**Page**

310p

**Location**

RDS library

**Notes**

available

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**Number**

1011

**Author**

Mackay John

**Title**

Forestry in Ireland: a study of modern forestry and of the interdependence of agriculture and industry.

**Publisher**

Cork University Press

**Place**

Dublin

**Date**

1934

**Key Word**

forestry history, forestry policy, timber processing, land use, politics, economics, culture, symbolism, mythology, afforestation,

**Abstract**

The author proposes a practical scheme for the re-afforestation of Ireland, and is critical of existing policy in this area. What is required initially is a thorough examination of the method of financing a planting programme, and a small committee of experts to institute an agronomical survey and to plan the scientific and technical campaign. The type of afforestation best suited to Irish conditions and most likely to feed successful processing industries is described in detail. The availability of land and the correctness or otherwise of planting arable or marginal lands are also examined. Finally, the question of financing a programme of re-afforestation is examined.

**Page**

190p

**Location**

RDS library

**Notes**

available

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**Number**

1012

**Author**

McCracken Eileen

**Title**

The Irish woods since Tudor times: distribution and exploitation.

**Publisher**

David & Charles

**Place**

Newton Abbot

**Date**

1971

**Key Word**

forestry history, forests products, industrial history, ancient woodlands, staves, shipbuilding, coopering, ironworks, private planting, State forestry

**Abstract**

This book gives an account of the gradual reduction of Ireland's woodland cover of 12.5% in 1600 to just over 2% in 1800, and the attempts at re-afforestation, both private and State-sponsored during the nineteenth and twentieth centuries. The author dates the beginning of Ireland's industrial revolution from the time that the ownership of Irish woods passed into the hands of the new British settlers. In the period following this change, Irish woodlands supplied a number of important timber-using industries. The manufacture of staves and iron, using charcoal, took a great toll on Irish woodlands and by the eighteenth century local timber could not supply the demands of coopers and tanners. The plantations increased the size and number of towns, and large amounts of timber were used in house building. The economic aspects of the timber trade, such as timber prices and timberworker's wages are considered in detail. There is also a chapter on the most important timber merchants active at this time.

**Page**

184p

**Location**

RDS library

**Notes**

available

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**Number**

1013

**Author**

Fitzpatrick H.M.

**Title**

Coniferae: keys to the genera and species with economic notes.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1930

**Source**

Scientific Proceedings of the Royal Dublin Society (1928 - 30)

**Volume**

Vol. 19

**Key Word**

Coniferae, taxonomy, botany, morphology

**Abstract**

The object of this study was to compile a comprehensive series of descriptions of the Coniferae, based on the morphology of the foliage, arranged in the form of an artificial key. The main divisions of the key rest upon the arrangement of the leaves of normal sterile branches, occurring in the lower part of the crown of adult trees, and on their shape and their mode of attachment to the twigs. There are 47 genera in the Coniferae family and 490 living species.

**Page**

pp 189 - 260

**Location**

RDS library

**Notes**available

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**Number**

1014

**Author**

Fitzpatrick H.M.

**Title**

The trees of Ireland - native and introduced.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1933

**Source**

Scientific Proceedings of the Royal Dublin Society (1930 - 1933)

**Volume**

Vol. 20

**Key Word**

native species, introduced species, exotic species, estate planting, landscaping, botany, taxonomy, species origin, species distribution, forestry history

**Abstract**

The yew is identified as the first tree which was introduced to Ireland. This was followed by the elm, the sycamore, the evergreen oak and the Spanish chestnut. The political turmoil in Ireland meant that it was not until the early to mid eighteenth centuries that exotic species began to be systematically planted in Ireland. The

author traces the development of landscape gardens and woodlands on the demenses during the eighteenth and nineteenth centuries, and identified the most significant and sustained introduced species during that period. The pattern of introductions was very similar to that prevailing in England. A list of places where the growth of trees has been recorded, with the names of the owners and a brief description of the locality, is provided. Catalogues of both conifers and broad-leaved species growing in Ireland are included. These provide a description of each species, and details of its origin and distribution.

**Page**

pp 597 - 656

**Location**

RDS library

**Notes**

available

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**Number**

1015

**Author**

Leonard S.

**Title**

Survey of the waste land of North County Wicklow suitable for afforestation.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1928

**Source**

Economic Proceedings of the Royal Dublin Society. (1910 -1935)

**Volume**

Vol. II

**Key Word**

County Wicklow, marginal land, peatlands, bogs, mountains, ecological survey, zones of vegetation, forestry history

**Abstract**

This is a report of a preliminary survey of the northern half of County Wicklow, made with the aim of determining the approximate area of waste land which could be used for forestry purposes. The survey deals with the Hill Pasture Zone (as defined by the ecological survey of South County Dublin by Pethybridge and Praeger), which is generally utilised for rough grazing, and in its wild state is covered by gorse. A map is included which colours red all areas considered suitable for afforestation, regardless of existing vegetation cover. Other colourings repeat those employed by Pethybridge and Praeger. The survey concludes that the amount of land available for afforestation in Ireland is much less than generally thought. Only 6% of the total area of North County Wicklow, which is representative of mountain districts in Ireland, is suitable for planting on an economic scale.

**Page**

pp 391 - 405

**Location**

RDS library

**Notes**

available

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**Number**

1016

**Author**

Cahill Declan

(IIRS. Forest Products Department)

**Title**

Project No. 31.09. The utilisation of Sitka spruce for roadside fencing rails. Final report.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1989

**Key Word**

Sitka spruce, fencing rails, durability, forest products, preservation treatment, roadside timber, forest products, timber processing, *Picea sitchensis*

**Abstract**

The objectives of this study were: 1. To evaluate the performance of a stretch of timber fencing (reported to be Sitka spruce) on the Longford/Newtownforbes road; 2. to use this information to help utilise Sitka spruce in roadside fencing. The length of fencing selected for testing was estimated to be 18 years and was heavily weathered with extensive growth of mosses and lichens. The quality of timber used in the rails had a high rejection rate in relation to knots. There was a high rate of end-grain splitting in the rails. The moisture content of the fencing shows levels conducive to decay. It was found that the specified nails size induces stresses in timber which can cause splitting. The preservative did not appear to cause a detrimental effect on the nails, and it is estimated that they may provide a further fifteen to twenty years service. Decay was detected in small pockets in some of the posts at the most hazardous area, the ground-line zone. However, given the limited penetration of preservative, the likely wet condition of the timber before treatment, and the high degree of checking, the performance of these Spruce posts is considered to be quite good. No decay was visually detected on any of the rail samples selected. The penetration of preservative in the rails was better than expected while the depth of preservative achieved in the posts was considered normal for the species. None of the samples achieved the desired loading of preservative required by the specification.

**Page**

52p

**Location**

Forbairt. Forest Products Dept.

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glanevin, Dublin 9

---

**Number**

1017

**Author**

Convery Frank

**Title**

Some regional impacts of alternative rural land uses.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1974

**Source**

Irish Journal of Agricultural Economics and Rural Sociology, 1973/1974

**Volume**

Vol. 4, No. 2

**Key Word**

land use, County Leitrim, agriculture, public policy, forestry policy, economics, sociology, employment, income generation, economic impact, physical output, exports, statistics, economic variables

**Abstract**

The object of this study was to provide estimates for the changes in employment and income which would result from the government's proposed replacement of some agricultural areas in Co. Leitrim by forestry. A comparison was made between the two principal types of land use by determining their respective physical output, employment and income generation. In the case of forestry, the income and employment generated in the

management, harvesting and processing of wood (economic base) was first identified. The non-basic/basic ratio was applied to determine the income and employment 'induced' in the non basic (service) sector. Agriculture was similarly treated, and then the impacts were compared with the assistance of the concept of rate of time preference. From graphical representation of the data it is clear that the bulk of forestry's impacts tend to occur towards the end of the planning period, while agriculture's effects have a more even distribution. However, the author argues that, from the perspective of public policy, arguments in favour of one use over another which are based exclusively on a single criterion, such as financial efficiency, are not valid. Variables such as employment, national security, the balance of payments and environmental quality must also be considered as part of the decision-making process.

**Page**

pp 29 - 49

**Location**

RDS library

**Notes**

available

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**Number**

1018

**Author**

Ward S.

**Title**

The rooting of hardwood cuttings.

**Publisher**

HMSO

**Place**

Belfast

**Date**

1974

**Source**

Agriculture in Northern Ireland

**Volume**

Vol. 49, No. 1

**Key Word**

rooting, hardwood cuttings, broadleaf trees, cultivation, nursery practice, propagation, establishment, silviculture, planting, broadleaves

**Abstract**

This article discusses various difficulties associated with the use of hardwood cuttings for propagation. One of the main problems seems to be the complex relationship shown between rooting and establishment. Potentially well rooted and weaned plants when moved from the bin have failed to establish under favourable conditions. Rooting potential is at its highest in Autumn and Spring, but establishment appears to be depressed at these periods. A possible explanation may be low food reserves in the cuttings at these critical times. Research is continuing on this problem. The present guidance available to nurserymen wishing to try this technique is to use the correct cutting material at the optimum autumn and spring times and follow present instructions for treatment.

**Page**

pp 66 - 69

**Location**

RDS library

**Notes**

available

**Address of author**

NI Dept. of Agriculture, Horticultural Centre, Loughgall, Co. Antrim

---

**Number**

1019

**Author**

Harron John

**Title**

The present distribution of the dark-leaved willow *Salix myrsinifolia* Salisb., in north-east Ireland.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

Jan/1992

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 24, No. 1

**Key Word**

broadleaves, willow, distribution *Salix myrsinifolia* Salish

**Abstract**

The dark-leaved willow, *Salix myrsinifolia* Salish (*S. nigricans* Sm. or *S. andersoniana* Sm) was thought to be confined to the glens of central Antrim, but has recently been discovered to be widespread in the north-east of Ireland. The author recently conducted a survey of many of the headwater streams in the area, the most common habitat of the willow. A list is included of the various locations at which *S. myrsinifolia* and its hybrids has been recorded in recent years.

**Page**

pp 8 -11

**Location**

RDS library

**Notes**

available

**Address of author**

54 Craigsdarragh Road, Helen's Bay, Co. Down BT19 1UB

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**Number**

1020

**Author**

Hobson D. D.

**Title**

*Populus nigra* L. in Ireland - an indigenous species.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

April/1993

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 24, No. 6

**Key Word**

black poplar, *Populus nigra* L., distribution, botany, taxonomy, natural regeneration, rare trees, broadleaves, genetic distinction, genetics

**Abstract**

Contrary to existing botanical opinion, a Botanical Society of the British Isles research project has concluded that the black poplar *Populus nigra* L., one of the rarest trees in Europe, is an Irish native. The recent discovery of an Irish population is of global significance. It is also the first time that naturally regenerating populations of the tree have been documented. Statistical and genetic analysis also indicate that the Irish population is distinct from those in Britain. The distribution of the species in Ireland is listed by county.

**Page**

pp 244 - 247

**Location**

RDS library

**Notes**

available

**Address of author**

Little Cansiron, Hazelbury Bryan, Sturminster Newton, Dorset DT10 2EB

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**Number**

1021

**Author**

Good J.A., Hume H.

**Title**

*Silvanus bidentatus* (F.) (Coleoptera: Silvanidae) imported into Ireland in bark of beetle pallets.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

July/1991

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 23, No. 11

**Key Word**

*Silvanus bidentatus*, beetles, forest protection, imported timber

**Abstract**

A single male *Silvanus bidentatus* (F.) was found under a piece of conifer bark on pallets imported into Dublin port from Japan. The species is subcorticolous in dead trees, and unlike bark-beetles it does not attack living trees. It has not been previously recorded in Ireland.

**Page**

pp 463 - 464

**Location**

RDS library

**Notes**

available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield Dublin 4

---

**Number**

1022

**Author**

Chandler Peter

**Title**

*Odinia boletina* (Zetterstedt) (Diptera: Odiniidae), a second Irish record and a British record of *O. xanthocera* Collin.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

Jan/1989

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 23 No. 1.

**Key Word**

Odinia boletia, insect pests, wood-borers, fungi, beetles, forest protection, broadleaves, distribution, beetle predators

**Abstract**

Odinia boletina, the only species of the genus associated with fungi, has been recorded in Ireland for the second time. It was found in July 1987 beneath brackets of Ganoderma at Crawfordsburn County Park, Co. Down. Other *Odinia* species are closely associated with the larvae or pupae of wood boring beetles, on which they are apparently predatory.

**Page**

pp 26 - 27

**Location**

RDS library

**Notes**

available

**Address of author**

Weston Research Laboratories, Vanwall Road, Maidenhead Berks., SL6 4UF

---

**Number**

1023

**Author**

Henry Augustine (Mrs.)

**Title**

Some remarkable trees in the Glasnevin Botanic Gardens, Dublin.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

March/1942

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 9, No. 1

**Key Word**

National Botanic Gardens, garden history, exotic species, beech, willow, yew, redwood, Ginko biloba

**Abstract**

The author describes a number of interesting tree species in the National Botanic Gardens. Addison's walk contains a large number of yews planted in the early eighteenth century. Other notable trees in the same part of the gardens are the *Pinus pinea*, the stone pine, and a *Sequoia gigantea*, giant redwood. Trees of eastern origin include the distinctive *Ginko biloba* and *Davidia involucrata*. Other trees mentioned are the beech, *Fagus sylvatica*, the tulip tree, *Liriodendron tulipifera*, the Weeping willow, *Salix babylonica* and the swamp cypress, *Taxodium distichum*.

**Page**

pp 11 - 14

**Location**

RDS library

**Notes**

available

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**Number**

1024

**Author**

Anon

**Title**

Advisory Committee on Forestry.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

July/1906

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 6, No. 4

**Key Word**

forestry history, forestry policy, State forestry, government, civil service

**Abstract**

A brief account is given of the Council of Agriculture meeting on 14 Nov. 1905 at which those serving on the new Advisory Committee on Forestry were appointed. The role which the Committee was expected to play in the Council's afforestation programme is described.

**Page**

p 755

**Location**

RDS library

**Notes**

available

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**Number**

1025

**Author**

Anon

**Title**

Forestry.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

1906

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 6, No. 2

**Key Word**

silviculture, thinning, pruning, early growth, cultivation, cleaning, forestry history

**Abstract**

This series of articles provides general guidelines for establishing and maintaining forestry plantations. There are five separate sections: 1. The planting of waste land; 2. The proper methods of planting forest trees; 3. Trees for poles and timber; 4. Trees for shelter and ornament; 5. Planting, management, and preservation of shelter-belts and hedgerow timber; 6. The Management of plantations.

**Page**

pp 270 - 294

**Location**

RDS library

**Notes**

available. ( Also published as a series, Leaflets Nos. 65 - 71, HMSO, Dublin, 1906)

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**Number**

1026

**Author**

Anon

**Title**

Avondale Forestry Station.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

Jan/1907

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 7, No. 2

**Key Word**

forestry history, forestry policy, State forestry, education, Avondale Forestry Station, arboriculture, silviculture, training, forest nurseries, arboretum, pinetum

**Abstract**

This report details the development of the forestry station at Avondale from the time of its acquisition by the Department of Agriculture in 1904. Forest plots were established on the site in order to demonstrate the growth and development into timber of all the more important species of trees under silvicultural, as distinct from arboricultural conditions. Descriptions are also provided of the arboretum, the pinetum and the nursery. A syllabus of subjects taught at the forestry school is included. There is also a map of the station and a list of the species cultivated there.

**Page**

pp 269 - 279

**Location**

RDS library

**Notes**

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**Number**

1027

**Author**

Anon

**Title**

The cost of forest planting.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

July/1907

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 6, No. 4

**Key Word**

planting, planting costs, silviculture, plantation establishment, afforestation

**Abstract**

This article considers the expenditure involved with the planting of trees on cleared or bare ground. When comparing the costs of sowing and planting, it is clear that planting is the only method of growing plantations that can give satisfactory results in all cases. The various factors which add to the cost of planting, such as fencing, draining, cleaning the ground and beating up are considered.

**Page**

pp 646 - 651

**Location**

RDS library

**Notes**  
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**Number**

1028

**Author**

Anon

**Title**

The position of larch in Irish forestry.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

Oct/1907

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 8, No. 1

**Key Word**

European larch, Japanese larch, timber trade, forest products, mixed plantations, mixtures, silviculture, fungal diseases, forest protection, timber exports

**Abstract**

Extensive planting of European larch, which has a natural distribution over a small area of central Europe, began in England in the middle of the 18th century. It produces a strong, durable and light timber, and will grow on poor land. However, the larch is very prone to disease, especially blister and heart-rot. In the current conditions of Irish timber production and markets, larch seems to be the only tree worth considering because of the high demand for it in Britain's collieries. Mixtures are a very suitable way of growing larch, but are very difficult to do properly. Advice on the best approach to establishing a mixed plantation with larch is provided.

**Page**

p 48 -53

**Location**

RDS library

**Notes**

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**Number**

1029

**Author**

Forbes A.C.

**Title**

The protection of woodlands.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

July/1908

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 8, No. 4

**Key Word**

forestry history, forestry policy, State forestry, forest protection, ancient woodlands

**Abstract**

Economic necessity has led to the repeal of a number of laws which have protected ancient forests in several European countries. While there has been a considerable amount of re-forestation in Ireland over the past century, there is still a great need for protection of existing old woodlands and recently planted forests.

**Page**

pp 627 - 632

**Location**

RDS library

**Notes**

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**Number**

1030

**Author**

Forbes A.C.

**Title**

Protection of woodlands in Ireland: protection against fungoid diseases.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

April/1909

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 10, No. 1

**Key Word**

forest protection, fungal diseases, forest pathogens, fungi, root rot, blister fungus, Hysterium, Lophodermium pini, Peridermium pini, Nectria cinnabarina, larch blister, larch canker

**Abstract**

The most common forms of fungal diseases in Irish woodlands are described and appropriate remedial action recommended. The different types of fungi are distinguished by the part of the tree which they attack. Hysterium or Lophodermium pini and Peridermium pini, for instance, attack the leaves of pines and spruces. The most familiar bark fungi are Nectria ditissima, and Nectria cinnabarina on broadleaved trees, Piziza wilkommi on larch, and Peridermium pini. Root rot disease is usually attributed to a species of Polyporus, Trametes radiciperda.

**Page**

pp 35 - 42

**Location**

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**Notes**

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**Number**

1031

**Author**

Anon

**Title**

Departmental Committee on Forestry in Great Britain.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

March/1902

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 2, No. 3

**Key Word**

forestry history, forestry policy, State forestry, government, civil service

**Abstract**

A note on the appointment, by the board of Agriculture, of a Departmental Committee to inquire into and report on the state of woodlands and the prospects for forestry in Great Britain.

**Page**

p 560

**Location**

RDS library

**Notes**

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**Number**

1032

**Author**

Hendrick E.

**Title**

An analysis of factors leading to windthrow after thinning.

**Place**

Bray

**Series**

Coillte Research & Technology Internal Report

**Date**

1988

**Key Word**

windthrow, thinning, soil shear strength, tree stability, silviculture, forest soils

**Abstract**

An analysis of windthrow in State plantations in 1984 and 1985 showed that 17% of sites had windthrow (1% or more of stems thrown). Windthrow was significantly related to a number of sites, crop and extraction factors. Windthrow was also related to soil shear strength. The data set created can form the basis of a windthrow risk classification.

**Page**

40p

**Location**

Coillte Research

**Notes**

Available

**Address of author**

National Council for Forest Research & Development, Agriculture Building, UCD, Belfield, Dublin 4

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**Number**

1033

**Author**

Forbes A.C.

**Title**

Production and value of Irish timber.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

Jan/1915

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 15, No. 2

**Key Word**

forestry history, timber exports, timber end use, building materials, timber processing, forest products, larch, Scots pine, Scots spruce, timber trade, imports, timber supplies

**Abstract**

This report assesses the current state of the timber market in Ireland, and examines how the war is affecting supplies. At present only 1.4% of the land of the country is under wood, a nett timber producing area of 290,909 acres. A large part of the Irish woodland is worn out and neglected. Figures are given for felling and for exports of timber and pitwood for the period 1909 to 1913. The species of trees exported for mining purposes are chiefly larch, Scots pine, spruce and silver fir. The various uses to which Irish produced timber are put within Ireland are described. These include the manufacture of boxes and packing cases, rough building materials, and minor uses such as matches, telegraph poles and basket making.

**Page**

pp 338 - 346

**Location**

RDS library

**Notes**

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**Number**

1034

**Author**

Anon

**Title**

Forestry instruction.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

July/1917

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 17, No. 4

**Key Word**

forestry history, forestry policy, State forestry, government, civil service, private forestry, forestry education, training, apprenticeship, foresters

**Abstract**

Conditions for acceptance onto the course of apprenticeship in forestry, to be run by the Department of Agriculture and Technical Instruction are outlined. There are also a number of memoranda concerned with the issue of afforestation of privately owned lands. There is one memorandum from the DATII outlining the conditions for employment of foresters.

**Page**

pp 668- 671

**Location**

RDS library

**Notes**

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**Number**

1035

**Author**

Forbes A.C.

**Title**

The present and future timber supplies of Ireland.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

April/1916

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 17, No. 1

**Key Word**

forestry history, timber supplies, timber trade, forest products, estate woodlands, sawmilling, timber processing, forestry policy, afforestation, land use, agriculture, economics, woodland exploitation, scrub, timber exports, home-grown timber, pitwood, war-time supplies, manufacturing

**Abstract**

This report describes the state of timber production and consumption in Ireland, and assesses the effect which the war has had on timber supplies. The only home-grown conifer which was regarded as having any value prior to 1903, the year in which a storm levelled thousands of trees, was larch which was sold to English collieries. The manner in which Irish woodlands were exploited in the decades prior to that is explained. The more valuable trees were usually removed from a selected area and exported, and inferior trees left on the ground, in many cases the land was left to grow scrub and weed. The pattern of conversion and consumption changed after the storm and much of the timber was sold locally. The effort to secure home-grown supplies of timber has concentrated on conifers which can be processed at portable sawmills. The rate at which existing stocks of Irish woods are being reduced is estimated. The amount of replanting now taking place is totally insufficient to maintain the present small area under woodland. Because planting conifer is uncommercial, and many trees are sold off at an immature stage, the amount of mature forest is decreasing rapidly and there will be severe shortages of timber in the coming decades. The income per acre that can be derived from grazing, and the amount of additional employment generated, is compared with forestry. It is clear that the afforestation of large tracts of mountain and heath land would be very beneficial economically and would hardly effect agricultural production.

**Page**

pp 20 - 29

**Location**

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**Notes**

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**Number**

1036

**Author**

Pim Sheila

**Title**

The wood and the trees, Augustine Henry: a biography.

**Publisher**

Boethius Press

**Place**

Kilkenny

**Series**

Boethius Press: Series Five. General Publishing

**Date**

1984

**Key Word**

biography, botany, silviculture, education, forestry literature, forestry history, forestry training, research,

forestry literature

**Abstract**

This biography covers that period of Augustine Henry's life when he was active as a botanical collector, naturalist and forester. He went to China to work as a doctor in the Imperial Maritime Customs, but during his time there he earned a world reputation as a collector of exotic botanical specimens. After retiring from the Service he studied forestry in France and later collaborated with H.J. Elwes to compile *The Trees of Great Britain and Ireland*. Henry helped to found the forestry school in Cambridge and later took the chair of forestry at the College of Science in Dublin. The author also describes Henry's varied cultural, aesthetic and scientific interests.

**Page**

252p

**Location**

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**ISBN**

0863140971

**Notes**

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**Number**

1037

**Author**

Henry Augustine

**Title**

The artificial production of vigorous trees.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

Oct/1914

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol.15, No. 1

**Key Word**

hybridisation, tree breeding, pollen collection, dusting, seedlings, seeds, cross pollination, *Populus angulata*, black poplar, *Populus trichocarpa*, *Populus generosa*, artificial hybridisation, ash, alder hybrids, silviculture, crosses

**Abstract**

The author gives an account of his research work on the production of new fast-growing kinds of trees through hybridisation. Artificial hybridisation of plants began in the 16th century, but the first serious application of the practice in tree breeding was in California in the late 19th century. The difficulties in producing hybrids in Ireland are explained. The removal of stamens from tall trees is very difficult, and it is very hard to obtain pollen of suitable exotic species. A number of hybrid seedlings which have been successfully raised are described. *Populus angulata*, a black poplar, was crossed with *Populus trichocarpa*, a fast growing balsam poplar, and produced a very vigorous plant which has been called *Populus generosa*. Two hybrid ashes, obtained from a fine Oregon ash (*Fraxinus oregona*) are also showing promise. A large number of alder crosses are also described. A complete list of crosses made 1909-1914, recording failures as well as successes, is provided.

**Page**

pp 34 - 52

**Location**

RDS library

**Notes**

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**Number**

1038

**Author**

Anon

**Title**

Collection of tree seeds.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

July/1920

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 20, No. 4

**Key Word**

seed collection, forest establishment, seedlings, silviculture, planting, cultivation, seeds

**Abstract**

A major cause of the increasing cost of establishing forest trees is the high cost of seeds. The extent of felling during the war, and the subsequent decrease in felling of immature trees which is necessary for forest recovery, will make seeds quite scarce in the coming years. However, depending on seeds of local origin may be an advantage because they are more likely to produce vigorous seedlings than imported seeds. The subject of seed collection in Ireland is dealt with under the following headings: 1. The collection of seed as it falls from the tree; 2. Collection from felled or standing trees; and 3. Storage of seeds. Extraction of seed from pine and European larch cones usually requires the application of artificial heat.

**Page**

pp 448 - 451

**Location**

RDS library

**Notes**

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**Number**

1039

**Author**

Anon

**Title**

Report of the Forestry Commissioners.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

1921

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 21, No. 3

**Key Word**

forestry history, forestry policy, State forestry, government, civil service, Forestry Commission, Acland Committee

**Abstract**

This is a summary of the First Annual Report of the Forestry Commissioners for the year ending Sept. 30th, 1920. Of particular interest to the Commissioners was the national forestry policy defined by the Acland Committee, the ultimate objective of which is the creation in Great Britain and Ireland of reserves of standing timber sufficient for domestic needs.

**Page**

p 363

**Location**

RDS library

**Notes**

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**Number**

1040

**Author**

Forbes A.C.

**Title**

Some results at Avondale Forestry Station.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

June/1923

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 23, No. 1

**Key Word**

Avondale Forestry Station, nursing experiments, nurse crops, research, forestry training, forestry education, State forestry, silviculture, establishment, planting, spacing, thinning

**Abstract**

This report contains data obtained from the Experimental Plots at Avondale Forestry Station. One of the experiments, established in 1913, was to compare how well certain crops fared in plots with and without nurse trees. It is evident from this work that tender trees need quick-growing shelter trees, such as larch, birch or alder. However, severe late frost damage in 1911 greatly hampered tests. Avondale's main interest is in the growth of a number of coniferous species, which are evidently better suited to the climate than broadleaved trees. Seven species of alder have done well, but only two spruce, Sitka and the European variety have succeeded. It was shown that a mixture of Japanese larch and Sitka spruce can, under favourable circumstances, prove extremely profitable. Accounts are also given of the progress made by the different pines and larches.

**Page**

pp 3 - 11

**Location**

RDS library

**Notes**

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**Number**

1041

**Author**

Henry Augustine

**Title**

Profitable trees.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

Oct/1913

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 14, No. 1

**Key Word**

commercial forestry, profitable trees, conifers, climate, Douglas fir, Sitka spruce, cypress, silver fir, broadleaves, chestnut, alder, poplar, forestry policy, afforestation, economics, *Picea sitchensis*, *Pseudotsuga menziesii*

**Abstract**

Ireland's mild climate is ideally suited to the cultivation of a wide variety of exotic species, and many of these can be grown commercially here. The most suitable conifers for Irish conditions are those of the Pacific coast region of North America, the climate of which is very similar to the extreme west of Europe. Conifers are the preferred choice of tree for plantations, because they are easy to grow and provide good yields. The following tree and species are assessed for their potential profitability in Irish conditions: larch; Douglas fir; spruce; pines; cypress; silver fir, broadleaved trees, chestnut, alder and; poplar.

**Page**

pp 41 - 52

**Location**

RDS library

**Notes**

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**Number**

1042

**Author**

Forbes A.C.

**Title**

Avondale Forestry Station: general description and progress of work, 1906-12.

**Publisher**

Department of Agriculture and Technical Instruction for Ireland

**Place**

Dublin

**Date**

Oct/1913

**Source**

Department of Agriculture and Technical Instruction for Ireland Journal

**Volume**

Vol. 14, No. 1

**Key Word**

Avondale Forestry Station, forestry history, forestry policy, research, training, education, experimental work, planting, establishment, forest nurseries, cultivation, mixtures, nursing, nurse species, weather, frost damage, estate woodlands, experimental plots

**Abstract**

The Avondale estate, comprising a mansion, 300 acres of woodland and 200 acres of unplanted grass land, was acquired by the State in 1903 for the purpose of establishing a school of forestry and an experimental station to test the suitability of various forest trees for commercial planting in Ireland. The dimensions of the largest trees surviving from the old estate, and temperature and rainfall records for 1908-1912 are given. The arrangement and species content of the experimental plots is explained. The different mixtures in the plots were planted with the object of discovering how various species fared in pure stands or with nurse trees. The two most common nurse trees in the broadleaved plots are larch and spruce. The method of planting is described in detail and the approximate cost of planting each species is estimated. The conditions of each plot in 1912 is explained in tabular form and the average of heights of the dominant trees are provided. The most successful of the conifer species, in terms of rate of growth after the first five years, were *Pseudotsuga*, *Douglasii*, *Picea sitchensis*, *Larix leptolepis*, *L. Europa* and *Cupressus macrocarpa*. The most successful broadleaved species were *Populus canadensis*, *P. alba*, *Alnus glutinosa*, *A. incana* and *Ulmus vegeta*. There is also a list of species which are unlikely to attain timber size.

**Page**

102 -125

**Location**

RDS library

**Notes**  
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**Number**

1043

**Author**

Forbes A.C.

(Department of Agriculture and Technical Instruction for Ireland)

**Title**

Forestry: Report on forestry operations for the year ended the 30th September, 1922.

**Publisher**

Stationery Office.

**Place**

Dublin

**Date**

1922

**Source**

Department of Agriculture and Technical Instruction for Ireland. Twenty-Second Annual General Report of the Department, 1921-22.

**Key Word**

forestry history, State forestry, forestry policy, land acquisition, afforestation, estate woodlands, silviculture, civil service, agriculture, Forestry Commission, research, species selection, commercial forestry, forest protection

**Abstract**

This first report on forestry operations in Saorstát Éireann begins with a review of the period since forestry was made a function of the Department of Agriculture and Technical Instruction in 1900. In 1907 a departmental committee was established to find ways of reversing the fall in the acreage of woodland which followed the 1903 Land Act, and to make recommendations for the improvement and development of Irish forestry. The Forestry Commission had responsibility for land acquisition and planting from 1919 to 1922. The total land area acquired for State afforestation by Saorstát Éireann up to Sept. 1922 was 19,421 acres and planting is proceeding at the rate of approximately 1,000 acres per annum. The main concern facing the afforestation programme is to secure sufficient areas of land large enough to be maintained as a working unit.

**Page**

pp 126 - 130

**Location**

RDS library

**Notes**

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**Number**

1044

**Author**

Meyrick F.J.

(Department of Agriculture and Technical Instruction for Ireland)

**Title**

Forestry.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1923

**Source**

Department of Agriculture and Technical Instruction for Ireland. Twenty-third Annual General Report of the Department, 1922-23.

**Key Word**

forestry policy, legislation, State forestry, afforestation, land acquisition, forest nurseries, planting, forestry history, civil service

**Abstract**

Details of land acquisitions since the previous report, and figures for planting operations at ten forests are given. The stock of transplanted trees has risen from three to four millions and there were 11 million seedlings in stock in September. A table is included indicating the position as regards acquisition and planting operations at the various Forest Centres on the 30th September, 1923.

**Page**

pp 103 - 105

**Location**

RDS library

**Notes**

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**Number**

1045

**Author**

Department of Agriculture and Technical Instruction for Ireland

**Title**

Part IV. - Forestry.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1926

**Source**

Twenty-Fourth General Report of the Department of Agriculture and Technical Instruction for Ireland. 1923-26

**Key Word**

forestry policy, forestry history, silviculture, legislation, laws, woodland clearance, estate woodlands, planting, replanting, timber sales, forest nurseries, State forestry, agriculture, land use, land acquisition, land prices, tree felling

**Abstract**

The reports covered in this section are for the periods 1st Oct. 1923 to 31st March 1925, and 1st April 1925 to 31st March 1926. The total area of land acquired by the State for afforestation up to March 1925 was 29,563 acres. The main species planted were 1.4M Sitka spruce, 1.2M Scots pine, 1M Douglas fir, 0.73M Corsican pine and 0.45M European larch. Notes are included on the following topics: work in forest nurseries; conditions of plantations; timber sales; assistance to public bodies and private owners; and laws to restrict tree felling. The second report describes the difficulties involved in obtaining parcels of land of sufficient size to make planting viable. The Department planted or replanted 3,000 acres of their forestry properties during the 1925-26 planting season, bringing the total area to up to 10,621 acres. The general condition of Irish woodlands has not recovered from the extensive felling of the period 1914-20 and little planting or replanting of private woodlands has taken place. Measures are urgently needed to prevent their complete disappearance.

**Page**

pp 106 - 117

**Location**

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**Notes**

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**Number**

1046

**Author**

Department of Agriculture and Technical Instruction

**Title**

Part IV. Forestry.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1927

**Source**

Twenty-Fifth General Report of the Department of Agriculture and Technical Instruction for Ireland 1926-27.

**Key Word**

forestry policy, forestry history, State forestry, legislation, land acquisition, grazing rights, afforestation, forest protection, estate woodlands

**Abstract**

This report covers the period 1st April, 1927 to 31st March, 1928. It is Government policy to increase Ireland's area of woodland to 5% of total land area, which will involve the planting of an additional 600,000 acres. Grazing and other rights on marginal lands are hampering negotiations aimed at making them available for afforestation. The total area of forest land acquired up to the end of the period under review amounted to 35,194 acres. Notes are included on the following topics: felling and clearing operations; conditions of plantations; insect and fungoid attack; forest nurseries; county forestry and tree nursery schemes; and restrictions on tree felling. (On page 136 there is a table showing the progress of forestry operations on State-owned forest properties).

**Page**

pp 97 - 101, p 136

**Location**

RDS library

**Notes**

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**Number**

1047

**Author**

Department of Agriculture and Technical Instruction for Ireland 1927-28.

**Title**

Forestry.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1928

**Source**

Twenty-Sixth General Report of the Department of Agriculture and Technical Instruction for Ireland 1927-28.

**Key Word**

forestry history, forestry policy, silviculture, land acquisition, private woodlands, tree felling, State forestry, woodland deterioration

**Abstract**

This report for the period 1st April, 1927 to 31st March, 1928 notes that, while the acreage under woodlands is not decreasing as rapidly as in the 1914 - 1920 period, existing woodlands are deteriorating because of the almost complete neglect of replanting operations. A Bill to prevent indiscriminate felling of trees has been drafted but has not yet been introduced by the Oireachtas. The total area of forest land acquired by the State up to the end of the period under review amounted to 39,889 acres. Figures are given for the acreage of various species planted. There are also notes on nursery work and on general conditions of plantations. Sitka spruce has proved to be the most adaptable of the imported trees and is largely wind resistant. Douglas fir, as a pure crop or mixed with European larch, has also produced excellent results. (On page 161 there is a table showing the progress of forestry operations on State-owned forests at end of season 1927-28)

**Page**

pp 123 - 128, p 161

**Location**

RDS library

**Notes**

available

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**Number**

1048

**Author**

Henry Augustine

**Title**

Forests, wild and cultivated.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

July/1904

**Source**

The Economic Proceedings of the Royal Dublin Society.

**Volume**

Vol. 1

**Key Word**

silviculture, forestry history, French silvicultural practice, erosion, natural regeneration, maritime pine, afforestation, commercial forestry, deforestation,

**Abstract**

Despite the country's almost total deforestation, Ireland still retains a few scattered areas of ancient woodland. Wild forests cannot satisfy man's needs and so useful species are grown in dense masses to produce tall straight stems. Two type of forest are cultivated: coppice, in which trees are grown from shoots which spring from the stumps of felled trees; and high forest, in which the trees grow from seedlings. The system of natural regeneration used in France is described. The French use thinning solely for the purpose of favouring the best trees in a stand by removing diseased and inferior trees, immediate profit is not a consideration. The author concludes that, for forestry to succeed in Ireland, we must follow the French in their patient observation of nature and careful utilisation of the forces she makes available.

**Page**

pp 231 - 248

**Location**

RDS library

**Notes**

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**Number**

1049

**Author**

Beirne Bryan P.

**Title**

The biology and natural control of the larch-shoot moth, *Argyresthia laevigatella*, H.S.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1942

**Source**

The Economic Proceedings of the Royal Dublin Society

**Volume**

Vol. 3

**Key Word**

Argyresthia, A. laevigatella H.S., A. atmoriella, Ephialtes (Pimpla) elegans Wolddst, forest protection, larch-wood moth, shoot damage, larch

**Abstract**

The larch-shoot moth is one of the most important insect pests on larch, and causes a considerable amount of damage annually throughout Europe. Two species of larch-feeding *Argyresthia* have been recorded, *A. laevigatella* H.S. and *A. atmoriella* Banks. However, the author argues that previous researchers have been mistaken, and that there is, in fact, only one species. The life history and biology of the moth is described. The larvae makes its way down the shoot in mid-summer and causes the most serious damage in spring as it eats its way through the wood of the bark. Usually the leading shoot of a tree escapes damage of this scale and the tree can usually survive. The author accepts the position of those observers who suggest that infestation has no relationship to the health or situation of the tree, but shelter is a factor. There are several natural predators of the moth including, birds, fungi and nematode worms. A general account of the systematics, synonymy, distribution, and biology of the *Ephialtes (Pimpla) elegans* Wolddst, the only species of hymenopterous parasite which is ectoparasitic on the *Argyresthia* larva, is given. No practicable method of artificial control of the larch-shoot moth can be suggested, apart from hand picking.

**Page**

pp 130 - 149

**Location**

RDS library

**Notes**

Available

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**Number**

1050

**Author**

Forbes A.C.

**Title**

Private forestry in the Free State.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1924

**Source**

Department of Lands and Agriculture Journal

**Volume**

Vol. 24

**Key Word**

forestry history, forestry policy, afforestation, private forestry, estate woodlands, deforestation, State forestry, planting, land clearance, land use, agriculture, land acquisition, legislation

**Abstract**

The author argues that a crisis has been reached regarding woods in the hands of private owners, and the country is in danger of becoming entirely treeless. The loss of woodland in the past century is attributed more to neglect and damage by grazing than to deliberate clearance for agricultural purposes. The Irish Government's policy of buying and leasing land for afforestation has increased the acreage planted from 200 acres per annum previous to 1914, to 2,000 acres per annum in 1924-25. State afforestation needs to be confined to blocks of not less than 400 acres for economic reasons. However, a comprehensive approach to afforestation faces the problem of a very complicated system of land division. The example of Denmark, which was facing deforestation in the early 19th century, is given as a model for a rigorous and comprehensive forestry policy.

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pp 217 - 222

**Location**

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**Number**

1051

**Author**

Forbes A.C.

**Title**

Some state forest policies and their results.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

Nov/1925

**Source**

Department of Lands and Agriculture Journal

**Volume**

Vol. 25, No. 3

**Key Word**

forestry history, forestry policy, deforestation, afforestation, private planting, private planting, fencing, protection, legislation, laws

**Abstract**

The author analyses the different approaches to forestry policy, and argues that a policy which depends solely on legislation and a mandatory approach to woodlands preservation will invariably be unsuccessful, or will certainly not add to work which would have been carried out in any case. However, some form of restrictive control will be necessary if Ireland is not to lose all of its woodlands. Legislation provides evidence of the level of interest a government has in this area, and acts as an assurance to owners that they are not wasting time or money by taking a constructive approach. The break-up of the large estates has had a devastating effect on woodlands, and if the Government is serious about preventing their total decay it must adopt a policy which combines the coercive force of legislation with a system of grants, tax breaks and gifts of trees.

**Page**

pp 284 -289

**Location**

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**Notes**available

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**Number**

1052

**Author**

Forbes A.C.

**Title**

Some state forest policies and their results.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

May/1925

**Source**

Department of Lands and Agriculture Journal

**Volume**

Vol. 25, No. 1

**Key Word**

forestry history, forestry policy, deforestation, afforestation, Denmark, Holland, Heath Society, private planting, private planting

**Abstract**

Unlike countries with greater forest cover, it is estimated that Ireland's home production is not much more than 50% of the annual total consumption. The need for timber and forest cover, and the decline of European forests has led every country in Europe to develop a forestry policy in order to maintain and expand existing woodlands. Ireland's situation is especially serious, its forest area is one-third that of Wales, the most poorly wooded of this portion of Europe. The situation faced by Ireland today is similar to that of Jutland in the last century, and the approach that the Danes took to prevent the total destruction of their woodlands is an example that the Irish could profitably follow. Holland managed to convert 33,839 acres of heath into forest through the efforts of the country's Heath Society. The Danish effort was undertaken by private individuals connected with agricultural holdings. Irish attempts at private planting by individuals often begin well, but trees are left unprotected and are often destroyed by animals.

**Page**

pp 132 - 137

**Location**

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**Number**

1053

**Author**

Forbes A.C.

**Title**

Land acquisition problems in relation to afforestation.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

May/1927

**Source**

Department of Lands and Agriculture Journal

**Volume**

Vol. 26, No. 1

**Key Word**

reforestation, land acquisition, waste land, marginal land, mountain land, land use, agriculture, costs, forest establishment costs, forest maintenance, planting, afforestation, land prices, land value, valuation, State forestry

**Abstract**

The author discusses the problem of reforestation of regions which have lost most of their woodlands, and where land, formerly under trees, is being used for agricultural purposes. Reforestation in this context usually refers to the planting of land which possesses low agricultural value or land which is not being used. However, timber production requires certain conditions of climate and soil which are not always available on what is regarded as waste, usually mountainous, land. Afforestation demands land which is more or less utilised for some purpose, and its acquisition must be paid for accordingly. Furthermore, this land must be acquired in large enough blocks to keep the task of maintenance low. Economy of scale is also an important consideration in carrying out planting, thinning, timber felling, cartage etc. These costs are reduced in blocks of 400 or 500 acres upwards, but other costs like roads, buildings and accommodation are not proportionately reduced. Valuation of forest land can be estimated using the following variables: quality class of land, cultural operations, rent and rates. The figures used indicate that the better the timber-growing quality of the land, the greater the balance left after production costs have been deducted and the smaller the acreage which can be economically worked.

**Page**

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**Location**

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**Number**

1054

**Author**

Henry Augustine, Flood Margaret G.

**Title**The history of the London plane, *Platanus acerifolia*, with notes on the genus *Platanus*.**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1920

**Source**

Proceedings of the Royal Irish Academy (1919-1920, Section B)

**Volume**

Vol. 35

**Key Word***Platanus acerifolia*, London plane, *P. pyramidalis*, *P. hispanica*, *P. cuneata*, *P. digitata*, *P. cantabrigensis*, *P. parviloba*, landscaping, hybrids, crosses, hybridisation, taxonomy, botany, botanical history**Abstract**

The London plane, *Platanus acerifolia*, has never been seen in the wild state and is undoubtedly a cross. It is remarkably vigorous and is extensively used for planting in the streets of towns in Europe and North America. The plane is intermediate in botanical characters between an American and a European species, and the new hybrid probably originated as a chance seedling in a botanic garden, most likely in Oxford about 1670. The first published description of the London plane was by Plunket in 1700 in his 'Matissa'. Several living examples of the species are described. The character of the genus *Platanus* is described and an account given of each of its nine recorded species.

**Page**

pp 9 - 28

**Location**

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**Number**

1055

**Author**

Henry Augustine, Flood Margaret G.

**Title**The history of the Dunkeld hybrid larch *Larix eurolepis*, with notes on other hybrid conifers.**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1920

**Source**

Proceedings of the Royal Irish Academy (Section B, 1919-1920)

**Volume**

Vol. 35

**Key Word**tree physiology, botany, hybrids, conifer hybridisation, *Larix eurolepis*, Dunkeld hybrid larch, Japanese larch, larch hybrids, *Larix leptolepis***Abstract**

Natural hybrid conifers are extremely rare, even in botanical gardens where species from the same genus grow

in close proximity. Hybridisation between the different larches is of great economic importance, and often produces new species of great strength and durability. However, the most cultivated larch hybrid, *Larix euroacea*, is liable to disease. There is an account given of each of the hybrid larches which have originated spontaneously in cultivation. The 'Dunkeld hybrid larch' is the name given by foresters to seedlings that have been repeatedly raised from the seed of certain Japanese larch trees (*Larix leptolepsis*) growing in Dunkeld, Perthshire. The oldest of the hybrid seedlings were planted out in 1904. The character and condition of other trees of the species in different locations is described. A description is given of the two parent species, *Larix europaea* and *Larix leptolepsis*.

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pp 55 - 66

**Location**

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**Number**

1056

**Author**

Henry Augustine, Flood Margaret G.

**Title**

The Douglas firs: a botanical and silvicultural description of the various species of *Pseudotsuga*.

**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1920

**Source**

Proceedings of the Royal Irish Academy (1919-1920, Section B)

**Volume**

Vol. 35

**Key Word**

Douglas fir, *Pseudotsuga Douglasii*, *Pseudotsuga glauca*, Green Douglas fir, Oregon Douglas fir, taxonomy, botany, tree physiology, silviculture, cultivation, economic botany, *Pseudotsuga* genus, timber yield

**Abstract**

The primary object of this study was to investigate the two chief forms of Douglas fir, the Pacific Coast, Oregon, or Green Douglas fir (*Pseudotsuga Douglasii*, Carriere) and the Rocky Mountains, Colorado or Blue Douglas fir (*Pseudotsuga glauca*). These two species inhabit separate regions and differ much in silvicultural features. The Oregon Douglas fir grows to an immense size and is of considerable economic importance. Other differences between the two species are dealt with under the following headings: habit; summer shoot; foliage; flowers; cones; wood; reproduction; resistance to frost; insect attack; rate of growth; volume and yield of timber; and silviculture. An account is given of the different behaviour in cultivation of both firs. A methodical description of the genus and of the seven species which have been distinguished is provided.

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**Location**

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**Number**

1057

**Author**

Department of Agriculture

**Title**

On planting trees on the farm to produce poles and timber.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

Sept/1944

**Source**

Department of Agriculture Journal

**Volume**

Vol. 41, No. 2

**Key Word**

farm forestry, timber production, poles, nurse trees, mixtures, agriculture, private forestry, fencing

**Abstract**

Most farms have an area of ground which is not suitable for farming but could be useful for the production of poles and timber. European and Japanese larch and Norway and Sitka spruce are the coniferous species most suited for rapid production. The broadleaved trees are ash and alder. The soil conditions most suitable for planting each of these species are described. Mixtures of species achieve early production of small useful poles, and later production of more valuable timber and the production of frost-tender species in early youth in the shelter of more hardy trees. The most successful nurse species are alder, poplar, European larch and Scots pine. Some silvicultural practices, including brashing and pruning, thinning, protection and maintenance of the stand are explained. Trees planted for timber are eligible for planting grants.

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pp 285 - 289

**Location**

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**Number**

1058

**Author**

Fitzpatrick H.M.

**Title**

Trees on the farm.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

March/1945

**Source**

Department of Agriculture Journal

**Volume**

Vol. 42, No. 1

**Key Word**

farm forestry, shelter trees, farm timber, woodfuel, agriculture, windbreaks, planting stock, establishment, species selection, protection, larch, Scots pine, timber yield

**Abstract**

The various species of trees most suited to Irish conditions are outlined. There are a number of conifers which are suitable for growing on the farm as shelter or fuel or as a source of timber. The positioning of trees to gain optimum shelter is described. Evergreens are most suitable for windbreaks. Planting for timber is also well worth while. An acre of Scots pine may in fifty years produce close on 140 tons of timber. After the twenty-fifth year approx. 1 ton of timber can be cut each year as thinnings. Larch gives good-sized poles in fifteen years, and after this will produce almost two tons a year in thinning. Notes are included on the following aspects of planting: ages and sizes of planting stock; season and method of planting; protection of young trees; after-care of trees; and thinning of belts and plantations.

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pp 39 - 45

**Location**

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**Number**

1059

**Author**

Doyle J.

**Title**

Proembryogeny in Pinus in relation to that in other conifers - a survey.

**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1963

**Source**

Proceedings of the Royal Irish Academy (1961-63, Section B)

**Volume**

Vol. 62

**Key Word**

Pinus proembryogeny, conifer proembryogeny, taxad proembryogeny, embryogeny, cell biology, botany, plant physiology, embryo cells, primary suspensor, vestigial suspensor, basal proembryogeny, nuclear arrangement, primary embryo cells

**Abstract**

A survey is made of available records of early embryogeny, i.e. from fertilisation to the mature proembryo, in conifers and taxads. On the basis of this evidence it is claimed that a uniform plan of development is shown in the early embryogeny of all conifers and taxads (but excluding for the time being the Araucariaceae). This basal plan shows a sequence of 3 stages. Stage 1 is a stage of free nuclei at the archegonial base. Stage 2 is a stage of nuclear arrangement and first membrane formation giving a single open tier, O, above and a group of primary embryo cells, pE, variously arranged, below - the O: pE stage. Stage 3 is produced by a further internal division, normally affecting all the units of Stage 2, and gives the mature proembryo. Division in the O tier give the upper tier, U, in one plane and suspensor tier, S, in one plane. The pE cells (or in podocarps their nuclei) are duplicated to give the lower group, E, of embryo cells proper. The proembryo may be shortly described as being of a U : S : E type. The use of the term prosuspensor for the S tier of these normal types should be discontinued. As there may be 5, 4, or 3 mitoses at Stage 1 the number of nuclei available for incorporation at Stage 2 may range from 8 to 32. The O : pE ratio of cell numbers may therefore vary greatly, even from genus to genus, as will also the x and y numbers in the mature proembryo U x : S x : E y, but the plan and sequence of development remain normally the same. The dropping out of one or more of the free mitoses at Stage 1 seems to be a characteristic evolutionary tendency in conifer embryogeny. An embryogeny based on 3 free mitoses would be more advanced than one based on 5. Early embryogeny in Pinus type is reviewed in relation to these conclusions. While conforming to the generalised type reasons are given to show that, in detail, it is not primitive for coniferous plants but is a derivative, advanced and rather specialised type. Reasons are given for the necessity of a new nomenclature for the tiers in proembryos of the Pinus type. The terms rosette and primary suspensor should be discontinued. It is suggested that the tiers, from above down, should be called - the upper tier U; the vestigial suspensor vS, replacing rosette; the embryonal suspensor, eS, the de facto elongating cells, replacing primary suspensor; and the embryo tier, E. The proembryo formula would be: - U 4 : vS 4 : eS : E4, to distinguish it from the normal U x : S x : E y type.

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**Location**

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**Number**

1060

**Author**

Gallagher Patrick H.

**Title**

The mobile colloidal humus of podsolic soils and its relationship to the process of podsolisation.

**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1942

**Source**

Proceedings of the Royal Irish Academy (1942-43, Section B)

**Volume**

Vol. 48

**Key Word**

soil science, mobile colloidal humus, podsolisation, soil nutrients

**Abstract**

The important role played by humus in the soil in supplying nutrients and in determining to a great measure the production of specific types of soil. The author describes the process by which the brown colloidal humus of podsol B horizon was isolated in a virtually ash-free condition. The behaviour of this material is discussed, and the possible relationships to peat and the process of podsolisation are examined.

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pp 213 - 229

**Location**

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**Number**

1061

**Author**

Stanuelli Charles A.

**Title**

Irish forestry and the Land Purchase Acts.

**Publisher**

Sealy, Bryers and Walker

**Place**

Dublin

**Date**

Dec/1907

**Source**

Journal of the Statistical & Social Inquiry Society of Ireland

**Volume**

Vol. 12, Part 87

**Key Word**

forestry history, estate woodlands, Land Purchase Acts, woodland destruction, forestry policy, shelter, climate, soil health

**Abstract**

The importance of forestry in regulating the climate of a country and ensuring the health of its soil is described. The lack of a shelter-belt on Ireland's windswept west coast have left stretches of the coast bleak and bare. The destruction of woodlands on the newly purchased lands from the divided estates is described.

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pp 93 - 102

**Location**

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**Number**

1062

**Author**

Farrell E.P., Mullen G.J.

**Title**

Rooting characteristics of *Picea sitchensis* and *Pinus contorta* on blanket peat in Ireland.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1979

**Source**

Journal of Life Sciences

**Volume**

Vol. 1, No. 1

**Key Word**

rooting characteristics, *Picea sitchensis*, *Pinus contorta*, Sitka spruce, Douglas fir, blanket peat, rooting density, rooting depth, water table depth, windthrow, silviculture, peatlands

**Abstract**

Information on the rooting behaviour of forest trees on exposed peatland sites in western Ireland is very limited as large scale planting did not begin until the 1950s and growth in these plantations has often been slow. This paper reports on an investigation into the rooting characteristics of *Picea sitchensis* and *Pinus contorta* on these sites. Over 40% of all roots observed were in the plough ribbon and density of rooting was greatest in this zone. Rooting density was greater in *Picea sitchensis* than in *Pinus contorta*. This was particularly evident in the case of finer roots. There was no difference in rooting depth between species. Effective rooting depth was 40 cm below bog surface. Regression analysis was used to establish the relationship between the variables. A relationship between water table depth and rooting density was established. The closest association existed between rooting density in the plough ribbon and water table depth. The restriction of vigorous rooting to the plough ribbon and the top 20 cm of the peat justify concern expressed about the stability of tree crops on peat sites in this region.

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pp 1 - 12

**Location**

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**Number**

1063

**Author**

Breen John

**Title**

Nest sites of *Formica lugubris* (Hymenoptera, Formicidae) in Irish plantation woods.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1978

**Source**

Journal of Life Sciences

**Volume**

Vol. 1, No. 1

**Key Word**

forest ants, forest insects, *Formica lugubris*, forest protection, nest sites, Hymenoptera, formicidae, anthropods, entomology

**Abstract**

A census of *Formica lugubris* ant nests was carried out in forest plantations in South Tipperary consisting mainly of Sitka spruce, lodegpole pine and Scots pine. This revealed a lowest nest density of 0.13 nests per ha. 87% live nests remained at the same site for three seasons and annual mortality was ca. 9%. Nearest neighbour analysis showed that the nests were overdispersed and this, coupled with a demonstration of negligible inter-nest communication using 32P, suggests that *F. lugubris* forms monocallic colonies here. An array of variables was recorded at 184 nest sites. The analysis reveals an equilibrium between nests and plantation. Scots pine is the most important overhead tree. Local shade from *Calluna*, *Vaccinium* and *Pteridium* and light penetration to the nest surface is described and discussed.

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pp 13 -32

**Location**

RDS library

**Notes**

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**Address of author**

Department of Zoology, Trinity College Dublin 2

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**Number**

1064

**Author**

Muriel C.E.

**Title**

Forestry: its present position and future prospects in Ireland.

**Publisher**

Sealy, Bryers and Walker

**Place**

Dublin

**Date**

Dec/1909

**Source**

Journal of the Statistical & Social Inquiry Society of Ireland

**Volume**

Vol. 12, Part 87

**Key Word**

Royal Commission, Land Purchase Acts, forestry history, forestry policy, land use, afforestation, woodland destruction, estate woodlands

**Abstract**

This article discusses the assessment of the present state of forestry in Ireland and the proposals for the future contained in the Report of the Department Committee on Irish Forestry, published in 1908, and in the Afforestation Report of the Royal Commission. The Irish section of the report deals with the present conditions of Irish woods, and it is shown that the area under woods is shrinking. This is largely as a consequence of the sale of the estates on which trees are cleared either immediately before sale by the vendor, or immediately after by the new owner. As in Britain, Irish timber is of inferior quality largely due to the lack of density in the crop. The various purposes for which the woods were managed in the first place now makes them less useful as a source of timber. Trees are either too close, in shelter belts, or too far apart, as part of woodland managed for game. The report also deals with the danger to industries dependent on the woods. The arguments for schemes of afforestation in Ireland are also considered.

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**Number**

1065

**Author**

Day K.R., Edwards T.L.

**Title**

The oviposition behaviour of the large spruce aphid, *Cinara pilicornis* HTG (Hemiptera : Aphididae)

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1978

**Source**

Journal of Life Sciences, Royal Dublin Society

**Volume**

Vol. 1, No. 1

**Key Word**

*Cinara pilicornis*, Norway spruce, *Picea abies*, Sitka spruce, *Picea sitchensis*, oviposition, insects, forest pests, forest protection, insect biology, zoology, entomology, arthropods

**Abstract**

This paper gives an account of a study of the oviposition behaviour of *Cinara pilicornis* (Htg.) on Norway spruce, and on Sitka spruce in Counties Antrim and Derry respectively in 1977. During oviposition, oviparae of *Cinara pilicornis* Htg. transfer fine wax threads from their abdominal terga to the surfaces of their eggs. An almost complete wax coating is formed on the area not attached to the surface of the spruce needle on which it is laid. The function of this pellicle is unknown; it appears to be unique among the Aphididae. It may be protective against excessive cold or preserve a layer of air around the chorion during prolonged wetting by rain.

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pp 33 - 38

**Location**

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**Notes**

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**Address of author**

School of Biological and Environmental Studies, The New University of Ulster, Coleraine BT37 OQB

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**Number**

1066

**Author**

Harrington J., Kirwan Louise, Stuart Mary R.

**Title**

Heat tolerance of thermophilic and thermotolerant fungi in composted conifer bark.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1978

**Source**

Journal of Life Sciences, Royal Dublin Society

**Volume**

Vol. 1, No. 1

**Key Word**

thermophilic fungi, thermotolerant fungi, bark compost, isolation of fungi, *Talaromyces leycettanus*, *Thermoascus aurantiacus*, *Talaromyces emersonii*, *Humicola grisea* var. *thermoidea*, *H. lanuginosa*, *Aspergillus fumigatus*, fungus, forest protection

**Abstract**

A sample of composted bark, comprising a mixture of finely mixed conifer bark and animal manure was treated and counts were made of the number of viable thermophilic or thermotolerant fungal propagules from heated samples and from a control. Eleven species were isolated. These included the first record of the isolation of *Talaromyces leycettanus* from this type of woody material. *Thermoascus aurantiacus*, *Talaromyces emersonii*, *Humicola grisea* var. *thermoidea*, *H. lanuginosa* and two thermotolerant species, *Aspergillus fumigatus* and *Talaromyces leycettanus* survived exposure to 70 degrees C in moist compost for at least 48 hours. The dominant thermophiles in all heat treated compost samples were *T. aurantiacus* and *T. emersonii*, both species surviving exposure to 70 degrees C for 72 hours.

**Page**

pp 99 - 105

**Location**

RDS library

**Notes**

available

**Address of author**

Department of Botany, UCD, Belfield Dublin 4

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**Number**

1067

**Author**

Kirby E.N. O'Connell M.

**Title**

Shannawoneen Wood, County Galway, Ireland: the woodland and saxicolous communities and the epiphytic flora.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1981

**Source**

Journal of Life Sciences, Royal Dublin Society

**Volume**

Vol. 4, No. 1

**Key Word**

Shannawoneen Wood, woodland communities, Saxicolous communities, epiphytic flora, botany, sessile oak, *Quercus petraea*, hazel scrub, natural woodlands

**Abstract**

This paper presents the results of phytosociological, floristic and ecological studies on Shannawoneen Wood, a previously undescribed lowland, natural woodland of 34 ha, situated near Spiddal, Co. Galway. The woodland communities are surveyed and classified according to the Braun-Blanquet approach. A western sessile oak woodland (Blencho-*Quercetum petraea scapanietosum* (Br. - Bl. et Tx. 1952) Kelly et Moore 1975) is the principal association and a western hazel-dominated scrub (*Corylo-Fraxinetum veronicetosum* (Br.- Bl. et Tx. 1952) Kelly et Kirby 182) has a restricted distribution. The podzol and acid brown earth soils supporting the former and latter communities, respectively, are characterised. The saxicolous communities are also surveyed and classified according to the Braun-Blanquet approach. Cluster analysis and principal components analysis of the floristic data were carried out using the program package CLUSTAN. The data were also subjected to detrended correspondence analysis. The latter proved to be particularly useful in elucidating the relationships evident in the association table. Five community types are distinguished, which include those dominated by *Hymenophyllum tunbrigense* (L.) Sm. and *H. wilsonii* Hooker, and that in which Atlantic bryophyte species are prominent. The relationship between community distribution and factors such as slope and aspect of the substratum is considered. A preliminary account is presented of the epiphytic flora. Lichens typical of western woodland but with restricted distribution elsewhere in Ireland and Britain are well represented.

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pp 73 - 96

**Location**

RDS library

**Notes**

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**Address of author**

Office of Public Works, Connemara National Park, Letterfrack, Co. Galway

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**Number**

1068

**Author**

Williamson S.D.H., Cooper Alan

**Title**

The status of *Carex pendula* Hudson at Glenarm Forest, County Antrim (H39).

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1982

**Source**

Journal of Life Sciences, Royal Dublin Society

**Volume**

Vol. 4, No. 1

**Key Word**

*Carex pendula* autoecology, ecology, ecological studies, Glenarm forest, sedge, woodlands, plant communities, botany, phytogeographic, introduced species, flora

**Abstract**

Field studies on the autoecology of *Carex pendula* at Glenarm forest were carried out to test the hypothesis that this species may have been introduced to the area. The sedge is abundant only in that part of the forest close to Glenarm Castle grounds, but transect and ordination studies indicated that its distribution follows a complex gradient of soil moisture and pH which is related to elevation. It is concluded that habitat requirements are responsible for limiting the range of *C. pendula* in Glenarm forest and that the species is at least naturalised but confined to a community occupying moist, base-rich soils.

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pp 183 - 190

**Location**

RDS library

**Notes**

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**Address of author**

School of Environmental Sciences, Ulster Polytechnic, Shore Road, Newtownabbey, Co. Antrim BT37, 0QB, Northern Ireland

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**Number**

1069

**Author**

Heslin M.C.

**Title**

Ectomycorrhizae of poplar hybrids in Ireland.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1984

**Source**

Journal of Life Sciences, Royal Dublin Society

**Volume**

Vol. 5, No. 2

**Key Word**

ectomycorrhizae, poplar hybrids, mineral soils, peat soils, mycorrhizal fungi, fungus, ectomycorrhizae formation, peatlands

**Abstract**

Establishment of many species of poplar on deprived soils has been shown to be facilitated by the presence of mycorrhizal fungi. In the study described in this paper the most common ectomycorrhizal types found on poplar in peat and mineral soil in Ireland are described. Poplar roots from five locations in Ireland were examined for ectomycorrhizae formation. The five most frequently encountered genera were described and classified as Ac, Fb, Fg and Ia, following Dominick (1969).

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pp 93 - 96

**Location**

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**Address of author**

Teagasc, Kinsealy Research Station, Malahide Road Dublin 17

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**Number**

1070

**Author**

Collins J.F, Farrell E.P., O'Toole P.

**Title**

Topo, litho and chronosequences of soil in Avondale Forest Park, County Wicklow.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1979

**Source**

Journal of Earth Sciences, Royal Dublin Society

**Volume**

Vol. 2, No. 1

**Key Word**

soil science, geology, Avondale Forest Park, toposequence, clinosequence, lithosequence, chronosequence, brown podzolic, brown earth humic gley, tuff soils

**Abstract**

The purpose of this paper is to report some studies on three separate sequences of soils, - a topo - (or clino - ) sequence, a lithosequence, and a chronosequence. The studies form part of a surveying programme of the 145 ha. Forest Park at Avondale, Co. Wicklow. The topo- (or clino-) sequence includes brown podzolic, brown earth, gleyic brown earth, low-humic and humic gley soils developed in slaty parent materials. Changes in translocation of mobile constituents within and between profiles were noted as was the influence of groundwater levels. Igneous rock materials include various volcanic tuffs, diorite and dolerite and these give rise to sets of soils whose properties appear to dependent on the parent materials mainly. The tuff soils are typically acid brown earths, brown podzolics and lithosols, while those of the basic intrusive rocks are mostly brown earths. The doleritic soils have a high level of iron. The exchangeable cation populations of the sequences are directly related to their respective parent materials. A chronosequence of soils was studied on differing-age gravel deposits in the Avonmore River Valley. Regosols occur on the most recent gravels, brown earths on middle-age terraces and brown podzolic soils on the oldest and highest terraces.

**Page**

pp 71 - 83

**Location**

RDS library

**Notes**

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**Address of author**

Department of Agricultural Chemistry and Soil Science, UCD, Belfield Dublin 4

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**Number**

1071

**Author**

Kelly Daniel L. Kelly, Kirby E.N.

**Title**

Irish native woodlands over limestone.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1982

**Source**

Journal of Life Sciences, Royal Dublin Society

**Volume**

Vol. 3, No. 1

**Key Word**

native woodlands, free-draining soils, limestone, geology, soil science, scrub, woodland communities, ecology, palynology, rocky limestone terrain, *Corylus avellana*, *Fraxinus excelsior*, *Alnus*, *glutinosa*, *Salix atrocinerea*, *Betula pubescens*, *Quercus robur*, phytosociology

**Abstract**

This paper describes the history and phytosociology of Irish native woodlands on free-draining soils over limestone. The structure of present-day scrub and forest and their successional status in relation to other woodland communities are discussed. The probable history of the major tree species is outlined in the light of palynological evidence. The authors consider that the normal community of both scrub and forest belongs floristically to the association *Corylo-Fraxinentum* Br. - Bl. et Tx. 1952. The redefined association is subdivided into a *neckeretosum* subassociation of rocky limestone terrain, a *veronicetosum* subassociation of leached soils, and a species-poor *typicum* subassociation.

**Page**

pp 181 - 198

**Location**

RDS library

**Notes**

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**Address of author**

School of Botany, Trinity College, Dublin 2

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**Number**

1072

**Author**

Dierschke Harmut

**Title**

The significance of some introduced European broad-leaved trees for the present potential natural vegetation of Ireland.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1982

**Source**

Journal of Life Sciences, Royal Dublin Society

**Volume**

Vol. 3, No. 1

**Key Word**

broadleaf trees, exotic species, introduced species, natural vegetation, woodlands, *Fagus sylvatica*, *Acer pseudoplatanus*, beech, flora, botany, ecology, environment, broadleaves

**Abstract**

The author discusses the role of exotic European broadleaved trees in the present potential natural vegetation of Irish woodlands on the basis of his own observations and examples from the published literature. *Fagus sylvatica* and perhaps also *Acer pseudoplatanus*, which are only absent from the natural flora of Ireland for historical rather than ecological reasons, could have greater significance today. Some examples of *Fagus* and *Acer* vegetation were compared with natural beechwoods in climatically-related areas in northwest France. Some proposals are made for the study of exotic trees in Ireland.

**Page**

pp 199 - 207

**Location**

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**Address of author**

Systematisch-Geobotanisches Institut, Untere Karpule 2, D - 3400 Gottingen, Germany

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**Number**

1073

**Author**

Cross J.R.

**Title**

The invasion and impact of *Rhododendron ponticum* in native Irish vegetation.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1982

**Source**

Journal of Life Sciences, Royal Dublin Society

**Volume**

Vol. 3, No. 1

**Key Word**

*Rhododendron ponticum*, native vegetation, introduced species, weed control, acid oakwoods, *Blechno-Quercetum*, biological diversity, ground flora, woodland habitats, epiphytes, fungi, mammal food supply, oak woodlands, woodland ecology

**Abstract**

The alien *Rhododendron ponticum* has been widely planted in Ireland since its introduction in the late 18th century. In suitable locations it is extremely invasive, spreading rapidly by seed into native communities, where it often forms dense strands. It is most invasive in acid oakwoods (*Blechno-Quercetum*) but also invades other communities, principally heaths and dried-out bogs. Its most serious impact on native communities is to reduce the biological diversity by shading out the ground flora, preventing regeneration of trees and shrubs, reducing the variety of epiphytes and fungi, and destroying the habitat and food supplies for animals. It provides few substitute habitats and the toxicity of its foliage makes it unpalatable except to a few invertebrates. On a long-term basis it could lead to the complete destruction of many of the remaining fragments of oak woodland in Ireland, and render unusable extensive areas of heath and dried-out bog. It is probably the most successful and damaging introduced plant in the country and, since control is very expensive, it appears likely to remain an important element of the Irish flora.

**Page**

pp 209 - 220

**Location**

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**Number**

1074

**Author**

Blackith R.E., Blackith R.M., Speight M.C.D.

**Title**

*Fannia umbrosa*, *Phaonia cinta*, *Chirosia parvicornis*, *Eustalomyia festiva*, *Protohormia terraenovae*, flies (Diptera: Cyclorrhapha) new to Ireland.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

April/1990

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 23, Nos. 5- 6

**Key Word**

*Fannia umbrosa*, *Phaonia cinta*, *Chirosia parvicornis*, *Eustalomyia festiva*, *Protohormia terraenovae*, flies (Diptera: Cyclorrhapha), forest flies, forest ecology, insects, forest protection, new species

**Abstract**

This paper identifies the following flies which are new to Ireland: *Fannia umbrosa* (Fanniidae), was found in a rotting beech tree in Co. Galway; *Phaonia cincta* (Muscidae), in a tree hole in a sycamore in Co. Wicklow; *Chirosia parvicornis*, in bracken in Wicklow; and *Eustalomyia festiva terraenovae* (*Phormia terraenovae*) in willow woods in Wicklow.

**Page**

pp 205 - 208

**Location**

RDS library

**Notes**

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**Address of author**

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---

**Number**

1075

**Author**

Good J.A., Ashe P.

**Title**

Records of four species of false powder-post beetle (Coleoptera : Bostrichidae: *Dinoderus*) imported into Ireland.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

October/1990

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 23, No. 8

**Key Word**

insect pests, forest protection, Coleoptera, Bostrichidae, Hymenoptera, false powder-post beetle, *Dinoderus minutus*, *Dinoderus brevis*, introduced pests, imports, entomology, wood-borers, wood products

**Abstract**

The beetle, *Dinoderus minutus*, was found in chopsticks imported into Ireland in 1989. *D. minutus* and *D. brevis* caused damage to a shipment of rattan furniture in the same year. In this case the bostichids were associated with a species of silvanid, a species of clerid (both probably predators on the bostrichids) and at least one species of clerid.

**Page**

pp 326 - 327

**Location**

RDS library

**Notes**

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**Address of author**

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**Number**

1076

**Author**

Breen John

**Title**

The distribution of *Formica lugubris* zetterstedt (Hymenoptera: Formicidae) in Ireland, with a discussion of its possible introduction.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

1977

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 19, No. 4

**Key Word**

*Formica lugubris*, wood ants, pismires, horse ants, *Formica rufa*, woodland ecology, zoology, introduced species, native species, food sources

**Abstract**

A review of the literature on ants of the *Formica rufa*-group, variously known as wood ants, pismires, and horse ants, is provided. The various sites where *F. lugubris* is located in Ireland are listed. While the literature generally holds that it is a native species, some authors suggest that they were deliberately introduced for use as food for peasannts. The fostering of lachnid aphids by *F. lugubris* is discussed.

**Page**

pp 123 - 127

**Location**

RDS library

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**Address of author**

Department of Zoology, Trinity College Dublin 2

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**Number**

1077

**Author**

Folan Ann C. M., Mitchell M.E.

**Title**

The lichens and lichen parasites of Derryclare Wood, Connemara.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1970

**Source**

Proceedings of the Royal Irish Academy

**Volume**

Vol. 70

**Key Word**

Derryclare Wood, Connemara, oakwoods, lichen flora, lichen parasites, botany, taxonomy, woodlands

**Abstract**

Derryclare Wood is situated in the Twelve Bens mountain range of Connemara. The general floristic and climatic features of the woodland resemble those of the Killarney oakwoods; this resemblance is also apparent in the lichen-flora of both areas. A number of lichen species previously known in Ireland only from the south-west have now been recorded in Derryclare Wood. There are 32 additions to the vice-county flora of West Galway (v.-c. H 16), of which three taxa are new to the Irish lichen-flora. Ninety-eight species and seven minor taxa, belonging to forty genera, are recorded from Derryclare Wood. Seven species of fungi parasitic on lichens were found to occur. Six of these have not been previously recorded from Ireland, while one is new to the British Isles and another to the Northern Hemisphere.

**Page**

pp 163 - 170

**Location**

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**Number**

1078

**Author**

Morrison M.E.S.

**Title**

Factors in the degeneration of the prehistoric woodland.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

1956

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 13, No. 3

**Key Word**

Betula alba, palaeoecology, bogs, peatlands, ecology, Pinus sylvestris, synecology, climate, pre-bog woodlands, pine woods, woodland destruction

**Abstract**

This study examines the influence of climatic deterioration and prehistoric farming methods upon the formation of the Scandinavian and Irish peat bogs. It is suggested that pre-bog woodland was frequently pine. This degenerated into open woodland or scrub, composed mainly of birch, due to the formation of podzols under the pine. The author suggests that these edaphic factors may have initiated the destruction of the woodlands. This process was later accelerated by blanket-bog formation during the subsequent climatic deterioration.

**Page**

pp 57 - 65

**Location**

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**Number**

1079

**Author**

Steinbeck Klaus

**Title**

Short-rotation forests: an energy alternative.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1983

**Source**

Proceedings of the First International Summer School in Agriculture held in co-operation with the W.K. Kellogg foundation: Energy Management and Agriculture. (Edited by D.W. Robinson & R.C. Mollan).

**Key Word**

short rotation forestry, energy management, alternative energy, agriculture, woodfuel, biomass production systems, forest biomass, site selection, species selection

**Abstract**

The advantages and drawbacks of forest biomass as an energy source are briefly reviewed. Short rotation forestry is defined as a biomass production system consisting of closely spaced, rapidly growing hardwood plantations which are intensively managed and harvested on cycles of less than ten years. Succeeding crops are assured through the resprouting of established rootstocks. The system is flexible and can be adapted to conditions in developing and industrialised countries. Factors which affect growth and yield, such as species and site selection, cultivation and rotation age, are discussed.

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pp 119 - 130

**Location**

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**Notes**

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**Address of author**

School of Forest Resources, University of Georgia, Athens Georgia 30602, USA

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**Number**

1080

**Author**

Neenan M, Lyons G.

**Title**

Short-rotation forestry for energy, the Irish experience.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1982

**Source**

Proceedings of the First International Summer School in Agriculture held in co-operation with the W.K. Kellogg Foundation: Energy Management and Agriculture. (Edited by D.W. Robinson & R.C. Mollan).

**Key Word**

alternative energy sources, energy management, agriculture, short rotation forestry, silviculture, harvesting, Populus, Salix aquatica Gigantea, production costs, woodfuel, energy needs, energy production

**Abstract**

Short rotation forestry is a promising source of energy. In co-operation with the State forest service, trials were established with 18 species at four centres in 1977. Silvicultural trials were laid down at two centres in 1978, one on mineral soil and the other on used up peatbog. Some sampling harvests, which are not statistically validated, were taken in 1980. The results show that yields of 10 to 15 tonnes/ha/year of dry matter can be obtained where the species is adapted to the soil type. On good mineral soil Populus is best, while on peatland Salix aquatica 'Gigantea' is the most promising. The physical data, together with cost production information collected from contractors and other parties, were subjected to a systems analysis. The results show that, allowing for purchase of the land, short-rotation forestry can be produced at a price of about \$US 176 per ton of oil equivalent, in August 1981. If cost of land is discounted over a very long period, the price of fuel from short-rotation wood can be as little as 4%. It is expected that this cost can be substantially reduced through the use of better yielding clones, possibly in utilising nitrogen fixing species such as Alnus. While the original programme was designed to produce fuel for power stations, there are indications that short-rotation forestry could be used in domestic boilers and in small rural industries. Harvesting and handling can be by conventional agricultural machinery, though special harvesters are now being designed for this purpose.

**Page**

pp 131 - 154

**Location**

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**Notes**

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**Address of author**

Teagasc Research Centre, Oakpark, Co. Carlow

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**Number**

1081

**Author**

Gallagher G.J., Gillespie J.

**Title**

The economics of peatland afforestation.

**Publisher**

Irish National Peat Committee

**Place**

Dublin

**Date**

1984

**Source**

Proceedings: 7th International Peat Congress Dublin, Ireland, 19-23 June 1984.

**Volume**

Vol. 3

**Key Word**

bogs, economics, peatlands, afforestation, cultivation, silviculture, planting, peat, blanket bogs, employment, economic development

**Abstract**

Peatlands form an important part of the present and potential forest estate in Ireland. The economics of forestry on peatland is examined and three examples are shown to indicate profitability. The impact of different cultivation and management techniques are discussed and some downstream effects are also illustrated. The results indicate that peatland forestry, using Sitka spruce and lodgepole pine can yield from 4 to 8.4% depending on site, peat type and crop management.

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pp 271 - 285

**Location**

Coillte library

**Notes**

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**Address of author**

Forest Service, Leeson Lane Dublin 2

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**Number**

1082

**Author**

Dickson D.A.

**Title**

Effects of ground limestone and urea on growth of Sitka spruce planted on deep oligotrophic blanket peat in Northern Ireland.

**Publisher**

Irish National Peat Committee

**Place**

Dublin

**Date**

1984

**Source**

Proceedings of the 7th International Peat Congress Dublin, Ireland 18-23 June 1984

**Volume**

Vol. 3

**Key Word**

lime, ground limestone, fertilisers, fertilisation, deep oligotrophic blanket peat, tree growth, bogs, phosphate, urea, cultivation, silviculture, Sitka spruce, *Picea sitchensis*, peatlands

**Abstract**

Ground limestone was applied at rates up to 22.5 tonnes per ha at time of planting Sitka spruce on deep oligotrophic blanket peat. Tree growth was significantly reduced by lime application over the following six years. Mean tree height at the end of the 8th growing season was still significantly reduced by liming but the effect was small at the lowest rate. Mean height was significantly increased by the phosphate applied at planting. Between the 11th and 15th years after planting lime increased annual height growth but in no year was the effect significant. Urea (at 500 kg per ha) applied in the 11th season significantly increased mean tree height at the end of the 15th growing season but the effect of the lime was not significant. As a result of the early reduction in growth brought about by liming mean height at the end of the 15th season was greater where urea had been applied in the absence of lime than in any of the lime treatments. There was a significant interaction on height growth between applied lime and urea; in the absence of urea liming increased annual height growth in the 14th season and mean height in the 15th season whereas in the presence of urea growth was reduced by all levels of applied lime.

**Page**

pp 255 - 263

**Location**

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**Number**

1083

**Author**

Carey M.L., McCarthy R.G., Hendrick E.

**Title**

Nutrient budgets in young Sitka spruce and lodgepole pine on a raised bog.

**Publisher**

Irish National Peat Committee

**Place**

Dublin

**Date**

1984

**Source**

Proceedings: 7th International Peat Congress Dublin, Ireland 18-23 June 1984

**Volume**

Vol. 3

**Key Word**

peatlands, bog soils, phosphate, fertilisers, fertilisation, cultivation, soil nutrients, Sitka spruce, lodgepole pine, *Picea sitchensis*, *Pinus contorta*, raised bogs, soil nutrients, nutrient budgets, tree growth, nitrogen

**Abstract**

A nutrient budget study was carried out in part of a 7 year old phosphate fertiliser experiment on a raised bog which had received the equivalent of 60 and 90kg P/ha in separate replicated plots. The object was to obtain more information on the effects of the fertiliser which is essential for growth on such sites and also to contract the nutrient uptake and distribution patterns for the two species Sitka spruce and lodgepole pine. Phosphate increased the diameter and height of both species but there was a tendency for biomass production to decrease at the higher rate of application. Lodgepole pine produced about 30% more biomass than the spruce, most of the difference being accounted for by needles and branches. Phosphorus uptake for both species was about 18kg/ha over 7 years. Lodgepole pine accumulated 50% more nitrogen than the spruce (152 kg/ha) even though total root mass for both species only differed by 6%. Optimum rate of phosphorus application was in the order of 50-60 kg/ha. Raised bogs have a high production potential for both species but the pine is the cheaper to grow because it does not require inputs for fertiliser nitrogen which are essential to sustain growth of the spruce.

**Page**

pp 207 - 218

**Location**

Coillte library

**Notes**

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**Address of author**

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**Number**

1084

**Author**

Hendrick E.

**Title**

Drainage of peatlands for afforestation.

**Publisher**

National Peat Committee

**Place**

Dublin

**Date**

1984

**Source**

Proceedings: 7th International Peat Congress Dublin, Ireland, 18-23 June 1984

**Volume**

Vol. 3

**Key Word**

peatlands, raised bogs, peatland drainage, peat soils, afforestation, hydraulic conductivities, ploughing, tree growth, early growth establishment, forest ploughs, blanket peat

**Abstract**

The majority of peat soils being afforested in Ireland have low hydraulic conductivities, in the order of 10 mm/day and occur in areas of high and frequent rainfall (about 1400 mm/annum). For satisfactory growth of forest plantations these soils must be intensively drained. For the past thirty years and up to the recent past this has been accomplished using trailed, single and double mouldboard forest ploughs. Plough furrows are installed at 4 m spacing for both surface water removal and the provision of planting ribbons. On blanket peats cut-off drains 10 m apart will lower the summer water-table (June-August) by up to 10 cm on preploughed sites. No early growth improvement of lodgepole pine results, however. On unploughed raised bog peats drainage lowers the water-table and improves growth of lodgepole pine. While giving good establishment and early growth ploughing furrows and ribbons are an obstacle to timber extraction. There are also strong indications that planting on peat ribbons leads to stem lean in lodgepole pine. Alternative subsurface drainage techniques which

can overcome these problems are under investigation. These include tunnel ploughing and the development of peat harvesters. Results to date are promising.

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pp 304 - 315

**Location**

Coillte library

**Notes**

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**Address of author**

National Council for Forest Research and Development, Agriculture Building, UCD, Belfield, Dublin 4

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**Number**

1085

**Author**

McCarthy R., Keogh R.M.

**Title**

Biomass potential of conifers on peatlands.

**Publisher**

Irish National Peat Committee

**Place**

Dublin

**Date**

1984

**Source**

Proceedings: 7th International Peat Congress Dublin, Ireland 18-23 June 1984

**Volume**

Vol. 3

**Key Word**

biomass production, energy needs, economics, dry matter production, lodgepole pine, Sitka spruce, *Picea sitchensis*, *Pinus contorta*

**Abstract**

Heavy dependence on imported oil and coal has had an adverse effect on Ireland's economy. Furthermore, supplies of peat, the most important native energy resource, are predicted to be depleted within 50 years. These factors have encouraged research into the possibility of replacing peat by wood in electricity power stations. This is being investigated by the Forest and Wildlife Service in independent studies and in international co-operative projects. Findings are presented in this paper of investigations on the dry matter production of the most vigorous tree species planted on Irish peatlands: lodgepole pine (*Pinus contorta* Dougl.) and Sitka spruce (*Picea sitchensis* (Bong.) Carr.) Results show that species, peatland type, age and density have a considerable influence on biomass productivity. The maximum mean annual dry matter increment of overground material obtained was 8.9 tonnes/ha/yr for 14 year-old coastal lodgepole pine at a density of 2,990 trees/ha on blanket bog. Between-species variation was demonstrated in a study on 6 year-old lodgepole pine and Sitka spruce at a planting density of 10,000 trees/ha on virgin mainland raised bog. The mean annual dry weight increment of overground material produced was 8.5 tonnes/ha/yr by lodgepole pine and 3.7 tonnes/ha/yr by Sitka spruce. Based on the results obtained, estimates are made of the potential production of lodgepole pine on the total peatland areas and its possible contribution to energy requirements.

**Page**

pp 398 - 417

**Location**

Coillte library

**Notes**

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**Address of author**

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**Number**

1086

**Author**

O'Carroll N.

**Title**

Peatland afforestation in the Republic of Ireland.

**Publisher**

Irish National Peat Committee

**Place**

Dublin

**Date**

1984

**Source**

Proceedings: 7th International Peat Congress Dublin, Ireland 18-23 June 1984

**Volume**

Vol. 3

**Key Word**

peatland afforestation, bogs, forestry history, peat soils, fertilisers, establishment, silviculture, State forestry, forest management, harvesting, cutaway bogs, peatlands

**Abstract**

Large areas now covered by peat were formerly forested. The first major State attempt at bog afforestation in the 1890s failed. The development of suitable ploughs and the use of phosphate fertiliser permitted successful afforestation of peatland from about 1950 onwards. The use of open drains in peatland afforestation practice is now being replaced where possible by a system of tunnel ploughing with drains about 75 cm below the surface. This will lead to better root development, improved stability and easier harvesting. Phosphorus is applied at establishment and potassium is also necessary in some midland areas. The main species used are Sitka spruce and lodgepole pine. Research on cutaway bog areas indicates that very high yields will be attainable under forest crops.

**Page**

pp 450 - 461

**Location**

Coillte library

**Notes**

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**Address of author**

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**Number**

1087

**Author**

McNally G.

**Title**

Development of cutover bog in Ireland.

**Publisher**

Irish National Peat Committee

**Place**

Dublin

**Date**

1984

**Source**

Proceedings of the 7th International Peat Congress Dublin, Ireland 18-23 June 1984

**Volume**

Vol. 3

**Key Word**

bogs, peatlands, industrial cutover bogs, industrial development, agriculture, land use, peat soils, forestry policy, afforestation, rural development

**Abstract**

In Ireland, some 80,000 ha of industrial cutover peatland will be available for other uses in the next century. Sizeable areas will become available for development within ten years. This paper examines the main

conclusions from ten years work on the application of research results to pilot development projects on cutover bogs. The variation in the peat and mineral soil within any one bog area and the limitations these impose on future use are discussed. The physical problems encountered on large areas of peatland lacking any of the infrastructural requirements of modern agriculture and forestry are also dealt with. The main conclusion is that either grassland or forestry or a combination of both is the likely use for cutover peatland overlying the upper contours of the bog floor. The use to which the lower contours are put is not yet clearly identified but it is likely that options other than agriculture or forestry may dominate their future use.

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pp 442 - 449

**Location**

Coillte library

**Notes**

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**Address of author**

Bord na Mona, Newbridge, Co. Kildare

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**Number**

1088

**Author**

Gray N.F., Bailey F.

**Title**

Ecology of nematophagus fungi: vertical distribution in a deciduous woodland.

**Publisher**

Kluwer Academic Publishers

**Place**

Dordrecht

**Date**

1985

**Source**

Plant and Soil

**Volume**

Vol. 86, No. 2

**Key Word**

nematophagous fungi, deciduous woodlands, woodland ecology, microfungi, endoparasites, woodland soils, Cephalosporium balanoides, soil nutrients

**Abstract**

The distribution of nematophagous fungi in soil collected from a deciduous woodland was examined in relation to various biotic and abiotic soil factors. The microfungi were isolated at all depths down to 35cm. Predators forming constricting rings, adhesive branches and adhesive knobs were restricted to the upper litter and humus layers. The net forming predators and endoparasites were isolated at all depths, although they were significantly more abundant in the lower mineral rich soils. A much greater species diversity of nematophagous fungi was recorded in the upper organic zones. Cephalosporium balanoides was independent of all soil vegetables, while spontaneous trap forming predators, which are excellent saprophytes, were isolated from the deeper soils which were low in nutrients. The ecological significance of these results is discussed.

**Page**

pp 217 - 223

**Location**

Coillte library

**Notes**

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**Address of author**

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**Number**

1089

**Author**

Farrell E.P.

**Title**

Aspects of the nitrogen cycle in peatland and plantation forest ecosystems in western Ireland.

**Publisher**

Kluwer Academic Publishers

**Place**

Dordrecht

**Date**

1990

**Source**

Plant and Soil

**Volume**

Vol. 128

**Key Word**

blanket bogs, peatlands, nitrogen cycle, mineral nitrogen, fertilisers, fertilisation, phosphorus, peatland afforestation, forest plantation ecosystems

**Abstract**

Extensive plantation forests cover large areas of blanket peatland in western Ireland. Sites are characterised by the ombrotrophic nature of the peat and often extreme maritime conditions prevailing. The study area is located close to two coastlines and in consequence, ions of marine origin are dominant in the bulk precipitation. Mean annual nitrogen deposition is 2.26 kg per ha. Forestry development in the region dates from the early 1950s. Deficiency of phosphorus is universally encountered, sometimes accompanied by a shortage of nitrogen. A fertiliser experiment in the study area was maintained for 16 years. The principal response was to applied phosphorus and although nitrogen had a positive influence on growth in the early years, it was of little consequence in the longer term. Over 900 kg N per ha was accumulated in the forest floor. In a mineralisation study of peat collected from plots fertilised 14 years previously, differences in total mineral nitrogen production between treatments were small, but in nitrogen-treated plots a higher proportion of the mineral nitrogen was as nitrate than in those which had not received fertiliser nitrogen. Throughfall measurements in pole-stage crops of Sitka spruce and lodgepole pine, which had received no fertiliser nitrogen, showed significantly greater quantities of nitrogen than bulk precipitation.

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pp 13 - 20

**Location**

Coillte library

**Notes**

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**Address of author**

Department of Environmental Resource Management, UCD, Belfield, Dublin 4

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**Number**

1090

**Author**

Carey M.L., OCarroll Niall

**Title**

Potassium accretion by *Pinus contorta* on oligotrophic peat in the west of Ireland.

**Publisher**

Martinus Nijhoff/Dr. W. Junk

**Place**

The Hague

**Date**

1981

**Source**

Plant and Soil

**Volume**

Vol. 60

**Key Word**

fertilisation, fertilisers, potassium accretion, precipitation, oligotrophic peat, lodgepole pine, *Pinus contorta*, soil

improver species, soil nutrients, bogs, minerals in soil, soil improvement, phosphorus, peatlands

**Abstract**

The value of lodgepole pine as a soil improver and pioneer enabling more demanding trees to follow has been noted. As part of a larger research programme on forest fertilisation the amounts of potassium present in the various components of a 22 year old crop of *Pinus contorta* growing on oligotrophic peat at Nephin Beg State Forest, Co. Mayo. The crop was found to contain 85 kg per ha more K than adjacent unplanted areas. The results show that the presence of the forest cover on oligotrophic peat has enriched the ecosystem in those cations which are presumably lost through runoff or drainage in the natural state are conserved by the trees. Responses in tree growth to K application suggest that the increased penetration of the rainfall into the peat together with the extended crowns and/or roots resulting from the phosphorus application aided the trees in intercepting and utilising atmospheric K.

**Page**

pp 471 - 475

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teoranta, Leeson Lane, Dublin 2

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**Number**

1091

**Author**

Farrell Edward P., Cummins Thomas, Collins James F., Beier Claus, Blanck Kai, Bredemeier Michael, de Visser Pieter H.B., Kreutzer Karl, Rasmussen Lennart, Rothe Andreas, Steinberg Natascha

**Title**

A comparison of sites in the EXMAN project, with respect to atmospheric deposition and the chemical composition of the soil solution and foliage.

**Publisher**

Elsevier Science

**Place**

Amsterdam

**Date**

1994

**Source**

Forest Ecology and Management

**Volume**

Vol. 68

**Key Word**

atmospheric deposition, chemical composition, EXMAN project, soil solution, foliage, nutrient status, biogeochemical cycles, hydrogen ion flux, composition of soil water, soil nutrients

**Abstract**

Forest stands, throughfall and the composition of the soil solution in six coniferous forest plantations in Europe were compared as part of the EXMAN project, which was established to quantify biogeochemical cycles and the effects of atmospheric deposition on coniferous forest ecosystems. Even though the EXMAN stands and sites are broadly similar, they represent a wide range of climatic conditions and levels of pollutant deposition. The EXMAN project incorporates treatment of forest plots and in this paper the untreated control plots are compared. The results show marked differences in ionic composition of water between sites, most clearly expressed in throughfall fluxes. At the German and Dutch sites, ionic inputs demonstrate a strong human influence. Throughfall at the Danish and Irish sites is dominated by ions of marine origin. Hydrogen ions are not the most important cations in precipitation at any site, and at only one site (Solling, Germany) was the hydrogen flux in throughfall greater than in precipitation. The influence of atmospheric deposition on the composition of the soil water is very evident for most major ions. Exceptions to this are ammonium and nitrate, the complexity of whose behaviour demonstrates the need for greater understanding of nitrogen transformation and uptake in coniferous forest ecosystems.

**Page**

pp 3 - 14

**Location**

Coillte library

**Notes**

available

**Address of author**

Department of Environmental Resource Management, UCD, Belfield, Dublin 4

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**Number**

1092

**Author**

McAdam J.H.

**Title**

An evaluation of tree protection methods against Scottish Blackface sheep in an upland agroforestry system.

**Publisher**

Elsevier Science Publishers

**Place**

Amsterdam

**Date**

1991

**Source**

Forest Ecology and Management

**Volume**

Vol. 45

**Key Word**

forestry protection, Scottish blackface sheep, agroforestry, tree damage, grazing stock, tree protection methods, sycamore, ash, larch, *Acer pseudoplatanus*, *Larix decidua*, *Fraxinus excelsior*, broadleaves, deciduous trees

**Abstract**

The initial protection of trees against grazing stork is essential to the establishment of silvopastoral trials in upland areas. In a trial to evaluate protection methods, three tree species (sycamore, ash and larch) were planted at 400 stems per ha in an upland sward previously reseeded with perennial ryegrass. Eight tree protection options involving combinations of primary stake, secondary stake and shelter shape were tested in plots with 5 trees randomised in six replicated blocks. Swards were grazed down to approximately 1.5 cm and allowed to regrow to 8cm. Tree damage assessment was carried out after each grazing cycle and minor damage (e.g., loose ties) made good. Overall, 7.3% of trees were completely destroyed but 70% suffered some damage, much of which would need remedial attention. Tree survival was better where two stakes were used (irrespective of size) rather than one stake with a short peg. However, the main cause of damage with the latter method was associated with the security of the ties rather than damage to the shelters. Damage to square section shelters (mainly crushing) was significantly greater than to round section shelters (30.4% and 3.3%, respectively), although ties were most liable to come off the round sections than the square shelters. Provided tie quality and security were improved, a 1.8 m primary stake, short secondary peg and 1.5 m round section shelter would give most cost effective protection of the methods used.

**Page**

pp 119 - 125

**Location**

Coillte library

**Notes**

available

**Address of author**

Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, BT 5PX

---

**Number**

1093

**Author**

Robinson Claire H., Pearce Trevor G., Ineson Phil, Dickson Dave A., Nys Claude.

**Title**

Earthworm communities of limited coniferous soils: field observations and implications for forest management.

**Publisher**

Elsevier Science Publications

**Place**

Amsterdam

**Date**

1992

**Source**

Forest Ecology and Management

**Volume**

Vol. 55

**Key Word**

earthworm communities, earthworms, limed coniferous soils, *Dendrodrilus rubidus*, *Lumbricus terrestris*, Aporetodea, forest ecology, zoology

**Abstract**

A field experiment and two soil faunal surveys were carried out to determine the effect of liming on earthworm populations of European forests. In the UK, a mixed species assemblage of earthworms was introduced into a deep peat soil under a young stand of *Picea sitchensis*, following additions of earthworm numbers and biomass were 70% and 15% of those introduced; this included species which had not been inoculated. Earthworms were found only where the soil had been limed; most individuals were found where earthworms and lime had been applied. In a survey of long-established limed plots of *Picea abies* on an acid, brown earth soil in northern France, liming increased earthworm density (5 to 11 individuals per square metre, compared with 6 per square metre in a nearby deciduous woodland, and 0 per square metre in unlimed *P. abies* plots). Similarly, in Northern Ireland, the addition of lime permitted a substantial community of earthworms to develop in deep peat soil under *P. sitchensis* (79 individuals per square metre, compared with 5 per square metre in unlimed soils), including acid intolerant species rare in coniferous soils. Different species assemblages were found in the four different limed plots sampled. The trees growing on limed soil at this site showed greater height growth than the trees in the unlimed plots, and it is suggested that earthworms have a beneficial effect in limed coniferous soils by increasing nutrient turnover.

**Page**

pp 117 - 134

**Location**

Coillte library

**Notes**

available

**Address of author**

Institute of Terrestrial Ecology, Merlewood Research Station, Grange-over-sands, LA116JU, UK

---

**Number**

1094

**Author**

O'Carroll C., Farrell E.P.

**Title**

Relationships between soil characteristics and yield for Norway spruce on fen peat in central Ireland.

**Publisher**

Elsevier Science Publications

**Place**

Amsterdam

**Date**

1993

**Source**

Forest Ecology and Management

**Volume**

Vol. 57, Nos. 1 - 4

**Key Word**

soil characteristics, Norway spruce, *Picea abies*, fen peat, yield class, peatlands, fertilisation, fertilisers, soil nutrients, site-productivity model

**Abstract**

A site-productivity model for Norway spruce on fen peat in Edenderry forest, Co. Offaly was derived by

stepwise regression of measured soil data on yield class (the expected maximum mean annual volume increment for the crop, expressed in cubic metres per annum per hectare). Soil C/N ration, soil air space and hydrogen ion concentration explained 73% of the observed variation in yield class. The results indicated that the yield class of Norway spruce on fen was correlated with the physical properties of the peat and that, assuming adequate inputs of P and K, this species will be most productive on poorly decomposed well-drained fen which exhibits a botanical composition indicative of relatively poor nutrition at the time of peat formation.

**Page**

pp 61 - 70

**Location**

Coillte library

**Notes**

available

**Address of author**

Department of Environmental Resource Management, UCD, Belfield Dublin 4

---

**Number**

1095

**Author**

Kelleher C., O'Hara P.

**Title**

Prepension proposals: what prospects for success?

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

Feb/1987

**Source**

Farm & Food Research

**Key Word**

farm forestry, agricultural policy, forestry policy, European Commission, European Union, EU, EC, pensions, farmer retirement, land use, afforestation, private forestry

**Abstract**

In an effort to solve some of the problems associated with land structure the Commission of the European Communities has proposed a prepension scheme for farmers aged 55 - 70. There are three options: to transfer the land to a first degree successor; to take it out of farming; to plant it with trees. In a survey of 144 farmers in the north-west of the country 44% of respondents thought the transfer option attractive. However, only 11 out of 49 farmers over 50 years of age said that they would give it serious consideration. About 65% were against the idea of taking land out of farming altogether. Nearly half the respondents thought tree planting was the best option but many were opposed to planting all of their land.

**Page**

pp 10 - 11

**Location**

Coillte library

**Notes**

available

**Address of author**

Rural Sociology Department, Economics and Rural Welfare Research Centre, Hume House, Dublin 4

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**Number**

1096

**Author**

Forbes A.C.

**Title**

Tree planting in Ireland during four centuries.

**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1933

**Source**

Proceedings of the Royal Irish Academy, Section C

**Volume**

Vol. 41, No. 6

**Key Word**

forestry history, forestry policy, reforestation, yew, demesne woodlands, estate woodlands, woodland preservation, legislation, laws, introduced species, private planting

**Abstract**

This paper reviews the surviving records from the 17th century onwards of the attempts at reforestation in Ireland. The earliest record referred to is from 1534 which demonstrates the concern which the loss of woodlands was causing even at that time. The planting of yews in churchyards and monasteries was common during the medieval era. Several sources of records of tree planting are cited. The species introduced before the end of the 17th century were *Pinus sylvestris*, *Pinus pinea*, English and Dutch elms, oak, plane, robinia and mulberry. Legislation regarding planting and woodland preservation, beginning with An Act for Planting and Preserving timber trees and Woods (1698), is outlined. The creation of deer parks from the 16th century, their further expansion during the period of the laying out of the demenses in the eighteenth century and the effect this had on area devoted to woodland is examined. The 18th century was a time of expansion in woodlands, but no major developments were recorded between 1800 and 1845. Available land was considered too valuable for increasing expansion. The deterioration of woodlands in the period leading up to and during the various land purchase Acts, and the gradual expansion in forests under State direction from the early 1900s are described.

**Page**

pp 168 - 199

**Location**

Coillte library/ RIA library

**Notes**

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**Number**

1097

**Author**

Doyle Joseph, Clinch Phyllis

**Title**

Seasonal changes in conifer leaves, with special reference to enzymes and starch formation.

**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1927

**Source**

Proceedings of the Royal Irish Academy, Section B

**Volume**

Vol. 37, No. 26

**Key Word**

enzymes, starch formation, biochemistry, fats, starch synthesis, leaf morphology, botany

**Abstract**

This paper on seasonal changes in conifer leaves examines the following aspects: A. The changes which the starch and fat undergo in the leaves of certain conifers in the passage from autumn to late spring; B. The capacity possessed by the leaves of regenerating starch under certain conditions in winter; C. The presence or absence in winter and summer of enzymes associated with changes in carbohydrates and fats. A seasonal change in the enzyme activity seems to occur - maltase, dextrinase, and amylase in winter being either absent, difficult to demonstrate, or less active. These seasonal enzyme changes are another expression of the internal change

occurring during dormancy. The presence or activity of the enzymes can readily be related to natural and indeed starch formation. The enzyme results, together with an examination of the data offered elsewhere in its support, show further that the claim that maltase, detrinase, and amylase are all necessary for starch synthesis, though probable, has yet little proof in its support.

**Page**

pp 373 - 414

**Location**

Coillte library, RIA library

**Notes**

available

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**Number**

1098

**Author**

Lines R.

**Title**

Pinus contorta in Ireland, 1955.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1957

**Source**

Forestry

**Volume**

Vol. 30, No. 2

**Key Word**

lodgepole pine, Pinus contorta, silviculture, provenance trials, regeneration, mixtures

**Abstract**

This paper describes a short study of a number of older plantations of lodgepole pine planted since 1918 on poor soil. Three provenances of Pinus contorta are distinguished in Ireland, the South Coastal and North interior types and Rainer Forest, an intermediate type. Each provenance is discussed under growth rate, site influence, spacing, susceptibility to sawfly attack, mixtures, thinning treatment, and windblow. The fast-growing South Coastal type is preferred in the Republic of Ireland and is usually planted as a pioneer plant. In Northern Ireland mixtures containing both Coastal and Interior types with Sitka spruce are common, and have been less successful than the pure plantations in the Republic.

**Page**

pp 139 - 150

**Location**

Coillte library

**Notes**

available

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**Number**

1099

**Author**

Murphy Wm., Gardiner J.J.

**Title**

Forest recreating economics.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1983

**Source**

Irish Forestry

**Volume**

Vol. 40, No. 1

**Key Word**

recreation economics, recreational facilities, forest amenities

**Abstract**

This paper examines a method for evaluating the benefits of forest recreation using data collected in a pilot scale survey carried out in Portumna Forest Park in 1980. A consumer demand curve is constructed for the park and it is calculated that the annual monetary value of recreation facilities in the park is £5,670. This is greatly in excess of actual amounts collected at present in the park.

**Page**

pp 12 - 19

**Location**

Coillte library

**ISBN**

00211192

**Notes**

available

**Address of author**

Dept. of Forestry, UCD, Belfield Dublin 4

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**Number**

1100

**Author**

Pickerill Tracy

**Title**

Profitable ecology. An evaluation of the investment potential of tree farming in Ireland.

**Place**

Dublin

**Date**

1990.

**Key Word**

investment appraisal, land use, forestry economics, farm forestry, afforestation grants, forestry economics, private forestry, forestry policy, forest ecology, timber industry

**Abstract**

The objectives of this study were to determine whether small scale farmer and ecologically motivated forestry schemes can be self financing, and to determine what minimum size of scheme could be profit making. The effect which government forestry policy has and will have on private investment in forestry is assessed. The net financial returns which investment in forestry might be expected to yield under Irish cost, price and productivity conditions, having regard to economic, risk and taxation implications, are assessed. The difficulties associated with economies of scale faced by small private forestry developers are examined. It is concluded that that a well planned regional afforestation programme would be of considerable benefit. A fully integrated regional development plan, taking into account forestry, agriculture, tourism, the environment and conservation interests is essential to ensure that benefits will accrue to areas with a high proportion of marginal land.

**Page**

150 p

**Location**

Library, College of Technology, Bolton Street, Dublin 1.

**Notes**

Available. (Thesis submitted for award of Property Economics Degree at Trinity College)

**Thesis**

BA Thesis, TCD

---

**Number**

1101

**Author**

Hall Aidan J.

**Title**

Timber frame housing. A potential growth industry with deep rooted problems.

**Place**

Dublin

**Date**

1991

**Key Word**

timber frame construction, timber end use, forest products, timber processing, building industry

**Abstract**

The market for timber frames and relevant legislation, including the 1990 Building Control Act and various building regulations, are examined. The roles played by various actors in the market, including insurance companies, building societies and banks, valuers/estate agents, local authorities and traditional house builders, are outlined. The beneficial aspects of using timber frame, including energy efficiency, speed of construction, and the environmental merits of using a renewable resource are identified. Recent developments in timber frame technology are examined. Future prospects for timber frame housing in Ireland and Great Britain are discussed.

**Page**

vi, 100 p

**Location**

Library, College of Technology, Bolton Street, Dublin 1.

**Notes**

Available. ( Thesis submitted for award of Degree of Bachelor of Science (Surveying), Trinity College, Dublin)

**Thesis**

B.Sc. Thesis, TCD

---

**Number**

1102

**Author**

Kingston Peter G.

**Title**

Inefficiency in the supply of Irish timber to the construction industry.

**Place**

Dublin

**Date**

1987

**Key Word**

timber supply, construction timber, timber industry, forest products, timber processing

**Abstract**

This study examines the expansion and modernisation of the Irish timber industry and the likely effects on the quality and supply of indigenous softwood to the construction industry. The problems which lead to the inefficiencies in the timber industry are identified and possible solutions to these problems are proposed. The current state of the industry is assessed, and a number of problems caused by current government sales policy are identified. The main problems arise from the lack of advance information of yields from forests which would allow the sawmillers to operate more efficiently and plan their operating schedules. Overcoming prejudice against native timber will permit the construction market to become more open and will enable an efficient supply of quality home-produced timber through to the consumer.

**Page**

65 p

**Location**

Library, College of Technology, Bolton Street, Dublin 1.

**Notes**

Available. (Thesis submitted for award of Degree of Bachelor of Science, Trinity College Dublin)

**Thesis**

B.Sc. Thesis, TCD

---

**Number**

1103

**Author**

Gaffney Chris

**Title**

The Irish timber industry.

**Place**

Dublin

**Date**

1982

**Key Word**

forestry history, forestry policy, timber imports sawmilling industry, timber processing, forest products

**Abstract**

The current state of the global timber market is summarised, and the regions with large reserves or deficits of timber are identified. The development and present state of the Irish forest estate is examined. The land acquisition and tree planting policies pursued by the Department of Fisheries and Forestry are assessed. The pattern of consumption in Ireland's timber-using industries is described. The consumers that use mainly native timber, and the areas where it may be possible to substitute Irish native for imported timber are identified. The state of the Irish saw-milling industry is assessed, and the improvements which must be made if it is to survive and develop into a successful industry are identified.

**Page**

iv, 59 p

**Location**

Library, College of Technology, Bolton Street, Dublin 1.

**Notes**

Available. (A thesis submitted for award of the Degree B.Sc., Trinity College, Dublin)

**Thesis**

B.Sc. Thesis, TCD

---

**Number**

1104

**Author**

Nolan Peter

**Title**

Timber frame housing versus traditional construction: a comparative cost analysis.

**Place**

Dublin

**Date**

1983

**Key Word**

timber frame construction, timber conversion, timber end use, forest products, timber processing

**Abstract**

The development of timber frame building construction is described and the techniques involved are compared with those used in traditional buildings. The various elements in costing timber frame constructions, including choice of supplier, speed of erection, wastage and sub-structure are examined. Other issues discussed include fire resistance, energy efficiency, the attitudes of insurance companies and building societies, and public perception of this type of housing. It is concluded that timber frame houses with a good quality finish can be built more cheaply than traditional houses and enjoy a similar life expectancy.

**Page**

95 p

**Location**

Library, College of Technology, Bolton street, Dublin 1.

**Notes**

Available. Thesis submitted for the award of the Degree of Bachelor of Science (Surveying), Trinity College

Dublin)  
**Thesis**  
B.Sc. Thesis, TCD

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**Number**

1105

**Author**

Rossiter James

**Title**

The joinery industry in Ireland.

**Place**

Dublin

**Date**

1981

**Key Word**

timber end use, timber conversion, joinery industry, timber processing, forest products

**Abstract**

A general account of the joinery industry in Ireland is provided. The extent to which home-grown timber is used in these industries, and the current state of the home timber market is examined. Various aspects of the industry, including plant technology, employment, design, quality of finish, sources of supplies of joinery products, and taxation are discussed.

**Page**

70 p

**Location**

Library, College of Technology, Bolton Street, Dublin 1.

**Notes**

Available. (Thesis submitted for award of Diploma in Construction Economics at the Dublin Institute of Technology, Bolton Street)

**Thesis**

Dip. Const. Econ. Thesis, DIT

---

**Number**

1106

**Author**

Duffy Declan L.

**Title**

An investigation into the use of home-grown Sitka spruce in composite space-joint construction.

**Place**

Dublin

**Date**

1985

**Key Word**

Sitka spruce, Picea sitchensis, construction timber, timber end use, timber conversion, engineering, space joists, timber strength, timber standards, timber mechanics

**Abstract**

This study examines the use of home-grown Sitka spruce in composite space-joint construction. The deflection behaviour of space-joints is investigated, and the part played by the factors contributing to it, namely axial strain of the joint members and nail slip of the mechanical joints, is determined. The performance of home-grown Sitka spruce in the fabrication of space-joints is assessed. From the results of a number of tests, it is concluded that deflection due to nail slip accounted for, approximately, 33% of the over-all deflection. The allowable deflection of space-joints of 0.003 span, as recommended in CP 112, was exceeded by approximately 35%, on average, in five out of six tests. In three of the space-joints tested, timber failure occurred at 2.5, 3.8 and 3.45 times the working load, respectively. There is concern that space-joint thickness may have to be confined to a maximum of 72 mm to facilitate ease of fabrication in using Irish Sitka spruce.

**Page**

viii, 152 p

**Location**

Library, College of Technology, Bolton Street, Dublin 1.

**Notes**

Available. (Thesis submitted for the award of Degree of Bachelor of Science at Trinity College Dublin)

**Thesis**

B.Sc. Thesis, TCD

---

**Number**

1107

**Author**

Keane Michael

**Title**

The response of pole-stage lodgepole pine (*Pinus contorta* Dougl.) crops to fertiliser application.

**Place**

Dublin

**Date**

1979

**Key Word**

lodgepole pine, *Pinus contorta*, fertilisers, exotic conifer, fertilisation, site amelioration, forest mensuration, regression analysis, covariance

**Abstract**

The purpose of the investigation was to examine the response of pole-stage, coastal lodgepole pine (*Pinus contorta* Dougl.) to various fertiliser levels and combinations. The fertiliser experiment established in 1973 by the Forest and Wildlife Service at Ballyhoura Forest, Co. Cork, is described. The experiment uses a central composite rotatable design with five levels each of N,P and K fertiliser. Assessment of basal area, carried out annually from 1973 to 1978 were not found, however, to be significant. This study examines the possibility of volume response in the crop. Two hundred trees were felled and sectioned and diameter readings taken. Volumes/plot were computed for 1972 and 1977 and, from these, the increments/plot were calculated. The analysis of data was carried out using the standard method for the central composite rotatable design. However, none of the regression equations showed significance. On the introduction of co-variance, however, certain variables in the regression gave significant t-values. A management criterion for significance was then introduced and the 'significant' variables were found to be P,P2 and NP. The completed response surface for the experiment is shown.

**Page**

92 p

**Location**

Coillte library

**Notes**

Available. (Thesis submitted for award of M.Agr.Sc. UCD)

**Thesis**

M.Agr.Sc. Thesis, UCD

---

**Number**

1108

**Author**

Gilligan Aidan

**Title**

An investigation into the suitability of Leitrim soils for tree stabilisation.

**Place**

Galway

**Date**

1988

**Key Word**

tree stability, windthrow, forest soils, peatland forestry, shear vane test, cyclic loading test, fall cone test, soil

mechanics, peatlands

**Abstract**

The objective of this study was to determine the ability of certain soils to resist windthrow. The soils were classified by means of a series of tests. The natural moisture content, liquid limit, plastic limit and linear shrinkage of the soil was determined. The calculation of shear strength was accomplished by means of in-situ shear vane testing and in the laboratory by means of the fall cone. These values can be compared with results from cyclic loading tests. Cyclic tests extend and compress a soil sample and mimic field conditions more precisely where the trees sway to and fro exerting tensile and compressive forces on the soil. In this test the cyclic loading test yielded the greatest result because moisture content of the sample (436%) was approximately 100% lower than in the case of the in-situ vane test (517%). Thus, due to loss of moisture, the cyclic loading test would probably yield greater results than it should. It has been hypothesised that peaty soils are more elastic than other soils but no definite conclusions have been established as to why trees on peaty soils are less susceptible to windthrow than on other soils.

**Page**

100 p

**Location**

Coillte library

**Notes**

Available . (A thesis submitted for the award of the Degree of Bachelor of Engineering, UCG.)

**Thesis**

B.Eng. Thesis, UCG

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**Number**

1109

**Author**

Anon

**Title**

Coillte's sawmills - a success story.

**Place**

Birr

**Date**

1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 2

**Key Word**

forest products, timber industries, Coillte Teoranta sawmills, sawmilling, value added product, timber processing

**Abstract**

This article deals with the acquisition by Coillte Teoranta of two old estate saw-mills, one at Cong, County Mayo and the other at Dundrum, County Tipperary in 1989. The up-dating of both mills' technology and their overall modernisation is described. Each mill has one manager and ten workers. Sawn timber production at Cong is 4,000 cubic metres from the 8,000 cubic metres of round-wood taken in each year. The total production in Dundrum is based on the added-value and niche marketing using Irish-grown timber only. One of the specialities of this mill is the sawn, structural timber and machined timber.

**Page**

pp 14 - 15

**Location**

Coillte library

**Notes**

Available.

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**Number**

1110

**Author**

McGhie John

**Title**

Northern Ireland's squirrels : better red than dead ?

**Place**

Birr

**Date**

1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 2

**Key Word**

grey squirrel, *Sciurus carolinensis*, red squirrel, *Sciurus vulgaris*, forest protection, forest pests, forest fauna, wildlife conservation

**Abstract**

This article examines the various measures used to control grey squirrels, since their first recorded sighting in the north of Ireland in 1945. The reasons for control include broadleaf tree protection, and red squirrel conservation. It is recommended that woodland owners should be encouraged to adopt control methods where necessary. Warfarin should not be considered as a control method and efforts should be directed at improving alternatives. Various conservation measures for red squirrels are outlined.

**Page**

18p

**Location**

Coillte library

**Notes**

Available. (John McGhie is wildlife management officer at the Department of Agriculture for Northern Ireland's Forest Service)

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**Number**

1111

**Author**

Graham Eric

**Title**

An investigation of the performance of medite in timber box beam construction.

**Place**

Dublin

**Date**

1988

**Key Word**

medite, plywood, forest products, timber end use, construction timber, wood technology, wood engineering, timber processing

**Abstract**

This study compares the performance of medite and plywood in a number of tests associated with timber box beam construction, including bending stress tests, bending deflection, shear deflection and the calculation of both panel and rolling shear stress. Each of three medite beams examined failed due to shear, and two plywood beams failed when subjected to bending. It was to be expected that a 400 mm-deep plywood beam used would fail bending, but it was hoped that the 500 mm-deep ply-wood beam would fail in shear only. The most interesting aspect of the comparison between medite and plywood beams was the relevant displacement of equivalent beams under identical loading conditions. The performance of the medite beams was quite good considering webs of only 6 mm thickness were used. A further advantage of medite is its low cost compared with ply-wood. However, the performance of the medite under long-term loading and in a wet environment needs to be examined.

**Page**

79 p

**Location**

Library, College of Technology, Bolton Street, Dublin 1.

**Notes**

Available. (Thesis submitted for award of Diploma in Structural Economics at the College of Technology, Bolton Street)

**Thesis**

Dip. Struc. Econ. Thesis, Bolton St.

---

**Number**

1112

**Author**

Phillips Declan

**Title**

Investigation of stress distribution in Irish grown softwoods using photoelectric analysis.

**Place**

Dublin

**Date**

1989

**Key Word**

timber mechanics, timber strength, timber adhesives, timber stress analysis, photoelastic stress analysis, forest products, timber processing

**Abstract**

This study examines the various factors which affect the strength properties of timber. Among the issues examined are photo-elastic stress analysis, fabrication and the use of adhesives. A number of experimental procedures which examine sawing, drilling, surface preparation of timber, adhesive preparation and bending procedures, are described.

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**Location**

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**Notes**

Available. (Thesis submitted for award of Diploma in Structural Engineering, at D.I.T., Bolton St.)

**Thesis**

Dip. Str. Eng. Thesis, Bolton St.

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**Number**

1113

**Author**

Sheil Michael

**Title**

An investigation of the strength of two types of pin-jointed connections for jointing home grown Sitka spruce roundwood forest thinnings.

**Place**

Dublin

**Date**

1989

**Key Word**

construction timber, thinnings, timber end use, Sitka spruce, timber strength, structural timber, timber joints, forest products, wood technology, wood engineering, Picea sitchensis, thinning

**Abstract**

One of the difficulties involved in using forest thinnings in the manufacture of building materials is in making a durable and strong joint. The use of two types of joints, the Buro Happold joint and the Delft joint, has helped to achieve some success in developing the full strength of the members and inhibiting splitting of the member ends. Results from tests for both types of joints tested are presented. Glued and bolted joints are also examined. The various factors affecting timber strength, and the fabrication and testing of glued joints and bolted joints are discussed.

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**Thesis**

B.Sc. Thesis, TCD

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**Number**

1114

**Author**

Cagney Roger

**Title**

An investigation into spans and deflections of roof trusses fabricated with home grown timber.

**Place**

Dublin

**Date**

1981

**Key Word**

construction timber, timber end use, timber conversion, Sitka spruce, Picea sitchensis, stress grading, timber strength, roof truss, wood technology, forest products, timber processing

**Abstract**

The trusses used in this study were of home-grown, stress-graded Sitka spruce and were designed using a rigorous plastic analysis in accordance with C.P. 112 and Irish standard for roof truss design, I.S. 193p (Provisional). The objectives of the investigation were to examine a truss for deflection at the maximum allowable span for Irish timber, and to examine a truss of increased span for deflection using the same timber. The results obtained show that the observed deflections of the strut nodes and centre of the ceiling tie were less than predicted in both the 7.6 m and 8.3 m spans employed. This shows that the method of design used gives a safe structure. It would appear that the grading stresses of Irish Sitka spruce are generally on the low side. Tests were 24-hour deflection tests with 150% working loads. It is recommended that the stress grades and spans for Irish Sitka spruce could be increased for the fabrication of roof trusses.

**Page**

80 p

**Location**

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Available. (Thesis submitted for award of B.Sc., Trinity College Dublin)

**Thesis**

B.Sc. Thesis, TCD

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**Number**

1115

**Author**

Geoghegan Dominic

**Title**

An investigation of the performance of mechanical joints in Irish Sitka spruce.

**Place**

Dublin

**Date**

1988

**Key Word**

Sitka spruce, Picea sitchensis, construction timber, timber strength, forest products, timber processing, nails, bolts, joints, lateral loading, wood technology

**Abstract**

The performance of mechanical, nailed, bolted and connected joints are compared. The procedure for lateral loading of fasteners, test requirements for nails under lateral loading, and the requirements for bolts and

connectors under lateral loading are explained. The results of a number of tests on nails, bolts and connectors under lateral loading are presented and analysed.

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Dip. Str.Eng. Thesis, Bolton St.

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**Number**

1116

**Author**

O'Donovan Conor

**Title**

Assessing values of Young's modulus of Irish Sitka spruce based on deflection readings of mechanically stress graded members.

**Place**

Dublin

**Date**

1986

**Key Word**

Sitka spruce, stress grading, construction timber, timber strength, Young's modulus, timber E value, timber deflection, timber defects, timber processing, forest products, Picea sitchensis

**Abstract**

Slope of grain and knot areas are among features assessed during visual stress grading of structural timber. The procedure involved in the mechanical stress grading of timber is based on Young's modulus and deflection. The aim of this project was to compare native-grown Sitka spruce with similar, imported species. On a superficial inspection of the test specimens, it was thought that the native timber compared poorly with other imported timbers. There was a high proportion of knots and fissures and relatively few growth rings present due to rapid growth rate of Irish timber. Moisture content was not considered critical for these tests. The results for the full-size timber members tested were as follows: E mean, 9621.6 N/mm<sup>2</sup>; E min 5065.3 N/mm<sup>2</sup>. The results for the small, clear specimens used were as follows: E mean, 6778 N/mm<sup>2</sup>; E min, 3486.6 N/mm<sup>2</sup>.

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**Location**

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**Number**

1117

**Author**

Byrne Tom

**Title**

An investigation into the use of home-grown timber for glulam beams.

**Place**

Dublin

**Date**

1981

**Key Word**

timber conversion, glulam timber, timber adhesives, construction timber, timber end use, timber

processing, forest products

**Abstract**

At present there is a deficiency in timber beams which can span in the 7.0m to 12.0m range, below 7.0m - solid timber, above 12.0m - timber lattice trusses. Glulam timber beams could easily fill such a gap in the market. Stress grading, specifications for glulam timber beams, test beam fabrication and the use of timber adhesives are described. The topics of load strain characteristic, failure modes, load deflection curve and the various test procedures used to examine hardness, planing, jointing, gluability, durability and fire rating are examined. The suitability of timbers for laminating, grading, pre-cambering and fabrication are discussed, and the various uses for glulam timber are outlined.

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106 p

**Location**

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Available (A thesis submitted for the award of the Degree of B. Sc. (Structural Engineering), Trinity College, Dublin)

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**Number**

1118

**Author**

McFadden Simon

**Title**

Double tapered glulam beams.

**Place**

Dublin

**Date**

1995

**Key Word**

glulam timber, timber conversion, construction timber, timber technology, timber processing, forest products

**Abstract**

In this study four straight, soffited tapered beams were tested, incorporating different load systems, to failure. The results obtained were compared to those predicted using two theoretical analyses - an approximation recommended for design, and a finite element analysis. It was found that the theoretical analysis underestimated the actual stresses. The finite element method seems to have the capability of estimating the stresses accurately, if all the required constants are known with confidence. Checks for radial stress did not estimate the actual radial tension which occurred in one beam and, in the case of another, the check over-estimated the actual value. This latter beam split in mid-span as a result of radial tension due to a defective glue-line. It was predicted that the bending stresses at the critical section would be shown to be greater than the bending stresses at mid-span, and this was confirmed in the test.

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**Number**

1119

**Author**

Moran Edward J.

**Title**

An investigation of the use of Irish timber for a box section beam.

**Place**

Dublin

**Date**

1983

**Key Word**

construction timber, timber processing, timber beams, chipboard, Sitka spruce, Picea sitchensis, stress grading, glue laminated beams, plywood

**Abstract**

The development and structure of the Irish timber industry, and its impact on the economy is described. The properties of a number of Irish timber products, including chipboard and box-section beams are examined. Comparison are made between box-section beam and I-section & glue laminated beams, and between particle-board webs and ply-wood webs.

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**Number**

1120

**Author**

Murphy Gerard

**Title**

An investigation of the use of Irish timber for structural columns.

**Place**

Dublin

**Date**

1984

**Key Word**

structural timber, Sitka spruce, Picea sitchensis, Young's modulus, construction timber, timber properties, glued joint, timber column, timber lamination, timber processing, forest products

**Abstract**

For the purposes of this report, a series of 14 columns were tested under two types of loading: (a) axial load only, and (b) axial load and uni-axial bending. Laminated columns were compared with solid columns for each loading case. The structural performance in columns of Irish grown Sitka spruce was compared with European white-wood. Under axial load, the Irish timber performed very well. In one arrangement of laminations the axial deflection for the service load was just over 2mm. Imported timber produced a similar deflection at a considerably lower load of 17 KN. For a service load of 46.53 KN the Irish timber produced a deflection of approximately 2mm while the imported timber was a full 1mm greater at 3mm. Both solid sections were in agreement regarding deflection. A deflection of approximately 4.3mm was produced at the service load of 62 KN. This deflection is considerably greater than those of the laminated section. Solid columns performed quite well compared with glue-laminated sections. Their central deflections at service were 0.6 mm and 1.1 mm for Irish and imported timbers, respectively.

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98 p

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Library, College of Technology, Bolton Street, Dublin 1.

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Available. (Thesis submitted to the School of Engineering at the DIT, Bolton Street award of the Diploma in Structural Engineering).

**Thesis**

Dip.Str.Eng. Thesis, Bolton St.

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**Number**

1121

**Author**

Marmion Desmond

**Title**

An investigation into the use of Irish grown Sitka spruce in the fabrication of space joists.

**Place**

Dublin

**Date**

1985

**Key Word**

Sitka spruce, Picea sitchensis, stress grading, construction timber, space joist fabrication, timber strength, timber deflection, timber properties, timber processing, forest products, timber end use

**Abstract**

The aim of this research was to investigate the use of home-grown Sitka spruce in the fabrication of space-joists. The project involved the design and fabrication of space joists using Irish Sitka spruce. The first set were 5.1 m spans and were designed to grade S.S. European white-wood dry stresses. The second set were 4.8 m spans and were designed to grade M75 home-grown Sitka spruce dry stresses. In the first strength test, the splice on the bottom chord failed in tension at 1.8 times the design load. Every space-joist exceeded the 14 mm limit with regard to deflection. The space-joist performed very well during the strength tests and the Irish timber behaved very favourably. Space-joist fabrication encountered two notable problems: cracking of timber; and bad penetration of nails. These results indicate that Sitka spruce is suitable for use in this application.

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**Number**

1122

**Author**

Dunleavy Dan

**Title**

The structural use of Irish medium density fibreboard.

**Place**

Dublin

**Date**

1985

**Key Word**

medium density fibreboard, MDF, Medite, structural timber, timber products, timber end use, construction timber, timber beams, plywood, forest product, timber strength, rolling shear, timber processing

**Abstract**

The aim of this thesis was to investigate the possibility of using Irish produced medium density fibreboard as an integral component of a structural member. A number of I-beams were fabricated, using either MDF or plywood. All beams were tested to failure. The MDF beams' performance compared most favourably with those of ply-wood. The average central deflection of an MDF Beam at 30.09 KN was 6.41 mm whilst the central deflection of a plywood beam at 30.09 KN was 11.81 mm. Although the plywood beams supported a similar load before actual failure occurred, the deflection at this load was very large (20.80 mm). All three MDF beams employed failed due to rolling shear. The inference is that there may be failure in the MDF due to a factor such as a flaw in pressing or in the drying of the board.

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**Number**

1123

**Author**

Stapleton Eamonn

**Title**

Research on finger joints in glue laminated Irish Sitka spruce.

**Place**

Dublin

**Date**

1985

**Key Word**

Sitka spruce, Picea sitchensis, timber beams, finger jointing, glue lamination, glulam, timber strength, construction timber, structural timber, E value, forest products, timber processing

**Abstract**

Six beams, which contained 3 different joint arrangements, were tested using a third point loading arrangement. Deflections and strains were also recorded which resulted in 'E' values for the different joint configurations. Beam 1 failed at a knot which was in the bottom laminate, at 31.86 KN. The second failed at a knot, again in the bottom laminate, at 31.86 KN. Beam 3C (finger joint at centre) failed at the roots of the finger joints, the failure load was 31.86 KN. Beam 4C (finger joint at centre) failed similarly to 3C but at a much lower load of 26.55 KN. Beam 5T (finger joint at third point) was the strongest beam with a failure load of 44.25 KN which represents a safety factor of 3.8 using CP112 and manufacturer's efficiency. The actual failure was similar to most centre-jointed specimens. Beam 6T (Finger joint at third point) is the only one of the finger-jointed beams not to fail at a joint, but rather at a knot half-way between centre span and the finger joint. Failure occurred at a very high load of 40.71 KN which leaves a safety factor of 3.5.

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**Number**

1124

**Author**

Tucker Francis

**Title**

Flexural properties of glue-laminated Irish Sitka spruce incorporating the effect of lamination thickness.

**Place**

Dublin

**Date**

1985

**Key Word**

Sitka spruce, Picea sitchensis, timber flexural properties, timber strength, timber mechanics, glulam, glue-

lamination, modulus of elasticity, modulus of rupture, timber processing, forest products

**Abstract**

The objective of this thesis was to assess Irish Sitka spruce for possible use as a timber for the glulam industry in Ireland. The test programme was designed with consideration to CP112, increasing the number of laminations from four up to twenty. The test results are as follows; (a) the Modulus of Elasticity of Irish Sitka spruce compared well with that obtained by the Princes Risborough laboratory for British Sitka spruce. The average MOE was 6899.5 N/mm<sup>2</sup> in the Irish timber, and 8100 N/mm<sup>2</sup> in the Princes Risborough tests. (b) The Modulus of Rupture for Irish Sitka spruce was much lower than that for British Sitka spruce in the Princes Risborough study - 24.74 N/mm<sup>2</sup> as against 67 N/mm<sup>2</sup>, a difference of 63%. The MOR was greatly influenced by knots in the outer-tension laminations. Since the process of glue-lamination allows for the selective positioning, a higher grade of lamination at the outer-tension zone of the beam would allow for greater bending strengths to be attained.

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**Number**

1125

**Author**

Leahy Gerard

**Title**

An investigation into the performance of tempered hardboard webbed I-beams.

**Place**

Dublin

**Date**

1985

**Key Word**

engineering, timber conversion, forest products, tempered hardboard, webbed I-beams, timber strength, timber mechanics, structural timber, construction timber, timber end use, ply web beams, timber processing, forest products

**Abstract**

Three beams of Masonite Tempered Preswood hardboard, grade TE, and one plywood beam were strength tested. The hardboard beams failed along the glue-line between the web and the flange in rolling shear, and the ply-web beam failed in panel shear. The ply-web beam deflected considerably more than the tempered hardboard beams under load. The ply-web beam had a central deflection at failure of 18.72 mm, the beam failing at 25.67 KN. At the same load, beam 2 of the hardboard beams had a central deflection of 5.41 mm, and beam 3 had a deflection of 5.37 mm. Beam 1 failed a 22.13 KN and proved to be the weakest beam of the three.

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**Number**

1126

**Author**

McCarthy Colman

**Title**

Dynamic mechanical properties of fungally and enzymatically degraded wood.

**Place**

Limerick

**Date**

1991

**Key Word**

wood engineering, wood science, timber technology, timber decay, fungal pathogens, *Coniophora puteana*, *Phanerochaeta chrysosporium*, Scots pine, *Pinus sylvestris*, timber mechanics, timber strength, flexural analysis, shear storage modulus, timber processing, forest products

**Abstract**

The effect of *Coniophora puteana* and *Phanerochaeta chrysosporium* on the mechanical properties of Scots pine, *Pinus sylvestris* L. was examined using dynamic mechanical analysis and conventional mechanical testing methods. Measurements of shear storage modulus and both flexural modulus and strength showed larger reductions, for equivalent loss in weight, in samples exposed to the *Coniophora puteana* fungal species. There was a decline in the tensile strength of micro-sections treated with Fenton's reagent over an incubation interval of 3 days as the reagent concentration increased. At the highest concentrations of the reagent for a six-day period, dynamic mechanical analysis of the whole-wood samples indicated no alterations in modulus when compared with samples in a 4.2 pH buffer for the same period. There was an increase in modulus of samples in reagent according to flexural analysis results. Further whole-wood samples were vacuum-impregnated with 1 mg/ml of bio-amylase V solution whilst control samples were impregnated with distilled water. A comparison between samples in this enzyme and those in water showed up an initial fall in the shear storage modulus for both sets.

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**Location**

Glucksman Centre, University of Limerick.

**Notes**

Available. (Thesis submitted to the Department of Materials and Industrial Chemistry, University of Limerick, Plassey for the award of M.Sc)

**Thesis**

M.Sc. Thesis, UL

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**Number**

1127

**Author**

O'Brien Declan

**Title**

Novel extrusion techniques for wood fibre composites - engineering aspects.

**Place**

Limerick

**Date**

1992

**Key Word**

wood technology, extrusion technique, wood fibre composite, wood engineering, timber technology, wood science, twin screw extrusion, single screw extrusion, ram extrusion

**Abstract**

This study evaluated the feasibility of wood fibre profiles extrusion. The fibres used in these processes had length to diameter ratios of between 5 to 50 and lengths ranging from 0.6 mm to 3 mm. The effects of various binders based on di-phenyl methane di-isocyanate, as well as processing aids such as water, sodium ligno-sulphate and paraffin wax in amounts up to 20% by weight on processing behaviour, were examined. Wood-filled thermo-plastics using polyurethane matrices in amounts up to 40% by weight were also investigated. Extrusion systems examined included ram, single screw and twin screw configurations. It was impossible to produce wood fibre profiles by ram extrusion due to the adverse alignment of the fibres. Single screw extrusion was also unsuccessful because of poor mixing ability. The use of fibre-board formulations with binder contents of 5% to 10% were found to be incompatible with screw extrusion techniques. Twin-screw extrusion using a thermo-plastic matrix filler may be worthy of future investigation and commercialisation for interior fittings.

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**Location**

Glucksman Centre, University of Limerick

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**Thesis**

M.Eng. Thesis, UL

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**Number**

1128

**Author**

Moloney John T.

**Title**

The surface finishing of Irish Sitka spruce.

**Place**

Limerick

**Date**

1989

**Key Word**

Sitka spruce, *Picea sitchensis*, timber finish, exotic conifer, timber end use, timber product, timber conversion, import substitution, cutterblock, timber processing, forest products

**Abstract**

The principal aim of this thesis was to assess the possibility of achieving a satisfactory surface finish standard which would allow the commercial exploitation of this species for added-value applications. The performance of a new cutter-block and its effects on the surface finishes achieved of Sitka spruce test samples were assessed in a series of experiments. Samples from sixty trees representing two yield classes, 12 and 24 and two moisture content levels were used in the experiments. Multi-variable statistical analyses were carried out to analyse the relationship between wood samples, machining parameters and surface finish. The experiment clearly demonstrated the feasibility of achieving a satisfactory standard of surface finish on both yield classes. It was also established that there is a need to develop processing technology and techniques which recognise the unique characteristics of Sitka spruce growing in Irish conditions.

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**Location**

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Available. (Thesis submitted to the University of Limerick for the Degree of M.Tech.)

**Thesis**

M.Tech. Thesis, UL

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**Number**

1129

**Author**

Harrington Robert

**Title**

Degradation of selected wood components by aquatic hyphomycetes.

**Place**

Limerick

**Date**

1994

**Key Word**

timber decay, fungus, timber degradation, aquatic hyphomycetes, *A. crassa*, *V. eleodeae*, *A. splendans*, fungal pathogens

**Abstract**

Aquatic hyphomycetes are the major initial processors of stream detritus in fresh-water rivers and lakes. These fungi breakdown, or survive, at least, on foliage as well as on woody debris. This study investigates the ability of these fungi to degrade at least some of the components which make up timber. The growth and yield of selected aquatic hyphomycetes on the selected components was recorded and proof obtained that the fungi could utilise these. Some utilisation of xylanase and polygalacturonase activity was also carried out. The aquatic hyphomycetes were found to utilise all the carbon sources except lignin and they were also found to degrade wood. All three aquatic hyphomycetes involved in these trials - *A. crassa*, *V. eleodeae* and *A. splendans* - grew better on pectin than on any other one of the selected wood components. These do not cause dephenolisation of lignin but they can utilise all the other components provided. They poorly degrade crystalline cellulose and produce measurable quantities of xylanases and polygalacturonases.

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120 p

**Location**

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Available. (Thesis submitted to the Department of Industrial Bio-chemistry for award of B.Sc. at the University of Limerick)

**Thesis**

B.Sc. Thesis, UL

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**Number**

1130

**Author**

O'Grady Colum

**Title**

Effect of degradation on the dynamic and mechanical properties of wood.

**Place**

Limerick

**Date**

1994

**Key Word**

timber degradation, timber dynamic properties, mechanical properties, decay fungus, radiation, fungal decay

**Abstract**

The objectives of this project were to simulate the action of degradant fungi by the introduction of Fenton's reagent into the wood structure. It examines the use of high-energy radiation as a means of opening up the wood structure. Fenton's reagent had little effect on wood, which leads to the conclusion that this method of introducing Fenton's reagent into the wood is not satisfactory. The second objective of observing the effects of high-energy radiation on opening up the wood structure was a success, the radiation having a major effect on the mechanical properties of wood, the glass transition temperature and activation energy of the wood. It is known that the degradation process in a cellulose sample proceeds after irradiation has terminated; this after effect could be traced up to 100 days.

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**Location**

Library, University of Limerick.

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Available. (Thesis submitted for award of B.Sc., University of Limerick.)

**Thesis**

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**Number**

1131

**Author**

Coleman Thomas

**Title**

Degradation of wood and the effect on its dynamic mechanical behaviour.

**Place**

Limerick

**Date**

1993

**Key Word**

Scots pine, Pinus sylvestris, timber degradation, mechanical properties, moisture content

**Abstract**

Samples of Scot's pine were investigated under conditions of varying degrees of moisture by means of a Polymer Laboratories Dynamic Mechanical Thermal Analyser. Water acts as a plasticiser for the amorphous matrix components of the microfibril, namely lignin and hemi-cellulose, and has the effect of altering the position and magnitude of transitions observed. Fenton's reagent was used to simulate wood degradation. The micro-structural variation brought on by the reagent was detected using DMTA from changes in shear modulus and tan "d" curves. The use of dynamic mechanical properties as indicators of degradation is considered and described. The use of DMTA in the analysis of the degradation processes in wood involving Fenton's reagent has the effect of reducing the temperature at which "a" peaks occur. This is increasingly the case with increasing moisture content. The reagent has the effect of increasing the resolution of the "a"1 and "a"2 dispersions. However, the figures for shear storage modulus drop are not indicative of a trend with respect to degradation but only tend to decrease with increasing moisture content due to the plasticising effect of water on wood.

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47 p

**Location**

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Available. (Thesis submitted to the Department of Industrial Chemistry, University of Limerick for the award of B.Sc.).

**Thesis**

B.Sc. Thesis, UL

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**Number**

1132

**Author**

Cahillane John Paul

**Title**

The feasibility of using waste wood to produce items for domestic and other applications with the end grain as a feature.

**Place**

Limerick

**Date**

1994

**Key Word**

forest products, waste wood, timber products, wood technology, wood engineering, wood science, timber processing

**Abstract**

This project assesses the feasibility of using waste wood with the end-grain as a feature. It is concluded that the cost of adapting a workshop to suit the production requirements of this approach would be much too large to make this method of using waste wood viable. It could not compete against existing methods such as the production of manufactured boards. It would only be feasible if used on a small-scale where it could be produced by hand for its aesthetic value. It could be used in a similar manner to a veneer, with varying thickness to suit the application. Given support about the edges or mounted onto a backing material, such as 6mm MDF to prevent shear, it would be very suited to this application because of its resistance to abrasion.

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250 p

**Location**

Library, University of Limerick

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**Thesis**

B.Tech.Ed. Thesis, UL

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**Number**

1133

**Author**

Cross John Ridley

**Title**

The ecology and control of *Rhododendron ponticum* (L) with special reference to the Killarney National Park.

**Place**

Dublin

**Date**

1973

**Key Word**

*Rhododendron ponticum*, forest protection, Killarney national park, weed control, native oak wood, forest shrubs, forest ecosystems, herbicides, environment

**Abstract**

*Rhododendron ponticum*, an alien species introduced from Turkey, is a serious weed in woodlands and plantations throughout the islands of Ireland and Great Britain. In the Bourn-Vincent Memorial Park in the Killarney Valley, County Kerry, it has extensively intruded upon the natural communities. It is now firmly established as an under-storey shrub in the oak woods, which are of great scientific and aesthetic value. Experiments were conducted to examine the plant's growth under different light intensities in artificial environments, and the growth of young plants in field conditions was studied. The importance of winter photosynthesis is assessed. The substrates on which *Rhododendron ponticum* is found are outlined, and details of experimental work with different soils and varying soil fertility are provided. The biotic element of the environment of *Rhododendron ponticum* is explained, and the type of communities in which it occurs, on the islands of Ireland and Great Britain and in Turkey, are described. The various forms of control available are outlined and assessed, and suggestions for the prevention of regeneration and spread of the plant are made.

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215 p

**Location**

Trinity College library

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**Thesis**

Ph.D. Thesis, TCD

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**Number**

1134

**Author**

Dawson W.M., McCracken A.R.

**Title**

Effect of *Melampsora rust* on the growth and development of *Salix burjatica* 'Korso' in Northern Ireland.

**Publisher**

Paul Parey

**Place**

Hamburgh

**Date**

March/1994

**Source**

European Journal of Forest Pathology

**Volume**

Vol. 24, No. 1

**Key Word**

Melampora rust, Salix burjatica, fungicides, forest pathogens, forest protection, fungal diseases

**Abstract**

The impact of Melampora rust on the growth of Salix burjatica 'Korso' was assessed. Comparisons were made between untreated plants and those where the disease had been partially controlled using fungicides. Fungicides delayed the onset of the disease and its effect on growth. Leaf loss was reduced whilst shoot growth and dry matter yields increased. The effect of secondary organisms was also reduced resulting in lower levels of shoot death in the following season.

**Page**

pp 32 - 39

**Location**

Coillte library

**Notes**

Available

**Address of author**

Northern Ireland Horticultural and Plant Breeding Station, Loughall, Co. Armagh

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**Number**

1135

**Author**

Little Declan, Bolger Thomas

**Title**

The effects of contrasting land uses on soil properties and animal communities in brown earth soils.

**Place**

Dublin

**Date**

1995

**Source**

Biology and the Environment: Proceedings of the Royal Irish Academy.

**Volume**

Vol. 95 B, No. 3

**Key Word**

land use, soil properties, brown earths, animal communities, Norway spruce, Picea abies, ash, grasslands, soil microflora, soil fauna, , microarthropod, earthworms, soil chemistry, forest soils

**Abstract**

An investigation of contrasting land uses on brown earth soils in eastern Ireland indicated modification of physical, chemical and morphological soil properties coincident with changes in soil animal diversity and abundance. The study area consisted of three adjacent plots which had comparable histories until the early 1950's, but which were then individually planted with Norway spruce, ash and grass. Forty three years of Norway spruce monoculture increased acidity, reduced nutrient recycling, induced some mobilisation of organo-metallic complexes and reduced the number of species of earth-worms. A moder-like surface organic layer developed. Under a 44-year-old ash stand, pH and total exchangeable bases, especially Mg and K, were maintained at high values (c. 2 times greater than in the A1 horizon under pasture). High biological activity was reflected in an appreciable diversity and abundance of arthropod and earth-worm species. Amounts of Fe a and Fe p species in the A1 horizon were 2 and 10 times lower, respectively, than in the A1 horizon under Sitka spruce. Fertility of the pasture soil was maintained, as indicated by high Ca values and high biological activities. The absence of an organic surface horizon was reflected in lower organic matter and total nitrogen contents compared to the forested soils. Very low levels of Fe a and Fe p species were found in the top-soil. Bulk density was higher under pasture than under forested soils. The micro-arthropod species found in each land use reflected differences in micro-habitat conditions, especially litter quality, and earth-worm diversity was affected by alternative management practices.

**Page**

p 183 - 193

**Location**

RIA library/Department of Zoology, UCD

**Notes**

Available.

**Address of author**

Dept. of Zoology, UCD, Belfield, Dublin 4

---

**Number**

1136

**Author**

Coll Marian T., Heneghan Liam, Bolger Thomas

**Title**

Carabidae fauna in two Irish conifer stands; a comparison with those of some other European forests.

**Place**

Dublin

**Date**

1995

**Source**

Biology and Environment: Proceedings of the Royal Irish Academy

**Volume**

Vol. 95B, No. 3

**Key Word**

Carabidae, forest fauna, forest wildlife, arthropod fauna, forest ecosystems, environment

**Abstract**

The majority of forests in Ireland comprise monocultures of coniferous tree species introduced from continental Europe and North America. Along with the fact that, historically, Ireland was virtually deforested, this means that a new arthropod fauna may be presented in today's forests. In order to examine this hypothesis, the Carabidae of two Irish coniferous sites, one in county Kilkenny, the other in county Wicklow, were studied by pit-fall trapping every two weeks over a two-year period and the species composition compared with species lists for other European forests derived from the literature. Activity patterns for the most common species were similar to those found elsewhere, but TWINSPAN classification analysis placed the Irish sites in an end group, distinguished by the presence of *Agonum muelleri* and separated from the other European sites by the absence of *Carabus hortensis* and *Pterostichus oblongopunctatus*. This suggests that the fauna of the Irish forests is distinct in not having some of the generally common, large and typical woodland species. However, the majority of the species found are normally categorised as woodland associates, which demonstrates their ability to survive centuries of deforestation.

**Page**

pp 171 - 177

**Location**

Department of Zoology, UCD/RIA library

**Notes**

Available.

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**Number**

1137

**Author**

Gallagher G.J., Lynch T.J., Fitzsimons B.

**Title**

Lodgepole pine in the Republic of Ireland II. Yield and management of coastal lodgepole pine.

**Publisher**

Elsevier

**Place**

Amsterdam

**Date**

1987

**Source**

Forest Ecology and Management

**Volume**

Vol. 22

**Key Word**lodgepole pine, silviculture, yield tables, *Pinus contorta*, forestry management

**Abstract**

Coastal lodgepole pine has played a significant role in Irish forestry. Growth patterns of the species in this country diverge from those indicated in yield models elsewhere. As part of this study revised yield tables for coastal lodgepole pine were drawn up and their method of production is described. There are difficulties inherent to coastal lodgepole pine associated with the silviculture needed for optimum end-use. Management strategies for coastal lodgepole pine are outlined and economic implications are discussed.

**Page**

pp 185 - 203

**Location**

Coillte library

**Notes**

Available

**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane, Dublin 2

---

**Number**

1138

**Author**

Curry J.P., Bolger T.

**Title**

Growth, reproduction and litter and soil production by *Lumbricus terrestris* L. in reclaimed peat.

**Place**

Dublin

**Date**

1983

**Source**

Soil Biology and Biochemistry

**Volume**

Vol. 16, No. 3

**Key Word**

forest litter, *Salix aquatica*, *Lumbricus terrestris*

**Abstract**

Ninety-one percent of *Salix aquatica* cv. *gigantea* litter disappeared within 6 months from experimental cages containing *Lumbricus terrestris* L. in reclaimed peat, compared with only 28% when *L. terrestris* was absent. Litter consumption rates was 6-9 mg dry wt g<sup>-1</sup> in the field and 10-15 mg g<sup>-1</sup> fresh wt day<sup>-1</sup> in the laboratory at 15 degrees Celcius. Maximum growth rate in the field was 4 mg fresh wt g<sup>-1</sup> day<sup>-1</sup> and 4.55 mg in the laboratory. Mean gut contents were 48-23 mg dry wt g<sup>-1</sup> fresh wt over the size range 1-6 g fresh wt and gut transit time was 10 h. It was estimated that a *Lumbricus* biomass of 100 g m<sup>-2</sup> could consume 1.34 kg soil m<sup>-2</sup> yr<sup>-1</sup>.

**Page**

pp 253 - 257

**Location**

Department of Zoology, UCD

**Notes**

Available.

**Address of author**

Dept. of Zoology, UCD, Belfield, Dublin 4

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**Number**

1139

**Author**

Carnol M., Anderson J.M., Beese F., Berg M.P., Bolger T., Couteaux M.M., Dolan S., Ineson P., Raubuch M., Verhoef H.A.

**Title**

Effects of enhanced (NH<sub>4</sub>)<sub>2</sub> SO<sub>4</sub> deposition and roots on NO<sub>3</sub><sup>-</sup> and cation leaching from forest soils.

**Publisher**

Commission of the European Communities.

**Place**

Brussels

**Date**

1995

**Source**

Ecosystem manipulation experiments: Scientific approaches, experimental evidence and relevant results (Edited by Jenkins A., Ferrier R.C., Kirby C.).

**Key Word**

nitrification, pollution, cation leaching, nitrate, ammonium sulphate, leaching, soil nitrogen, forest soils, soil buffering capacity, NO<sub>3</sub><sup>-</sup>, roots and leaching

**Abstract**

This work is part of the CORE Project investigating nutrient dynamics in European coniferous forest soils, in which a framework showing the responses of forest soils to climate change and increased N deposition has been developed. The occurrence of nitrification, the "N" saturation status of the forest and the soil buffering zone are critical features of this framework. In particular, nitrification has been identified as a key process. The effects of enhanced (NH<sub>4</sub>)<sub>2</sub> SO<sub>4</sub> deposition on the soil solution chemistry of rooted and non-rooted lysimeters in six European coniferous forest soils situated across a climatic and pollution gradient.

**Page**

pp 182-183

**Location**

Department of Zoology, University College, Dublin 4.

**Notes**

Available.

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**Number**

1140

**Author**

Kreutzer Karl, Farrell Edward P., Cummins Thomas, Rothe Andreas, Huber Christian, Weiss Wendelin.

**Title**

Elemental turnover in Norway spruce stands in Bavaria and Ireland.

**Publisher**

Commission of the European Communities.

**Place**

Brussels

**Date**

1995

**Source**

Ecosystem Manipulation Experiments: Scientific Approaches, experimental evidence and relevant results (Edited by Jenkins A., Ferrier R.C., Kirby C.).

**Key Word**

Norway spruce, Picea abies, pollution, elemental turnover, seasalt effect, acidification, marine ion deposition, soil chemistry, agriculture, nitrification, environment

**Abstract**

Elemental inputs, internal fluxes and soil solution outputs of inorganic ions were compared for the period 1989-1991 in comparable stands of Norway spruce in two areas of contrasting air-pollution load and continentality. The Irish stand is at Ballyhooly, County Cork, in a region of low industrial pollution but moderate agricultural emissions (principally NH<sub>3</sub>), dominated by high inputs of marine ions (Cl<sup>-</sup>, Na<sup>+</sup>, SO<sub>4</sub><sup>2-</sup>, Mg<sup>2+</sup>, Ca<sup>2+</sup> and K<sup>+</sup>). The Bavarian stand is at Hoeglwald, near Augsburg, in a region of moderate industrial-emission deposition (SO<sub>4</sub><sup>2-</sup> and NO<sub>3</sub><sup>-</sup>), and a stronger agricultural influence (NH<sub>3</sub> deposited as NH<sub>4</sub><sup>+</sup>), and almost no maritime influence. The climates contrast in annual temperature ranges but are, otherwise, comparable. Contrasts are most marked in the activity of marine ions, while similarities have been noted in the deposition of other substances. The acidifying effects of NH<sub>4</sub><sup>+</sup> uptake and of nitrification have been quantified and the contrasting effects on soil-water output are discussed.

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pp 187 - 191

**Location**

Department of Zoology, UCD

**Notes**

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**Number**

1141

**Author**

Anderson J.M., Beese F., Berg M.P., Bolger T., Couteaux M.M., Henderson R., Ineson P., McCarthy F., Palka L., Raubuch M., Splatt P., Verhoef H.A., Willison T.

**Title**

Mechanisms of nutrient turnover in the soil compartment of forests.

**Publisher**

Elsevier Applied Science

**Place**

London

**Date**

1992

**Source**

Responses of Forest Ecosystems to Environmental Changes (Edited by Teller A, Mathy P., Jeffers J.N.R.).

**Key Word**

forest soils, soil nutrients, forest ecosystems, environment, atmospheric pollutants, soil ionic input, denitrification, soil nitrogen, acidification, nitrification, protonation, soil buffering, soil chloride, soil sulphur input, soil aluminium, soil calcium, soil magnesium

**Abstract**

The CORE Project is investigating the response of bio-geochemical processes in coniferous forest soils to changes in the amount and composition of atmospheric pollutants. A novel approach is employed for manipulating ionic inputs to soils in which lysimeters containing undisturbed soil cores are reciprocally exchanged within a network of locations in Europe with different pollution environments. Studies of the effects of N and S inputs on the soil biota, decomposition processes, N mineralisation and denitrification are also in progress. Results of the CORE Network experiment confirm that nitrification is a key process contributing to acidification and leaching of cations in forest soils. In soils buffered by exchange cations, protonation resulted in the mobilisation of Ca and Mg, while Al was mobilised in Al-buffered soils. Control soils, where the volume of throughfall was replaced by distilled water, showed a strong climatic effect on nitrification and controls, which were leached with distilled water, lost chloride at slower rates than predicted for this conservative ion. The ionic budgets for the lysimeters provide a cost effective basis for rapid assessment of the short-term response of soils to changes in N and S inputs and a database for model testing and development.

**Page**

pp 342-350

**Location**

Department of Zoology, UCD

**Notes**

Available.

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**Number**

1142

**Author**

Raubuch M., Anderson J.M., Beese F., Berg M.P., Bolger T., Couteaux M.M., Henderson R., Ineson P., McCarthy F., Palka L., Splatt P., Verhoef H.A., Willison T.

**Title**

Ionic balances of reciprocally transplanted forest soils.

**Publisher**

Commission of the European Communities

**Place**

Brussels

**Date**

1995

**Source**

Ecosystem Manipulation Experiments: Scientific approaches, experimental evidence and relevant results (Edited by Jenkins A., Ferrier R.C., Kirby C.).

**Key Word**

forest soils, soil ionic balances, soil nutrients, pollution, nitrification, marine deposition, soil nitrogen, soil potassium, soil sodium, soil anions, cations

**Abstract**

It is believed that internal processes of N turnover, such as mineralisation, nitrification and denitrification are very important for soil acidification. In this experiment, soils were reciprocally exchanged between six sites located along a pollution gradient. Each of the six sites operate seven replicate columns of each soil. The six sites were Kilkenny, Haldon, Grizedale, Fontainbleau, Wekerom and Solling. Soil solutions and through-fall were analysed for Na<sup>+</sup>, K<sup>+</sup>, Ca<sup>+</sup>, Mg<sup>+</sup>, Al<sup>+</sup>, NH<sub>4</sub><sup>+</sup>, NO<sub>3</sub><sup>-</sup>, Cl<sup>-</sup>, SO<sub>4</sub><sup>2-</sup>. All soil, except from Fontainbleau, were sources of nitrate N. These soils were sinks for NH<sub>4</sub><sup>+</sup>, but nett sources for total nitrogen. Nitrification of both input and internally-generated NH<sub>4</sub><sup>+</sup> results in an additional internal proton production in all soils and an exchange of base cations in the exchange complex in the Kilkenny and Haldon soils. The pH of soil solutions from the nitrifying soils decreased during the experiment. Calcium and magnesium loss occurred from the Haldon soil and proton balance suggest that nitrification may be reason for loss of nutrient cations. At Wekerom, high NH<sub>4</sub><sup>+</sup> inputs occurred during the course of the experiment. The proton balance indicates that the buffering capacity of Cation Exchange Buffering Soils (CEB soils) was always sufficient to neutralise the imported or generated protons. The acid soils had similar responses in polluted and non-polluted sites. The proton flux of other transplanted soils increased with increasing NO<sub>3</sub><sup>-</sup> loss but was negligible at the Fontainbleau site.

**Page**

pp 38-43

**Location**

Department of Zoology, University College, Dublin, Belfield, Dublin 4.

**Notes**

Available.

---

**Number**

1143

**Author**

Berg M.P., Anderson J.M., Beese F., Bolger T., Couteaux M.M., Henderson R., Ineson P., McCarthy F., Palka L., Raubuch M., Splatt P., Verhoef H.A., Willison T.

**Title**

Effects of temperature and air pollutants in mineral-N dynamics in reciprocally transplanted forest soils.

**Publisher**

Commission of the European Communities

**Place**

Brussels

**Date**

1995

**Source**

Ecosystem Manipulation Experiments: scientific approaches, experimental evidence and relevant results (Edited by Jenkins A., Ferrier R.C., Kirby C.).

**Key Word**

forest soils, mineral N dynamics, soil nitrogen, air pollution, pollution, soil cations, soil anions, soil sulphur, nitrate, ammonium, soil science, cation leaching, forest ecosystems, environment

**Abstract**

In this study the responses of the chemistry of European forest soils to deposition of air pollutants in through-fall are examined. A reciprocal transplant experiment, along an air pollution gradient, has been carried out. This was achieved using a transect of forest sites across Europe with differing N and S inputs in through-fall. Intact soil cores were reciprocally transported to and from each site to separate the influence of micro-climate from deposition of N and S. Sites were located at Kilkenny, Haldon, Grizedale, Fontainbleau, Wekerom and Solling. As inputs of N in all hosts was zero, differences in N dynamics in these cores must have been solely due to climatic factors at the host sites. Comparisons with the hosts showed that the trend of NO<sub>3</sub><sup>-</sup> leaching in time was comparable between sources, indicating independence of soil texture type. Forests with high precipitation events

showed reduced NO<sub>3</sub>- leaching. Comparison between measured NO<sub>3</sub>- leaching and predicted NO<sub>3</sub>- production showed temperature predicted NO<sub>3</sub>- leaching when micro-flora and transported soils had adapted to the new conditions. Associated with solution losses of NO<sub>3</sub>- are losses of cations, such as Ca<sup>2+</sup> in the non-acidified calcareous soil types and Al<sup>3+</sup> in the acidified soil types.

**Page**

pp 44 - 51

**Location**

Department of Zoology, UCD

**Notes**

Available.

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**Number**

1144

**Author**

Hodge Simon J.

**Title**

Belvoir Park Forest: case study of an existing woodland.

**Publisher**

HMSO

**Place**

London

**Series**

Handbook 11

**Date**

1995

**Source**

Creating and managing woodlands around towns (Chapter 10).

**Key Word**

urban forestry, amenity forestry, forest design, landscaping, wildlife conservation, forest management

**Abstract**

Belvoir Park Forest is a 75 ha wood-land on the southern outskirts of Belfast, attracting 300,000 visitors per annum. It is the only major woodland in the Lagan Valley Regional Park. Planting began in 1961 on the parkland of the original Belvoir Park Estate. It is owned by the Department of Agriculture for Northern Ireland and managed by the Department's Forest Service. The woodland comprises 12 ha of predominantly broadleaved, mature trees and 47 ha of mainly coniferous woodland planted between 1961 and 1981. The management plan for the estate is summarised.

**Page**

pp 160 - 171

**Location**

Coillte library

**ISBN**

0 11 710328 4

**Notes**

Available.

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**Number**

1145

**Author**

O'Hanlon Rory P., Bolger Thomas

**Title**

Biomass, growth and secondary production of *Arcitalitrus dorrieni* (Hunt) (Crustacea: Amphipoda: Talitridae) at two sites in Co. Galway, Ireland.

**Place**

Dublin

**Date**

1995

**Source**

Journal of Zoology (in print)

**Key Word**

forest fauna, crustacean, Arcitalitus dorrieni, deciduous woodland, Amphipoda, Talitridae, forest ecosystems, woodland ecology, environment

**Abstract**

Growth, podomere addition and secondary production of *Arcitalitus dorrieni* (Hunt, 1925) populations inhabiting two neighbouring woodland sites at Kylemore, Co. Galway were investigated. One site was a mixed deciduous woodland infested with *Rhododendron ponticum*, the other a pure coniferous stand of *Pinus contorta* var. *latifolia* S. wats. Seasonal changes in biomass were recorded at the two sites. In both years of the study, maximum biomass was recorded in September. Females had a higher growth rate than males, but growth rates of both males and females were higher at the mixed, deciduous site. The number of podomeres on the second antenna was correlated with the size of the animal. The average length of *A. dorrieni* at each podomere numbered appeared to change seasonally. Comparisons of mean spring values with mean summer values showed a statistically significant decrease in mean amphipod length for a given podomere number, though this was more marked at the mixed deciduous site. Annual, secondary production rates ranged from 5.06 g dry weight / square metre / year at the coniferous site to 14.55 g dry weight / square metre / year at the mixed deciduous site. P: B values ranged from 2.41 at the coniferous site to 3.01 at the mixed deciduous site. Results are compared between sites and with data from other relevant crustacean species.

**Page**

40 p

**Location**

Department of Zoology, UCD

**Notes**

Available. (Text of article submitted for publication in Journal of Zoology)

**Address of author**

Dept. of Zoology, UCD, Belfield, Dublin 4

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**Number**

1146

**Author**

Heneghan Liam, Bolger Thomas

**Title**

Effect of components 'acid rain' on the contribution of soil microarthropods to ecosystem function.

**Place**

Dublin

**Date**

1994

**Source**

Journal of Zoology (in print)

**Key Word**

forest soils, micro-arthropods, microcosm, forest ecosystems, acid rain, forest fauna, soil nitrogen, soil macronutrients, Acari, collembola, Norway spruce, *Picea abies*, ion leaching, woodland ecology

**Abstract**

This study evaluates the functional consequences of stressing micro-arthropod assemblages (Acari and Collembola) in a Norway spruce - *Picea abies* (L.) Karsten - forest soil with the chronic proton and low-level nutrient input associated with acid rain. Assemblages of micro-arthropods from the organic layer of the forest floor plots, sprayed over a four-year period with potential components of polluted rain, namely, nitric acid, sulphuric acid, ammonium sulphate, ammonium nitrate and ammonium chloride were introduced into laboratory micro-cosms which contained unpolluted litter. Assemblages from plots treated with urea and distilled water were also included to extend the range of contrasts. Leaching of ammonium-N, nitrate-N, sulphate-S, chloride, calcium, magnesium, potassium and sodium from the microcosms was measured over a ten-week period. When losses from micro-cosms containing animals from all sprayed plots were compared with losses from microcosms with undisturbed assemblages (i.e. treated with distilled water), significant differences were found for all parameters except for the leaching of sodium. The results indicate that the perturbation of the micro-arthropod assemblage, as a consequence of anthropogenic activity, may have impacts upon decomposition and the local availability of labile nutrients.

**Page**

50 p

**Location**

Department of Zoology UCD

**Notes**

Available. (Text of article submitted for publication in Journal of Zoology)

**Address of author**

Dept. of Zoology, UCD, Belfield, Dublin 4

---

**Number**

1147

**Author**

Heneghan Liam, Bolger Thomas

**Title**

Are soil micro-arthropod communities functionally redundant?

**Place**

Dublin

**Date**

1994

**Source**

Proceedings of the IX International Congress on Acarology.

**Key Word**

microarthropod, Picea abies, Picea sitchensis, Tsuga heterophylla, Norway spruce, Sitka spruce, Norway spruce, soil communities, soil nutrients,

**Abstract**

Micro-arthropods from three adjacent plots in John F. Kennedy Park, County Wexford were chosen for use for use in this investigation. The plots consisted of Picea sitchensis and Tsuga heterophylla stands and an intervening grassland dominated by Lolium perenne. Differences between the communities in species composition and the abundance of individual species were shown to be statistically significant. Significant differences between treatments were detected on at least one occasion in the production of CO<sub>2</sub>. Differences in the amounts of NH<sub>4</sub>-N and NO<sub>3</sub>-N leached were also significant. A relationship was found between both species richness (R) and NH<sub>4</sub>-N leaching (NH<sub>4</sub>-N leaching = 0.005 + 0.00067R, r<sup>2</sup>= 0.043, F= 5.25 p< 0.05). The relationship between micro-arthropod biomass and the leaching of total in-organic nitrogen (NH<sub>4</sub>-N + NO<sub>3</sub>-N) was significant at alpha= 0.01 level and was of the form: N leached= 0.05 + 0.00005 MB.

**Page**

10 p

**Location**

Department of Zoology ,UCD

**Notes**

Available. (Text of paper delivered to IX International Congress on Acarology)

**Address of author**

Dept. of Zoology, UCD, Belfield, Dublin 4

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**Number**

1148

**Author**

Irish Timber Council

**Title**

The Irish timber industry: a policy statement.

**Publisher**

Irish Timber Council.

**Place**

Dublin

**Date**

1987

**Key Word**

timber processing, forest products, tendering system, timber supply, timber processing, timber marketing, timber sales

**Abstract**

This document outlines the history of the Irish timber industry and assesses its current state. The obstacles to growth are identified as inadequate organisation and management and unreliable supplies. While the industry cannot pay competitive prices to the State for erratic supplies and quality, the State cannot improve supplies because of inadequate returns for its timber and the mills cannot afford to pay international level prices unless they increase production capacity. To resolve this difficulty, the establishment of a totally new and autonomous State-sponsored authority, which would take over the responsibilities which are currently held by the Forest and Wildlife Service, is recommended.

**Page**

21 p

**Location**

Coillte library

**Notes**

Available.

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**Number**

1149

**Author**

Bolger T., Heneghan L., McCarthy F.

**Title**

Impacts of anthropogenic atmospheric pollution on forest soil processes.

**Place**

Dublin

**Date**

1995

**Source**

Disturbance and recovery of ecological systems. (In press)

**Key Word**

soil chemistry, anthropogenic atmospheric pollution, forest ecosystems, soil acidification, soil cation leaching, ammonium deposition, nitrate deposition, nitrification, forest soils

**Abstract**

Increases in nitrogen and sulphur compounds have been largely responsible for the elevated acidity of rain in certain regions and, despite marked reductions in SO<sub>2</sub> concentrations in the atmosphere, the acid inputs to forest ecosystems, in particular, are still considerable over large areas of Europe. There is increased awareness of the roles played by NO<sub>x</sub> and NH<sub>3</sub> in acidifying forest ecosystems and causing ecosystem changes. The consequences of elevated rates of deposition of these compounds are discussed in terms of their roles in soil acidification, cation leaching and their effects on soil fauna and the processes to which the animals contribute. The particular importance of elevated levels of ammonium and nitrate deposition and of enhanced rates of nitrification are emphasised.

**Page**

15 p

**Location**

Department of Zoology, UCD

**Notes**

Available. (Submitted for publication in: Disturbance and recovery of ecological systems)

**Address of author**

Department of Zoology, University College, Dublin, Belfield, Dublin 4.

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**Number**

1150

**Author**

Elwes H.J., Henry A.H.

**Title**

The trees of Great Britain & Ireland (7 Volumes).

**Publisher**

R. & R. Clark

**Place**

Edinburgh

**Date**

1906

**Key Word**

forestry history, arboriculture, estate forestry, silviculture

**Abstract**

These books, according to the authors, give a complete account of all the trees which grow naturally or are cultivated in Great Britain or Ireland and which can be correctly described as timber trees. It does not include those which are naturally shrubs or bushes. Several specimens of over 500 species of trees are recorded, and the books contain a valuable record of the trees growing on the great estates at the turn of the century. The development of arboriculture and systematic planting of trees in the United Kingdom is described, and the manner in which large number of foreign species of trees were introduced in the eighteenth and nineteenth centuries is explained

**Location**

Coillte library

**Notes**

Available

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**Number**

1151

**Author**

Heneghan L., Bolger T.

**Title**

Core project: studies of the role of soil invertebrates in nutrient mobilisation in soil columns.

**Publisher**

Commission of the European Communities

**Place**

Brussels

**Date**

1992

**Source**

Responses of forest ecosystems to environmental changes (Edited by A. Teller, P. Mathy, J.N.R. Jeffers).

**Key Word**

soil invertebrates, Norway spruce, *Picea abies*, soil nutrients, leachate, soil chemistry, forest ecosystems, soil mesofauna, soil microflora, nutrient mobilisation, CORE Project

**Abstract**

Ten soil columns (diameter 14.4 cm, depth 30 cm) were collected from a Norway spruce stand, stored for a period at 4 degrees centigrade and then gamma-irradiated. Animals were introduced into five and holes, drilled in the soil at the level of the soil surface, allowed free movement into and out of the system. Lysimeters were then covered with plastic lids and through-fall added, pro-rata, every two weeks. Leachates were analysed for pH, NH<sub>4</sub>-N, PO<sub>4</sub>-P, SO<sub>4</sub>-S, Cl, Na, Mg, K, Ca. Carbon, nitrogen, and hydrogen concentration in lysimeter litter were determined for 13th March, 1990. Animal activity was assessed, using von Torne bait lamina strips, in September 1990 and April 1991. The visual differences observed after three months are described. The presence of animals increased the release of Na and Mg ( $p < 0.05$ ) on several dates in 1989 and 1990. The greatest differences occur in Spring and late Autumn/Winter, coinciding with peak activity of the soil meso-fauna and suggesting that the meso-fauna may be responsible for the differences. It would appear that fluxes which may be occurring in the first few centimeters of the lysimeters are being dampened by the mineral soil.

**Page**

pp 711 - 714

**Location**

Department of Zoology, UCD

**Notes**

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**Address of author**

Department of Zoology, University College, Dublin, Belfield, Dublin 4.

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**Number**

1152

**Author**

McLoughlin John

**Title**

Forestry, the future.

**Place**

Dublin

**Date**

1995

**Source**

Seeking a Partnership Towards Managing Ireland's Uplands: Proceedings of a conference held in University College Galway, 13th - 15th October 1995. (Edited by Dave Hogan and Adrian Phillips).

**Key Word**

marginal land, land use, afforestation, agriculture, State forestry, forestry development, forestry policy, environment, forest health

**Abstract**

The current state of forestry in Ireland is briefly assessed, and the contribution the industry is making to overall economic development described. The Coillte estate is compared to State forestry in other countries and several unique characteristics are identified. State forestry in Ireland is fragmented but highly productive. The estate is young, expanding rapidly and is in a healthy condition by international standards. The emphasis on coniferous species is explained and the environmental record of State managed forestry plantations is defended. Coillte's role in stimulating growth in the timber processing sector is outlined. The potential for growth is assessed, and the following factors driving this growth are identified: the demand for forest products in Europe; the reform of the Common Agricultural Policy; the conditions for growing healthy forests in Ireland; and the level of support available through the 1994-1998 Forest Operations Programme. The change of land use from agriculture to forestry is defended in economic, social and environmental terms. It is estimated that Ireland's forestry estate will eventually have a sustainable production of about 10M cubic metres per annum, a level of production which would be on a scale with the current cattle or dairy sectors.

**Page**

pp 156 - 166

**Location**

UCG library/Coillte library (copy of article)

**Notes**

Available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

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**Number**

1153

**Author**

Gillmor Desmond A.

**Title**

Afforestation in the Republic of Ireland.

**Publisher**

Belhaven Press

**Place**

London

**Date**

1993

**Source**

Afforestation: policies, planning and progress (Edited by Alexander Mather).

**Key Word**

State forestry, afforestation, forestry policy, forestry history, private forestry, environment, amenity forestry, recreational forestry, rural development, farm forestry, Forest Operational Programme

**Abstract**

Twentieth century afforestation in the Republic of Ireland has made a substantial contribution towards reversing the forest resource depletion of previous centuries, though the new forest is of a very different kind. The increasing level of afforestation has been strongly supported by the EC, and State forestry is now on a much firmer footing. Half the land in the State is marginal for agriculture, and over half of this is suitable for forestry. Ireland has a considerable comparative advantage in forestry and further major extension seems likely. One great deficiency which has characterised afforestation policy in Ireland, and which still exists, is the lack of forward planning with regard to the location of development. The development of State afforestation is examined from the Knockboy Experiment of 1890-1898 up to the Forest Operational Programme 1989-1993. The role of private afforestation in Ireland, including both estate forestry and present day farm forestry, is described.

**Page**

pp 34 - 48

**Location**

Coillte library

**ISBN**

1852932023

**Notes**

Available.

**Address of author**

Department of Geography, Trinity College, Dublin 2.

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**Number**

1154

**Author**

Wilson W. Trevor

**Title**

Trends in establishment methods on wetlands in northern Ireland.

**Publisher**

International Union of Forest Research Organizations.

**Place**

Moscow

**Date**

1980

**Source**

Proceedings of the Symposium on stand establishment techniques and technology in Moscow and Riga, 3rd - 8th September 1979: Part 2.

**Key Word**

ground preparation, site preparation, establishment methods, wetland forestry, site cultivation, ploughing, tunnel drainage, mole drains, ripping, mounding

**Abstract**

Ground preparation methods employed in afforesting wet sites in Northern Ireland in the past 30 years have proved successful in achieving quick establishment and early growth in conifers. However, evidence is now available to show that the creation of furrows and ribbons (ridges) associated with ploughing operations over this period has restricted development of stable rooting patterns. The high incidence of windthrow in relatively young plantations has prompted a critical examination to be made of traditional site preparation methods and has led to the testing of new methods in an effort to minimise wind damage risk.

**Page**

pp 483 - 488

**Location**

Coillte Library

**Notes**

Available.

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**Number**

1155

**Author**

Grogan H., Mitchell D.T.

**Title**

The mycorrhizal status of some forest sites and the propagation of ectomycorrhizal Sitka spruce seedlings in Ireland.

**Date**

1990

**Source**

Aspects of Applied Biology

**Volume**

Vol. 24

**Key Word**

mycorrhizal infection, Sitka spruce, ectomycorrhiza, propagation, *Thelephora terrestris*, inoculant fungus, *Laccaria laccata*, *Hebeloma crustuliniforme*, forest establishment, *Picea sitchensis*, seedlings

**Abstract**

Evidence from a pot experiment suggests that Sitka spruce seedlings growing in soil from first rotation sites in Ireland have a low growth rate and poor mycorrhizal infection. Examination of mycorrhizas from one first rotation site revealed features similar to those of one nursery type. Three mycorrhizal types and *Thelephora terrestris* were identified at a bare-root nursery in Ireland and 97% mycorrhizal infection occurred in Sitka spruce seedlings grown in Basomid-treated nursery soil, although there was a decline in the proportion of one of the mycorrhizal types. An inoculation trial at the nursery with eleven inoculant fungi showed that, after one year, only two (*Laccaria laccata* and one strain of *Hebeloma crustuliniforme*) were successful in forming mycorrhizas on seedlings and competing with the established nursery types. These data suggest that inoculation may be important in the establishment of Sitka spruce on first rotation sites in Ireland.

**Page**

pp 123 - 130

**Location**

Department of Botany, UCD, Belfield, Dublin 4.

**Notes**

Available.

**Address of author**

Department of Botany, UCD, Belfield, Dublin 4.

**Number**

1156

**Author**

Thompson David

**Title**

Recommended Sitka spruce origins for use in Ireland - time for change.

**Publisher**

Coillte Research &amp; Development

**Place**

Bray

**Series**

Coillte Research &amp; Development Information Note No. 12

**Date**

1994

**Key Word**

Sitka spruce, *Picea sitchensis*, seed origin, frost, seeds

**Abstract**

Sitka spruce originating from the southern part of its native range (Washington and Oregon) provide significant increases in productivity (up to one full yield class) over the conventional Queen Charlotte Islands (QCI) sources. Fears of increased spring frost susceptibility of the more southerly origins are not justified because of

an inherent lack of variation in date of bud break between different origins. Washington and Northern Oregon seed origins should be used in all but high elevation (above 300 metres) and autumn frost susceptible sites.

**Page**

2p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow

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**Number**

1157

**Author**

McElhinney C., Mitchell D.T.

**Title**

Phosphatase activity of four ectomycorrhizal fungi found in a Sitka spruce-Japanese larch plantation in Ireland.

**Date**

1993

**Source**

Mycological Research

**Volume**

Vol. 97, No. 6

**Key Word**

ectomycorrhizal fungi, mycorrhizae, Sitka spruce, *Picea sitchensis*, *Larix kaempferi*, Japanese larch, conifer mixture, *Paxillus involutus*, *Suillus grevillei*, basidiomycetes, phosphatase, pyrophosphate, phytase, mycology

**Abstract**

Ectomycorrhizal fungi (*Paxillus involutus*, *Suillus grevillei* and two un-identified basidiomycetes from excised Sitka spruce mycorrhizas) were isolated from stands of Sitka spruce either in monoculture or in mixture with Japanese larch in an Irish conifer plantation. They were grown for 35 days on modified Melin-Norkrans liquid medium containing ferric phytate as the phosphorus source. The cultures were then separated into wall-bound and membrane-bound, cytoplasmic and extracellular fractions and assayed for phosphatase. Wall-bound and membrane-bound fractions contained the most active acid phosphatase. The unidentified Basidiomycetes showed a lower substrate affinity and higher velocity of reaction than *P. involutus* and *S. grevillei*. Wall-bound and membrane-bound and cytoplasmic phosphatase activities were optimum over a broad pH range (4.0-6.0). Various methods were used to release the wall-bound phosphatase, and a high proportion (49%-88%) appeared to be tightly-held within the wall. Phosphatase released from the wall by sonication had a similar  $K_m$  to wall-bound phosphatase but  $V_{max}$  was lower. The use of a number of substrates demonstrated a high affinity for inorganic pyrophosphate and sodium B-glycerophosphate but a low phytase activity.

**Page**

pp 725-732

**Location**

Department of Botany, UCD, Belfield, Dublin 4.

**Notes**

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**Address of author**

Department of Botany, UCD, Belfield, Dublin 4.

---

**Number**

1158

**Author**

Grogan H.M., O'Neill J.J.M., Mitchell D.T.

**Title**

Mycorrhizal associations of Sitka spruce seedlings propagated in Irish tree nurseries.

**Place**

Berlin

**Date**

1994

**Source**

European Journal of Forest Pathology

**Volume**

Vol. 24

**Key Word**

Hebeloma sp., Piceirhiza guttata, Piceirhiza horti-inflata, Picea sitchensis, Sitka spruce, Thelephora terrestris, mycorrhizal association, Amphinema byssoides, forest nurseries, seedlings, propagation, tree growth, nursery practice

**Abstract**

The mycorrhizas of Sitka spruce seedlings propagated in two bare-root nurseries and one container nursery are identified and compared. In the bare-root nurseries, Piceirhiza horti-inflata was the most frequent mycorrhizal association during the first year of growth but appeared to be replaced by Hebeloma sp. And Amphinema byssoides in 2-year-old seedlings. There was a greater diversity of mycorrhizas on container-grown seedlings which included Thelephora terrestris, Hebeloma sp. And Piceirhiza guttata.

**Page**

pp 335-344

**Location**

Department of Botany, UCD, Belfield, Dublin 4.

**Notes**

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**Address of author**

Department of Botany, UCD, Belfield, Dublin 4.

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**Number**

1159

**Author**

Hughes E., Mitchell D.T.

**Title**

Utilization of sucrose by Hymenoscyphus ericae (an ericoid endomycorrhizal fungus) and ectomycorrhizal fungi.

**Date**

1995

**Source**

Mycological research

**Volume**

Vol. 99, No. 10

**Key Word**

Ectomycorrhizal fungus, Hymenoscyphus ericae, mycorrhizae, Cenococcum geophilum, Laccaria laccata, Lactarius rufus, Paxillus involutus, Thelephora terrestris, invertase, botany, mycology, sucrose utilisation

**Abstract**

Hymenoscyphus ericae utilised sucrose, whereas the ectomycorrhizal fungi either showed poor growth or responded to the presence of sucrose after a lag phase. On sucrose-containing media, fructose and glucose accumulated in the medium at the end of the linear phase of growth of H. ericae and then disappeared during the stationary phase. Dry mass of H. ericae increased with increasing concentration of both sucrose and glucose up to 2.0 g C l<sup>-1</sup>, whereas, on fructose, it increased up to 4 g C l<sup>-1</sup>. Growth of H. ericae was double on media containing both glucose and fructose at a 1:1 ratio compared with growth on either hexose alone at the same carbon concentration. Sucrose, fructose and glucose were detected in the mycelium of H. ericae, although the main soluble carbohydrates were mannitol and trehalose. Growth of ectomycorrhizal fungi (excluding Cenococcum geophilum) on sucrose depended solely on the presence of hexoses in the medium and utilisation of sucrose was poor. The use of "starter glucose" had an effect on sucrose utilisation by Laccaria laccata, Lactarius rufus (from a Ballyhoura Forest basidiocarp), Paxillus involutus (from an Avondu Forest, Co.Cork, basidiocarp) and Thelephora terrestris, but growth was still less than that on equivalent amounts of glucose. These results confirm previous studies that the majority of ectomycorrhizal associations do not utilise sucrose directly and may have to rely on apoplastic host invertase. In contrast, host invertases may not be required in the utilisation of sucrose by ericoid mycorrhizal associations.

**Page**

pp 1233-1238

**Location**

Department of Botany, UCD, Belfield, Dublin 4.

**Notes**

Available.

**Address of author**

Department of Botany, UCD, Belfield, Dublin 4.

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**Number**

1160

**Author**

McElhinney C., Mitchell D.T.

**Title**

Influence of ectomycorrhizal fungi on the response of Sitka spruce and Japanese larch to forms of phosphorus.

**Publisher**

Springer

**Place**

New York

**Date**

1995

**Source**

Mycorrhiza

**Volume**

Vol. 5, No. 6

**Key Word**

phosphate, *Paxillus involutus*, *Suillus grevillei*, basidiomycete, ectomycorrhizal fungus, Sitka spruce, *Picea sitchensis*, Japanese larch, *Larix kaempferi*, mixtures, phosphorus, Basidiomycete

**Abstract**

Ectomycorrhizal fungi (*Paxillus involutus*, *Suillus grevillei* and two unidentified basidiomycetes from excised Sitka spruce mycorrhizas) were isolated from stands of Sitka spruce both in a monoculture and in a mixture with Japanese larch. The growth of these fungi and their mycorrhizal formation in Sitka spruce and Japanese larch were examined after incubation in modified Melin-Norkrans medium containing either  $\text{KH}_2\text{PO}_4$ ,  $\text{Ca}_3(\text{PO}_4)_2$  or Fe phytate as the phosphorus (P) source. *P. involutus* and *S. grevillei* utilised all three P sources. The unidentified basidiomycetes had limited ability to utilise Fe phytate. Basidiomycete 1 had poor growth on  $\text{KH}_2\text{PO}_4$  whereas growth of basidiomycete 2 was low on  $\text{Ca}_3(\text{PO}_4)_2$ . Pure culture synthesis studies confirmed that *P. involutus* and the two basidiomycetes formed mycorrhizas with both tree species but *S. grevillei* was mycorrhizal only on Japanese larch. *P. involutus* formed more mycorrhizas in both conifers than the other fungi. Following inoculation with each of the four fungi, shoot and root dry mass of both Sitka spruce and Japanese larch seedlings was enhanced compared with un-inoculated/non-mycorrhizal controls. On the Fe phytate, *Paxillus*-inoculated Sitka spruce seedlings had the lowest primary root length and on  $\text{KH}_2\text{PO}_4$ , *Suillus*-inoculated Japanese larch had the greatest number of short roots.

**Page**

pp 409-415

**Location**

UCD. Dept. of Botany/UCD library

**Notes**

Available.

**Address of author**

Dept. of Botany, UCD, Belfield, Dublin 4

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**Number**

1161

**Author**

Sweeney M., Harmey M.A., Mitchell D.T.

**Title**

Detection and identification of *Laccaria* spp. using a repeated DNA sequence from *Laccaria proxima*.

**Place**

Dublin

**Date**

1996

**Source**

Mycological Research (in print)

**Key Word**

forest genetics, genome library, tree mycorrhizal association, *Laccaria* spp., DNA probe, ectomycorrhizal fungus, *Laccaria proxima*, UPGMA Analysis, *Hebeloma crustuliniforme*, *Paxillus involutus*, *Russula* spp., *Lactarius* spp.

**Abstract**

A repetitive 319 bp DNA probe (LpM21) has been selected and cloned from the genomic library of an isolate of the ectomycorrhizal fungus *Laccaria proxima*. This probe hybridises strongly with digested DNAs of all isolates of *Laccaria* spp. (except *L. tortilis*) and shows unique RFLP patterns in all isolates tested. The probe discriminates between the genus *Laccaria* and other ectomycorrhizal fungi as it does not hybridise with DNA of isolates of *Hebeloma crustuliniforme*, *Paxillus involutus*, *Lactarius* sp. and *Russula* species. UPGMA analysis of a similarity coefficient matrix of EcoR I-digested DNA of 12 isolates of *Laccaria* spp. hybridised with the probe has revealed two distinct clusters with one divided into several sub-clusters. This cluster analysis has grouped the isolates of *Laccaria* spp. according to the general taxonomy of this genus. The probe can be used to further our understanding of the population dynamics of ectomycorrhizal associations of trees.

**Page**

17 p

**Location**

Department of Botany, UCD

**Notes**

Available. (Text of article submitted for publication in *Mycological Record*)

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**Number**

1162

**Author**

O'Neill C.

**Title**

An evaluation of in vitro methods for the production of ectomycorrhizal fungal inoculum.

**Place**

Dublin

**Date**

1995

**Key Word**

Ectomycorrhizal fungus, forest nurseries, mycorrhizae, *Hebeloma crustuliniforme*, Sitka spruce, *Picea sitchensis*, Melin-Norkrans medium, propagation, in vitro fertilisation

**Abstract**

This study evaluates in vitro methods of producing mycelium of the ectomycorrhizal fungus *Hebeloma crustuliniforme* S166, a strain which readily forms mycorrhizas on Sitka spruce in Irish tree nurseries. Using casein hydrolysate as the sole nitrogen source, it was shown that the final growth yield was proportional to the initial concentration of casein hydrolysate in a Melin-Norkrans (MMN) medium after a seven week culture period. Growth, nutrient up-take and culture morphology were compared at different culture volumes in uniform volume bottles. There was no relation between the utilisation of either glucose or amino-N and the final growth yield (dry weight) of the fungus at the highest culture volumes. The morphology of the mycelium was examined in the different culture regimes, stationary, shaken and air-lift. The degree of agitation affected the morphology of the fungus ranging from a tight pellet to a dispersed mycelium. Microscopic examination showed that the highest frequency of clamp connections and number of branches (400 microns from hyphal tip) was observed in shaken and air-lifted cultures. Mycelium of *H. crustuliniforme* was immobilised in alginate beads and grown on both stationary and shaken cultures in order to examine the efficiency as a suitable carrier for in situ inoculation of tree seedlings. It was shown that *H. crustuliniforme* immobilised in alginate beads can grow and form mycorrhizas in Sitka spruce seedlings.

**Page**

189 p

**Location**

Department of Botany, UCD

**Notes**

Available. (Thesis submitted to the Department of Botany, UCD, for the award of the Degree of Philosophiae Doctor)

**Thesis**

Ph.D. Thesis, UCD

---

**Number**

1163

**Author**

Grogan H.

**Title**

Inoculant and naturally-occurring ectomycorrhizal associations of Sitka spruce in Irish conifer nurseries.

**Place**

Dublin

**Date**

1993

**Key Word**

Sitka spruce, *Picea sitchensis*, ectomycorrhiza, forest nurseries, nursery practice, mycorrhizae, rooting, *Amphinema byssoides*, *Thelephora terrestris*, *Piceirhiza guttata*

**Abstract**

A pot experiment using soil from six forest sites indicated that Sitka spruce seedlings grown in first rotation developed few mycorrhizas. Aseptic inoculation indicated that three of eight fungal isolates tested, *Laccaria laccata* (S238A), *L. bicolor* (4) and *Hebeloma crustuliniforme* (S116), formed abundant mycorrhizas with Sitka spruce seedlings. Both *Laccaria* species significantly increased shoot dry-mass compared to uninoculated controls. *L. tortilis* produced the tallest and heaviest seedlings overall, without forming mycorrhizas. In both bare-root and container nurseries, control seedlings and those from unsuccessful inoculum treatments developed abundant naturally-occurring mycorrhizas. Five types were identified: a *Humaria* type, a *Hebeloma* type, *Amphinema byssoides*, *Thelephora terrestris* and *Piceirhiza guttata*. The *Humaria*-type dominated in the bare-root nursery in the first year, colonising 57% of short roots. Its frequency decreased in the second year to 33% while mycorrhizas of *Hebeloma* type, *A. bissoides* and *T. terrestris* increased in frequency. In the container nursery, *Hebeloma* mycorrhizas and *T. terrestris* were generally the most common and *Piceirhiza guttata* was common on many short shoots. *Humaria*-type mycorrhizas were infrequent. *Laccaria laccata*, *L. bicolor* and *H. crustuliniforme* successfully competed with naturally-occurring mycorrhizal fungi under standard nursery conditions.

**Page**

xii, 197 p

**Location**

Department of Botany, UCD, Belfield, Dublin 4.

**Notes**

Available. (Thesis submitted to the Department of Botany, UCD for the award of the Degree of Philosophiae Doctor)

**Thesis**

Ph.D. Thesis, UCD

---

**Number**

1164

**Author**

Hughes E.M.

**Title**

Sucrose utilisation and invertase activities of mycorrhizal systems.

**Place**

Dublin

**Date**

1993

**Key Word**

mycorrhizas, sucrose utilisation, roots, *Paxillus involutus*, *Hymenoscyphus ericae*, *Cenococcum geophilum*, *Thelephora terrestris*, Sitka spruce mycorrhizae, *Picea sitchensis*, *Hebeloma crustuliniforme*, *Laccaria laccata*, *Lactarius rufus*, mycorrhizal systems

**Abstract**

Utilisation of sucrose and glucose by eight ectomycorrhizal fungi was studied using solid and liquid media of initial pH 6.2-6.3. Only three species, *T. terrestris*, Sitka spruce isolate 2 and *Cenococcum geophilum* utilised sucrose. The endomycorrhizal fungus, *Hymenoscyphus ericae* was grown on media containing both glucose and fructose at a 1:1 ratio. Gas liquid chromatography of the growth media revealed sucrose hydrolysis to glucose and fructose. Both acid and alkaline invertases were detected in the soluble and insoluble mycelial fractions but the extra-cellular activity was predominantly acid. High acid and alkaline activities were found in the insoluble mycelial fractions of *H. ericae*. The  $K_m$  values for sucrose of the extra-cellular (9.1 mM), soluble (11.5 mM) and solubilised (5.3 mM) acid enzymes and the alkaline insoluble (20.4 mM) invertases were similar but that of the soluble, alkaline (139 mM) enzyme was higher. The  $V_{max}$  values of the different enzymes ranged from 50 to 172 microns glucose g<sup>-1</sup> dry mass h<sup>-1</sup> but the insoluble acid invertase had the greatest activity with a  $V_{max}$  of 406 microns glucose g<sup>-1</sup> dry mass h<sup>-1</sup>. The soluble alkaline invertase was completely inhibited, at pH (9.0), by 0.15M fructose but the invertase showed competitive inhibition. Increased acid invertase activity was demonstrated in mycorrhizal compared with non-mycorrhizal roots of Sitka spruce and cranberry. The results indicate that *P. involutus* and *H. ericae* may obtain carbon from their hosts in a similar manner.

**Page**

xii, 238 p

**Location**

Department of Botany, UCD

**Notes**

Available. (Thesis submitted for award of Philosophiae Doctor Department of Botany, University College, Dublin)

**Thesis**

Ph.D. Thesis, UCD

---

**Number**

1165

**Author**

McElhinney C.

**Title**

An evaluation of in vitro methods for the production of ectomycorrhizal fungus inoculum.

**Place**

Dublin

**Date**

1995

**Key Word**

*Larix kaempferi*, ectomycorrhizal fungi, Sitka spruce, *Picea sitchensis*, mycorrhizae, Japanese larch, forest phosphorus, soil nutrients, *Paxillus involutus*, *Suillus grevillei*, conifer mixture, *Amphinema byssoides*, in vitro production, , tree growth, soil chemistry, seedlings

**Abstract**

The P nutrition of two fungi, isolates 1 and 2, from spruce mycorrhizas grown in monoculture at Avondhu forest, Co. Cork was compared with that of two ectomycorrhizal fungi, *Paxillus involutus* and *Suillus grevillei*, cultured from basidiocarps collected from an adjacent mixed stand of Sitka spruce/Japanese larch. *P. involutus* and isolate 1 and 2 formed mycorrhizas with both tree species, but *S. grevillei* was mycorrhizal only on Japanese larch. The spruce isolates produced identical mycorrhizas on seedlings of both conifers which were similar to mycorrhizas formed by *Amphinema byssoides*. *Paxillus involutus* formed significantly more mycorrhizas on the roots of both conifers than the other three fungi. Inoculated seedlings had greater root and shoot dry-masses than controls. Mycorrhizal infection also increased tap root length and stimulated the production of short roots. There was no significant improvement in Sitka spruce growth in the presence of larch which was mycorrhizal with *S. grevillei*. Sitka spruce seedling in monoculture and mixture has increased tap root length, when the phosphorus source in the medium was ferric phytate. The four ectomycorrhizal fungi were shown to be able to utilise potassium, calcium and sodium phosphate, when each of these was supplied as a

source of P. Growth of all fungi was reduced on aluminium phytate. They were also shown to possess acid phosphatase in cytoplasmic, extra-cellular and wall/membrane-bound fractions. When the fungi were grown on media containing calcium, potassium and sodium phosphate and aluminium and sodium phytate as P sources, greater numbers of polyphosphate granules were formed per hyphal length in *P. involutus* and *S. grevillei* than in the two Sitka spruce isolates.

**Page**

x. 119 p

**Location**

Department of Botany, UCD

**Notes**

Available. (Thesis submitted to the Dept. of Botany, UCD, for award of Master of Science)

**Thesis**

M.Sc. Thesis, UCD

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**Number**

1166

**Author**

McElhinney Carole, Mitchell Derek T.

**Title**

Acid phosphatase of ectomycorrhizal fungi of Irish conifers.

**Place**

Sheffield

**Date**

1991

**Source**

Third European Symposium on Mycorrhizas, Sheffield, England.

**Key Word**

ectomycorrhizal fungus, mycorrhizae, Sitka spruce, Japanese larch, *Paxillus involutus*, *Suillus grevillei*, *Picea sitchensis*, phosphatase enzymes, roots

**Abstract**

Phosphatase enzymes are associated with the break-down of complex phosphorus sources into assimilated forms. Phosphatase of two symbionts isolated from Sitka spruce mycorrhizas were compared with two mycorrhizal fungi (*Paxillus involutus* and *Suillus grevillei*) cultured from basidiocarps found beneath a mixed stand of Sitka spruce and Japanese larch. The fungi were grown on modified Melin-Norkrans liquid medium containing ferric phytate, separated into cytoplasmic, extra-cellular and wall/membrane-bound fractions and assayed for acid phosphatase. All the fractions, with three exceptions, hydrolysed p-nitrophenol phosphate (PNPP) optimally at pH 4.4 - 5.6. The membrane-bound fraction of isolate 1 and the cytoplasmic fraction of both Sitka spruce isolates had an optimum pH of between 5.4 - 5.6. In all fungi, the most active enzyme was the wall-bound, which was very resistant to release by NaCl, sonication and wall-degrading enzymes (chitinase and laminarinase). The Michaelis-Menten characteristics of the wall-bound fraction showed variation between the four fungi, with Sitka spruce isolate 1 having the highest Km value. A wide substrate specificity was demonstrated for all fungi with pyrophosphate and sodium glycerophosphate being most efficiently hydrolysed with sodium phytate having a low rate of hydrolysis. These studies provide more evidence of the role of ectomycorrhizal fungi in the utilisation of organic P substrates in the soil.

**Location**

Department of Botany, UCD (Text of paper available)

**Notes**

Available.

**Address of author**

Dept. of Botany, UCD, Belfield, Dublin 4

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**Number**

1167

**Author**

Grogan H., Mitchell Derek T.

**Title**

Ectomycorrhizas of Sitka spruce in Irish nurseries (P).

**Place**

Dublin

**Date**

1991

**Source**

Third European Symposium on Mycorrhizas, Sheffield, England.

**Key Word**

Sitka spruce, mycorrhizae, ectomycorrhiza, forest nurseries, mycorrhizal inoculation, seedlings, roots, *Picea sitchensis*

**Abstract**

Mycorrhizal inoculation trials, using eleven fungal isolates, were carried out in two Irish nurseries (a bare-root nursery and a container nursery). In the bare-root nursery trial, all seedlings were 99% mycorrhizal with either inoculant isolates or indigenous nursery mycorrhizal types. *Hebeloma crustuliniforme* S166 was the most successful inoculant fungus, colonising 46% and 72% of the short roots after one or two years, respectively. *Laccaria laccata* S238A and *L. bicolor* KROP were less successful colonising only 8% of the short roots after two years with the indigenous mycorrhizal fungi making up the remainder. The indigenous mycorrhizal fungi were dominated by *Humaria* sp. and *Hebeloma* type. *Amphinema byssoides* and *Thelephora terrestris* occurred to a lesser degree. In the container nursery trial, seedlings were between 50% and 95% mycorrhizal and three of the mycorrhizal inoculant fungi were successful after one year. *Laccaria bicolor* KROP and *L. laccata* S238A colonised 95% and 87% of the short roots, respectively. *Hebeloma crustuliniforme* S166 colonised only 42% of the short roots with the indigenous container nursery mycoflora making up the balance. The container nursery mycorrhizas were dominated by *Hebeloma* type, *Thelephora terrestris* and *Tylospora fibrillosa*, *Amphinema byssoides* and *Humaria* sp. occurring at low frequencies. These studies indicate that only a small number of inoculant fungi compete with nursery mycorrhizal fungi under Irish conditions.

**Page**

18 p

**Location**

Department of Botany, UCD

**Notes**

Available.

**Address of author**

Department of Botany, UCD, Belfield, Dublin 4

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**Number**

1168

**Author**

Mitchell D.T., Jackson L. And Heslin M.C.

**Title**

Influence of protein-nitrogen on the growth of ectomycorrhizal Sitka spruce and its mycorrhizal symbionts.

**Place**

Guelph, Canada

**Date**

1993

**Source**

9th North American Conference on Mycorrhizae, Guelph, Canada

**Key Word**

Sitka spruce, *Picea sitchensis*, ectomycorrhiza, mycorrhizal fungi, soil nitrogen, *Paxillus involutus*, forest soils, roots

**Abstract**

Sitka spruce is Ireland's main timber crop and it suffers from nitrogen deficiency on peaty and sandstone-derived soils. Growth of Sitka spruce on these soils may be improved by their mycorrhizal associations. Mycorrhizal symbiosis of trees provides access to organic nitrogen present in forest soils. This study investigates the utilisation of nitrogen sources by three ectomycorrhizal fungi from a conifer plantation in Ireland and their ability to form mycorrhizas with Sitka spruce. The fungi were *Paxillus involutus* (Batsch) Fr. cultured from a basidiocarp and two unidentified basidiomycetes excised from Sitka spruce mycorrhizas. Both basidiomycetes had intermediate ability to utilise protein nitrogen in culture whereas *P. involutus* was shown to

be a "protein" fungus. With ammonium as the nitrogen source, all three fungi formed mycorrhizas on Sitka spruce. Formation of the mycorrhizas in the presence of bovine serum albumin was only achieved when "starter" nitrogen (glutamic acid) was added to the nutrient medium. Although proteins are utilised by some mycorrhizal fungi, they may not be suitable nitrogen sources for the development of mycorrhizas in Sitka spruce.

**Location**

Department of Botany, UCD

**Notes**

Available

**Address of author**

Department of Botany, UCD, Belfield, Dublin 4j

---

**Number**

1169

**Author**

Prince E., Mitchell D.T.

**Title**

Effects of glucose, fructose and sucrose on growth of the ectomycorrhizal fungus of *Piceirhiza horti-inflata* in culture.

**Place**

Dublin

**Date**

1996

**Source**

Irish Botanists Meeting, Trinity College Dublin, 1996

**Key Word**

ectomycorrhiza, *Piceirhiza horti-inflata*, mycorrhizae, mycorrhizal fungi, Sitka spruce, *Picea sitchensis*, sucrose utilisation

**Abstract**

The most dominant mycorrhizal type found on Sitka spruce seedlings in Irish tree nurseries is *Piceirhiza horti-inflata*. The fungus has been isolated from excised mycorrhizas. This study investigates the utilisation of fructose, glucose and sucrose by an isolate in culture. Sugar utilisation was examined using two methods i.e. mycelial extension on agar media and dry mass determinations in liquid media. When the fungus was grown on modified Melin Norkrans (MMN) agar medium containing the carbon sources at either 0.4 or 4.0 g C l<sup>-1</sup>, mycelial extension was similar at both concentrations of glucose and sucrose whereas mycelial extension on fructose was lower at 4 g C l<sup>-1</sup>. The fungus was then grown in MMN liquid media containing 0.04, 0.4, 2.0 and 4.0 g C l<sup>-1</sup> of each carbon source. Mycelia were harvested at 7, 14, 21, 28 and 35 d after inoculation and dry mass was determined. The filtrates were analysed for fructose, glucose and sucrose. Although sucrose yielded the lowest dry mass when compared with growth on glucose and fructose, dry mass on sucrose was significantly greater than on media without a carbon source. These results indicate that the fungus of *P. horti-inflata* is capable of utilising fructose, glucose and sucrose in mycorrhizal association.

**Location**

Department of Botany, UCD

**Notes**

Available. (Paper presented at at Irish Botanists's Meeting, Trinity College, 1996)

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**Number**

1170

**Author**

Heslin M.C., Blasius D., Mitchell D.T.

**Title**

Identification and influence of mycorrhizas on Sitka spruce growing in mixed stands in Ireland.

**Place**

Regensburg

**Date**

1990

**Key Word**

Sitka spruce, *Picea sitchensis* Japanese larch, *Larix kaempferi* nursing mixtures, *Paxillus involutus*, *Suillus grevillei*, mycorrhizae, mycorrhizal fungi, soil nutrients, roots

**Abstract**

Sitka spruce is the main timber crop in Ireland and pure stands on low nutrient sites suffer from a nitrogen deficiency known as "check". Growth of Sitka spruce can be enhanced if planted in association with Japanese larch and this nursing effect may be due to mycorrhizal activity. Fourteen mycorrhizal types were recorded on Sitka spruce taken from pure and mixed stands at Avondhu forest, County Cork with a greater diversity occurring in the mixed spruce/larch stand. Basidiomycetes were isolated from excised mycorrhizas of Sitka spruce. Two of these formed mycorrhizas on Sitka spruce and Japanese larch in synthesis culture. They had limited ability to utilise protein although one produced prolific growth on media containing glutamic acid as the nitrogen source. Fungal cultures were obtained from sporocarps of *Paxillus involutus* and *Suillus grevillei* from mixed stands at Avondhu Forest. Both *P. involutus* and *S. grevillei* were designated as "protein fungi", but *S. grevillei* was unable to utilise nitrate as a nitrogen source. It is concluded that the selection of mycorrhizal fungi with protelytic ability may be necessary to inoculate Sitka spruce for planting on organic soils in Ireland.

**Location**

Department of Botany, UCD (Text of paper available)

**Notes**

Available. (Text of paper given to Fourth International Mycological Congress, Regensburg, Germany)

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**Number**

1171

**Author**

McElhinney C., Mitchell D.T.

**Title**

Phosphorus nutrition of mycorrhizal fungi of Sitka spruce and Japanese larch in Ireland.

**Place**

Regensburg

**Date**

1990

**Source**

Fourth International Mycological Congress, Regensburg, Germany

**Key Word**

Sitka spruce, *Picea sitchensis*, Japanese larch, *Larix kaempferi*, mycorrhizae, phosphorus nutrition, forest fungus, forest soil, *Paxillus involutus*, *Suillus grevillei*, soil nutrients

**Abstract**

The P nutrition of two symbionts isolated from mycorrhizas of Sitka spruce grown in monoculture at Avondhu Forest (County Cork) was compared with that of two mycorrhizal fungi (*Paxillus involutus* and *Suillus grevillei*) cultured from basidiocarps from an adjacent mixed stand of Sitka spruce/Japanese larch. Pure culture synthesis studies confirmed that *P. involutus* and the two Sitka spruce isolates formed mycorrhizas with Sitka spruce and Japanese larch, but *S. grevillei* was only mycorrhizal on Japanese larch. Growth of the two Sitka spruce symbionts was limited on various complex P-sources compared with other mycorrhizal fungi. When the fungi were grown on media containing Ca, Na and K phosphate and Na and Al phytate as P sources, fewer polyphosphate (polyP) granules were observed in hyphae of the two symbionts than in *P. involutus* and *S. grevillei*. When P-starved mycelium was incubated in media containing different concentrations of orthophosphate, differences were found between the fungi in their ability to synthesise polyP. This suggests that the symbionts from Irish Sitka spruce forests have difficulty in sustaining a saprotrophic habit in infertile soils.

**Location**

Department of Botany, UCD

**Notes**

Available.

**Address of author**

Department of Botany, UCD, Belfield, Dublin 4

---

**Number**

1172

**Author**

Nieuwenhuis Maarten, Williamson Gary P.

**Title**

A national planning model for integrated harvest scheduling and timber allocation in Ireland.

**Publisher**

International Union of Forestry Research Organisations

**Place**

Helsinki

**Date**

1995

**Source**

Caring for the Forest: Research in a Changing World. Congress Report: IUFRO XX World Congress 6-12 August 1995 Tampere, Finland.

**Key Word**

harvesting, timber allocation, timber supply, timber processing, linear programming, forestry economics, planning models, harvest schedule

**Abstract**

Coillte Teoranta harvested 1.8 cubic metres of timber in 1993. By the year 2000 this annual harvest will increase to just over 2.8 million cubic metres. This projected increase in timber supply has resulted in the planned introduction of new timber and the expansion of existing ones. The increased volume of timber and the more specific requirements of the processing sector have made planning the harvesting and allocation of the timber supply in an efficient and cost effective manner impossible without the aid of some means of decision support. The current research is attempting to produce an optimal harvest schedule by making the cutting and allocation decision simultaneously. The problem has been formulated within the framework of linear programming. A hierarchical approach is used. The forest estate is divided into forest units. Management options, which are produced at local levels for each stand, are aggregated to produce forest unit management alternatives. The requirements of the processing industry are also included leading to a moderately sized corporate model. The results of the corporate level optimisation provide production targets for each forest unit. Each forest unit is then modelled separately using the targets produced from the corporate model. The existence of a detailed geographic information system database is a vital element in both the construction of the model and interpretation of the solution.

**Location**

Coillte, Bray

**Notes**

Available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co. Wicklow.

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**Number**

1173

**Author**

Cannell M.G.R., Cruickshank M.M., Mobbs D.C.

**Title**

Carbon storage and sequestration in the forests of Northern Ireland.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1996

**Source**

Forestry

**Volume**

Vol. 69, No. 2

**Key Word**

carbon storage, carbon sequestration, carbon fixing, forest biomass

**Abstract**

The rate of accumulation of carbon in forests and woodlands in Northern Ireland was estimated using the record of forest planting since 1990 and a model which calculated the flow of carbon from the atmosphere to trees, litter, soil, wood products and back to the atmosphere. It was assumed that all conifer forests had the carbon accumulation characteristics of *Picea sitchensis* and that upper and lower levels of carbon storage were calculated assuming Yield Class 16 for unthinned stands and Yield Class 14 for thinned stands. Broadleaf woodlands were assumed to have the carbon accumulation characteristics of *Fagus sylvatica*, Yield Class 6. Northern Ireland currently has about 78,700 ha of forest, 83% of which is coniferous, 77% is State-owned, mostly planted since 1945, with peak planting in the period from 1960-1975. In 1990, conifer forests contained 3-4 MtC (trees + litter) and broadleaf woodlands contained about 0.8 MtC (tree + litter + new forest soil). In 1990, conifer forests were sequestering 0.15-0.20 MtC a-1 and broadleaf woodlands about 0.025 MtC a-1. To maintain these sink sizes, new conifer forests need to be planted at 1,500-2,000 ha a-1, and new broadleaf woodland at 100-150 ha a-1 in addition to full restocking. Current carbon sequestration by northern Ireland forests represents around 6.5% - 8.2% of the total for UK forests and is greater per hectare than in Great Britain because the average forest age is younger in Northern Ireland.

**Page**

pp 155 - 165

**Location**

Coillte library

**Notes**

Available.

**Address of author**

Institute of Terrestrial Ecology, Bush Estate, Midlothian, EH26 0QB, Scotland

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**Number**

1174

**Author**

Harrington Rory

**Title**

How much do you know about Irish oak? (most important genus of broadleaf trees in the northern hemisphere).

**Place**

Birr

**Date**

May/1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 5

**Key Word**

Irish oak, pedunculate oak, *Quercus robur*, *Quercus pedunculata*, sessile oak, *Quercus petraea*, *Quercus sessiliflora*, native broadleaf trees, hardwoods, silviculture, forestry history, regeneration, broadleaved forestry, broadleaves

**Abstract**

The most suitable types of sites for native Irish oak species, sessile and pedunculate oaks, are outlined. Hybridisation among the two species is common. However, the sessile oak, *Quercus petraea*, is generally a tree of upland, less fertile soils whilst the pedunculate oak, *Quercus robur*, generally grows on sites over limestone, especially in the midlands. The history of the species in the Irish environment and the challenges involved re-establishing oak and recreating an authentic oak ecology are discussed.

**Page**

pp 14 - 15

**Location**

Coillte library

**Notes**

Available.

**Address of author**

National Parks & Wildlife Service, OPW, 98 The Quays, Waterford

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**Number**

1175

**Author**

McDonald Tom

**Title**

Pruning your trees.

**Place**

Birr

**Date**

May/1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 5

**Key Word**

pruning, silviculture, tree improvement, timber quality

**Abstract**

The benefits of pruning are outlined, and the need to improve the teaching of pruning skills with different species is emphasised. Several aspects of pruning both of both hardwoods and coniferous species are examined, and the most suitable times of the year for this operation to be carried out are identified. The registration of pruned stands is recommended.

**Page**

pp 22-23

**Location**

Coillte library

**Notes**

Available.

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**Number**

1176

**Author**

O'Sullivan Aileen

**Title**

Historical and temporary effects of fire on the native woodland vegetation of Killarney, S.W. Ireland.

**Place**

Dublin

**Date**

1991

**Key Word**

native woodlands, forest fires, forestry history, forest succession, oak, *Quercus petraea*, alder, *Alnus glutinosa*, *Sorbus aucuparia*, rowan, mountain ash, birch, *Betula pubescens*, *aquifolium*, post-glacial history, burning practices

**Abstract**

The post-glacial record of fire occurrence is examined through the analysis of pollen and charcoal preserved in small hollow sites within contemporary woodlands. Results from two woods with contrasting disturbance histories over preceding decades are compared. Tree age structure analyses in three contemporary oak-woods illustrate the dynamics of oak-wood development. The period of most active oak establishment was in the early 19th century for all three wood-land areas. Successful oak regeneration was much reduced in the latter part of the 19th century when it may have been limited by increased incidence of heath-land burning and has been virtually non-existent in the present century. The data are discussed in relation to what is known of past management from documentary evidence and from palynological data from humus deposits. The responses of fire to five tree and shrub species are described. Sessile oak, *Quercus petraea*, and *Rhododendron ponticum* show the strongest recovery; downy birch, *Betula pubescens*, and rowan, *Sorbus aucuparia*, suffered high mortality and showed poor ability to recover; holly, *Ilex aquifolium*, recovered quickly. Comparison of the stand characteristics of burned and unburned woodlands indicates that fire causes a reduction in the species diversity

of woodland stands.

**Page**

viii, 189p

**Location**

Trinity College library

**Notes**

Available. (Thesis submitted to the Trinity College, in fulfilment of the requirements for the award of Doctor of Philosophy).

**Thesis**

Ph.D. Thesis, TCD

---

**Number**

1177

**Author**

Donnelly Alison

**Title**

A comparison of epicuticular wax of *Pinus sylvestris* needles from three sites in Ireland.

**Place**

Dublin

**Date**

1993

**Key Word**

*Pinus sylvestris*, Scots pine, moisture content, needles water loss, transpiration, epicuticular needle wax, botany

**Abstract**

Three forest stands of *Pinus sylvestris* were chosen for comparison: a coastal location (Ards); an inland, upland site (Kinnitty); and an eastern upland site (Glendalough). Present year 1-year-old and 2-year-old needles were collected in December 1992 from each site. Cuticular transpiration (water loss) curves were drawn and confirmed that the rate of water loss from 1-year-old needles was faster than either 2-year-old or present year needles at all sites. An increase in water loss rate occurred at approximately 40h of the experiment. The amount of epicuticular wax was established by extraction in chloroform and revealed that there was statistically significant difference at the 95% confidence level between the amounts of extractable wax as regards year class or site. The increase in needle moisture content was measured using the angle of contact of a water droplet on the adaxial surface of the needles. Moisture content increased with the age of the needle represented by a lower contact angle on 1- or 2-year-old needles. Amorphous wax coverage was estimated using scanning electron microscopy, SEM, and was found to increase with needle age and Kinnitty showed the greatest percentage cover of amorphous wax. Algal cells were noted on needles of all ages at the Kinnitty site under SEM and appeared to affect transpiration and micro-roughness. The presence of fungal hyphae was also noted but only had a local effect on the epicuticular wax. There was a slight variation found between the sites and the findings are compared to both polluted and control sites from continental Europe.

**Page**

169p

**Location**

Trinity College library

**Notes**

Available. (Thesis submitted to Trinity College, for award of M.Sc. in Environmental Science)

**Thesis**

Ph.D. Thesis, TCD

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**Number**

1178

**Author**

Casey Angela Deirdre

**Title**

Virus elimination from rose and poplar using meristem tissue culture.

**Place**

Dublin

**Date**

1985

**Key Word**

poplar virus, forest pathogens, Populus tremula X tremuloides, Populus X euamericana c.v. Robusta, meristem tissue culture, viral pathogens, forest protection

**Abstract**

This study describes the successful production of two virus-free strains of rose cultivars by tissue culturing apical meristems < 0.5 mm diameter. Initial establishment of poplar meristems of Populus X euamericana c.v. Robusta and of Populus tremula X tremuloides was also achieved, but, after 5-10 weeks, cultures of c.v. Robusta became chlorotic and died: all attempts to prevent this failed. These problems did not occur with cultures of Populus tremula X tremuloides and proliferation of shoots occurred after 5 weeks. Poplar mosaic virus, PMV, was identified in Populus X euamericana c.v. Robusta. Nicotiana megalosiphon, an indicator plant, proved more suitable to identify the viruses present in poplar. Virus transmission from poplar to indicator and from indicator to poplar was readily obtained using 0.1M sodium phosphate with nicotine 1% w/v and PVP at pH 7.4. By maintaining inoculated plants in a shaded greenhouse with regular watering, maximum symptom development was observed after 21 days for both rose and poplar viruses. Further identification of virus presence was done using immuno-sorbent electron microscopy, ISEM. Numerous rod-shaped poplar virus particles were found in extracts from both poplar c.v. Robusta and N. megalosiphon, observable at 24,000 magnification.

**Page**

xi, 78p

**Location**

Trinity Library

**Notes**

Available. (Thesis submitted to Trinity College for award of M.Sc.)

**Thesis**

M.Sc. Thesis, TCD

---

**Number**

1179

**Author**

Grogan Helen M.

**Title**

The early decomposition of willow wood in storage.

**Place**

Dublin

**Date**

1982

**Key Word**

willow, timber storage, moisture content, wood density, timber properties, fungal infection

**Abstract**

Three-year-old and one-year-old willow wood intended for fuel was harvested at intervals from November through to March 1980/81. It was stored outdoors and chipped in May. Changes in the moisture content, in dry density and in the myco-flora were recorded after one, two, three, five and nine months of storage. There were no significant differences in either moisture content or dry density between harvests at different dates so all the data for all the harvests were pooled. Moisture content declined in two phases from 140% (o.d.w.) to 30% in Summer and rose again in the Autumn due to re-absorption. One year old wood was always significantly wetter than three year old wood except during the Summer. Dry density analyses revealed large variations in branch-wood density. Tentative trends in density losses indicate that up to 30% losses in density can occur between June and December of the year after harvesting. Three-year-old wood density losses are greater than those from one-year-old wood and the period of active decay is earlier. Those differences are interpreted in terms of the myco-flora, nutrient status, moisture content and the physical form of the two types of wood. Fungal successions on stored willow wood are described for a period not exceeding one year. The time of harvesting considerably affected the frequency and establishment of organisms colonising the wood. Causes of these differences in patterns of colonisation were (1) the change in innate host resistance with harvest time and with storage; (2) the moisture content of the wood; (3) the nitrogen status of the wood; (4) the ability of organisms to produce anti-biotic substances; (5) the length of time before the establishment of strongly competitive organisms and ; (6) the

ability to grow at low temperatures.

**Page**

135p

**Location**

Trinity library

**Notes**

Available. (Thesis submitted for award of M.Sc., Trinity College)

**Thesis**

M.Sc. Thesis, TCD

---

**Number**

1180

**Author**

Fuller B. Sheila D.

**Title**

Ancient woodland in central Ireland: does it exist?

**Place**

Dublin

**Date**

1990

**Key Word**

native woodlands, deforestation, ancient woodlands, forestry history, estate woodlands

**Abstract**

The woodlands of Ireland have been subjected to a continuous process of destruction for many centuries and very few remnants remain. Three woodlands, which were identified as having some characteristics of ancient woodland, on the central plain of Ireland were examined to determine their status because of the importance of conserving these surviving unique communities. These were Abbeyleix Woods, County Laoighis, Charleville Woods, County Offaly and St. John's Wood, County Roscommon. The three woods showed contrasting management histories. Abbeyleix and Charleville have each been owned as part of a desmesne of an aristocratic family for centuries and the woods have been managed for timber, game and amenity. St. John's Wood is remote from any large house and despite past felling of large trees, the wood contains a rich and natural herb flora. It was concluded that Abbeyleix Woods, Charleville Woods and St. John's Wood all had a record of ecological continuity and, as such, were of major importance and warranted inclusion in the list of important woods in Ireland today.

**Page**

195p

**Location**

Library, University of Dublin, Trinity College, Dublin 2.

**Notes**

Available. (Thesis submitted for the degree of Master of Science at Trinity College)

**Thesis**

M.Sc. Thesis, TCD

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**Number**

1181

**Author**

Patton Linda

**Title**

Photosynthesis and growth of willows used for short rotation forestry.

**Place**

Dublin

**Date**

1984

**Key Word**

Willow, Salix, short rotation forestry, tree growth rate, tree metabolism, plastochron index, Salix X , Aquatica

Gigantea, photosynthesis, willow

**Abstract**

Gas exchange characteristics of leaf anatomical features were examined in six cultivars of *Salix*. Leaf photosynthesis, respiration and transpiration were measured using an open circuit gas analysis system. Internal leaf structure was examined on transverse and paradermal sections to measure the ratio of exposed mesophyll cell surface area to leaf area. Photosynthesis at near light saturation was found to be highly correlated with this ratio for all six cultivars. Photosynthesis was also correlated with leaf thickness and chlorophyll concentration in all cultivars, except one. The effects of leaf age, vapour density and temperature on photosynthesis, respiration and leaf chlorophyll concentration was examined for *Salix* X "Aquatica Gigantea". The rates of photosynthesis of outdoor grown and 'growth room' grown plants were compared. A field plot of *Salix* X "Aquatica Gigantea" was established in order to measure production under natural conditions. Productivity and growth rates were measured non-destructively on four experimental trees over two growing seasons. Growth analysis formulae were applied to estimates of wood weight and leaf area. Maximum growth rates were not particularly high when compared with data from other trees although mean annual increments were high, indicating a high average growth rate over the whole length of the growing season. A mechanistic growth model, based on canopy photosynthetic rates, was constructed for *Salix* X "Aquatica Gigantea" to increment tree growth per unit ground area. The primary environmental variable driving the model were intercepted light and mean daily temperature. The model predictions were good for two-year-old trees but greatly under-estimated yield for three-year-old trees. It was suggested that this was as result of a large error in the assumed amount of assimilate distributed to the leaves early in the season.

**Page**

250p

**Location**

Trinity library

**Notes**

Available. (Thesis submitted to the Trinity College for the Degree of Doctor of Philosophy.)

**Thesis**

Ph.D. Thesis, TCD

---

**Number**

1182

**Author**

Allison James P.

**Title**

The effects of forestry on the chemistry of poorly buffered streams in Connemara.

**Place**

Dublin

**Date**

1990

**Key Word**

forest chemistry, environment, surface water acidification, forest catchment, water chemistry

**Abstract**

Thirty nine sites on afforested and un-afforested catchments in Connemara were sampled. Colour, pH, major ions, iron and aluminium were analysed using the Gran titration, absorbance, HPLC and flame, or furnace, atomic absorption, respectively. Areas of forestry were estimated using satellite images in a geographical information system. Chloride and sodium increased by an average of 23.3% and 17.3% on afforested catchments. Mean alkalinity decreased by 31.9 ueq.l<sup>-1</sup> on afforested catchments. No changes in calcium, magnesium, or sulphate on afforested catchments were noted except during increased flow, when changes of -33% and -6% for calcium and magnesium were recorded. Aluminium, iron and manganese levels positively differed by 3.5 ueq.l<sup>-1</sup> (100%), 9.6 ueq.l<sup>-1</sup> and 0.4 ueq.l<sup>-1</sup>, respectively, on afforested catchments. The pH decreased by an average of 0.68 pH units. Forestry plantations on catchments seem to increase the acidification of surface waters in Connemara. Forest growth seems to be the source of excess acids and decreased base cations. The effects of the altered water chemistry on fish and invertebrates are likely to be mitigated to a degree by high (i.e. > ueq.l<sup>-1</sup>) calcium levels and low aluminium levels.

**Page**

xii, 190p

**Location**

Library, University of Dublin, Trinity College, Dublin 2.

**Notes**

Available. (Thesis submitted for award of M.Sc. in Environmental Science Trinity College)

**Thesis**

M.Sc. Thesis, TCD

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**Number**

1183

**Author**

Iremonger Susan Felicity

**Title**

An ecological account of Irish wetland woods; with particular reference to the principal tree species.

**Place**

Dublin

**Date**

1986

**Key Word**

native woodlands, forest ecology, native hardwoods, *Alnus* sp., *Fraxinus* sp., *Betula* sp., *Salix* sp., Killarney National Park, soil water, wetland woods, *Rhododendron ponticum*, *Cervus nippon*, native broadleaves, forest soils

**Abstract**

This study investigates the response of trees to various soil water regimes, soil types and nutrient levels. The four most frequent tree species in the woods were found to be *Salix cinerea* ssp. *oleifolia* Macreight, *Alnus glutinosa* (L.) Gaertn., *Betula pubescens* Ehrh and *Fraxinus excelsior* L. Experiments were carried out on seedlings of these four species to investigate their response to different soil water regimes; to a wet-land soil and potting compost; and to added nitrogen and phosphorus. The four species showed varying degrees of tolerance to soil water-logging. The *Salix* sp. was the most tolerant, followed by *Alnus* and *Fraxinus* spp., with *Betula* sp. being the least tolerant. Both *Alnus* and *Salix* spp. grew better in a moving soil water treatment than in a stagnant one and *Salix* sp. was less adversely affected by the stagnant water treatment than was *Alnus* sp. All four species grew a certain amount in a soil with standing water (flooded). Water roots and hypertrophied lenticles were developed by all four species in the flooded treatment and the degree to which both of these were produced seemed to be proportional to the flooding tolerance of the species. All four species grew better in the potting compost than in the wetland soil. Added phosphorus significantly increased growth in the wetland soil of *Alnus*, *Fraxinus* and *Betula* spp., but not the most waterlogging-tolerant species, *Salix* sp. Added phosphorus had little, or no, effect on growth in the potting compost. Added nitrogen generally did not significantly increase growth in the absence of added phosphorus. A categorisation of the woods on a physiognomic and edaphic basis was carried out. The type categories inferred were found to be applicable to most other wetland woods in Ireland.

**Page**

173p

**Location**

Trinity library

**Notes**

Available. (Thesis submitted for the degree of Doctor of Philosophy at Trinity College)

**Thesis**

Ph.D. Thesis, TCD

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**Number**

1184

**Author**

Tynan Suzanne

**Title**

A strategy for coniferous forestry with specific reference to the Liffey Valley, Co. Wicklow.

**Place**

Dublin

**Date**

1992

**Key Word**

environment, forest planning, land use

**Abstract**

This forestry strategy is designed to find resolutions to the conflicts between forestry as a commercial resource and forestry as an environmental resource. Land availability, potential productivity and viability are identified as the most important factors influencing forestry development. The most important environmental factors in forestry development are water resources, landscape aesthetics, heritage and ecology. Four types of policy region are suggested for potentially afforested land based on the number, importance and complexity of interaction of these various elements. These policy regions are: excluded areas; sensitive areas; potential areas; and preferred areas and are indicative of the level of planning required to achieve optimum, balanced land use. The Liffey valley is chosen as a worked example of the strategy in a potentially afforested area. Based on this information, the Liffey Valley is divided into two policy regions: excluded areas and sensitive areas. A forestry strategy indicating the type of inter-active planning required and the forestry practises to be employed in order to achieve balanced land use is outlined.

**Page**

ix, 247 p

**Location**

Trinity library

**Notes**

Available. (Thesis submitted for award M.Sc. in Environmental Science, Trinity College)

**Thesis**

M.Sc. Thesis, TCD

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**Number**

1185

**Author**

Buckley Pearse

**Title**

An investigation of short rotation forestry as a source of energy in Ireland.

**Place**

Dublin

**Date**

1993

**Key Word**

short rotation forestry, biomass production, woodfuel, energy production

**Abstract**

One of the more promising alternatives to the use of fossil fuels is the production of energy from short rotation forestry. This thesis examines the production of this energy to determine its potential for exploitation. This process is examined from the stage of preparation of the land for forestry to the conversion of the timber to energy. The economics of this process is described and compared with other forms of energy production.

**Page**

x, 250 p

**Location**

Trinity library

**Notes**

Available. (Thesis submitted for the award of M. Sc.in the Department of Civil, Structural and Environmental Engineering, Trinity College)

**Thesis**

M.Sc. Thesis, TCD

---

**Number**

1186

**Author**

Mitchell Fraser J.G.

**Title**

Recent woodland history in the Killarney Valley, south west Ireland.

**Place**

Dublin

**Date**

1987

**Key Word**

native woodlands, forestry history, pollen analysis, species composition, biological diversity, woodland disturbance, conservation, Atlantic bryophyte community

**Abstract**

Regional pollen records and historical literature relating to the Killarney woodlands are examined. These sources of evidence present apparently conflicting information about woodland history and continuity. To clarify the recent history of individual woodlands, pollen records from small hollows and mor humus profiles from within woodlands and on a small lake island are presented. These data illustrate woodland composition and dynamics for at least the last 5,000 years. The relationship between the present-day pollen deposition and vegetation in the Killarney Valley is also investigated. Pollen-vegetation correlation factors for the major tree taxa in the area are presented. There is evidence of isolated disturbance during the iron age followed by more widespread and severe woodland exploitation during the 17th and 18th centuries. The pollen records illustrating the later phase of woodland disturbance are supported by substantial historical data. Comparison of the pollen data presented with regional pollen records indicates that the regional sites lack sufficient spatial resolution to detect these woodland disturbances. In the light of the data presented, the status of the Atlantic bryophyte communities in the area is considered and the future management and conservation of the woodland is discussed.

**Page**

157p

**Location**

Trinity library

**Notes**

Available. (Thesis submitted to Trinity College, for the degree of Doctor of Philosophy)

**Thesis**

Ph.D. Thesis, TCD

---

**Number**

1187

**Author**

Kerr Peter D.

**Title**

Insect pests of trees in the John F. Kennedy Park, Arboretum and Forest Garden.

**Place**

Dublin

**Date**

1975

**Key Word**

forest pathogens, forest pests, entomology, insects, forest protection, Hymenoptera, Lepidoptera, Coleoptera

**Abstract**

This work was intended as a base-line survey of the types of insect pest which have been recorded in the John F. Kennedy Park since planting commenced in 1966. The objectives of the study were to: carry out a survey of the trees affected and to list their pests; assess the nature and extent of the injury caused by these insects; and to report on the biology and habits of these insect pests. Only a small percentage of the total number of tree species at the park have suffered moderate to severe injury. The orders Hymenoptera, Lepidoptera and Coleoptera account for 90% of the major insect pests found at the park. Among the Hymenoptera, the more serious pest is *Croesus septentrionalis*. The most destructive of the pine sawflies is *Diprion pini* (L.). The most commonly found species of the wood-boring beetles was *Myelophilus piniperda* (L.), the common pine shoot beetle. The larvae of several species of Lepidoptera were frequently recorded as pests on *Populus*, *Salix*, *Fagus* and *Quercus* spp. and on other broadleaf trees. The most important sap-sucking insect recorded was *Adelges cooleyi* (Gillette): infestation was heavy on *Pseudotsuga menziesii* during July - August.

**Page**

x, 155p

**Location**

Trinity library

**Notes**

Available. (Thesis submitted for award of M. Sc., Trinity College)

**Thesis**

M.Sc. Thesis, TCD

---

**Number**

1188

**Author**

Mac an t-Saoir, O'Brien J., Selby C.

**Title**

The effect of explant type on the establishments of Sitka spruce [*Picea sitchensis* (Bong.) Carr.] in culture.

**Publisher**

Academic Press

**Place**

London

**Date**

1992

**Source**

Annals of Botany

**Volume**

Vol. 69

**Key Word**

*Picea sitchensis*, Sitka spruce, micropropagation, shoot elongation, establishment in culture

**Abstract**

Five different types of shoot tip from three-year old and 13-year-old Sitka spruce trees were established on a range of media and shoot growth was recorded. While Schenk and Hildebrandt medium gave the greatest shoot elongation, Webb and Street medium produced the healthiest-looking shoots. Poorest growth was recorded for the explants cultured without the crown or any vascular tissues from the previous years's growth. [14C] sucrose tracer studies indicated that poor uptake was not responsible for the reduced growth and it was suggested that damage due to inadequate water uptake may be responsible. Results demonstrated that peeling the protective scales from resting buds and trimming the shoot tissues below the crown to a wedge shape and excluding the bark was a reliable method of explant preparation for establishing mature and juvenile Sitka spruce in culture.

**Page**

pp 161 - 165

**Location**

UCD library

**Notes**

Available

**Address of author**

Agricultural Botany Research Division, QUB, Newforge Lane, Belfast BT9 5PX.

---

**Number**

1189

**Author**

O'Gorman J.

**Title**

Wood pole decay: the implications for the Electricity Supply Board.

**Place**

Dublin

**Date**

1990

**Key Word**

transmission poles, timber technology, timber protection, timber preservatives, decay fungus, Ascomycete,

Basidiomycete, creosote, timber end use, forest products, timber processing

**Abstract**

This study investigates fungal decay in Electricity Supply Board transmission poles. A survey of 16, 497 poles carried was out to determine pole condition nationally, and a pole replacement curve was developed based on the survey results. A projection is made for the required annual replacement rate up to the year 2010 The type of maintenance measures which will be required to ensure that over-head lines can withstand extreme wind conditions are outlined. The conditions necessary for attack by the two major fungal types - Ascomycetes and Basidiomycetes - and their effect on pole strength are discussed. Remedial treatment applied to the pole some years after erection, designed to extend the life of the pole, is described. The four treatment methods on trial in the Electricity Supply Board since 1977 are assessed to determine their effectiveness against pole decay.

**Page**

190 p

**Location**

Trinity library

**Notes**

Available.(Thesis submitted for award of MAI at Trinity College)

**Thesis**

MAI. Thesis, TCD

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**Number**

1190

**Author**

Halpin Brendan J.

**Title**

A study of the organisation of the Irish forest industry.

**Place**

Dublin

**Date**

1988

**Key Word**

forestry policy, land use, Forest and Wildlife Service, State forestry, private forestry

**Abstract**

A reorganisation of the Irish forest industry in the near future is necessary because of the need to adjust to the expected increase in timber production in Irish forests and continuing difficulties in the area of land utilisation. The development of forestry in Ireland is examined, and the problems historically associated with land utilisation and forestry are outlined. The financial aspects of State forestry, and the organisational structure of the Forest and Wildlife Service are described. It is recommended that a new State-sponsored body, dealing with marketing and promotion of native forests and forest produce, is needed.

**Page**

89p

**Location**

Trinity library

**Notes**

Available. (Thesis submitted for the award of MBA, Trinity College)

**Thesis**

MBA Thesis, TCD

---

**Number**

1191

**Author**

An Foras Forbartha

**Title**

Economic evaluation and potential land use options of forestry plantations at Blessington Reservoir.

**Publisher**

An Foras Forbartha

**Place**

Dublin

**Date**

1982

**Key Word**

Electricity Supply Board, State forestry, forest management options, amenity forestry, forest economics

**Abstract**

The ESB has 262 ha of highly productive forestry, 9 ha of old woodland, and 33 ha of narrow belts which are not viable as forestry units, around Poulaphuca Lake in Co. Wicklow. The stands are worth £142,000 at the present time, but at the end of the first rotation (20 - 40 years time), will yield a nett profit of at least £359,000 (at 1981 values and 4% interest rates), if managed with the current inputs (ESB costs). Several alternatives for the commercial management of this property are examined, including the development of the entire area as an amenity resource. Overall, it appears that commercial forestry is a profitable operation at Poulaphuca, and will yield a satisfactory return on the investment in labour, management and infrastructure. The rate of return will be affected by the extent to which currently inaccessible stands can be successfully managed.

**Page**

47 p

**Location**

Trinity library

**Notes**

Available.

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**Number**

1192

**Author**

Royal Society for the Protection of Birds,

Irish Wildbird Conservancy,

An Taisce

**Title**

Ireland's forested future: a plan for forestry and the environment.

**Date**

1994

**Key Word**

environment, forestry policy, forest wildlife, land use

**Abstract**

This document proposes a number of strategies by which Government commitment to multiple-benefit forestry can be implemented. Strategic identification of suitable and unsuitable land for afforestation will reduce conflict between forestry and other land users. A broad survey of Ireland's rural environment is provided, and the manner in which forestry affects the environment is described. The issues of control of forestry policy, and decision-making in the area of land use are discussed.

**Page**

33 p

**Location**

Trinity library

**Notes**

Available.

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**Number**

1193

**Author**

Harrington Rory

**Title**

How much do you really know about Sitka spruce?

**Place**

Birr

**Date**

April /1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 4

**Key Word**

Sitka spruce, *Picea sitchensis*, silviculture, forestry management, environment

**Abstract**

This article describes the origins of Sitka spruce along the Pacific coast of North America, and outlines the conditions which produce optimum growth. The fast growth of the species is explained, and the difference between various provenances is outlined. The manner in which management of Sitka spruce plantations in Ireland differ from that in North American forests is described. The relatively shallow rooting nature of the species makes it vulnerable to windblow. However, early and frequent thinning increases windfirmness and allows longer rotations.

**Page**

pp 10-11

**Location**

Coillte library

**Notes**

Available.

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**Number**

1194

**Author**

Brosnan John

**Title**

Forestry - the environment and the strategy.

**Place**

Birr

**Date**

April /1996

**Volume**

Vol. 5, No. 4

**Key Word**

environment, Environmental Impact Assessment, forest planning, forestry strategy, planning, local authorities

**Abstract**

The implications of new regulations which require all new forest projects to undergo the process of Environment Impact Assessment once they are over the 200 ha threshold level are examined. It is argued that lowering this threshold to 100 ha or less would bring Irish forestry EIA regulations in line with Irish agricultural land reclamation threshold and closer to European forest establishment norms. There is a need for local authorities, who oversee EIAs, to have access to expertise in forestry. Alternatively the Forestry Service should be allowed to assess and evaluate EIAs.

**Page**

pp 20-21

**Location**

Coillte library

**Notes**

Available.

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**Number**

1195

**Author**

Griffin Jacinta, Hook Ingrid

**Title**

Variation of taxol content in *Taxus* (Yew) species growing in Ireland.

**Place**

Angers, France

**Date**

1993

**Key Word**

*Taxus baccata* var *fastigiata*, Irish yew, taxol, plant derivative, forest product, biotechnology, biochemistry, cell suspension culture, plant tissue compounds

**Abstract**

Taxol is a chemically complex compound found in various species of Yew (*Taxus*), and is of clinical value in the treatment of refractory ovarian cancer. Research in Ireland is being conducted in the following areas: (i) genetic variation of taxol content in established trees of *Taxus* species and cultivars growing in Ireland; (ii) seasonal variation of taxol content and growth in Irish Yew (*T. baccata* var *fastigiata*); (iii) alternative biotechnological production of taxol by plant cell cultures. 10 trees of *Taxus baccata* var *fastigiata* growing at different locations around Dublin were sampled. Three extracts of each tree were prepared according to established protocol and taxol quantified by HPLC. Results obtained indicate that: [a] taxol is present at concentrations up to 0.01% of dry weight; [b] main stem needles consistently yield most taxol; [c] a considerable variation exists in taxol content between the trees tested; [d] a slight seasonal increase in taxol yield occurs during the Winter months. Cell suspension cultures of *T. baccata* var *fastigiata*, established in a modified Murashige and Skoog medium, have proved to be very slow-growing and, to-date, have not yielded measurable amounts of taxol.

**Page**

27p

**Location**

Department of Pharmacognosy, School of Pharmacy, Trinity College, 18 Shrewsbury Road, Dublin 4.

**Notes**

Available. (A paper presented at the VIIth Colloque International consacre aux Plantes Medicinales et Substances d'origine naturelle, 1 - 4 juin, 1993).

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**Number**

1196

**Author**

Anon

**Title**

Forestry herbicides.

**Place**

Birr

**Date**

April/1996

**Source**

Irish Timber and Forestry

**Key Word**

forest herbicides, forest protection, vegetation control, weed control

**Abstract**

This article briefly outlines the various herbicides available to Irish foresters. Most are used during forest establishment to provide weed-free area of 1m diameter for the first few years after planting. The method of application of these herbicides is, to some degree, determined by the product chosen. There is a short glossary of herbicide terms relating to herbicides and their uses, and a chart of the active ingredients..

**Page**

pp 26-27

**Location**

Coillte library

**Notes**

Available.

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**Number**

1197

**Author**

Fitzpatrick H.M.

**Title**

The story of our trees.

**Place**

Dublin

**Date**

1984

**Key Word**

forestry history, land use, forest wildlife, amenity forestry, forestry policy, economics

**Abstract**

This book traces the history of Irish forests from the time of the earliest prehistoric settlements in Ireland, through the eras of Norman settlement, Tudor conquest and land confiscation, and replanting during periods of political stability and prosperity. The destruction of the woodlands which followed the demise of the estates, and the intervention of the State to propel the reforestation process in the twentieth century are described. Several aspects of contemporary forestry in Ireland are examined including the development of modern silvicultural practice, forestry policy, and woodland management.

**Page**

81p

**Location**

Coillte library

**Notes**

Available.

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**Number**

1198

**Author**

Coillte Teoranta

**Title**

Discovering Ireland's woodlands - a guide to forest parks, picnic sites and woodland walks.

**Publisher**

Coillte Teoranta

**Place**

Dublin

**Date**

1992

**Key Word**

amenity forestry, forest wildlife, forest fauna, forest flora, Coillte Teoranta, forestry history, plantation forestry, forest recreation

**Abstract**

This guide provides a brief description of Ireland's woodland resource. It lists the forest parks, picnic sites and woodland walks on Coillte properties and describes the geology, habitat, tree species, archaeology, history and facilities of each location.

**Page**

102p

**Location**

Coillte library

**ISBN**

0 9518612 1 2

**Notes**

Available.

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**Number**

1199

**Author**

Harrington Rory

**Title**

How much do you know about contorta pine?

**Place**

Birr

**Date**

June/1996

**Source**

Irish Timber and Forestry

**Key Word**

Pinus contorta, lodgepole pine, shore pine, forestry management, silviculture

**Abstract**

The diverse range of ecotypes and provenances of lodgepole pine are examined. Its poor past performance in Irish plantations was partly due to the lack of attention paid to seed origin. A number of characteristics of lodgepole pine in Ireland are examined, including its ability to regenerate after fire, its susceptibility to stem distortion, and its proneness to windthrow. Under Irish conditions it is more appropriate to grow this species in mixtures. Lodgepole pine is at present serving as a very useful pioneer crop on the peatlands where it has been planted.

**Page**

pp 14-15

**Location**

Coillte library

**Notes**

Available.

**Address of author**

National Parks & Wildlife Service, OPW, 98 The Quay, Waterford

---

**Number**

1200

**Author**

Binggeli Pierre, Rushton Brian S.

**Title**

A management oriented study of the birch-rowan-hazel woodland at Murlough Bay, Co. Antrim, Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1985

**Source**

Irish Forestry

**Volume**

Vol. 42, No. 1

**Key Word**

forestry management, birch, rowan, hazel, woodland management, silviculture

**Abstract**

A management oriented study of the birch-rowan-hazel woodland at Murlough Bay Co. Antrim was conducted in order to establish the balance of tree species composition, population age structure and regeneration of the tree species, grazing pressure and the status of sycamore (*Acer pseudoplatanus* L.) and ash (*Fraxinus excelsior*) which are invading the woodland. The woodland forms part of the National Trust Nature Reserve. Results indicated that: (i) the most common trees were birch (*Betula pubescens* Ehrh.) 1016 trees/ha, rowan (*Sorbus aucuparia* L.) 2444 trees/ha and hazel (*Corylus avellana* L.) 236 trees/ha whilst sycamore and ash accounted for 21.4 and 14.8 trees/ha respectively; (ii) the main tree species were, by and large, segregated within the woodland with hazel just below the cliff, birch in the lower, damper areas and rowan between; (iii) plots of log. tree number against log. tree age indicated that populations of all the above five tree species were declining; (iv)

regeneration appeared to be sparse despite the very large numbers of seedlings produced whilst there was extensive evidence of grazing pressure from sheep and goats. A management plan, directed towards restricting grazing and sycamore eradication by tree-barking is suggested.

**Page**

pp 16 - 32

**Location**

Coillte library

**ISBN**

00211192

**Notes**

Available

**Address of author**

Dept. of Biology, New University of Ulster, Coleraine, Co. Derry

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**Number**

1201

**Author**

Doyle Joseph

**Title**

Notes on the staminate cone of *Larix leptolepis*.

**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1926

**Source**

Proceedings of the Royal Irish Academy, Section B

**Volume**

Vol. 37, Nos. 18, 19

**Key Word**

*Larix leptolepis*, Japanese larch, *Larix kaempferi*, conifers, staminate cone, cone structure, botany, conifer microstrobili, conifer megastrobili

**Abstract**

Evidence is presented from *Larix* and other Conifers in support of the theory that the primitive stamen of the Conifer and Ginkgo phyla was a radically symmetrical structure, carrying numerous sporangia distally attached, and/or a non-foliar sporangiophoric nature, i.e., a modification of a primitive lamina condition was never impressed. This conception allows an easy and direct homology to be drawn not only among the megastrobili of conifers, but between these and microstrobili, and between both and primitive strobilus of the Cordaianthus type. The vascular bundle of the stamen of *Larix* becomes mesarch distally, and develops such an arrangement of transfusion tissue as to support the claim that such tissue is itself phylogenetically a modification of centrepetal xylem. The micro-strobili of conifers would well repay more intensive study.

**Page**

pp 154 - 167

**Location**

Coillte library/ RIA library

**Notes**

available

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**Number**

1202

**Author**

Doyle Joseph

**Title**

The ovule of *Larix* and *Pseudotsuga*.

**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1936

**Source**

Proceedings of the Royal Irish Academy, Section B

**Volume**

Vol. 37, Nos. 18, 19

**Key Word**

reproductive morphology, Larix, Pseudotsuga, larch, botany

**Abstract**

This paper examines the reproductive morphology of Larix and Pseudotsuga. The study concludes that the integument of Larix is provided on one side only with a large outgrowth which is a stigmatic pollen-receiving device, the curling inwards of which carries the pollen into the micropilar mouth. The morphology of the Pseudotsuga differs slightly from that of that of the Larix, but not enough to detract from the claim that Larix and Pseudotsuga are genera more closely connected, in every morphological aspect except habit, than any other two of the Abietineae. The claim is confirmed by the wingless pollen, the ovule, the female gametophyte structures, and the secondary wood.

**Page**

pp 170 - 180

**Location**

Coillte library/ RIA library

**Notes**

available

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**Number**

1203

**Author**

Farrell Edward P.

**Title**

Forest fertilisation in Ireland.

**Publisher**

Canadian Institute of Forestry

**Date**

1976

**Source**

Forestry Chronicle

**Volume**

Vol. 52, No. 4

**Key Word**

forest fertilisation, phosphatic fertilisers, soil nutrients, nutrient deficiencies, Sitka spruce, Picea sitchensis, peat soils, moderately fertile sites, peatlands

**Abstract**

Fertilisers have been in operational use in Irish forestry for almost 25 years. At present, 12,000 - 16,000 ha of forest land are fertilised annually. Deficiencies of nitrogen and phosphorus are widely encountered, particularly in Sitka spruce on infertile peatland sites. Forest fertilisation research in Ireland has been centred, to a large extent, on the nutrition of this species on peat soils. Current work on mineral soils includes the investigation of the response to fertilisers on moderately fertile sites. Preliminary results indicate that phosphatic fertilisers may be effective in these situations.

**Page**

pp 194 - 196

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield Dublin 4

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**Number**

1204

**Author**

McKillop D.G., Hutchinson R.W.

**Title**

The determination of risk adjusted discount rates for private sector forestry investment.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1990

**Source**

Forestry

**Volume**

Vol. 63, No. 1

**Key Word**

risk adjusted discount rates, private forestry, investments, economics, costs, public sector investment, afforestation, tax, State subsidies, grants, Farm Woodland Scheme, Woodland Grant Scheme, profits

**Abstract**

In forestry economics a great deal of attention has been given to the choice of discount rate when this activity has been constituted as part of the public sector investment portfolio. In contrast, little attention has been paid to the discount rate that should be used when afforestation is considered as part of a portfolio of investments in the private sector. There are major differences, both practical and methodological, in determining the discount rate that should be applied to private as opposed to public sector afforestation projects. The central purpose of this paper is thus to derive the appropriate discount rate for the private forestry sector with attention focused primarily on risk adjusted discount rates of the type applied in commercial capital budgeting. The relevant risk adjusted rates are then employed to assess the viability of 28.5 ha private sector afforestation stand based on Oceanic forestry technology. The afforestation project is assessed under the differing tax and grant arrangements, introduced in 1988, available within the Farm Woodland Scheme and the Woodland Grant Scheme. The analysis concludes that the use of a risk adjusted discount confirms that forestry, under both schemes, is a profitable venture

**Page**

pp 29 - 38

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Banking and Commerce, University of Ulster, Coleraine, Co. Derry, BT52 1SA, Northern Ireland

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**Number**

1205

**Author**

Clear T.

**Title**

Forestry.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Date**

1944

**Source**

The natural resources of Ireland: a series of discourses delivered before the Royal Dublin Society on April 12th, 13th, and 14th 1944 in commemoration of the centenary of the publication by the Society of Sir Robert Kane's 'The Industrial Resources of Ireland.'

**Key Word**

forestry history, forestry policy, State forestry, afforestation, forestry education, estate woodlands, woodlands destruction, legislation, economic development, natural resources

**Abstract**

The alarmingly low acreage under woodlands is largely due to the wholesale clearance of estate forests following the various Land Acts, the storm of 1903, and the massive felling for timber during 1914 - 20. The census of timber reserves at present being carried out by the State forestry service will help to assess the extent of the loss. The difficulties faced by other countries in meeting their own timber needs underlines the urgent need to develop a large scale planting programme. Emphasis in this programme should be placed on achieving high yields of timber because of the high cost of establishment and maintenance. The State must take a leading role in the afforestation programme. The lack of indigenous trees means that this programme must depend to a large extent on exotic species, and many suitable trees have been introduced over the past 100 years and are thriving. The progress of the State's forestry programme, including the issues of education and land acquisition, is reviewed.

**Page**

pp 81 - 90

**Location**

RIA library

**Notes**

available

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**Number**

1206

**Author**

Selby C., Seaby D.A.

**Title**

The effect of auxins on *Pinus contorta* seedlings root development.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1982

**Source**

Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

silviculture, primary lateral root production, *Pinus contorta*, seedling root development, auxin treated seedlings, rooting, planting, lodgepole pine

**Abstract**

Primary lateral root production on *Pinus contorta* seedlings was increased 5 - 10 fold by immersion in auxin solutions. Watering auxin solutions onto *P. contorta* seedlings growing in soil or compost induced the development of large numbers of primary lateral roots in the root collar region. The number of primary lateral roots which developed depended largely upon the auxin used and its application rate, seedling age and to a lesser extent on the soil characteristics. Instability of transplanted pines is partly due to their lack of primary lateral roots and their inability to regenerate new ones after planting out; this instability may be overcome by using auxin treated seedlings. Potential practical applications of this technique are discussed.

**Page**

pp 125 - 135

**Location**

Coillte library

**Notes**

available

**Address of author**

Department of Agriculture for Northern Ireland, Dundonald Hse., Upper Newtownards Rd., Belfast

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**Number**

1207

**Author**

Ross Ruth Isabel

**Title**

Irish trees.

**Publisher**

Easons

**Place**

Dublin

**Series**

The Irish Heritage Series: 31

**Date**

1980

**Key Word**

native species, introduced species, *Quercus petraea*, *Quercus robur*, *Taxus baccata*, *Alnus glutinosa*, *Betula pendula*, *Fraxinus excelsior*, *Ulmus glabra*, *Populus canescens*, *Cratageus monogyna*, *Fagus sylvatica*, *Aesculus hippocastanum*, *Castanea sativa*, *Cedrus libani*, *Pinus sylvestris*, ash, oak, alder, yew, cedar, Scots pine, horse chestnut, poplar, hawthorn

**Abstract**

A brief description and an account of the source of various native and introduced trees growing in Ireland is provided. The economic and historical significance of each species is noted and the current state of existing specimens is assessed. A brief account of the development of State forestry is included, and the prospects for retaining the existing broadleaved estate are examined.

**Page**

20p

**Location**

RIA library

**Notes**

available

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**Number**

1208

**Author**

Henry A.

**Title**

Irish forestry.

**Publisher**

Cumann Leiseactai an Phobail

**Place**

Dublin

**Series**

Industrial Development. Series B. No. 2

**Date**

1921

**Key Word**

forestry history, forestry policy, afforestation, State forestry, industry, agriculture, estates woodlands, timber imports

**Abstract**

The destruction of the woodlands has been accelerating since the start of the first world war, and the demand for timber in other countries means that Ireland's will be seriously handicapped by a lack of timber unless great

efforts are made now to increase the area of plantations. Because of the delay on returns from investments in timber, afforestation on a large scale can only be carried out by the State. Forestry policy since the Department of Agriculture's inquiry of 1908 is reviewed. The process of land acquisition and the extent of planting in the intervening period is discussed. A number of non-official efforts at establishing plantations, especially the Toghher Agricultural Associations work at Roundwood, Co. Wicklow are noted.

**Page**

12p

**Location**

RIA library

**Notes**

available

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**Number**

1209

**Author**

Aiken James M.

**Title**

Afforestation and the national plan.

**Publisher**

James Duffy

**Place**

Dublin

**Series**

Reconstruction pamphlet No. 4

**Date**

1944

**Key Word**

forestry policy, forestry history, land use, agriculture, timber imports, economic development, afforestation

**Abstract**

The extent of land under forest in Ireland, 0.66% of the total land area, is considerably less than that of nearly all European countries. Our dependence on imported timber has alarming consequences for our future economic prosperity, and the lack of trees is causing the loss of valuable top soil. Up to 2 million acres of arable land are far more suited to growing trees than any other agricultural use. The extent of the proposed afforestation programme is criticised for being too cautious. The author argues for a planting target of 2 million acres, 0.75 m being planted within the next 40 years. The most likely proportions for any afforestation programme would be around 94% soft woods and 6% hardwoods. The various administrative and technical changes which are necessary are outlined, and the likely extent of economic growth and employment creation which could be brought about by afforestation is assessed.

**Page**

11p

**Location**

RIA library

**Notes**

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**Number**

1210

**Author**

Falkiner C. Litton

**Title**

The forestry question considered historically: A paper read before the Statistical and Social Inquiry Society of Ireland on Friday, 23rd January, 1903.

**Publisher**

Sealy, Bryers and Walker

**Place**

Dublin

**Date**

1903

**Key Word**

forestry history, ancient woodlands, placenames, deforestation, conquest, war, afforestation, Congested Districts Board

**Abstract**

This paper describes the historical background to current efforts aimed at preventing further decline in the extent of Ireland's woodlands. The extent of woodland in Ireland in earlier times and the suitability of Irish soil and climate to the growing of trees is noted. There have been references to woods in a great number of historical texts, and many of these are cited. The destruction of the ancient woodlands increased significantly during Tudor times for both political and economic reasons. The process of deforestation continued during the political upheaval of the next two centuries, although a number of remedial measures were made into law from the late 17th century. The efforts of the Congested Districts Board to plant coastal areas in the west of Ireland in 1893 and 1894 are described.

**Page**

18 p

**Location**

RIA library

**Notes**

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**Number**

1211

**Author**

Seaby D.A., Mowat D.J.

**Title**

Growth changes in 20-year-old Sitka spruce *Picea sitchensis* after attack by the green spruce aphid.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1993

**Source**

Forestry

**Volume**

Vol. 66, No. 3

**Key Word**

green spruce aphid, Sitka spruce, *Elatobium abietinum* forest pests, forest insects, forest protection, defoliation, *Picea sitchensis*

**Abstract**

Following a severe attack by *Elatobium abietinum* (Walker) in 1979-80, annual observations were made for 5 years on 320 pole-size Sitka spruce in a nitrogen and phosphate experiment laid out on oligotrophic blanket bog. Leader length was reduced by 25.5% in 1980-81 compared with the 3 previous years. This reduction was highly correlated with defoliation, being 39.4% for trees that lost all 1977-79 needles and 8.4% in trees that lost no needles. There were strong interactions with fertiliser treatment. Defoliated trees continued to grow less during the 5 years of observations and were more likely to go into growth check. Early flushing trees suffered significantly less growth reduction following defoliation. The same trees consistently broke bud early over 4 years of observation. Early bud burst was not correlated with height, girth or defoliation. No reattack by aphids was observed in the experiment until 1985-86 and in this minor infestation the trees previously colonised were found to be significantly more likely to recolonised. A novel measuring rod for tree height is described.

**Page**

pp 371 - 379

**Location**

Coillte library

**Notes**

available

**Address of author**

Dept. of Agriculture for Northern Ireland, Newforge Lane, Belfast 9, Northern Ireland

---

**Number**

1212

**Author**

Erdtman G.

**Title**

Traces of the history of the forests of Ireland.

**Publisher**

Irish Naturalists' Journal

**Place**

Belfast

**Date**

July/1927

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 1

**Key Word**

pollen analysis, pollen fossils, geology, ancient forests, paleobotany, forest history, botany, native woodlands

**Abstract**

The fossils of the peat and lacustrine deposits, especially the fossils of pollen grains, are the chief source of information concerning the late Quarternary history of the Irish forests. A 'pollen diagram', which presents the statistical investigation of samples of pollen deposits in graphic form, is included. By comparing diagrams constructed for different areas, the order of immigration of Scotch pine, hazel, elm, oak, and alder can be traced. Results which have been obtained to date by means of pollen statistics are presented for the following periods: the Marl-periods (early and late); the period of silting up of the marl-lakes; and the sphagnum peat period.

**Page**

pp 242 - 245

**Location**

RIA library

**Notes**

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**Number**

1213

**Author**

Westropp Thomas Johnson

**Title**

The forests of the counties of the lower Shannon Valley.

**Publisher**

Hodges, Figgis

**Place**

Dublin

**Date**

1909

**Source**

Proceedings of the Royal Irish Academy. Section C. 1908-1909.

**Volume**

Vol. 27

**Key Word**

ancient woodlands, forestry history, forest clearance, conquest, war, placenames, native woodlands

**Abstract**

The author estimates that Co. Clare had at least 24,650 acres of woodland in 1653, and Co. Limerick had 13,580

acres. An examination of place names in the various districts of both counties gives an indication of the extent of woodland cover during this period. The part that the forests played in important historical events is also recorded. Tables, compiled from data in the Book of Distribution, 1655, are presented which briefly describe the total amount in acres of trees and shrubbery in Clare and Limerick in that year.

**Page**

pp 270 - 300

**Location**

RIA library

**Notes**

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**Number**

1214

**Author**

Conroy M.J., Clinch P.

**Title**

The effect of soil quality on the yield class of a range of forest species grown on the Slieve Bloom mountains and foothills.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1989

**Source**

Forestry

**Volume**

Vol. 62, No. 4

**Key Word**

soil quality, yield class, Slieve Bloom mountains, Sitka spruce, Norway spruce, lodgepole pine, Picea abies, Pinus contorta, Picea sitchensis, silviculture, forest soils

**Abstract**

The Slieve Bloom mountains region covering an area of approximately 36,000 ha in the Central Plain of Ireland contains a wide variety of soils, which have been planted mainly with Sitka spruce, Norway spruce and lodgepole pine and smaller amounts of Japanese larch, Scots pine and Douglas fir. These species show a wide range of yield classes when grown on the different soils. Sitka spruce gave a weighted mean yield class of 19.2, 16.5 and 9.9 on the brown earths (Baunreagh Series) peaty gleys (Slieve Bloom Series) and blanket bog (Aughty Series), respectively. Yield class differences were also found on different soil types within the same soil series: Sitka spruce had a weighted mean yield class of 21.7 and 17.1 on the normal moderately deep phase and the shallow steep phase of the Baunreagh Series respectively. Mean yield classes ranged from 13.7 to 17.4 on the different phases of the Slieve Bloom Series and from 9.6 to 11.1 on the deep and shallow deep and shallow phases of the Aughty Series, respectively.

**Page**

pp 397 - 407

**Location**

Coillte library

**Notes**

available

**Address of author**

Teagasc, Oak Research Centre, Co. Carlow

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**Number**

1215

**Author**

Clinch P. G.

**Title**

Growth patterns in young conifer crops - effects of second manuring.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication No. 18

**Date**

1977

**Key Word**

yield class, production forecasting, yield tables, fertilisation, tree growth

**Abstract**

The objectives of this project were: (i) to determine whether the yield classes of young crops (P/58 - P/69) differed from the prediction used for them in production forecasting i.e. that they would be the same as those for crops P/53 - P/57; (ii) to examine the extent to which any change could be ascribed to second fertilisation. It was found that Sitka spruce was underestimated by at least one yield class on average and lodgepole pine by at least half a yield class in the production forecasting. There are also favourable indications for most other important species. It is estimated that about one-third of this improvement is due to second fertilisation, but other factors must also have contributed.

**Page**

31p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

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**Number**

1216

**Author**

Robinson J. D.

**Title**

'Prefix' - a granular herbicide for controlling grasses and herbaceous weeds.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication No. 10

**Date**

1973

**Key Word**

Prefix, weed control, forest protection, herbicides, grasses, herbaceous weeds

**Abstract**

Prefix is the trade name for Chlorthiamid, C<sub>7</sub>H<sub>5</sub>Cl<sub>2</sub>NS a residual, pelletised, granular herbicide containing 7.5 % active ingredient. At the recommended dosage rate of 60 kg per ha a wide range of established grasses and broadleaved weeds will be killed or suppressed for the greater part of the growing season. In 1972 sixteen hectares of Sitka spruce at Shillelagh Forest were successfully treated with Prefix for the complete growing season. The main advantages of the herbicide are outlined, the most suitable method of its application, and the costs and equipment involved are explained.

**Page**

20p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place Bray, Co. Wicklow

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**Number**

1217

**Author**

De Brit G.

**Title**

Stump protection against Fomes annosus with particular reference to sodium nitrite.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service Research Communication No. 6

**Date**

1969

**Key Word**

Fomes annosus, forest protection, stump treatment, fungal diseases, butt rot, root rot, fungus, chemical treatment, fungicides, creosote, sodium nitrite, forest pathogens

**Abstract**

The performance of creosote and sodium nitrite as treatments for Fomes annosus on stumps are compared. The desirable qualities of a chemical stump protectant include toxicity to F. annosus, stability, water solubility, and visibility. It should allow penetration by saprophytic decay organisms and should not be toxic to man or animals. Sodium nitrite fulfils all of these conditions. The most effective method of application is described. The optimum area of stump basal coverage for a 10% sodium nitrite solution is estimated to be 50-60 square feet.

**Page**

3p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton, Bray Co. Wicklow

---

**Number**

1218

**Author**

Cross J.R.

**Title**

The distribution, character and conservation of woodlands on esker ridges in Ireland.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1992

**Source**

Proceedings of the Royal Irish Academy, Section B

**Volume**

Vol. 92, No. 1

**Key Word**

eskers, woodland conservation, woodland survey, native woodlands, geology, post-glacial forests, ancient forests, forest history

**Abstract**

Eskers are a prominent feature of the landscape of the Irish midlands, forming low, steep-sided ridges which may extend for many kilometres. Most of these ridges are too steep for cultivation and are utilised largely for grazing, but in places patches of native woodland occur, some being several kilometres in length. These woodlands have been surveyed as part of a national woodland survey and this paper describes their character, extent and conservation value. Their significance in respect of the very small area of native woodland remaining in the country is discussed, with particular reference to their history and possible relationship with the original post-glacial forests.

**Page**

19p

**Location**

RIA library

**Notes**

available

**Address of author**

Research Branch, Wildlife Service, OPW, St. Stephens Gn., Dublin 2

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**Number**

1219

**Author**

Morris M.G.

**Title**

A critical review of the weevils (Coleoptera, Curculionoidea) of Ireland and their distribution.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

June/1993

**Source**

Biology and Environment: Proceedings of the Royal Irish Academy

**Volume**

Vol. 92B

**Key Word**

weevils, Coleoptera, Curculionidae, weevil distribution, forest protection, insect pests, entomology, insects

**Abstract**

A brief summary of the various types of weevils (Curculionida) is provided, together with a short account of the biology of the group. Identification of species is discussed. Irish records of species of Curculionidae (excluding Scolytidae) are reviewed and the source of records described, with emphasis on published accounts. Brief characteristics of the abundance of each species in Ireland are given, together with summaries of distribution, using the vice-county system. If there are specimens in the collection of the National Museum of Ireland, this is indicated. Two species have not previously been recorded in the Irish fauna; 246 species are regarded as certainly Irish; the status of 22 others requires clarification. The zoogeography, ecology and conservation of the species are discussed.

**Page**

pp 69 - 84

**Location**

RIA library

**Notes**

available

**Address of author**

Furzebrook Research Station, NECR Institute of Terrestrial Ecology, Wareham, Dorset BH20 5AS, UK

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**Number**

1220

**Author**

Bowman J.J., Bracken J.J.

**Title**

Effects of run-off from afforested and non-afforested catchments on the survival of brown trout *Salmo trutta* L. in two acid-sensitive rivers in Wicklow, Ireland.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

Nov/1993

**Source**

Biology and Environment: Proceedings of the Royal Irish Academy

**Volume**

Vol. 93B

**Key Word**

water run-off, brown trout, fish kills, water acidification, drainage, acid-sensitive rivers, environment, water pollutants, pollution

**Abstract**

A high level of mortality occurred among samples of brown trout contained for seven days in the acidified Lugduff River which drains an afforested catchment in County Wicklow. No evidence of stress was observed among brown trout contained in the adjoining Glenealo River, draining a non-afforested catchment. In the Lugduff River the fish tended to lie at right angles to the direction of a moderate flow prior to death, and showed evidence of disorientation and loss of energy. The trout showed extensive coating of aluminium and mucus on the lamellae of their gills, but evidence of fusion of the secondary lamellae was inconclusive. No difference was noted in the intensity of staining for both aluminium and mucus between the gills of the surviving fish in the Lugduff River and those that died during the experiment. However, when examined under a scanning electron microscope, a section of the gill of a surviving fish was seen to be free of mucus clogging. It is possible that this fish maintained gill function by partially clearing its gills. The high levels of acidity in the Lugduff River can be attributed to the impact of the scavenging of air pollutants by the canopies of the evergreen trees in the catchment.

**Page**

pp 143 - 150

**Location**

RIA library

**Notes**

available

**Address of author**

Environmental Protection Agency, Pottery Road, Deansgrange, Co. Dublin

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**Number**

1221

**Author**

Seaby D.A.

**Title**

The possibility of using *Trichoderma viride* for the control of *Heterobasidion annosum* on conifer stumps.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1977

**Source**

Irish National Committee for Biology: Proceedings of a Seminar on Biological Control, February 17 and 18, 1977. (Edited by J.J. Duggan)

**Key Word**

*Trichoderma viride*, *Trichoderma hazianum*, *Heterobasidion annosum*, tree stumps, fungal diseases, fungus, forest protection,

**Abstract**

Laboratory experiments of stem sections of nine conifers indicated that at 10 degrees Celsius *Trichoderma viride* provided stronger competition than *Trichoderma hazianum* against *Heterobasidion annosum*. Growth of *Trichoderma* sp. on wood was enhanced when spores were applied in aqueous ammonium sulphate solution. Stump protection trials set up in winter and spring on *Picea sitchensis* and *Pinus contorta* confirmed these results. In winter pregermination of *Trichoderma* spores significantly decreased colonisation by *Heterobasidion*. Significantly more *Trichoderma* and less *Heterobasidion* were recorded in all treatments in spring trials compared with winter. When *Trichoderma* spores were applied in 1% aqueous sulphamate, *Trichoderma* colonisation was increased and *Heterobasidion* significantly decreased. *Trichoderma* conidia (1m/ml) pregerminated overnight in 1% ammonium sulphamate at room temperatures, and applied to stumps, gave control over an inoculum at 0.1m/ml spores of *Heterobasidion*, similar to that obtained by a solution of 20% urea, (which is the standard stump protection treatment used in N. Ireland) Methods of spore production are recorded and possible use of *T. viride* in forestry is discussed.

**Page**

pp 57 - 72

**Location**

RIA library

**Notes**

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**Number**

1222

**Author**

McCracken Eileen

**Title**

The woodlands of Ulster in the early seventeenth century.

**Publisher**

Ulster Archaeological Society

**Place**

Belfast

**Date**

1947

**Source**

Ulster Journal of Archaeology (Third Series)

**Volume**

Vol. 10

**Key Word**

Ulster woodlands, forest history, forest clearance, ancient forests, timber industries, war, plantations, deforestation, native woodlands

**Abstract**

By the end of the sixteenth century most of the woods remaining in Ulster, with the exception of those in the Lough Erne basin, the Dufferin and the north-west shoulder of Lough Neagh, were probably not dense oak-forest, but shrubby brush-wood comprising alder and willow in marshy areas, with ash, hazel, and oak scrub in drier parts. The remoteness of Lough Erne ensured the survival of its woodlands until much later than the rest of Ulster. The area from the mouth of the Arney river to Enniskillen supported a variety of species of trees and little attempt was made to clear this wild area until the 18th century. Practically the whole of the northern shore of Lough Erne and the western side of Lough Neagh was wooded, and it is suggested that at the time of the 1641 rebellion trees filled the entire Clogher valley. Other great forests mentioned include Killultagh and Killetra. Most of the forests had been felled by the end of the seventeenth century, both for military and economic reasons. The most common uses to which the timber was put were shipbuilding, tanning, pipe-staving and charcoal for ironworks. Attempts to preserve woodlands for shipbuilding were unsuccessful.

**Page**

pp 15 - 25

**Location**

RIA library

**Notes**

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**Number**

1223

**Author**

Deane Arthur

**Title**

Trees - the character, structure, and properties of wood, with notes on forestry and afforestation.

**Publisher**

Belfast Natural and Philosophical Society

**Place**

Belfast

**Date**

March/1919

**Source**

Proceeding of the Belfast Natural History and Philosophical Society

**Volume**

Session 1918 - 19, No. 3

**Key Word**

forestry policy, forestry history, afforestation, silviculture, timber properties, timber processing, economic development

**Abstract**

The author summarises the situation regarding timber imports and the possibility of extensive programmes of afforestation being carried out in Britain and Ireland. Various aspects of forestry are discussed and explained, including arboriculture, silviculture and forest protection. The various problems facing any afforestation programme in Ireland are examined including transport, the delay on return on investments in forestry, and land acquisition. A general account of the timber properties of the major softwood and hardwood species is provided.

**Page**

pp 35 - 61

**Location**

RIA library

**Notes**available

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**Number**

1224

**Author**

Harkin Mary C.

**Title**

Interrelations between decay and non-decay fungi and their possible effects on timber quality.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1977

**Source**

International Committee for Biology. Proceedings of a Seminar on Biological Control, February 17 and 18, 1977. (Edited by J.J. Duggan)

**Key Word**decay fungi, fungal infection, timber rot, white rot fungus, *Stereum sanguinolentum*, Scots pine, transmission poles, *Diplodia pinea*, *Verticillium abietinum*, *Cylindrocarpon destructans*, *Trichoderma viride*, *Fomes annosus*, *Peniophora gigantea*, fungal inhibitors, forest protection, forest products**Abstract**

The nature of the interrelationships between a white rot fungus *Stereum sanguinolentum* and other fungal species isolated from seasoning Scots pine poles were examined in paired culture, using pine sapwood blocks

and sawdust as substrates. Fungi investigated included three species positively associated with *Stereum* in the field, *Diplodia pinea*, *Verticillium abietina* and *Cylindrocarpon destructans*, and three negatively associated species, *Trichoderma viride*, *Fomes annosus* and *Peniophora gigantea*. The effect of the relative time of inoculation of pine blocks with *Stereum* and each non-*Stereum* species on subsequent colonisation and decay was determined. The results obtained for positively and negatively associated species differed with respect to the extent of substrate colonisation by the interacting fungi and in the final weight loss recorded. The findings contributed to a better understanding of the basis of the associations observed in seasoning poles. The significance and possible exploitation of antagonistic interactions involving the inhibition of *Stereum* by other fungi is discussed in the context of biological control of wood decay.

**Page**

pp 73 - 92

**Location**

RDS library

**Notes**

available

**Address of author**

Dept. of Botany, UCD, Belfield, Dublin 4

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**Number**

1225

**Author**

O'Driscoll J.

**Title**

The role of introduced forest tree species in Ireland.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1979

**Source**

The Introduction of Exotic Species: Advantages and Problems. Proceedings of a Symposium, 4 -5 January 1979. (Ed. by R.P. Kernan, O.V. Mooney and A.E.J. Went)

**Key Word**

Sitka spruce, *Picea sitchensis*, grand fir, *Abies grandis*, Douglas fir *Pseudotsuga menziesii*, lodgepole pine, *Pinus contorta*, Japanese larch, *Larix kaempferi*, Monterey pine, *Pinus radiata*, Scots pine, *Pinus sylvestris*, introduced species, species variation, silviculture, afforestation, planting, cultivation

**Abstract**

The introduction of new species on a large scale began during a period of extensive replanting in the 18th century. A completely new range of species from the west coast of North America became available from the end of the 18th century. These included Sitka spruce, the grand fir and Douglas fir. Species from other parts of the world include the Japanese larch, from the far east, and eucalyptus, from Australia. The most common European imports have been Norway spruce and Scots pine. Knowledge of species variation and origin, especially in species like lodgepole pine, became an important factor in successful establishment in Ireland. Other species of minor importance are western red cedar, noble fir, Monterey pine and bishop pine. The most successful species have been those which belong to the cooler northern circumpolar species. The introduced species have greatly increased the amount of home-grown timber available, and have greatly enriched the native gene pool and have allowed for the cultivation of difficult sites.

**Page**

pp 27 - 34

**Location**

RIA library

**Notes**

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**Number**

1226

**Author**

Hussey Brian

**Title**

Irish forestry - resources, returns and reality.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1985

**Source**

Renewable Resource Development in Ireland: Proceedings of a Seminar 18 - 19 February 1985. (edited by A.C. Cassels)

**Key Word**

investment, economics, wood production, marginal land, land use, agriculture, wood imports, timber trade, forestry policy, financial returns, natural resources

**Abstract**

Ireland's potential in wood production is underdeveloped. There are something under 400,000 ha of what is classified as woodland, representing about 5% of the land area, a very low figure by world standards. Sitka spruce grown here on retired farmland, that is land with very limited agricultural potential, will produce wood four or five times faster than Europe can. Close to 1,000,000 ha of disadvantaged land now in agriculture already had very doubtful prospects in farming and is becoming more marginal with trends in European agriculture. Europe spends more on wood imports than on any other commodity except oil, and is in surplus in virtually all the commodities produced on Irish farms. Forestry should be prepared to compete aggressively with agriculture in the determination of land use policy. The existing and potential forest resource is examined as are financial returns and some options for translating resources into reality.

**Page**

pp 61 - 72

**Location**

RIA library

**Notes**

available

**Address of author**

Woodland Investments Ltd., Courthous, Blessington, Co. Wicklow

---

**Number**

1227

**Author**

Thomas D.E.L.

**Title**

Economic aspects of forestry in Northern Ireland.

**Publisher**

Statistical and Social Inquiry Society of Ireland

**Place**

Dublin

**Date**

1962

**Source**

Journal of the Statistical and Social Inquiry Society of Ireland. One Hundred and Fifteenth Session, 1961 - 62

**Volume**

Volume 20, Part 5

**Key Word**

investment, land use, forestry policy, State forestry, land acquisition, land prices, marginal land, agriculture, potential returns, economics, rural employment,

**Abstract**

The author points out that decisions regarding investments in forestry by the Government of Northern Ireland

have not been strongly guided by economic criteria. This has had the effect of reducing the opportunities for acquiring land available to the Forestry Division. In this paper economic criteria are used to compare the potential rates of return from investment in forestry and from other industries, hill farming in particular, which compete with it for use of marginal lands. The author concludes that forestry should acquire a greater supply of land, and of better quality, than it has acquired in the past. An analysis of agriculture in hill and marginal lands reveals that, despite attempts to reconstruct farming in these areas on an economic basis, many farms currently yield no return or very low return on investment, while forestry provides an average return of between 3.0% and 4.4%. Furthermore it is suggested that forestry has far more potential to maintain the density of population in these areas. The present method of acquiring land for forestry should be changed to allow the Forestry Division pay higher prices for land. This would increase the willingness of farmers to sell and enable the Forestry Division to establish larger and more efficient forest units.

**Page**

pp 196 - 219

**Location**

RIA library

**Notes**

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**Number**

1228

**Author**

Jack W.H.

**Title**

Factors relevant to planning an economic forest policy.

**Publisher**

Statistical and Social Inquiry Society of Ireland

**Place**

Dublin

**Date**

1963

**Source**

Journal of the Statistical and Social Inquiry Society of Ireland. One Hundred and Seventeenth Session, 1963-64

**Volume**

Vol. 21, Part 2

**Key Word**

land use, forestry policy, marginal land, farm incomes, agriculture, hill farming, employment, timber consumption, economics, labour requirements

**Abstract**

The author deals with a number of factors which influence forest policy. The study is particularly relevant to Northern Ireland. The first factor investigated is the import and usage of forest products. Figures are given for the net imports of forest produce into Northern Ireland and the roundwood equivalent of these imports as an average of the 1957-61 period. An estimate is made for the future per capita consumption of paper and paperboard in Northern Ireland. Figures on the land area under permanent grass cover and rough grazing are provided. The estimated agricultural output from hill land in the State is described in tabular form. Comparing labour requirement for agriculture and forestry, it is estimated that sheep farming on hill land provides an employment density of one per 600-800 acres, while the equivalent figure for forestry is one per 100 acres.

**Page**

pp 45 - 54

**Location**

RIA library

**Notes**

Available

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**Number**

1229

**Author**

Orpen Goddard Henry

**Title**

Charters of Earl Richard Marshal of the forests of Ross and Taghmon.

**Publisher**

The Royal Society of Antiquaries of Ireland.

**Place**

Dublin

**Date**

1934

**Source**

The Journal of the Royal Society of Antiquaries of Ireland

**Volume**

Vol. 4 (Series 7)

**Key Word**

forestry history, deforestation, Forests of Ross and Taghmon, charters, antiquarian studies, medieval history

**Abstract**

This paper provides a translation of and notes on Earl Richard Marshal's deforestation charter of the Forests of Ross and Taghmon in Co. Wexford. The charter was given in the Chartulary of St. Mary's, and the date lies between 1231 and 1234.

**Page**

pp 54 - 63

**Location**

RIA library

**Notes**

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**Number**

1230

**Author**

McCracken Eileen

**Title**

The woodlands of Ireland circa 1600.

**Publisher**

Irish Historical Studies

**Place**

Dublin

**Date**

Sept/1959

**Source**

Irish Historical Studies

**Volume**

Vol. 11, No. 44

**Key Word**

forest history, woodlands destruction, rebellion, wood using industries, Tudor conquest, native woodlands, ironworks

**Abstract**

A district-by-district survey of surviving woodlands in Ireland at the end of the 16th century is provided. The proportion of the country which carried timber at the end of the sixteenth century was probably one-eighth. Surviving maps give some evidence of forest distribution at the time, but more important pointers are the presence of ironworks, either forges or furnaces, which were dependent on charcoal for fuel. One of the biggest areas of woodland and possibly the densest was the oak forests of Killetra, Glenconkeyne and Monterivelin which lay to the north-west of Lough Neagh and stretched northwards to Coleraine, and which was described as being as big as the New Forest in Hampshire. Ulster was heavily wooded and the extent of forests in different regions is described. In Connacht there were a number of large woods comprising mainly hazel and alder. Only a small proportion of the woods described in the survey survived the seventeenth century, and the forests were seen as a serious obstacle to the Tudor conquest of Ireland. The various uses to which the felled timber was put during the 17th century are described. House building, stave making, ship building and ironworks were the main

consumers of the wood. By 1700 the woodlands had been reduced to a negligible area. The age of exploitation of the woods was nearing its end and the first attempts were being made to replace by planting and preservation the destruction of the previous century.

**Page**

pp 271 -296

**Location**

RIA library

**Notes**

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**Number**

1231

**Author**

Rackham Oliver

**Title**

Looking for ancient woodland in Ireland.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Woods, Trees and Forests in Ireland. Proceedings of a seminar held on 22 and 23 February 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

ancient woodlands, forest history, woodland history, deforestation, historical documents, archaeology, native woodlands

**Abstract**

This paper is concerned with the extent to which historic woods, or remains of them, still exist in the Irish landscape. Evidence for woodland history comes from various independent sources: documents, pollen analysis, and the archaeology, structure and vegetation of ancient woods as they are now. All these need to be pursued simultaneously if a true story is to be reconstructed. Irish woods turn out to have a history not very different from that of England or most of Europe, except that Ireland has always had relatively little woodland and little of the evidence has survived the last 300 years. Ancient woods do exist in Ireland, however precariously, and need to be recognised and studied before it is too late.

**Page**

pp 1 - 12

**Location**

RIA library

**Notes**

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**Address of author**

Corpus Christi College, Cambridge

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**Number**

1232

**Author**

Tuxen Reinhold

**Title**

Observations on Irish woodland associations, with special reference to practical forestry.

**Publisher**

The Irish Naturalists' Journal

**Place**

Belfast

**Date**

Oct/1950

**Source**

The Irish Naturalists' Journal

**Volume**

Vol. 10, No. 4

**Key Word**

woodland associations, natural woodlands, afforestation, botany, woodland habitats, natural woodland systems, cultivation policy, silviculture, species selection, *Quercus petraea*, *Blechno-Quercetum* association

**Abstract**

Studies of plant associations provide a living, complete, and always accessible expression of the natural conditions prevalent in an area. Because they are a natural product of the interaction over a long period of all habitat factors in a particular area, they provide far more information than studies of single habitat factors and are therefore very useful in assessing the potentialities of that area for the growth of forest. The author attempts to apply these principles to the natural woodland associations of Ireland, and notes that the greater part of Ireland's land surface area including, in contrast to other areas of Europe, the coastal regions, is capable of supporting woodland. The study of associations will supply the basis for the selection of the native and therefore most aggressive pioneer woody-species for the early stages of afforestation, and also for the choice of the most suitable and valuable trees, whether native or exotic, for forming the final forest.

**Page**

pp 99 - 104

**Location**

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**Notes**

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**Number**

1233

**Author**

Mitchell Fraser J.G.

**Title**

The dynamics of Irish post-glacial forests.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, Trees and Flowers in Ireland: Proceedings of a seminar held on 22 and 23 February 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

post-glacial forests, native woodlands, natural woodlands, ancient forests, forest history, geology, pollen analysis, tree colonisation, species migration, climate, forest ecosystems

**Abstract**

Forest trees began recolonising Ireland following the termination of the last glacial stage 10,000 years ago. Pollen analysis from peat bogs and lake sediments charts the arrival of trees in the Irish landscape and the subsequent development of extensive woodland. Pollen analysis from a network of sites across Europe track these trees as they migrated from their glacial refugia on the Continent. Addressing the direction and speed of this migration places Irish post-glacial forest history in a European context. The development of Irish forests was essentially controlled by climate and the activities of man with the interplay of edaphic conditions. Analysis of a complete set of data from Ireland illustrates the establishment of woodlands that once covered at least 80% of the land surface. Regional variations in this development are compared by analysing the rate of change in the pollen data from a number of sites. This analysis reveals little stability in the forest ecosystems of Ireland over their 10,000 year history.

**Page**

pp 13 - 22

**Notes**

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**Address of author**

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---

**Number**

1234

**Author**

Hall Valerie A.

**Title**

Woodland depletion in Ireland over the last millennium.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Woods, Trees and Forests in Ireland: Proceedings of a seminary held on 22 and 23 February 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

natural woodlands, forest history, ancient woodlands, oak forests, forest clearance, colonisation, pollen analysis, historical documents, landscape, woodland depletion

**Abstract**

General statements in some of the documentary records for Ireland, written in the late sixteenth and early seventeenth centuries, imply that much of the Irish lowlands were covered in great forests of oak. However, detailed examination of local contemporary documentary sources reveals a more varied landscape. The past pollen record from peats near wooded sites described in seventeenth century writing shows that over the last thousand years the landscape was more diverse than the documentary record implies, with considerable fluctuation in woodland cover. Areas such as Killarney woodlands show strong evidence for exploitation during earlier times and significant reductions during the Tudor period. This is in contrast to the comparative documentary and pollen analytical evidence for parts of the north of Ireland. The written record for these areas describes human impact on the woods of mid-County Down and the valley of the lower Bann in the seventeenth century, but the past pollen record shows that the woods may have been greatly reduced much earlier. This questions the descriptions of woodland clearances during the Elizabethan period in the Calendars of State Papers. Writings from about 500 years ago describe the Burren with considerable scrubland but here especially the pollen evidence for landscape change is vital as the documentary comment is scant.

**Page**

pp 23 - 33

**Location**

RIA library

**Notes**

Available

**Address of author**

Institute of Irish Studies, Queen's University, Belfast

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**Number**

1235

**Author**

Farrell Edward P.

**Title**

Great expectations - the prospects for forestry on blanket bog.

**Publisher**

Irish Peatland Conservation Council

**Place**

Dublin

**Date**

1990

**Source**

Irish Peatlands, The Critical Decade: International Mire Conservation Group Excursion & Symposium Proceedings Ireland 1990 (Edited by Peter J. Foss)

**Key Word**

afforestation, peatlands, blanket bogs, Sitka spruce, *Picea sitchensis*, investment, financial returns, economics, State forestry, private forestry, Coillte Teoranta, silviculture

**Abstract**

The afforestation of the blanket peatlands of western Ireland commenced in the 1950s. Production in these forests has greatly exceeded expectations. Current yield class estimates of Coillte Teoranta forests give a mean Yield Class of 13.3 for Sitka spruce. However, even with generous EC supported grant-aid, these forests cannot be confidently expected to give an attractive return to the investor. Despite this uncertainty, it seems likely that both Coillte Teoranta and private investors, as long as grant support is maintained at present levels, will continue to be attracted by the large areas of land available on the blanket bogs.

**Page**

pp 107 - 112

**Location**

RIA library

**ISBN**

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**Notes**

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**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield, Dublin 4

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**Number**

1236

**Author**

Batten L.A.

**Title**

Bird communities of some Killarney woodlands.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1976

**Source**

Proceedings of the Royal Irish Academy. Section B

**Volume**

Vol. 76

**Key Word**

woodland birds, Killarney woodlands, ornithology, Norway spruce, *Picea abies*, Sitka spruce, *Picea sitchensis*, forest ecosystems, ecology, environment, conservation, forest wildlife

**Abstract**

Mapping censuses of territory-holding birds were carried out in May 1973 in a variety of woodlands near Killarney. Particular attention was paid to the oakwoods, where it was found that the diversity of birds decreased in those areas which were heavily grazed or were infested with rhododendrons. The almost complete absence of warblers and the abundance of goldcrests were unusual features. Muckross Yew Wood had 16 species and a more balanced bird community than that found either in the Norway or Sitka spruce. The Norway spruce wood had the highest density of all the plots, with 180 territories per 10 ha. The Sitka spruce was very poor, with only eight species against 14 in Norway spruce. A census of three mixed woodlands and several of the islands in Loch Leane was completed. The largest studied, Brown Island, had a balanced community with 83 territories of 20 species on its 4.8 acres.

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pp 285 - 313

**Location**

RIA library

**Notes**

available

**Address of author**

British Trust for Ornithology, Beech Grove, Tring , Hertfordshire, England

---

**Number**

1237

**Author**

Fairley J.S., Jones J.M.

**Title**

A woodland population of small rodents (*Apodemus sylvaticus* (L.) and *Clethrionomys glareolus* schreber) at Adare, Co. Wicklow.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

Oct/1976

**Source**

Proceedings of the Royal Irish Academy, Section B

**Volume**

Vol. 76

**Key Word**

rodents, wildlife, forest ecosystems, woodland ecology, environment, *Apodemus sylvaticus* (L.), *Glareolus schreber*, fieldmice, mice, bank voles, *Clethrionomys glareolus*

**Abstract**

A study of a population of fieldmice *Apodemus sylvaticus* and bank voles *Clethrionomys glareolus* was undertaken using trap, mark-recapture methods in mixed woodland from November 1973 to October 1974. The populations density of fieldmice was low. This may have been due to a large stand of conifers in the area which probably provided relatively little food. The mice showed changes in their relative abundance in different levels of cover which cannot readily be explained. Apart from this the results are comparable with those from similiar studies in Britain, The causes of deaths in the traps are discussed.

**Page**

pp 323 - 336

**Location**

RIA library

**Notes**

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**Address of author**

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**Number**

1238

**Author**

Bishop M.J.

**Title**

The mollusca of acid woodland in west Cork and Kerry.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1977

**Source**

Proceedings of the Royal Irish Academy. Section B

**Volume**

Vol. 77

**Key Word**

mollusca, acid woodlands, mollusc populations, terrestrail mollusc fauna, Kerry slug, Geomlacus maculosus, Semilimax pyrenaica, woodland ecosystem, forest ecology

**Abstract**

Quantative estimates of mollusc populations at sites in south-west Ireland were related to vegetation and chemical composition of soil and litter using principal co-ordinates analysis and canonical correlation. The differences in snail fauna between sites was best explained by variation in litter composition especially with regard to nitrogen and calcium. The numbers of *Discus rotundatus* were dependent on litter calcium and the numbers of *Zonitoides excavatus* were inversely related to litter phosphorus.

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pp 227 - 244

**Location**

RIA library

**Notes**

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**Address of author**

Department of Zoology, University of Cambridge, England

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**Number**

1239

**Author**

Baillie M.G.L., Brown D.M.

**Title**

Some deductions on ancient Irish trees from dendrochronology.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, Trees and Forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994.

**Key Word**

tree-ring chronology construction, tree populations, timber dating, ancient woodlands, bog oak, growth rates, oak, *Quercus petraea*, forest history, dendrochronology, native woodlands

**Abstract**

Recent developments in tree-ring chronology construction have made possible the study of populations of trees through time. The collection and dating of some thousands of Irish oak specimens from all periods in the last seven millennia allow a basic description of the general character of oak in Ireland. This paper looks at some parameters such as age structure, size and growth rate for different classes of timber, namely modern oak, bog oaks and archaeological trackway oaks. The results are not always self evident. Additional information is presented on the frequency of oak survival with time. This demonstrates periods of abundance and depletion which almost certainly relate to anthropogenic factors which may themselves be dependent on overriding environmental conditions. It was also shown that oaks in Ireland rarely reached 250 years, and that size has little to do with age. It is concluded that the modern oak population is not typical of the oak population which existed in former times. Modern oaks are bigger because they grow much faster.

**Page**

pp 35 - 50

**Location**

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**ISBN**

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**Notes**

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**Address of author**

Palaeoecology Centre, School of Geosciences, Queen's University, Belfast

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**Number**

1240

**Author**

O'Carroll Niall

**Title**

Forestry in the Republic of Ireland - an industry in transition.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, Trees and Forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994. (Edited by John R. Pilcher and Sean Mac an tSaoir)

**Key Word**

State forestry, land use, marginal land, commercial forestry, State support, private forestry, subsidies, grants, wood production, environment, State afforestation programme

**Abstract**

Forestry in the Republic of Ireland was largely confined before the 1980s to land sub-marginal for agriculture, with consequent reduced yields, high costs and occasional conflict with environmental and heritage values. The State forest enterprise was re-organised in 1989 into a commercial state-owned company with current annual wood output of 1.8m cubic metres. Ireland in the eighteenth century appears to have had the first State-funded planting grant scheme. Private planting remained low during the first 60 years of the State. Subsequent funding of afforestation through planting grants and annual payments under State and EC programmes has increased private planting to about 10,000 hectares annually, and is leading to an overall improvement in the quality of land planted, especially in the private sector, with a consequent increased diversity of tree species. The use of broadleaves is encouraged and particular care exercised to ensure maintenance of environmental standards.

**Page**

pp 59 - 67

**Location**

RIA library

**Notes**

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**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building UCD, Belfield Dublin 4

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**Number**

1241

**Author**

McNally Anthony

**Title**

Dendrochronology of subfossil pine as evidence for environmental change.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1990

**Source**

Ecology and Conservation of Peatlands: proceedings of a seminar held on 7th and 8th of March 1988. (edited by Gerry Doyle)

**Key Word**

dendrochronology, subfossil pine timbers, raised bogs, peatlands, tree ring chronologies, bog woodlands, site master chronologies, environment, ancient woodlands, forest history

**Abstract**

Subfossil pine timbers occur commonly in Irish bogs. Timbers from a number of midland raised bog sites in counties Kildare and Offaly have been used to construct tree ring chronologies. Cross matching between site master chronologies indicates that the bog woodlands at all three sites were contemporaneous. The chronology at one site reveals that several generations of trees occupied the bog surface for at least 500 years, dated by radiocarbon to between 4000 and 3500 b.p. Reconstructed germination and death rates suggest rather stable environmental conditions during this interval. The tree ring evidence suggests that the period of bog surface occupation by pine was not terminated by a brief cataclysm. A change in climate resulting in higher water table levels and renewed bog growth is the factor most likely to have caused the demise of such woodlands.

**Page**

pp 15 - 22

**Location**

RIA library

**Notes**

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**Address of author**

Department of Botany, UCD, Belfield Dublin 4

---

**Number**

1242

**Author**

O'Connell C.A., Doyle G.J.

**Title**

Local vegetation history of a *Pinus sylvestris* woodland on Clonfinane Bog, County Tipperary.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1990

**Source**

Ecology and Conservation of Peatlands: Proceedings of a seminar held on 7th and 8th of March 1988. (edited by Gerry Doyle)

**Key Word**

peatland ecology, stratigraphical analysis, macrofossil analysis, pollen analysis, spore analysis, rhizopod analysis, fungal analysis, birch woodlands, willow woodland, bog pinewood, *Pinus sylvestris*, Scots pine, forest history, peatlands

**Abstract**

The results of stratigraphical, macrofossil, pollen, spore, rhizopod and fungal analyses of two peat profiles from Clonfinane Bog, County Tipperary are presented. Vegetation development commenced at 2240 b.p. At that time a minerotrophic birch and willow woodland occupied the site. Two further birch woodland phases are indicated at 1723 and 1490 b.p. respectively. The floristic composition of these woodlands are reconstructed. An ombrotrophic bog phase is indicated from 129 to 390 b.p. A vegetation type, characterised by the predominance of Ericoid species alternated with a wet phase with Sphagnum hummock and pool systems. Drying out and burning of the bog led to the establishment of a *Pinus sylvestris* woodland on the surface at 109 b.p. A detailed history of this bog pinewood is presented which indicates that a continued lowering of the bog water table and another fire episode allowed the development of a species-rich conifer woodland that is still extant today.

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pp 23 - 40

**Location**

RIA library

**Notes**

available (Seminar organised by RIA. National Committee for Biology)

**Address of author**

Department of Botany, UCD, Belfield Dublin 4

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**Number**

1243

**Author**

Pilcher J.R.

**Title**

The ecology of sub-fossil oak woods.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1990

**Source**

Ecology and Conservation of Peatlands: Proceedings of a seminar held on 7th &amp; 8th March 1988. (edited by Gerry Doyle)

**Key Word**

bog oak, dendrochronological analysis, pollen analysis, macrofossil analysis, sub-fossil oak woods, tree-ring analysis, forest history, natural woodlands, ancient woodlands

**Abstract**

Several thousand bog oaks from the north of Ireland, from Lancashire and from East Anglia have been studied for a dendrochronological project. Most of these oaks were removed from their stratigraphy during drainage operations, thus little is known about the conditions in which they were growing. Limited evidence based on pollen and macrofossils for the growing conditions will be presented. It is clear that the woodlands in which the oaks grew were in general dense with little ground vegetation. A further type of environmental evidence is that preserved as a record in the rings of the trees themselves. The types of evidence that this can reveal will be examined on three times-scales: year-to-year changes, medium scale changes covering decades and more gradual changes during the post-glacial.

**Page**

pp 41 - 48

**Location**

RIA library

**Notes**

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**Address of author**

Palaeoecology Centre, Queen's University, Belfast

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**Number**

1244

**Author**

Kelly-Quinn, Tierney D., Bracken J.J.

**Title**

Impact of acidification on the ecology of upland streams with particular reference to the possible effects of plantation forestry.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

The Conservation of Aquatic Systems: Proceedings of a seminar held on 18th and 19th February, 1993.

**Key Word**

river ecology, acidification, waterways, hydrochemistry, environment, pollution, hydrology

**Abstract**

In 1991 a national investigation into the possible impact of plantation forestry on the hydrochemistry, hydrology and ecology of salmonid rivers was initiated. The project (AQUAFOR) is an ongoing interdisciplinary effort involving three universities working in different parts of the country. This paper reports on the work which has been carried out in Co. Wicklow. Intensive monitoring of the hydrochemistry of the poorly-buffered headwater streams of the Liffey, Kings and Avonmore rivers has been undertaken in association with the quantification of macroinvertebrate communities and trout populations. Sources of acidity, which may include non-marine sulphate, nitrate and organic acids, have been identified and where possible related to the ecology of these systems.

**Location**

RIA library

**Notes**

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**Address of author**

Department of Zoology, UCD, Belfield Dublin 4

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**Number**

1245

**Author**

Beatty Malcolm H.

**Title**

The development of forest policy in Northern Ireland.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, trees and forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

State forestry, forestry policy, forestry history, investment in forestry, marginal land, land use, land acquisition, afforestation, agriculture, silviculture

**Abstract**

The first Northern Ireland government continued an earlier policy of preserving woodlands and afforestation by State acquisitions. The reasons were partly for commercial investment and partly to provide employment. The major period of expansion was 1946-69, mostly on blanket bog or poor marginal hill land. Today, the main aims of forest policy are the sustainable management of existing forests and a steady expansion of tree cover to increase the many diverse benefits that forests provide. That expansion is appropriate on hill sheep farms of Antrim, north Co. Derry and the Sperrins, the more remote rush farms of Tyrone and Fermanagh, and close to centres of population. Provision has been made for expansion at a rate of about 1600 ha per year. There are 76,000 ha of woodland in Northern Ireland, producing over 200,000 cubic metres of timber per year and providing over 1000 full-time jobs in the forest and timber processing industry. There are over 1m visitors to State forests annually.

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pp 59 - 67

**Location**

RIA library

**Notes**

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**Address of author**

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**Number**

1246

**Author**

Whelan

**Title**

The avian and mammalian fauna of woodland.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, trees and forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994 (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

woodland habitats, avian fauna, mammalian fauna, woodland ecosystems, forest ecology, wildlife, environment, conservation

**Abstract**

Woodland habitats provide food and cover for a range of avian and mammalian fauna. Soil fertility, tree species and vegetation structure influence the population density and species diversity within woodland. Songbird diversity is lowest in even-aged monoculture plantations without undergrowth and highest in semi-natural mixed woodland with a thick undergrowth. Bird densities are in general highest in semi-natural woods, lower in spruce plantations and lowest in pine. Mammals are varied in their habitat requirements within woodland. Bank vole and wood mouse require a dense ground layer. The rabbit colonises newly planted areas and is an edge species in more mature plantations. Deer species will travel distances for food and shelter, areas with dense later cover being preferred.

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pp 69 - 79

**Location**

RIA library

**Notes**

available

**Address of author**

Department of Environmental Resource Management, UCD, Belfield, Dublin 4.

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**Number**

1247

**Author**

McCracken A.R.

**Title**

The role of saprophytic and pathogenic woodland fungi.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, trees and forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

fungi, fungus, forest ecosystems, Basidiomycetes, forest litter decomposition, mycorrhizal relationships, wood degradation, forest management, silviculture, forest protection, woodland ecology, pollution

**Abstract**

Fungi are widespread in forest ecosystems. All sub-divisions of fungi are present although the most obvious and perhaps the most important are the Basidiomycetes. Fungi play a vital role in the decomposition of forest litter and many form mycorrhizal relationships with trees. Basidiomycetes in particular are responsible for the degradation of wood, both in living trees and cut wood. Changes in forest management, increased use of agrochemicals, loss of unique habitats and pollution have resulted in the decline of some fungal populations.

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pp 81 - 87

**Location**

RIA library

**Notes**

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Queen's University of Belfast

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**Number**

1248

**Author**

Seaby D.A., Selby C.

**Title**

Enhanced seedling root development in eight conifer species induced by naphthalene acetic acid.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1990

**Source**

Forestry

**Volume**

Vol. 63, No. 2

**Key Word**

naphthalene acetic acid, NAA, chemical treatments, rooting, seedling root development, cultivation, nursery practice, nursery experiments, silviculture

**Abstract**

Seedlings of eight conifer species *Pinus contorta*, *Pinus sylvestris*, *Pinus nigra*, *Larix kaempferi*, *Picea abies*, *Picea sitchensis*, *Pseudotsuga menziesii* and *Abies grandis*, were treated with auxin, in pot and nursery experiments. Dilute solutions of naphthalene acetic acid (NAA) were applied at two treatment times, just before and just after cotyledon expansion. Lateral root numbers were increased by up to 20 times on responsive species. Sensitivity varied considerable, the three pine species showing a much greater response than the two species of spruce. In most cases the mean number of induced roots increased steadily with increasing auxin concentration. Forest nursery results showed that NAA could provide an inexpensive method for stimulating lateral root formation near the soil surface. Practical nursery aspects of treatment are briefly discussed.

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pp 197 - 207

**Location**

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**Notes**

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**Number**

1249

**Author**

Pfeifer A.R.

**Title**

Lodgepole pine IUFRO provenances in Ireland: summary of results to 9 years.

**Place**

IUFRO

**Date**

1992

**Source**

Pinus contorta: From Untamed Forest to Domesticated Crop. August 24-28, 1992, Umea, Sweden: Proceedings of a meeting with IUFRO Working Party S2.02.06 'Pinus contorta provenances and breeding' and 'Frans Kempe Symposium'. (Edited by Dag Lindgren).

**Key Word**

lodgepole pine, Pinus contorta, survival rates, stem straightness, branching characteristics, stem lean, basal bowing, silviculture

**Abstract**

In Ireland, 58 of the 143 provenances of lodgepole pine were selected for field testing. All provenances were sampled together with a wide range of inland origins. Field tests were established on 5 sites and were assessed for survival, height, stem straightness and branching characteristics. Early survival was uniformly high over most provenances and sites but interior high elevation provenances suffered significant mortalities after 9 years on difficult sites. Among the coastal provenances a north/south trend in height growth was evident, with the Washington to Californian (south coastal) provenances being the most vigorous. South coastal provenances, however, performed better than expected on a high elevation mountain site. Stem lean, leading to basal bowing, was most frequent in the south coastal origins. Long heavy branches predisposed vigorous provenances to poor stem form on exposed sites. The results from the trials have shown that origins from QCI, South BC coast and Vancouver Is. provide alternative sources with reduced vigour but better wind stability and stem form. These are currently being recommended for operational planning.

**Page**

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**Location**

Coillte Research, Bray

**Notes**

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**Address of author**

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**Number**

1250

**Author**

Minihan V.B., Rushton B. S.

**Title**

The taxonomic status of oaks (*Quercus* spp.) in Breen Wood, Co. Antrim, Northern Ireland.

**Publisher**

Botanical Society of the British Isles

**Date**

1984

**Source**

Watsonia

**Volume**

Vol. 15, Part 1

**Key Word**

taxonomy, oak, *Quercus petraea*, *Quercus robur*, botany, pollen analysis, leaf analysis, oak hybrids, hybridisation

**Abstract**

The taxonomic status of oaks (*Quercus* spp.) at a National Nature Reserve, Breen Wood, Co. Antrim was assessed using a combination of eight leaf characters and pollen viability. Four types of tree were recognised: pure *Q. petraea*, F1 hybrids between *Q. petraea* and *Q. robur*, and two types of backcrossed hybrids - one, morphologically, indistinguishable from 'pure' *Q. petraea* but with low pollen viability and the other, morphologically intermediate but with a comparatively high pollen viability. One 'pure' *Q. robur* tree was identified. It is argued that the wide range of backcrossed hybrids present in Breen Wood may be the result of extensive forest clearance in the past, which has promoted introgression.

**Page**

pp 27 - 32

**Location**

UCD library

**Notes**

available

**Address of author**

School of Biological and Environmental Studies, New University of Ulster, Coleraine, Co. Derry

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**Number**

1251

**Author**

Hobson D. D.

**Title**

The status of *Populus nigra* L. in the Republic of Ireland.

**Publisher**

Botanical Society of the British Isles

**Date**

1991

**Source**

Watsonia

**Volume**

Vol. 18, Part 3

**Key Word**

*Populus nigra* L., Black poplar, botany, species distribution

**Abstract**

This paper describes the results of a reconnaissance of the Black poplar, *Populus nigra*, in Ireland. The presence of the species in Ireland was confirmed and is shown to be locally common in rural habitats in the midlands and along the Shannon river-system. Contrary to existing opinion the author concludes that *P. nigra* is a native tree of Ireland.

**Page**

pp 303 - 305

**Location**

UCD library

**Notes**

available

**Address of author**

St. John's College Oxford, OX1 3JP, England

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**Number**

1252

**Author**

Selby C., Kennedy S.J., Harvey B.M.R.

**Title**

Adventitious root formation in hypocotyl cuttings of *Picea sitchensis* (Bong.) Carr. the influence of plant growth regulators.

**Publisher**

Academic Press

**Date**

1992

**Source**

New Phytologist

**Volume**

Vol. 120, No. 4

**Key Word**

Sitka spruce, *Picea sitchensis*, adventitious roots, auxins, cytokinins, plant growth regulators, hypocotyl cuttings, rooting inhibitors

**Abstract**

A simple method for the study of adventitious root initiation on Sitka spruce hypocotyl cuttings is described and was used to examine the effects of plant growth regulators. Twenty-one-day-old seedlings, grown at a low light intensity to stimulate hypocotyl elongation, provided easy to handle tissues which were responsive to root inducing treatments. Spontaneous rooting only occurred at a low frequency on untreated cuttings and reliable rooting depended upon auxin treatment. When continuous auxin treatment was used, indole-3-butyric acid (IBA) was more effective than either indole-3-acetic acid (IAA) or 1 naphthalene acetic acid (NAA), and was optimal between  $10^{-6}$  M and  $10^{-5}$  M. Pulse treatments with  $10^{-3}$  M IBA reduced rooting. 6-benzylaminopurine (BA) was the most active being inhibitory down to a concentration of  $10^{-7}$  M when it was applied in a mixture with IBA. Pre-treatment of hypocotyl cuttings with BA prior to auxin treatment demonstrated strong cytokinin 'carry-over' inhibitory effects on rooting. Gibberellic acid A3 (GA3), abscisic acid (ABA) and 2-chloroethyl-phosphoric acid (ethe-rel) were less potent inhibitors of rooting.

**Page**

pp 453 - 457

**Location**

UCD library

**Notes**

available

**Address of author**

Agricultural Botany Research Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast BT9 5PX.

---

**Number**

1253

**Author**

Mitchell F.G.

**Title**

The history and vegetation dynamics of a yew wood (*Taxus baccata* L.) in S.W. Ireland.

**Publisher**

Academic Press

**Date**

1990

**Source**

New Phytologist

**Volume**

Vol. 115

**Key Word**

Yew, *Taxus baccata*, woodland ecology, environment, vegetation dynamics, woodland history, pollen analysis, Killarney

**Abstract**

Reenadinna Wood is one of the largest *Taxus baccata* dominated woods in Britain or Ireland. It is therefore of considerable ecological and conservation interest. To investigate the history and dynamics of the wood, pollen data on a small hollow within the wood are described. These data are compared with the regional pollen record and its historical and archaeological information. The yew wood appears to have developed at least 3000, but probably 5,000 years ago from a wood previously dominated by pine, oak, elm and hazel. There is evidence to suggest that the wood has been disturbed by periods of patch cultivation and site occupancy.

**Page**

pp 573 - 577

**Location**

UCD library

**Notes**

available

**Address of author**

School of Botany, Trinity College, Dublin 2

---

**Number**

1254

**Author**

Selby C., Lee R., Harvey B.M.R.

**Title**

The effects of culture medium rigidity on adventitious bud production and tissue vitrification in needle culture of Sitka spruce [*Picea sitchensis* (Bong.) Carr.]

**Publisher**

Academic Press

**Date**

1989

**Source**

New Phytologist

**Volume**

Vol. 113, Part 2

**Key Word**

Sitka spruce, *Picea sitchensis*, tissue culture medium, vitrification, agar, adventitious bud formation

**Abstract**

Adventitious bud formation on Sitka spruce needle explants was strongly dependent upon the rigidity of the culture medium. In general, organogenesis was greatest on weak gels and poorest on more rigid gels resulting from increased medium pH or agar strength. There was a significant interaction between agar strength and pH, with optimum pH for organogenesis declining with increasing agar strength. Poor organogenesis at high agar concentrations was not due to toxic impurities since increased adventitious bud production could be stimulated by decreasing the medium pH whilst maintaining a high agar strength and an agar washing treatment had no significant effect. Although high levels of organogenesis could be sustained on weak gels the resultant adventitious shoots often showed severe vitrification. The frequency of shoots showing vitrification could be reduced by growing the tissues on harder media but this resulted in reduced shoot elongation. Vitrification of needle tissues did not stimulate the formation of adventitious buds in the absence of cytokins.

**Page**

pp 203 - 210

**Location**

UCD library

**Notes**

available

**Address of author**

Agricultural Botany Research Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, BT9 5PX.

---

**Number**

1255

**Author**

Iremonger S.F., Kelly D.L.

**Title**

The responses of four Irish wetland tree species to raised soil water levels.

**Publisher**

Academic Press

**Date**

1988

**Source**

New Phytologist

**Volume**

Vol. 109, Part 4

**Key Word**

*Alnus glutinosa* (L.) Gaertn, common alder, *Betula pubescens* Ehrh., downy birch, *Fraxinus excelsior* L., ash, *Salix cinerea* ssp. *oleifolia* Macreight, *Salix atrocinerea* Brot., common sally, wetland trees species, wetland woods, redox potentials, oxygen diffusion, waterlogging

**Abstract**

The four most common tree species in Irish wetland woods are *Alnus glutinosa* (L.) Gaertn. (common alder),

*Betula pubescens* Ehrh. (downy birch), *Fraxinus excelsior* L. (ash) and *Salix cinerea* ssp. *oleifolia* Macreight (*Salix atrocinerea* Brot., common sally). Seedlings of these species were subjected to different soil water levels (half saturated and surface saturated) in their second and third years of growth, and performance was compared to that in a free draining control treatment. All plants survived in the water treatments, except for over 50% of the *B. pubescens*. Soil redox potentials indicated a gradient in the degree of hypoxia which seemed to reflect the order of tolerance of the species, as shown by measurements of relative growth and final dry weight. The observed differences in soil redox potentials may have been due to the oxidising activity of the roots of tolerant species, which showed varying degrees of stem base hypertrophy and associated proliferation of lenticels. Species were affected by the waterlogging treatments in the order *B. pubescens* (most adversely affected) > *A. glutinosa* > *F. excelsior* > *S. cinerea* ssp. *oleifolia*.

**Page**

pp 491 - 497

**Location**

UCD library

**Notes**

available

**Address of author**

School of Botany, Trinity College, Dublin 2.

---

**Number**

1256

**Author**

Bingeli Pierre

**Title**

The conservation value of sycamore.

**Publisher**

Royal Forestry Society

**Date**

April/1993

**Source**

Quarterly Journal of Forestry

**Volume**

Vol. 87, No. 2

**Key Word**

sycamore, *Acer pseudoplatanus*, conservation value, environment, invasive species, woodland ecology

**Abstract**

The author points out that little scientific work has been carried in the comparison of the value of sycamore and associated tree species with different taxonomic groups both in native and invaded ranges. A combination of factors, including tree height, distance between trees and age classes, will dramatically alter the impact of sycamore. Other aspects concerning the conservation value of sycamore discussed include: its alteration of the below-canopy light regime; the effect on the soil; the very small number of associated herbivorous insects; its value as a food source for rodents; its impact as an invasive species upsetting the indigenous ecosystem. A number of recommendations concerning the treatment of sycamores in various habitats are outlined.

**Page**

pp 143 - 146

**Location**

Coillte library

**Notes**

available

**Address of author**

Biology Department, University of Ulster, Coleraine, Co. Derry, Northern Ireland BT53 1SA.

---

**Number**

1257

**Author**

Department of Agriculture

**Title**

The Augustine Henry Forestry Herbarium at the National Botanic Gardens Glasnevin, Dublin, Ireland.

**Publisher**

Department of Agriculture

**Place**

Dublin

**Date**

1957

**Key Word**

Augustine Henry, herbarium, National Botanic Gardens, botany, plant collecting

**Abstract**

The specimens of the various native and exotic tree species collected by Augustine Henry and held in the Augustine Henry Collection in Dublin's Botanic Gardens are listed. A brief biography of Henry is also provided.

**Page**

vi, 136p

**Location**

Coillte library

**Notes**

available

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**Number**

1258

**Author**

De Brit Gerard

**Title**

Commercial woody plant production.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Woods, trees and forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994 (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

seedling production, tree seedlings, nursery practice, conifer production systems, bare-root transplant system, silviculture, cultivation, planting

**Abstract**

This paper assesses the different methods of tree seedling production and their relative importance in Ireland. The following production systems employed in the production of conifers in Ireland are briefly described: bare-root transplant system; undercut seedlings system; container production; accelerated transplants; and vegetative propagation. In the case of conifers the bare-root transplant system is by far the most common production system, accounting for 60 - 70% of total forest plant production in Ireland. It is a proven system and produces good quality planting stock. The main elements of a typical three-year conifer cycle are outlined.

**Page**

pp 89 - 94

**Location**

RIA library

**Notes**

available

**Address of author**

Coillte Teoranta, Ballintemple Nursery, Ardattin, Co. Carlow

---

**Number**

1259

**Author**

Gallagher Leonard U., Cahill Declan

**Title**

Wood decay and protection in the nineties.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Woods, trees and forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

wood decay, timber protection, timber preservation, preservative treatment, forest products, timber processing, environment, wood protection systems, preservatives, legislation, standards specifications, law

**Abstract**

The most important features of the physiology and types of timber decay are explained and a brief outline of early preservation developments are presented. Current decay prevention practice is discussed in the light of standards and their development. The issues of control of preservation and the environment, and phytosanitary regulations are discussed, illustrating the complexity of satisfying both users' and suppliers requirements. In considering how the current issues may be addressed by research and development, possible topics, the resolution of which would help in better wood preservation practices, are discussed. The authors suggest that future developments in the area will be along the lines of 'wood protection systems', by which is meant the totality of the approach to the control of wood deterioration. The present consensus emphasises a 'cradle to grave' approach to preservation. A holistic approach to control, and the development of protection systems which take greater cognisance of the environment will be required.

**Page**

pp 95 - 104

**Location**

RIA library

**Notes**

available

**Address of author**

Forests Products Department, Forbairt, Glasnevin Dublin 9

---

**Number**

1260

**Author**

Department of Fisheries and Forestry. Forest & Wildlife Service.

**Title**

The John F. Kennedy Park, New Ross Co. Wexford: Census of taxa up to and including 1978.

**Publisher**

Department of Fisheries and Forestry

**Place**

Dublin

**Series**

Forest and Wildlife Service internal report

**Date**

1979

**Key Word**

botany, taxonomy, plant collections

**Abstract**

This census of taxa contains a list of 2383 species, 20 subspecies, 197 varieties, 56 forms and 1421 cultivars.

**Page**

137p

**Location**

Coillte library

**Notes**

available

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**Number**

1261

**Author**

Forest and Wildlife Service. Research Branch

**Title**

Sitka spruce International Provenance Experiment in conjunction with Division 2.02 Working party 12 IUFRO.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Key Word**

Sitka spruce, *Picea sitchensis*, provenance experiments, species selection, provenance selection, provenance variation, breeding, genetics, silviculture

**Abstract**

The immediate objective of this project was to compare provenances of Sitka spruce selected from areas throughout its natural range, when grown in Irish forest conditions, using the following criteria: survival; height growth; diameter growth, susceptibility to frost, insect and fungal attack. At an early stage the better provenances were selected and large areas of these provenances established to form gene pools for advanced generation breeding. The long term objective of the project was to select the best individuals from the gene pools to form the nucleus of a further breeding programme. It was planned to lay down the outplanting stage of the experiment on ten forest sites located on different soil types and geographic locations, representative of the site types normally planted with this species.

**Page**

30p

**Location**

Coillte Library

**Notes**

available

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**Number**

1262

**Author**

Kelly Daniel L.

**Title**

The native forest vegetation of Killarney, south-west Ireland: an ecological account.

**Publisher**

British Ecological Society

**Place**

Oxford

**Date**

1981

**Source**

The Journal of Ecology

**Volume**

Vol. 69

**Key Word**

native woodlands, natural woodlands, forest vegetation, forest ecosystems, woodland ecology, botany, Killarney woods, forest flora

**Abstract**

A general account of the native forest vegetation of the Killarney district is presented. Quantitative floristic data

are presented in tabular form; the bryophytes are fully treated, and the floristic accounts are accompanied by a range of edaphic data. The Killarney woods fall naturally into sectors, along a geological divide. The larger area, on Devonian Old Red Sandstone, supports a relatively homogenous acidophilous forest type, dominated by *Quercus petraea*, and referable to *Blechno-Quercetum* Association of Braun-Blanquet & Tuxen (1952). The main gradient in this vegetation is from a relatively species-poor variant in the lower-rainfall woods, to one with a rich and luxuriant bryophyte and epiphyte flora, corresponding to well-developed *Blechno-Quercetum scapanietosum* sub-association. Accounts are presented of the bryophyte micro-communities on the forest floor, and of the epiphyte communities on *Quercus*. The forest vegetation on the Carboniferous Limestone is described for the first time. The unique moss-rich *Taxus baccata* forest on limestone outcrops is a facies of the Corlyo-Fraxinetum Association.

**Page**

pp 437 - 472

**Location**

UCD library

**Notes**

Available

**Address of author**

School of Botany, Trinity College, Dublin 2

---

**Number**

1263

**Author**

Parkin K.F., Simpson A.W.

**Title**

Wood supplies from Northern Ireland's forests.

**Publisher**

Ministry of Agriculture for Northern Ireland

**Place**

Belfast

**Date**

1971

**Source**

Symposium on Processing and Preservation of Home-Grown Timber: Northern Counties Hotel Portrush Co. Antrim, Friday 1 October to Sunday 3 October 1971.

**Key Word**

State forestry programme, timber processing, harvesting, marketing, economics, timber supply

**Abstract**

This paper provides a summary of the present and future State forestry programme in Northern Ireland, considers the problems of forecasting future outturn, discusses the foresters control over this outturn and outlines the current methods of marketing. It is predicted that from 1980 onwards the outturn of raw material will rise to give a boost to the home timber trade, seriously handicapped at present by lack of supplies. No serious marketing problems are envisaged so long as outlets are carefully planned as home demand is likely to exceed supply until well into the next century.

**Page**

7p

**Location**

Dept. of Agriculture, NI library

**Notes**

available

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**Number**

1264

**Author**

Shaw M.H.

**Title**

Forest resources in the Republic of Ireland.

**Publisher**

Ministry of Agriculture for N. Ireland

**Place**

Belfast

**Date**

1971

**Source**

Symposium on Processing and Preservation of Home-Grown Timber. Northern Counties Hotel Portrush Co. Antrim. Friday 1 October to Sunday 3 October 1971.

**Key Word**

forestry policy, State forestry, species selection, inventories, forecasts, afforestation, planting, silviculture, yield, timber production, forest resources

**Abstract**

The author traces the development of State forestry in Ireland from the formation of the Forestry Division in 1904, from which time the State has had an annual acquisition and planting programme. The present state of forestry in the Republic of Ireland is assessed using a recent inventory (1968) of State plantations. Data from this inventory is presented in tabular form and the most significant changes in forestry are demonstrated. Since 1958 the area under conifer high forest has doubled while the area under broadleaved and mixed forests has remained unchanged. The most obvious feature in terms of species planted is the increasing dominance of Sitka spruce and lodgepole pine. Tables of production forecasts of production from State forests for 1970-2000 are provided. The development of the use of artificial fertilisers from the early 1950s is examined. The importance of provenance selection with *Pinus contorta* is emphasised. The issue of land acquisition for planting is examined, and the need for a thorough inventory of private woodlands is emphasised.

**Page**

13p

**Location**

Coillte library

**Notes**

Available (Symposium organised by Ministry of Agriculture for Northern Ireland. Forestry Division)

---

**Number**

1265

**Author**

Dunleavy J.A.

**Title**

The properties and preservation of Irish grown spruce.

**Publisher**

Ministry of Agriculture for N. Ireland

**Place**

Belfast

**Date**

1971

**Source**

Symposium on Processing and Preservation of Home-Grown Timber, Northern Counties Hotel Portrush, Co. Antrim Friday 1 October to Sunday 3 October 1971.

**Key Word**

Sitka spruce, Norway spruce, *Picea sitchensis*, *Picea abies*, timber properties, strength properties, ponding, preservation, preservatives, permeability, timber processing, forest products, ponding

**Abstract**

This paper summarises the results of a series of tests on samplings of Sitka spruce and Norway spruce from eight different locations designed to evaluate their suitability as structural material for the building industry, as transmission poles and as raw material for paper and composite wood products. Results for shrinkage properties and fibre length for both species are ideal for paper production. In order to overcome the problem of lack of permeability, and ensure adequate preservative penetration, a number of samples were ponded in fresh water for periods ranging from 4 to 12 months. The poles, after drying to a moisture content of about 35%, were treated with creosote using a Lowry and Rueping process. The increased permeability due to ponding is demonstrated in a number of cross-sectional slides of the samples. To date no significant difference in strength properties

between ponded and control material.

**Page**

20p

**Location**

Coillte library

**Notes**

available

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**Number**

1266

**Author**

Little C.

**Title**

Reflections on the interactions of sawmilling, silvicultural practice and wood quality.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1979

**Source**

Wood Quality and Its Silvicultural Control. Proceedings of the 13th Forestry Student Symposium. January 3rd, 4th, 5th, 1979.

**Key Word**

timber quality, mechanical properties, sawmilling, timber processing, forest products, silviculture, timber strength, standards

**Abstract**

While research shows that Irish timber compares well with imports when tested for the mechanical properties of static bending under certain loading, impact strength and hardness strength, there is as yet no system of standards for timber quality. It is therefore impossible at present to establish silvicultural practice that would result in the production of timber resources suitable for utilisation to a particular standard. The mechanical quality of the timber can be judged to a certain extent on visual assessment of standing timber, and this helps considerably in determining the most suitable silvicultural practices.

**Page**

pp 4 - 7

**Location**

Coillte library

**Notes**

available

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**Number**

1267

**Author**

Phillips Henry

**Title**

Wood quality/grading study.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1979

**Source**

Wood quality and its silvicultural control. Proceedings of the 13th Forestry Student Symposium, January 3rd, 4th, 5th, 1979.

**Key Word**

wood quality, machine grading, visual grading, silviculture, strength properties, wood properties, timber quality, Sitka spruce, lodgepole pine, *Picea sitchensis*, *Pinus contorta*, timber processing

**Abstract**

The object of this study was to assess what effect silvicultural practices have on the timber quality of homegrown Sitka spruce and lodgepole pine. Only Sitka spruce stands with a yield class of 20 and lodgepole pine stands of 12 to 14 were sampled. A sample of four trees per treatment class was taken and these were measured for branch diameter, ring width and number of branches per whorl. A brief crop history was also recorded. After sawing the timber was graded. No obvious relationship was found between branch size and overall grade. There is a very definite relationship between growth rate as defined by yield class and percentage degrade. The higher the yield class the greater the percentage degrade. Both species were machine graded according to BS and M75/M50 grading standards. For BS standards there was little difference between visual and machine grading for the yield class 20 material, and differences only became apparent at yield class 24 or 28. The results for M75/M50 grading were similar. However, unpruned material of both species fared significantly worse under the machine grading. Unpruned lodgepole pine was its poorest grades under both sets of matching grading. This would indicate that this material is inherently weaker, and this would not be discovered under visual grading alone. The good relationship between visual and machine stress grades for material of yield class 20 and below should help allay fears about the high proportion of yield class 24 and 28 material which enters structural grades under the machine stress grading.

**Page**

pp 8 - 36

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teo., Government Buildings, Cranmore Rd., Sligo

---

**Number**

1268

**Author**

Evertsen J.

**Title**

X - ray microdensity and its application in wood quality analysis.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1979

**Source**

Wood Quality and its Silvicultural Control. Proceedings of the 13th International Forestry Students Symposium. January 3rd, 4th, 5th, 1979.

**Key Word**

wood quality analysis, silviculture, timber quality, x-ray microdensitometry, wood density, forest products, strength properties, wood properties

**Abstract**

The application of the technology of x-ray microdensitometry to the analysis of wood quality involves the measuring of wood density of micro areas from the x-ray image of a wood sample. The process by which this is carried out is explained. An increment core is taken from a tree, machined, radiographed and scanned on the microdensitometer. The data output is then processed by the computer, giving wood density data which is in turn expressed in wood quality terms. With this method it is possible to observe the effect of silvicultural management on wood formation in wood quality terms, and to monitor the same tree over a period of time.

**Page**

pp 45 - 47

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

1269

**Author**

Gilliland J., Gardiner J.J.

**Title**

Effect of fertilisation on quality of wood.

**Publisher**

University College Dublin

**Place**

Dublin

**Date**

1979

**Source**

Wood Quality and Its Silvicultural Control. Proceedings of the 13th Forestry Student Symposium January 3rd, 4th, 5th, 1979.

**Key Word**

fertilisers, fertilisation, wood quality, silviculture, sawlog lumber, forest products, timber processing, increased yield, timber quality

**Abstract**

The effects of fertiliser application on the quality of sawlog lumber are assessed under the following headings: size; straightness; form; freedom from defects such as large knots, sweep and rot; strength or density. The effects on strength and density at different stages of growth are examined. These are the planting stage, the pre-thicket stage, the pole stage, and on older more mature crops. The author concluded that the evidence appears to show that all the alleged quality degradations attributed to fertilisation, i.e. reduction in density, hence strengths, thinner cell walls, poorer pulp quality etc. are more than offset by increased total yield, greater sawlog sizes and other advantages accruing in the manufacturing process.

**Page**

pp 48 - 53

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co. Wicklow

---

**Number**

1270

**Author**

Dawson Michael

**Title**

Short-rotation coppice - a realistic source of renewable energy.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, trees and forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

short-rotation coppice, silviculture, renewable energy, fuel production, timber utilisation, willow, Salix, poplar, land use, wood gasification, electricity generation, woodfuel

**Abstract**

Short-rotation coppice willow as an alternative renewable source of energy has been under investigation in Northern Ireland since the early 1970s. Initially this was in response to the insecurity of supply and increase in fuel prices brought about by the oil crisis. However, interest has been sustained because of coppice willow's potential role in the development of agriculture and utilisation of land no longer required for food production in the European Union. Alternative cropping strategies will be required, particularly in less favoured areas. The production cycle for short-rotation willow coppice is described with particular reference to the advances being made in the production of new clonal material, disease control and mechanisation, leading to improved crop stability and falling production costs. End product utilisation and market development are considered priority areas for investigation, if the opportunity offered by short-rotation coppice, particularly in marginal agricultural areas, is to be maximised. A pilot plant using wood gasification to supply electricity and heat a small agricultural college is described.

**Page**

pp 105 - 115

**Location**

RIA library

**Notes**

available

**Address of author**

Northern Ireland Horticulture and Plant Breeding Station, Loughall, Co. Armagh

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**Number**

1271

**Author**

Thompson D.G.

**Title**

Biological and potential solutions in tree breeding.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, trees and forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

tree breeding, silviculture, tree genetics, clonal forestry, genetic diversity, genetic improvement, genetic variation, wood quality, maturation, propagation

**Abstract**

Breeding of forest trees has been underway for about forty years. Progress has been hampered by our lack of understanding of the basic biological processes unique to long-lived perennial plants. This includes our ability to manage genetic diversity wisely, to identify superior genotypes early, to manipulate the flowering process, to propagate improved material rapidly, to control maturation and to deploy genetically improved material. This paper discusses how research is attempting to provide solutions to these problems that will allow more rapid advances in forest tree breeding. The author points out that wood density and other quality aspects of wood are becoming more important than 'wood quantity', which had previously been the major preoccupation of tree improvement programmes.

**Page**

pp 117 - 126

**Location**

RIA library

**Notes**

available

**Address of author**

Coillte Teoranta Research Laboratory, Newtownmountkennedy, Co. Wicklow

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**Number**

1272

**Author**

Mac an tSaoir Sean

**Title**

Rejuvenation.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, trees and forests in Ireland: Proceedings of a seminar held on 22 and 23 February 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

rejuvenation, seed production, in vitro tissue culture techniques, Quercus, oak, Sitka spruce, Picea sitchensis, establishment, silviculture, genetics, tree breeding, genetic selection, seeds

**Abstract**

Rejuvenation in woody plants is the production of juvenile tissues from mature tissues. This process occurs naturally in the production of seeds but can be difficult to induce artificially. It would be of great benefit to tree based industries if the process of rejuvenation could be manipulated for the production of juvenile trees. This paper outlines the problems of rejuvenation and describes the progress to date in addressing this problem using in vitro tissue culture. For oaks and Sitka spruce it is now possible to establish in culture both mature and juvenile explants from the same genome. Rejuvenation has not yet been achieved for oak but partial rejuvenation has been achieved for Sitka.

**Page**

pp 127 - 133

**Location**

RIA library

**Notes**

available

**Address of author**

Department of Applied Plant Science, Queen's University, Belfast

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**Number**

1273

**Author**

Douglas G.C.

**Title**

Prospects for advanced vegetative propagation and genetic modification of forest species.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1995

**Source**

Wood, trees and forests in Ireland: Proceedings of a seminar held on 22 and 23 February, 1994. (Edited by Jon R. Pilcher and Sean Mac an tSaoir)

**Key Word**

vegetative propagation, silviculture, genetics, genetic fingerprinting, tree breeding, tree improvement, propagation systems, clonal variation

**Abstract**

Vegetative propagation is an essential feature of tree improvement programmes. It is used to propagate superior trees or families from progeny tests, in the mass propagation of tested clones and in the establishment of clone banks. The propagation system must be efficient and ensure genetic and physiological conformity in the resulting plants. Somatic embryogenesis offers the greatest prospects for conifers and auxiliary budding for broadleaved species. Both propagation systems require an effective programme to rejuvenate physiologically the selected material in order to ensure the normal development of trees and efficient rates of propagation. The technology of genetic fingerprinting, genetic transformation and its tools will accelerate the procedures of selection and breeding by genetic characteristics of breeding stocks and clones and also by introducing new genes.

**Page**

pp 135 - 157

**Location**

RIA library

**Notes**

available

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

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**Number**

1274

**Author**

Keane Michael

**Title**

Stump treatment - stop the rot !

**Publisher**

Coillte Teo.

**Place**

Bray

**Series**

Coillte Research Division. Forest Management Information Leaflet No. 1

**Date**

1990

**Key Word**

Fomes annosus, butt rot, root rot, forest protection, stump treatment, urea, fungal diseases, forest pathogens, fungi

**Abstract**

The disease cycle and route of infection of Fomes root and butt-rot are explained. The conditions most suitable for the spread of the fungus and the most susceptible species are outlined. A number of basic questions on stump treatment are dealt with, and the mixing and applying of urea mix to combat infection is described. When applied to a stump urea releases ammonia which is lethal to the Fomes annosus spores, while creating a favourable environment for other non-pathogenic fungal spores by raising the nitrogen level.

**Page**

4p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow

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**Number**

1275

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on forestry for the period from 1st April,1959 to 31st March, 1960.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1960

**Key Word**

land acquisition, plantation establishment, forestry policy, forest management, harvesting, timber marketing, wildlife conservation, disease control, forest protection, amenity forestry, forest education, State forestry, private forestry

**Abstract**

The total productive area acquired during the year was 23,323 acres, a drop of almost 2,000 acres on the figure for the previous year. The restricted plantable reserve continued to cause difficulties in programme planning. The planting target of 25,000 acres was achieved. The area recorded as thinned in the year totalled 8,352 acres and the volume of resultant produce was 2.6 million cubic feet. Felling of mature timber produced 2.8 million cubic feet. The volume of material sold increased substantially over the level of the previous year. 79% of material marketed was sold standing to timber merchants. The publicity campaign for more private planting was continued. New grants for poplar planting were introduced.

**Page**

42p

**Location**

Coford library

**Notes**

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**Number**

1276

**Author**

Gallagher G.

**Title**

Results from thinning research in Ireland.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service internal report

**Date**

1969

**Key Word**

thinning, silviculture, Sitka spruce, Picea sitchensis, lodgepole pine, Pinus contorta, Norway spruce, Picea abies, Scots pine, Pinus sylvestris

**Abstract**

The Forest and Wildlife Service's thinning research programme has been designed to provide information on the consequences of different thinning regimes on the species which are most important in the national forest. The first replicated thinning experiment in Ireland was laid down in 1962. The 14 existing experiments are concentrated in four species: Sitka spruce; Norway spruce; contorta pine; and Scots pine. This study is concerned with the affects of varying the following components of the thinning regime: intensity of thinning; type of thinning; frequency of thinning; and time of thinning. Investigations of the four main species have shown that for Sitka spruce, Norway spruce and lodgepole pine the removal of one-third volume (or basal area) at first thinning is acceptable. For Scots pine the limit is lower, probably below 20% removal by volume for a first thinning. Financial returns from each of these thinning levels are estimated.

**Page**

10p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Forest Service, Leeson Lane, Dublin 2

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**Number**

1277

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1962 to 31st March, 1963.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1963

**Key Word**

forestry policy, land acquisition, plantation establishment, forest management, harvesting, timber marketing, wildlife conservation, disease control, forest protection, State forestry, private forestry

**Abstract**

The total productive area acquired for State forestry purposes during the year was 23,446 acres. The total area planted was 24,700 acres. The area recorded as thinned during the year was 9,548 acres which yielded 3.1 million cubic feet of produce. Felling of mature timber and blown material yielded 4.7 million cubic feet. The volume of material sold in the year was 6.8 million cubic feet of which 89%, a total of 6 million cubic feet was sold standing to timber merchants.

**Page**

38p

**Location**

Coillte library

**Notes**

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**Number**

1278

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1963 to 31st March, 1964.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1964

**Key Word**

forestry policy, land acquisition, plantation establishment, forest management, harvesting, timber marketing, wildlife conservation, disease control, forest protection, amenity forestry, forestry research, forest education, State forestry, private forestry

**Abstract**

The total productive area acquired for State forestry purposes during the year was 25,096 acres. The total area planted was 25,935 acres making it the fifth successive year in which a planting programme of the order of 25,000 acres was achieved. 9,165 acres were thinned, yielding 3.1 million cubic feet of produce. The same volume of timber was obtained from mature felling and blown material. A site was chosen at Slieve Coillte, Co. Wexford, for the JFK Memorial Park, which will include an arboretum and forest plots.

**Page**

38p

**Location**

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**Notes**

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**Number**

1279

**Author**

Forest and Wildlife Service. Research Branch

**Title**

Forest and Wildlife Research Report for the year ended June 1975.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Date**

1975

**Key Word**

soil nutrients, forest protection, forest research, weed control, genetics, inventory, crop structure, biometrics, arboriculture, State forestry, forest soils

**Abstract**

This reports describes the various projects undertaken by the Research Branch of the FWS in the previous year. Among the investigations undertaken as part of the study on soils and nutrition were a series of experiments laid down with a view to developing more precise fertiliser prescriptions at planting time for Sitka spruce and lodgepole pine. Forest protection studies involved experiments to assess the effects of green spruce aphid, pine shoot moth, Fomes annosus, Monterey pine 'yellows' disease.

**Page**

70p

**Location**

Coillte library

**Notes**

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**Number**

1280

**Author**

Department of Fisheries and Forestry. Forest and Wildlife Service. Research Branch

**Title**

Research report year ended December 1980.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Date**

1980

**Key Word**

State forestry, forestry research, soil nutrients, crops structure, biometrics, inventory, forest protection, ecology, forest soils

**Abstract**

This report describes the work of the research branch of the Forest and Wildlife Service during 1980. A large part of the soils and nutrition programme is concerned with the development of more precise fertiliser prescriptions, involving a large series of field experiments which are assessed at 2 - 3 year intervals. Other important areas include site preparation, reclamation and nursery practice. Forest protection research included work on the effects of Fomes annosus and Rhizina undulata.

**Page**

122p

**Location**

Coillte library

**Notes**

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**Number**

1281

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1933 to 31st March, 1938.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1938

**Key Word**

timber utilisation, private forestry, grants, legislation, forestry policy, land acquisition, plantation establishment, forest management, harvesting, timber marketing, wildlife conservation, disease control, forest protection, amenity forestry, State forestry, private forestry

**Abstract**

At the end of 1933 all matters relating to forestry were transferred from the Minister of Agriculture to the Minister for Lands and Fisheries. The development of forestry policy during the period is described, and records of land acquisition for each year under review are provided. Details of weather conditions for each season, planting operations, plant and seed supply, silvicultural and thinning operations are also provided.

**Page**

43p

**Location**

Coford library

**Notes**

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**Number**

1282

**Author**

Forest and Wildlife Service. Research Branch

**Title**

Current developments in research. Course in Avondale.

**Publisher**

Forest and Wildlife Service

**Place**

Bray

**Date**

1987

**Key Word**

forestry research, reforestation, wood quality, forest health, forest protection, silviculture, genetics, tree breeding, timber processing

**Abstract**

This booklet contains the text of a number of short talks given to a course on current developments in research in the FWS in 1987. The following are the main subject areas covered. 1. Reforestation: (i) Seed supply. The advantages of collecting seed from home grown stands are discussed; (ii) Plant production methods. The advantages of vegetative propagation over other methods are outlined.; (iii) Site cultivation. The various

methods available for site cultivation on Old Red Sandstone podsols, surface water, peaty gleys and free draining acid brown earths are assessed; (iv) Weed control. The problem of controlling rhododendron prior to reforestation is discussed; (v) Fertiliser use in reforestation. 2. Wood quality: (i) Timber testing. A joint IIRS/FWS study is being conducted to determine whether lodgepole pine grown on peat sites can achieve the degree of straightness required for joinery timber.; (ii) Improvement of timber characteristic through breeding. The type of information required to carry out a reliable cost/benefit analysis of a breeding programme is described. 3. Forest Health: (i) Legislation and pathology; (ii) Entomology; (iii) Fomes/pollution monitoring.

**Page**

80p

**Location**

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**Notes**

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**Number**

1283

**Author**

Review Group on Forestry

**Title**

Review Group on Forestry. Report to Minister for Fisheries and Forestry.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1985

**Key Word**

forestry policy, Forest and Wildlife Service, FWS, economics, public service, management structures, forest development, State forestry, private forestry, forest research, business organisation

**Abstract**

The terms of reference for the Review Group on Forestry which was responsible for the production of this report were: to examine the present structure, organisation and operation of the Forest and Wildlife Service of the Department of Fisheries and Forestry; to consider what changes, if any, are necessary; and to make recommendations on such changes. The report found that the Service's management structures and unclear mandate hindered it from operating on a commercial basis. As part of the re-structuring programme it proposes that a new commercial body, the National Forest Enterprise (NFE), should be set up. The NFE would be staffed by civil servants but would enjoy a large degree of autonomy to allow it to fulfil its commercial mandate with minimum interference. Other recommendations include the division of the national forest estate into three regions, the establishment of a new accounting system which would produce profit and loss accounts for each region, and the overhauling of staffing structures to ensure the most efficient and dynamic management of each regions affairs. The NFE would adopt an entrepreneurial approach to timber production and marketing, intensify research into the interaction between management techniques and wood use, and identify opportunities for wood processing industries in co-operation with relevant government agencies. The NFE would also have a role in stimulating the development of private forestry, and that the responsibility for private forestry should be assigned to a unit headed by a senior manager.

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81p

**Location**

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**Number**

1284

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1943 to 31st March, 1950.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1950

**Key Word**

grants, forestry legislation, forestry policy, land acquisition, plantation establishment, forest management, harvesting, timber marketing , State forestry, private forestry

**Abstract**

The development of forestry during the period, especially in relation to the rate of afforestation, is outlined. The Forestry Act, 1946 was brought into operation on the 1st April, 1949. Details of land acquisition for State forestry purposes for each year under review are provided. Details of planting operations, plant supply and nursery work, thinnings, forest maintenance, and felling and clearing operations are also given

**Page**

58p

**Location**

Coford library, Coillte library

**Notes**

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**Number**

1285

**Author**

Forest Service

**Title**

Forest Service. Report for 1987 presented to the Government by the Minister for Energy and laid before both Houses of the Oireachtas.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1990

**Key Word**

State forestry, forest development, forestry policy, forestry management, private forestry, forest research, timber marketing, timber sales

**Abstract**

The Forestry Act, 1988 provided for the transfer of the commercial forestry functions of the Forest Service to Coillte Teoranta on 1 Jan. 1989. Certain amenity areas within State forests were also transferred to the new company. This report relates to the activities of the Forest Service in 1987 when it was responsible for the management and development of the State's forest estate and for the encouragement of private forestry.

**Page**

32p

**Location**

Coillte library

**Notes**

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**Number**

1286

**Author**

Mitchell F.J.G.

**Title**

The vegetational history of the Killarney oakwoods, SW Ireland: evidence from fine spatial resolution pollen analysis.

**Publisher**

British Ecological Society

**Place**

Oxford

**Date**

1988

**Source**

Journal of Ecology

**Volume**

Vol. 76

**Key Word**

native woodlands, natural woodlands, forest ecosystems, woodland ecology, forest vegetation, vegetational history, pollen analysis, Killarney Woods, botany, oakwoods

**Abstract**

Pollen data from small hollows in two woods in Killarney Valley are presented. These data illustrate woodland vegetation dynamics for at least the last 5000 years. Pollen vegetation correction factors for the major tree taxa in Killarney are also presented. The small hollow pollen data are compared with previously unpublished regional pollen data from Killarney. This comparison indicates that the regional pollen data lack sufficient spatial resolution to detect isolated woodland disturbances or establish past woodland composition. The past woodland in Killarney was more diverse than today and *Pinus* was an important component. The reduction in diversity is associated with man-induced disturbance. Historical documents are considered in association with, and independently of the pollen data, to quantify the more recent woodland disturbance in the Killarney Valley. The status of the Atlantic bryophyte communities in the area is considered.

**Page**

pp 415 - 436

**Location**

UCD library

**Notes**

Available

**Address of author**

School of Botany, Trinity College, Dublin 2

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**Number**

1287

**Author**

Department of Fisheries and Forestry. Forest and Wildlife Service

**Title**

Research report year ended June 1977.

**Publisher**

Department of Fisheries and Forestry

**Date**

1977

**Key Word**

FWS, forestry research, fertilisers, soil nutrition, forest protection, genetics research, inventory, crop structure, biometrics, plant ecology, silviculture, thinning, forest ecology

**Abstract**

This annual report of the Research Branch of the FWS is divided into the following sections: soils and nutrition; forest protection; weed control; genetics; inventory; crop structure and biometrics; JFK Park; and plant ecology. An experiment to determine the best treatment for checked crops of Sitka spruce is described, and studies on the nutrient requirements of several soil types are summarised. The section on forest protection describes the increasing involvement of the Research Branch in plant health controls on imports and exports and its participation in the development of a harmonised EC approach in this area. The main emphasis in the work of the Genetics Section was on tree improvement. A series of national forecasts of production has been generated as part of the crop structure and biometrics research programme. The other major study in this section was on

the effect of a range of thinning intensities and types on the growth of Sitka spruce. The study found that, after initial losses, there is a complete recovery in basal area increment in Sitka spruce after first thinning which removes either 45% of volume selectively or 50% systematically.

**Page**

149p

**Location**

Coillte library

**Notes**

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**Number**

1288

**Author**

Department of Lands. Forest and Wildlife Service

**Title**

Report of the Minister for Lands 1975.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1975

**Key Word**

forestry policy, State forests, forest development, Forest and Wildlife Service, FWS, private forestry, forest management, silviculture, research, economics, marketing, sales, conservation

**Abstract**

The Forest and Wildlife Service has responsibility for State forest development and management and the promotion of private forestry. The Service is also responsible for the conservation of wildlife and for game development. This annual report is divided into eight sections 1. Forest development, which deals with the following topics: state forest development; provision of planting stock; establishment of plantations; private forest development. 2. Forest management, which summarises the Service's work in crop management, harvesting, marketing and amenities during the previous year. 3. Conservation. 4. Game Development and Management. 5. Research - an inventory of State woodlands began in March '75. Silvicultural research includes a range of fertiliser experiments established on 14 representative sites testing a range of application rates on Sitka spruce and lodgepole pine. Forest protection studies include an attempt to quantify the damage caused by epidemics of green spruce aphids and to assess the economic justification of control measures. The main effort in the genetics section of the Research Branch was concentrated on the outplanting of the IUFRO Sitka Spruce Provenance Experiment.

**Page**

57p

**Location**

Coillte library

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**Number**

1289

**Author**

Department of Lands. Forest and Wildlife Service

**Title**

Report of the Minister for Lands for the period 1st April, 1973 to 31st December, 1974.

**Publisher**

Dublin

**Place**

Dublin

**Date**

1974

**Key Word**

forestry policy, forest development, FWS, Forest and Wildlife Service, State forestry, forest management, conservation, forestry research, silviculture, forest protection, economics, marketing

**Abstract**

The Forest and Wildlife Service has responsibility for State forest development and management, the conservation of wildlife and game development, and the encouragement of private forestry. The following are the subject areas and sub-sections covered in the report: 1. Forest development, covering the topics of State forest development, land acquisition, provision of planting stock, and plantation establishment; 2. Forest management, covering crop management, forest roads, harvesting, marketing and amenities; 3. Conservation; 4. Research - preliminary planning for a continuing inventory of State woodlands was undertaken. Silvicultural experiments included an assessment of the responsiveness of pole-stage Sitka spruce crops to N, P and K fertilisers, an examination of nutrient cycling in *Pinus contorta*, and a series of tests aimed at studying the effects of different intensities of drainage on growth, stability and water table levels. The forest protection research programme included an examination of species susceptibility to *Fomes annosus* and an investigation of the likely future development of the pathogen in infected stands. There were also experiments in forest entomology, phytosanitary, and weed control.

**Page**

68p

**Location**

Coillte library

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**Number**

1290

**Author**

Heterington J.C.

(Tansey, Webster and Associates.)

**Title**

The forestry potential of cutaway peat: an analysis of forecast and actual production 1981-1984: A possible forest resource inventory strategy.

**Date**

1986

**Key Word**

afforestation, cutaway peat, silviculture, forestry management, peatlands, bogs, peat soils, forecasting, inventory strategy, yield class, yield estimation

**Abstract**

This report provides a detailed examination of forestry potential on cutaway peat and deals with a number of silvicultural, management and harvesting issues related to this kind of forestry. The report concludes that afforestation of that area which is suitable for forestry could provide employment for several thousand people. However, little is known about forestry development on milled cutaway peat, and the residual resource after milling is very variable in depth, pH, nutrient status, and in moisture content. Furthermore a windthrow hazard class of 4 - 5 is estimated for these sites and successful establishment requires the application of K and P. Sitka spruce is the most suitable species for planting and should achieve a growth of yield class 18-20. However, it also suffers from early frost damage, poor timber quality and early windthrow causing losses in production. A critical examination of the forest resource data base is provided and nine possible sources of error are identified which might be responsible for discrepancies in forecasting production. A possible forest resource inventory strategy is recommended. The proposed method consists of several possible phases, each of which is briefly summarised in the report.

**Page**

49p

**Location**

Coillte library

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**Number**

1291

**Author**

Quinn L.

(Forest and Wildlife Service. Inventory Section)

**Title**

Proposed sampling scheme for pulpwood supply to Finsa. Report.

**Publisher**

Forest &amp; Wildlife Service

**Place**

Bray

**Series**

Forest and Wildlife Service internal report

**Date**

1984

**Key Word**

pulpwood, inventory, sampling methods, timber supply, green density factor, volume estimation, timber measurement, harvesting

**Abstract**

The inventory section of the FWS was requested to establish a sampling system for estimating volume of quantities of pulpwood being supplied to a new company, Finsa. Volume will be determined by converting green weight. Most of the timber will be harvested by Finsa but some FWS harvested material is likely to be involved. The green density factor, which is the green density expressed as 'tonnes per cubic metre', can be established by measuring the green weight and green volume. The extent of variation in the sample hinders the attempt to provide accurate estimates. The most suitable sampling unit is a group of 20 billets, selected at random from within a lorry load. The conversion factor of that sampling unit is the total weight of the 20 billets divided by the total volume. Because of the greater variation, 40 samples will be required from the FWS harvested material. 30 samples will be required from the Finsa harvested material. Because monthly green density factors are required, a running average should be calculated for both the FWS and finsa harvesting material.

**Page**

30p

**Location**

Coillte library

**Notes**

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**Address of author**

Coillte Teo., Sidmonton Place, Bray Co. Wicklow.

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**Number**

1292

**Author**

Dunleavy J.A., McQuire A.J.

(Institute for Industrial Research and Standards)

**Title**The effect of water storage on the cell-structure of Sitka spruce (*Picea sitchensis*) with reference to its permeability and preservation.**Publisher**

IIRS

**Place**

Dublin

**Date**

1972

**Key Word**

water storage, ponding, tree cell-structure, permeability, timber preservation, preservatives, forest products, timber processing, Sitka spruce, *Picea sitchensis*, tree morphology

**Abstract**

Commercial treatment trials with full transmission poles have shown that water storage considerably improves the permeability of Sitka spruce and Norway spruce. The results were confirmed by laboratory measurements which showed that in the sapwood of ponded Sitka spruce, there is a vast improvement in permeability in all three grain directions. Heartwood permeability does not seem to be affected to any great degree. Detailed examination of the ponded sapwood by optical and electron microscopy showed that the tori and bordered pit membranes have been destroyed. This would explain its increased longitudinal and tangential permeability. Destruction of the bordered pit membranes would also affect radial permeability, but it is thought that the main factor contributing to increased radial penetration was the partial breakdown of the crossfield pit membranes of the ray parenchyma cells. The microscopic examination showed no evidence of cell wall degradation. Preliminary tests have not revealed any deterioration of the strength properties of the wood due to prolonged ponding. There is evidence to indicate that the destruction of the pit membranes was caused by bacterial attack. Microbiological investigations are now in progress and it is hoped that this work will establish the identity and the mechanism of attack of these organisms.

**Page**

8p

**Location**

Coillte library

**Notes**

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**Number**

1293

**Author**

Convery Frank J.

**Title**

The importance of the native sawmilling industry in Irish forestry.

**Date**

1980

**Key Word**

sawmilling industry, timber processing, timber production, forest products, timber supply, marketing, forestry development, forestry policy, State forestry, wood disposal mechanisms, timber sales policy, timber exports, import substitution

**Abstract**

This paper begins with a brief assessment of the current state of the lumber industry in Ireland. A rapid increase in the availability of sawlog size wood raw material is predicted which will allow expansion in domestic output, at a compound annual average growth rate of almost 19% over the coming decade. Sawlog and boxwood volumes becoming available from State forests will increase from 0.3 Mcubic metres in 1979, to 0.93 M cubic metres in 1990 and 2.05 M cubic metres in 2000. Ireland therefore has the opportunity to become a major sawnwood exporter. Sawmills process more than half of the output of Irish forests and thus provide the bulk of the revenues to both the State and private forests. The ability of the sawmilling industry to secure the bulk of the domestic market and export successfully, a development which is vital for the health of the entire forest industry, will depend on a number of factors. The author recommends the formation of a Forest Developments Board with expertise in wood marketing, harvesting, forest products, industrial processes, product development and marketing as necessary step in this development. The board would help to evaluate the full implications of stumpage prices and will be able to find ways of reducing the cost of harvesting and processing, which would allow the mills to achieve premium output prices. Alternative wood disposal mechanisms should be tested in order to determine the most satisfactory mix of marketing strategies.

**Page**

18p

**Location**

Coillte library

**Notes**

Available (Presented to the Annual General Meeting of the Irish Home Grown Timber Merchants Association, Dublin, December 11, 1980)

**Address of author**

Environmental Institute, UCD, Richview, Clonskeagh Drive, Dublin 14

---

**Number**

1294

**Author**

Graham T.

**Title**

Private Forest Inventory Northern Ireland 1975.

**Publisher**

Forest Service. Department of Agriculture N.I.

**Place**

Belfast

**Date**

1981

**Key Word**

private woodlands, private forestry, inventory, forecasting, forestry policy, annual yields, forest management, forestry research, forest management

**Abstract**

The Northern Ireland Forest Service undertook an inventory of privately owned woodland in response to demands for up-to-date information about existing woodlands, and also to provide possible forecasts for future yields. A pilot survey to explore inventory methods was conducted in 1975 and field work on the main survey was done over the subsequent four years. This showed that the inventory would be more effective if areas of less than 0.5 ha were surveyed separately. Sample plots were visited by surveyors who recorded height, girth, species, age class, soil type, management type, secondary use and details of ownership. The data were processed by a computer using the same programme as had been previously used for an inventory of State forests. The average size of the 13,800 ha of private woodlands was 3.4 ha. The areas surveyed are divided by species, soil type, and age. Three forecasts are presented, which show annual yields of 36,000 cubic metres, representing current management practice and species composition, 79,000 cubic metres, which represent current species composition and management for maximum sustained volume production, 220,000 cubic metres, which represents replacement of slower growing species by fast growing conifers managed for maximum volume production.

**Page**

77p

**Location**

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**Number**

1296

**Title**

Report of the Inter-Departmental Committee on Quota/Tender Sales Systems for Disposal of State-Owned Timber.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

Oct/1984

**Key Word**

State forestry, forestry policy, timber sales, sales systems, subsidies, timber processing, sawmilling, forest products, timber supply, tendering, economics, marketing

**Abstract**

In July 1983, the Irish Government established an Inter-Departmental Committee comprising officials of the

Departments of Fisheries and Forestry, Industry and Energy and Finance to examine the economic effects on the Exchequer, the sawmilling industry and generally of the quota system for the disposal of timber from State forests. The report found no evidence that the FWS disposes of this timber in a manner which is unfair to the industry or otherwise than in accordance with its statutory obligations. The existing tender system adheres to economic criteria set by successive governments. Irish timber, when properly processed, can compare favourably with imported timber. However, despite commitments by the mills, the timber processing industry still lacks the sawing, drying and ancillary finishing equipment needed to process Irish timber. These commitments were made under the large-sawlog Quota Scheme. The subsidy provided for timber supply under this scheme costs the Exchequer in excess of £200,000 per annum. The Committee recommends that the FWS should provide the industry with best information as to anticipated availability and location of timber supply. Further recommendations are made regarding the future operation of the Quota Scheme. The Committee does not recommend the introduction of Quota Scheme for small sawlog. An Advisory Committee representative of the FWS, the industry and other appropriate agencies and interests should be established to advise on research, development, promotion and marketing in the domestic and export markets of Irish timber and timber products.

**Page**

64p

**Location**

Coillte library

**Notes**

available

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**Number**

1297

**Author**

Coillte Teoranta. Research & Technology

**Title**

Report to the Forest Service Department of Agriculture, Food and Forestry on forest research 1993.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Date**

1994

**Key Word**

forestry research, silviculture, forest protection, forest pests, site studies, provenance trials, crop establishment, thinning, windthrow, environment, air pollution

**Abstract**

This report summarises the work of Coillte's research branch over the past year. As part of the provenance testing programme a provenance trial for beech was established. The results from the 1975 Sitka spruce IUFRO Provenance Trial were examined and the performance of Washington, Oregon and British Columbia provenances assessed. The best provenances from the Knocktopher 4/68 Norway Spruce IUFRO Provenance Trial were identified. As part of the Sitka spruce breeding programme a number of progeny trials and clonal tests were carried out. As part of the silvicultural research programme work was carried out in the following areas: plant stock quality; crop establishment; windthrow, work was mainly concerned with evaluating a number of existing windthrow risk assessment methods; thinning quality; and monitoring forest conditions using infrared aerial photography. A report on the ongoing survey being undertaken as part of Ireland's contribution to the EC scheme for the protection of forests against atmospheric pollution is included. Forest protection established two new trials to examine pest management of the large pine weevil and assess the effect of the granular insecticide, Marshal SuSCon.

**Page**

35p

**Location**

Coillte library

**Notes**

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**Number**

1298

**Author**

Purcell Thomas J.  
(Forest and Wildlife Service)

**Title**

Inventory of private woodlands - 1973.

**Publisher**

Department of Fisheries and Forestry

**Place**

Dublin

**Date**

1979

**Key Word**

private woodlands, inventory, volume assessment, forecasting

**Abstract**

Field work on an inventory of private woodlands commenced in August 1970 and finished in November 1973. The objectives of the inventory were: 1. To estimate the total area of private woodland in the country; 2. To obtain a breakdown of the forest types in private ownership; 3. To assess present volume and potential future production in the private sector; 4. To provide the larger woodland owners (40 ha + ) with basic maps and stand descriptions of their forest properties; 5. To facilitate the Forest and Wildlife Service of the Department of Fisheries and Forestry in shaping private woodland policy. All plantations, aged one year or older at time of Inventory were surveyed. The work involved in the two phases into which the inventory was divided are described. The field procedure was to delineate the stand on the appropriate 6" Ordnance Survey map and then fill in a stand form. A variation of Von Mantel's growth regulation formula was used to produce an estimate of yield from conifers.

**Page**

47p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Teoranta, Riverview House, Dublin Road, Kilkenny

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**Number**

1299

**Author**

O'Flanagan Liam  
(Department of Lands, Forest and Wildlife Service)

**Title**

Inventory of State Forests - 1968.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1973

**Key Word**

inventory, State forests, timber production forecasts, forest maps, data processing, yield

**Abstract**

The 1968 Inventory of State Forests covered all crops planted prior to 1958. The two prime objectives of this inventory were: 1. To produce short and long term forecasts of timber productions; 2. To provide up-to-date forest maps with stand descriptions for use by forest managers. The inventory covered a total of 202 forest units, and was divided into three parts: forest mapping and sub-compartment description; accuracy testing; and data

processing. The following location terms used by the inventory are defined: county; district; forest; property; compartment; and sub-compartment. The assessment terms employed are also described. These are: planting year; top height; yield height; volume per acre; firewood per acre; area; forest type; sub-type, pure or mixed; evenaged or unevenaged; name of first and second species; rotation classification; reduced rotation; normal rotation; transmission pole rotation; type of mixture; breast height quarter girth class of first and second species; stocking level; crop stage; and industrial timber by species.

**Page**

94p

**Location**

Coillte library

**Notes**

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**Number**

1300

**Author**

Egan G., Murphy P.

**Title**

Report on an investigation into the comparative operational and output costs of Forest Service machines and hired machines (in the areas of roadmaking and ground preparation).

**Publisher**

Forest Service

**Place**

Dublin

**Series**

Forest Service internal report

**Date**

1987

**Key Word**

operational costs, output costs, forest machinery, roadmaking machinery, ground preparation machinery, forestry machinery

**Abstract**

In recent years the Forest Service has become more and more dependent on hireage to carry out its various programmes, partly because of the de-commissioning and non-replacement of some machines, the increasing demand for machines, and the low level of increase in hire rates. This development is not the result of a policy decision. The terms of reference given to the authors of this report were: to compare the cost of operation and output of Forest Service machines with the cost of hiring and output of hired machines; to compare the relative effectiveness of the above and hireage; and consider policy changes. The report concentrates on two general areas, roadmaking machines and ground cultivation machines. The report found that at least part of the work performed by FS machines could have been done at a cheaper cost by hired machines. Furthermore utilisation rates achieved by hired machines are far higher. The authors conclude that the FS should not be using its own machines for any type of road formation work. In the few cases where direct comparisons can be made for ground/preparation ploughing work, the indications are that hireage would be cheaper than operating and maintaining the FS's own machines.

**Page**

48p

**Location**

Coillte library

**Notes**

available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co. Wicklow

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**Number**

1301

**Author**

Government of Ireland

**Title**

Forestry.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1964

**Source**

Second Programme for Economic Expansion. Part II. (Chapter 3)

**Key Word**

industrial development, economic development forestry policy, State forests, timber processing, pulpwood, silviculture, economics, forestry development, afforestation

**Abstract**

The chapter on forestry assesses the performance of this sector since the publication of the first programme on economic expansion. The afforestation proposals outlined in the first programme have been implemented in full, and the annual planting target of 25,000 acres has been reached every year since 1959/60. This level of planting will increase the area under State forests to about 550,000 acres by 1970, 80% over the 1960 figure. Among the issues to be addressed by a wide ranging research programme are seed provenance, the afforestation of infertile and exposed sites, the control of pests and diseases, and an investigation into the mechanical properties of the principal species of Irish timber in co-operation with the IIRS. Net outlay on State forests was estimated in 1958 to average £1.9 m annually during the first programme. Total State expenditure on forestry amounted to about £28m by 31 March, 1964. It is estimated that 15 years will elapse before revenue exceeds expenditure.

Production of sawlog timber from State forests rose from 1.1m cubic feet in 1958/59 to 2.6m in 1962/63.

Current supplies meet only about one-sixth of domestic requirements of lumber. The current state of the Irish pulpwood-based industries is assessed, and the adverse effects of that sector's dependence on imports on the sector is noted. Future developments should allow the industry to absorb most thinnings from State forests.

**Page**

pp 132 -141

**Location**

Coillte library

**Notes**

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**Number**

1302

**Author**

T.B.M. Consultants

**Title**

An economic opportunity for marginal land in Northern Ireland.

**Publisher**

T.B.M. Consultants

**Place**

Belfast

**Date**

1985

**Key Word**

coppicing, coppiced willow, fuel supplies, wood conversion, alcohol fuel, land use, forest products, timber end use, economic development, timber processing, biomass production

**Abstract**

This report summarises the work completed in Northern Ireland on growth rates of coppiced willow and compares the results with those obtained elsewhere. The most suitable end use for this kind of crop is the provision of energy. The principle of very fast growing trees which can be harvested every 3 years is outlined. Much of the land of South Tyrone and Fermanagh has been identified as suitable for the growth of these trees, and the amount of land which could be expected to be converted to growing willow in the short term is estimated at 20,200 ha. Conversion to transportable fuels is identified as the most suitable way to create an

economic resource and a number of different conversion processes are examined. The most promising technology entails the conversion of wood to alcohol by enzymatic hydrolysis. The end products of the conversion process are ethanol, lignin and sugars, all of which are economically useful. The cost of producing the wood and delivering to the location of the conversion process compares favourably to similar arrangements in other countries.

**Page**

72p

**Location**

Coillte library

**Notes**

available

**Address of author**

TBM Consultants, 8 Elmwood Ave., Belfast BT9 6AY.

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**Number**

1303

**Author**

H.A. Simons (International) Ltd.

**Title**

P. 1384 Industrial Development Authority

**Publisher**

H.A. Simons (International) Ltd.

**Place**

Vancouver B.C.

**Date**

1966

**Key Word**

timber processing, forest products, timber supply, pulp wood products, paper, composite wood based products, economics, operating costs

**Abstract**

In March 1966, the IDA engaged a consulting engineering firm, H.A. Simons, to carry out a technical and economic study to establish a long term development programme for utilisation of Irish grown wood for pulp, paper and composite wood based products. Each of the existing pulp, paper and particle board industries were asked to provide answers to a questionnaire prepared by Simons. The companies which responded to the survey provided operating and economic data as well as information regarding expansion plans. Using this data, and where necessary, other information, the economics have been worked out for each company, both for current operations and for the operation after what is considered to be a logical expansion. The economic summaries and calculations of all participating companies are shown in attached appendices, as well as hypothetical cases of new chipboard, pulp and paper mills. It is concluded that wood supply is presently inadequate for industry expansion requirements, but the thinning yield is increasing and it is expected that there will be a surplus over the expansion requirements by the 1980s. Generally, it would appear that the chipboard and hardboard industries would benefit from expansion and the gross return on investment for expansion is quite good.

**Page**

60p

**Location**

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**Notes**

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**Number**

1304

**Author**

Forest Service

**Title**

Notes on the origin and development of the Irish Forest Service 1900-1966.

**Place**

Dublin

**Date**

1967

**Key Word**

Forest Service, forestry policy, State forestry, staffing, administration, forestry management, public service, forestry history, forest development, afforestation, Forestry Commission

**Abstract**

This report begins with a brief overview of the origin and development of the Irish Forest Service starting with the establishment of the Department of Agriculture and Technical Instruction in 1899. The establishment and operation of the British Forestry Commission, which was responsible for Irish forestry policy through the agency of the DATI, is summarised. The present organisational structure of the Forestry Division is explained. The Forestry Division is a branch of the Department of Lands, which also embraces the Land Commission. The process by which land is acquired by the State for afforestation, either by purchase, leasing or renting, is outlined. The staffing arrangement for the implementation of the forestry programme and the division of the country for the purposes of forest management are explained. The the extent of each unit and the level of the personnel responsible for management is described. The administrative side of controlling the State's forest estate is also described. Outside of the departmental control area administration can be roughly grouped into: 1. Commercial, responsible for timber marketing, machinery, supplies and roads; 2. Management, responsible for buildings and revenue, estates management and private forestry

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44p

**Location**

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**Number**

1305

**Author**

Northern Ireland Forest Service

**Title**

Forestry in Northern Ireland.

**Publisher**

Department of Agriculture for Northern Ireland

**Place**

Belfast

**Date**

1993

**Key Word**

Northern Ireland Forest Service, forestry history, State forestry, recreation, conservation, education, timber harvesting

**Abstract**

This pamphlet provides a brief account of the history, development and operation of the Northern Ireland Forest Service. There are notes on the following areas: timber harvesting; conservation; recreation and education.

**Page**

8p

**Location**

Department of Agriculture for NI Library

**Notes**

Available

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**Number**

1306

**Author**

Northern Ireland Forest Service

**Title**

A review of forestry in Northern Ireland 1990. Part 1. Historic review 1986 - 90.

**Publisher**

Department of Agriculture for N. Ireland

**Place**

Belfast

**Date**

1990

**Key Word**

forestry policy, forest development, production targets, administration, Northern Ireland Forest Service, land acquisition, State forestry, forest management, silviculture, forest protection

**Abstract**

The terms of reference of this review of the Northern Ireland Forest Service were to review progress and achievements during the 5 year period 1986 to 1990 in relation to the targets and programme laid down, and to review policy objectives and policy instruments and to set targets and programmes for the next 5 years. Against the target of 600 ha per annum, an average of only 420 ha were acquired per year. A total of 2,104 ha were acquired during the period and the area planted was 3,009 ha planted. The timber production targets for the whole period were met, and the annual production of 143,430 cubic metres was as forecast. There was an overall increase of 51% in the volume sold over the period. The review states that the Forest Service Recreation Policy continued to fulfil the intentions and objectives of the 1970 Government White Paper on Forestry which stressed the important contribution which State forests can make to the growing need for outdoor recreation facilities. Changes in the organisation's structure and staffing arrangements are explained in the section on administration. In the section on policy evaluation the benefits obtained from the Forest Service programme during the past 5 years are outlined, and the external changes likely to influence the development of policy in the future. It is likely that greater emphasis will be placed on non-wood benefits, such as environmental benefits, than has been the case heretofore.

**Page**

80p

**Location**

Department of Agriculture for N. Ireland library

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**Number**

1307

**Author**

McCurdy R.J.

**Title**

Department of Agriculture (N.I.) Forest Service: conservation guidelines.

**Publisher**

Department of Agriculture for Northern Ireland.

**Place**

Belfast

**Date**

1987

**Key Word**

environment, conservation, afforestation, ploughing, drainage, water courses, forest management, wildlife, woodland ecosystems, forest ecology

**Abstract**

The objective of these guidelines is to indicate how woodlands managed for timber production can also be developed for the benefit of conservation. Critical periods within normal forestry practice that have a major effect on conservation are identified. The guidelines highlight the importance of natural features, the role of woodlands in the landscape and the value of wildlife conservation. Advice is given on the most environmentally sympathetic approach to take in the following areas: afforestation; management of the established forest; and clear felling and restocking.

**Page**

16p

**Location**

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**Notes**

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**Number**

1308

**Author**

Kilpatrick C.S.

**Title**

Northern Ireland Forest Service - a history.

**Place**

Belfast

**Date**

1987

**Key Word**

Northern Ireland Forest Service, forestry history, forestry policy, training, education, politics, administration, afforestation, politics, silviculture

**Abstract**

The historical background to the setting up of the Northern Ireland Forest Service is outlined and the role of the Department of Agriculture and Technical Instruction in establishing a forest industry in Ireland is described. In 1912 Ballykelly Forest was acquired by DATI and 11 acres of Douglas fir were planted marking the beginning of State forestry in Ulster. Responsibility for forestry in Northern Ireland was assumed by the Forestry Commission from the summer of 1920 to April 1922 when the Northern Ireland Ministry of Agriculture took over. The Babington Committee, set up in 1943 by the Northern Ireland Government to consider post-war agriculture policy, and the Drummond Report of 1957 set out Government policy in the area of forestry and expressed considerable confidence and optimism in the continuing growth of this sector. The lack of clarity in forestry policy was partially resolved by the 1967 White Paper, 'Forestry in Northern Ireland', which set planting and production targets and clarified the role of Northern Forests in the areas of recreation and rural development. The Jack Report of 1971 introduced an extensive programme of administrative reform for the service. Political uncertainty in the years before and after the introduction of direct rule from Westminster hampered the development of forestry in the province. Spending cuts in the early 1980s forced a restructuring of the organisation and a reduction in the size of the professional and technical staff.

**Page**

98p

**Location**

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**Notes**

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**Number**

1309

**Author**

Northern Ireland Forest Service

**Title**

Forest Service annual report 1993 - 1994.

**Publisher**

Department of Agriculture for Northern Ireland

**Place**

Belfast

**Date**

1994

**Key Word**

Northern Ireland Forest Service, State forestry, forestry policy, land acquisition, land use, afforestation, private forestry

**Abstract**

The operation of the forestry section of the Department of Agriculture for Northern Ireland is reviewed. The low level of land acquisition noted in previous years continued during the period under review and only 417 ha were purchased. 365 ha of land were planted and 451 ha of land reforested. Just over 220,000 cubic metres of timber were harvested, an increase of 5% on the previous year, and revenue from the sale of timber increased to £3.4 million. Performance in the areas of recreation, conservation and health and safety is assessed. 928 ha of land were planted by private owners, who received grants totalling £778,000.

**Page**

42p

**Location**

Department of Agriculture of N. Ireland library

**Notes**

Available

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**Number**

1310

**Author**

Northern Ireland Audit Office

**Title**

Department of Agriculture: Forest Service: Report by the Comptroller and Auditor General for Northern Ireland.

**Publisher**

HMSO

**Place**

London

**Date**

1992

**Key Word**

Northern Ireland Forest Service, forestry policy, land use, land acquisition, State forestry, harvesting, marketing, economics, costs, auditing, finance, commercial forestry, administration, management, forestry policy, forest development

**Abstract**

This report records the results of an examination by the Northern Ireland Audit Office of certain aspects of the Northern Ireland Forest Service. The report notes that the target of 90,000 ha of State forest by the end of the century is now regarded as being unattainable because of the difficulty in acquiring suitable land. The investment appraisal methodology which the Forest Service is required to carry out before acquiring land uses a higher discount rate than that used by the Forestry Commission. Furthermore agricultural land is over-valued because of European Community price supports. A Forest Service trading account which records the commercial activities of forestry is presented. Reports are also presented on harvesting and marketing of timber. The report found that although the Forest Service uses a number of performance indicators, they are applied inconsistently and in a limited way making comparisons difficult.

**Page**

25p

**Location**

Department of Agriculture for N. Ireland library

**Notes**

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**Number**

1311

**Author**

Simpson A.W.

**Title**

Some aspects of forestry in Northern Ireland since 1922 compared with those in Great Britain and Eire.

**Publisher**

Quarterly Journal of Forestry

**Date**

Oct/1964

**Source**

Quarterly Journal of Forestry

**Volume**

Vol. 73, No. 4

**Key Word**

afforestation, State forestry, silviculture, economics, private forestry, forestry policy, planting targets

**Abstract**

The reasons for afforestation and area targets, annual State planting programme, size of forests, economics and private forestry in Northern Ireland are considered in turn and compared where relevant with conditions in Great Britain and Eire.

**Page**

pp 287 - 301

**Location**

Dept. of Agriculture for NI library

**Notes**

Available

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**Number**

1312

**Author**

Jones G.B.

**Title**

Variations in cell size and cell wall thickness in Norway spruce, *Picea abies* Karst.

**Date**

1961

**Source**

Oxford University Forestry Society Journal

**Volume**

Vol. 4, No. 6

**Key Word**

cell size, cell wall thickness, Norway spruce, *Picea abies* Karst, botany, plant physiology

**Abstract**

Some methods of measuring wall thickness and cell size are compared. It was found that measurement on drawings made from projections was slightly more satisfactory than direct measurement with an eye-piece scale. Shand micrometer readings tended to give higher values for wall thickness. In rings near the pith wall thickness is low and shows only a slight increase in the latewood. In mature rings wall thickness often decreases in the last 2 or 3 cells at the end of the ring. The latewood tracheids of slow-grown Swedish material had thicker walls than those of the British stems. Maximum lumen diameter often occurs after 10 - 20% of the ring has been formed; the diameter fluctuates widely throughout the ring and it is suggested that this may be associated with development from mother cells. Variation in cell size is closely associated with the percentage of wall present, and appears to be an important factor in the increase at the end of a growth ring.

**Page**

pp 11 - 21

**Location**

Department of Agriculture for N. Ireland library

**Notes**

Available (Reprint in DANI library)

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**Number**

1313

**Author**

Busby J.A.

**Title**

Studies on the stability of conifer stands.

**Date**

1965

**Source**

Journal of the Royal Scottish Forestry Society

**Volume**

Vol. 19, No. 2

**Key Word**

stability, windthrow, silviculture, solid conditions, root rot, thinning

**Abstract**

Soil condition is the most important factor affecting tree stability. The stand age, height, structure and treatment are also significant. Wet and waterlogged soil leads to particularly unsuitable conditions. Uneven and irregular stands seem to suffer less damage than uniform ones and young stands less than old ones. While unthinned stands are stable, the individuals in them are very unstable. Various treatments are proposed to minimise the importance of windthrow. Margins should be treated specially. Efficient drainage is essential. Small irregularities in the canopy created by a crown thinning technique seem to offer advantages. For stable rooting, natural regeneration seems better than notch planting, while certain ground preparations before planting which permit a root spread in a radial pattern are more beneficial.

**Page**

pp 86 - 102

**Location**

Department of Agriculture for NI/Coillte library

**Notes**

available

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**Number**

1314

**Author**

Parkin K.F. Dallas W.G.

**Title**

The balance: production versus conservation versus recreation: the growers' viewpoint - experience in Northern Ireland.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1962

**Source**

Supplement to Forestry

**Key Word**

forest management, forestry policy, environment, recreation, conservation

**Abstract**

This paper discusses some of the criteria affecting the development of a forest management policy involving a balanced use of forests for production, conservation and recreation. The importance of moorland as a habitat for wildlife, such as red grouse, is an important factor to be considered how much of this land should be planted. The leaving of scrublands, increased use of indigenous species, and manipulation of planting and felling programmes so that at any time there are young plantations in any locality here are recommended as ways of resolving the production-conservation conflict in forestry. These recommendations are also relevant in dealing with conflicts that may arise between production and recreation.

**Page**

pp 84 - 89

**Location**

Department of Agriculture for NI library

**Notes**

Available

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**Number**

1315

**Author**

McConaghy S., McAllister J.S.V., Parkin K.F., Parker R.E.

**Title**

The growth of Sitka spruce on deep peat in Northern Ireland: 1. The effect of fertilisers and other treatments on the growth of young trees.

**Publisher**

Ministry of Agriculture, Northern Ireland

**Place**

Belfast

**Date**

1960

**Source**

The Research and Experimental Record of the Ministry of Agriculture, Northern Ireland.

**Volume**

Vol. 10, Part 2

**Key Word**

deep peat, tree growth, silviculture, fertilisers, growth check, lime, phosphate dressing, Sitka spruce, *Picea sitchensis*, fertilisation, peatlands

**Abstract**

This paper studies the effects of various treatments on the growth of young Sitka spruce trees on deep peats, with particular reference to the incidence of 'check'. The addition of certain nitrogenous materials to young trees in check produced a temporary improvement in colour and growth, but this improvement was not persistent as that obtained by deepening the main drains and placing the excavated peat around the trees. Nitrogenous materials with basal phosphate, applied in and around the planting hole at the time of planting, had little effect on growth after three years. Similiar treatments, broadcast under the turf ribbon, significantly increased the rate of growth but the increase appeared to be mainly the result of an improved response to the phosphate dressing when applied in this manner. The application of lime before planting increased growth of young trees, particularly after the second year.

**Page**

pp 151 - 162

**Location**

Department of Agriculture for N. Ireland library

**Notes**

available

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**Number**

1316

**Author**

Parkin K.F.

**Title**

Afforestation of the peatlands in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1957

**Source**

Irish Forestry

**Volume**

Vol. 14, No. 2

**Key Word**

afforestation, peatlands, peat soils, marginal land, bogs, deep peat, drainage, planting, forest establishment,

forest development, plant competition, forestry policy

**Abstract**

This paper summarises the present policies and techniques of afforestation of peat covered areas in Northern Ireland, provides details of current research, and briefly assesses the future management problems which may be anticipated in the developing forest. The most suitable type of drainage for this type of soil and the fencing which is necessary to protect new plantations against stock and harmful vermin are described. The turving ploughs provide ribbons of peat about 9 inches thick and five feet apart across the planting area. The young trees are planted on these at 5 feet intervals using a semi-circular spade. Sitka spruce and lodgepole pine are the most suitable species on a wide range of peat types. A number of experiments are being conducted to determine the best method of eliminating the competition of Calluna. Other factors affecting stands in the establishment phase include windthrow and invasion by Sphagnum moss.

**Page**

pp 111 - 117

**Location**

Coillte library

**Notes**

Available

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**Number**

1317

**Author**

Adams S.N.

**Title**

Sheep and cattle grazing in forests: a review.

**Publisher**

Blackwell Scientific Publications

**Place**

Oxford

**Date**

April/1975

**Source**

Journal of Applied Ecology

**Volume**

Vol. 12

**Key Word**

afforestation, planting, forest establishment, agriculture, grazing, sheep, cattle, weed control, forestry policy, land use

**Abstract**

The advantages associated with combining grazing and afforestation are discussed. Letting grazing rights in the early years after planting could provide a small income and improve profitability. The application of phosphate at planting results in increased vegetation. Grazing could help weed control, reduce the risk of fire, and might improve nitrogen cycling in the ecosystem. Integration of grazing and forestry could help to reduce the conflict between farming and forestry.

**Page**

pp 143 - 152

**Location**

Department of Agriculture for N. Ireland library

**Notes**

Available (Reprint in DANI library)

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**Number**

1318

**Author**

Dickson D.A.

**Title**

The effect of nitrogenous and phosphatic fertilisers on the growth of checked trees on deep peat.

**Publisher**

Ministry of Agriculture, Northern Ireland

**Place**

Belfast

**Date**

1965

**Source**

Record of Agricultural Research

**Volume**

Vol. 14, Part 2

**Key Word**

nitrogen, phosphate, fertilisers, silviculture, checked growth, tree growth, deep peat, peatlands, peat soils, Sitka spruce, Picea sitchensis, lodgepole pine, Pinus contorta

**Abstract**

This paper presents the results of an investigation into the mineral nutrition of Sitka spruce and lodgepole pine planted 24 years ago on deep ombrogenous peat at two forests in Co. Derry. Growth had been poor since the time of planting. In 1959 an experiment was laid down to investigate the response of the trees to relatively heavy rates of nitrogenous and phosphatic fertilisers, singly and in combination. The rate of tree growth increased rapidly after treatment, reached a maximum in the third season and then declined quickly. By 1963, five years after treatment, the rate of growth had fallen almost to the pre-treatment level. Samples of foliage and peat were collected from each treatment just before the 1964 growing season. All samples were analysed chemically for total nutrient content. The results show that the levels of foliar nitrogen, phosphorus and potassium were sub-optimum. It can be inferred that both species are suffering from deficiencies of these elements. There is no relationship between the present level of foliar nitrogen and the quantity of nitrogenous fertiliser applied in 1959. There is a slight residual effect of applied phosphate on the foliar phosphorus content. It is established that the N : P ratio is lower, and the N : K ratio higher, in Sitka spruce than in lodgepole pine. The results of the peat analysis show that there is no detectable residual effect of either fertiliser on the nitrogen or phosphorus status of the peat. It is concluded that, under the conditions investigated, the single application of large quantities of soluble mineral fertilisers to checked plantations is not an efficient practice.

**Page**

pp 61 - 71

**Location**

Department of Agriculture for N. Ireland library

**Notes**

available

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**Number**

1319

**Author**

Dickson D.A.

**Title**

Uptake of nutrients following fertilisation of Sitka spruce on deep peat in Northern Ireland.

**Date**

1969

**Source**

Journal of the Science of Food and Agriculture

**Volume**

Vol. 20, No. 7

**Key Word**

nutrient uptake, fertilisers, fertilisation, deep peat, peat soils, peatlands, Sitka spruce, Picea sitchensis, soil nutrients, soil minerals, tree growth, silviculture

**Abstract**

An experiment was carried out at Ballintempo forest, Co. Fermanagh as part of a research project on the mineral nutrition of Sitka spruce on ombrogenous peat. The effects of the application of fertiliser on the growth and nutrient uptake of newly planted Sitka spruce on deep oligotrophic peat are described. Mineral phosphate at rates of 0-400 units (1 unit = 1.12 lb) P<sub>2</sub>O<sub>5</sub> per acre and top-dressing with nitrogen and potassium at rates of up to 30 units N and 180 units K<sub>2</sub>O per acre were applied. Rate of tree growth and P uptake increased

progressively over four years with increased phosphorus application. Applied K appreciably increased rate of growth, length of growing season and K uptake, but tree response decreased in the fifth season after application. Nitrogen application has had little effect except in the year of planting. Levels of N and K in Sitka foliage at the end of the first growing season were very much higher than in subsequent years.

**Page**

pp 420 - 423

**Location**

Department of Agriculture for N. Ireland library.

**Notes**

Available (Reprint in DANI library)

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**Number**

1320

**Author**

Jack W.H., Savill P.S.

**Title**

The causes of tattering of flags under natural conditions.

**Date**

1973

**Source**

International Journal of Biometeorology

**Volume**

Vol. 17, No. 2

**Key Word**

flag tattering, wind, gusts, gustiness, weather, climate, rainfall, exposure, exposed sites, wind damage

**Abstract**

The object of this paper was to analyse data relating to the tatter of standard cotton flags and 11 climatic variables in order to determine how reliably these variables can be predicted from measurements of tatter. Having identified the variables which most influenced rate of tatter a number of regressions were calculated using tatter as the independent variable. It is shown that, in spite of the high correlations, no one wind variable contributes a great deal more to the tattering of flags than several others. The best relationship found in this study is between tatter and the gustiness of wind. In spite of close relationships it was not possible to predict very accurately any of the variables with which tatter is associated. The importance to forestry of easily identifying particularly gusty and windy sites using a technique such as tatter flags is emphasised.

**Page**

pp 185 - 192

**Location**

Department of Agriculture for N. Ireland library

**Notes**

Available (Reprint in DANI library)

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**Number**

1321

**Author**

Savill P.S., Dickson D.A., Wilson W.T.

**Title**

Effects of ploughing and drainage on growth and root development of Sitka spruce on deep peat in Northern Ireland.

**Publisher**

Department of Agriculture for Northern Ireland

**Place**

Belfast

**Series**

DANI. Forestry Division internal report

**Date**

1975

**Key Word**

ploughing, drainage, root development, tree growth, deep peat, peat soils, Sitka spruce, Picea sitchensis, soil nutrients, stability, windthrow, silviculture, peatlands

**Abstract**

Early results of ploughing and drainage experiments on deep peat in Northern Ireland have indicated that drainage alone has little effect upon the growth of young Sitka spruce. The main stimulus to growth appears to come from the increased availability of N in peat which is thrown above the original surface of the ground during ploughing or draining. Drains or plough furrows cause a serious restriction to rooting which is likely to affect the stability of crops as they get to a windthrow susceptible stage. It is suggested that it might be an advantage to sacrifice some early growth by reducing the intensity of ploughing in the expectation that much greater benefits will accrue as a result of increased stability at the other end of the rotation.

**Page**

11p

**Location**

Department of Agriculture for N. Ireland library

**Notes**

Available

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**Number**

1322

**Author**

Jack W.H.

**Title**

Variation in density of freshly felled Sitka spruce and changes in density with time after felling.

**Publisher**

Northern Ireland Ministry of Agriculture

**Place**

Belfast

**Date**

1966

**Source**

Record of Agricultural Research

**Volume**

Vol. 15, Part 2

**Key Word**

wood density, Sitka spruce, Picea sitchensis, felling, harvesting, timber quality, physical qualities

**Abstract**

The object of this experiment was to compare the freshly felled density of Sitka spruce at four forests, each with two different site types, for three different sizes of small roundwood, and for three times of felling. In addition details of the changes in density with time were recorded for 20 weeks after felling and determination of nominal specific gravity carried out. Differences in density which would be economically important were found between forests, between site types, and between sizes of produce; the rate of change of density with time after felling depended largely on the date of felling, but the size of the produce was also economically important.

**Page**

pp 23 - 31

**Location**

Department of Agriculture for N. Ireland library

**Notes**

Available

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**Number**

1323

**Author**

Jack W.H.

**Title**

The collection of growth information for management: prepared for the British Commonwealth Forestry Conference 1962.

**Publisher**

Department of Agriculture, Northern Ireland

**Place**

Belfast

**Date**

1962

**Key Word**

tree growth, growth rate, silviculture, forest management

**Abstract**

Information concerning growth rates in Northern Ireland forests is obtained from a series of permanent sample plots laid out by random stratified sampling. Circular sample plots (semi circular at stratum boundaries) are variable in size, 1/40th to 1/10th of an acre, depending on the number of trees, with one pair of plots in each stratum of approximately 10 acres. Details of trees removed in thinning are kept by the local forester but measurements of the standing crop are taken by a mensuration forester during an annual visit for all plots thinned since his last visit. In pulpwood stands without thinning, measurements are made every 6 years for Working Plan revision.

**Page**

12p

**Location**

Department of Agriculture for N. Ireland library

**Notes**

available ( Issued by the Ministry of Agriculture, Forestry Division Belfast)

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**Number**

1324

**Author**

Jack W.H.

**Title**

Assessing the response of forest trees to fertilisers.

**Date**

1967

**Source**

Journal of the Science of Food and Agriculture

**Volume**

Vol. 20 , No. 7

**Key Word**

fertilisers, fertilisation research, tree growth, experimental methods, statistical analysis

**Abstract**

Some of the problems of statistical design of fertiliser experiments with forest plots are described. The large areas of ground which must be covered in any one experiment and the many factors whose effects still remain unknown or uncertain require the best statistical design. Factors which affect the reliability of results from fertilisation experiments include root spread, the effect of exposure within blocks in an experiment, and the differing reactions of different provenances within a species to the same conditions. So many factors have an influence on the growth of any individual tree over the whole of its lifetime that techniques such as those of covariance, multivariate regression analysis, and time series can be extremely valuable in reducing the variance of experimental treatments imposed at one time or different times in the life of this tree. By collecting information at the basic level of individual trees rather than averages to which general tables are applied, it should be possible to make better use of simulation models to help in economic analysis of the results of fertiliser and other trials.

**Page**

pp 413 - 414

**Location**

Department of Agriculture for N. Ireland library

**Notes**

available (Reprint in DANI library)

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**Number**

1325

**Author**

Jack W.H.

**Title**

Single tree sampling in even-aged plantations for survey and experimentation.

**Place**

Belfast

**Series**

Ministry of Agriculture for Northern Ireland. Forestry Division - internal report.

**Date**

1967

**Key Word**

inventory, silviculture, sampling methods, forest volume increment, statistics, populations estimates

**Abstract**

This paper suggests a method of inventory for volume increment, etc., based on the use of single tree plots. Details of the sampling, which is probably proportional to the area surrounding each tree, together with formulae for the calculation of the correct single tree area and for estimating the forest volume increment, etc., with its standard error are also given. Preliminary trials suggest that this sampling can be done to acceptable levels of accuracy at lower costs than traditional methods providing the forest area is reasonably large. A new concept for the determination of a competition factor influencing the growth of a tree is also presented. It is suggested that a combination of these two ideas can be used to improve the precision of estimates of differences between fertiliser treatments in experiments in middle-age forests.

**Page**

9p

**Location**

Department of Agriculture for N. Ireland library

**Notes**available

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**Number**

1326

**Author**

Dickson D.A.

**Title**Effects of limestone, phosphate and potash on the early growth and nutrient uptake of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) planted on deep peat in Northern Ireland.**Place**

Helsinki

**Date**

1972

**Source**

The Proceedings of the 4th International Peat Congress: Otaniemi, Finland, June 25 - 30, 1972. Volume III. Bog cultivation and afforestation. The use of peat in agriculture and horticulture.

**Key Word**fertilisers, limestone, phosphate, potash, deep peat, peat soils, peatlands, soil nutrients, nutrient uptake, silviculture, fertilisation, Sitka spruce, *Picea sitchensis*, early growth, growth rate**Abstract**

Ground limestone applied at time of planting on deep oligotrophic peat significantly reduced the height growth of Sitka spruce after six growing seasons. Liming also decreased the uptake of N and P by the trees. Rock phosphate applied at the same time tended to counteract some of the effects of liming, an increase in the rate of phosphate applied increased the foliar concentrations of N and P and growth. Potash (as KCl) applied at the beginning of the fifth growing season significantly increased foliar N and K concentrations in the fifth growing seasons; growth in the sixth growing season was significantly increased. Liming greatly increased the pH of the

surface layers of peat but neither Ca nor P had penetrated below 15 cm six years after application. The specific composition of the vegetation was changed and its nutrient content increased by liming and fertiliser application.

**Page**

pp 479 - 488

**Location**

Department of Agriculture for N. Ireland library

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**Number**

1327

**Author**

Magurran Anne Elizabeth

**Title**

Biological diversity and woodland management. An investigation with special reference to Banagher, Co. Derry, N. Ireland.

**Date**

1981

**Key Word**

biological diversity, woodland management, forest ecosystems, woodland ecosystems, deciduous woodlands, wildlife habitats, forest vegetation, environment, conservation, species abundance models, diversity indices

**Abstract**

The aim of this study was to examine the diversity of wildlife in forest plantations and compare them with natural deciduous woodland. A second related aim of the study was to investigate the role of diversity in woodland evaluation and management. The difference in the biological diversity of two groups of organisms, the ground vegetation and the Macro-lepidoptera was investigated in two contrasting types of woodland at Banagher, Co. Derry. The first site, Banagher Forest, is planted mainly with Sitka spruce. The second areas, Banagher Glen, is a mixed deciduous woodland in which the main species is oak. The diversity of both groups of organisms was higher in the deciduous woodland. Many of the ground vegetation species present in the conifer forest were associated with a woodland habitat, but these were limited in abundance and number. Canopy was found to be highly correlated with ground vegetation diversity in the conifer forest but not in the deciduous woodland. In the forest different associations of species formed distinct patches with different diversities which could be linked to the planting scheme. In the nature reserve there was no single limiting factor on diversity and discrete patches of vegetation did not occur. 73 Macro-lepidoptera species were recorded in the forest and 116 in the nature reserve. Only a small proportion of the moth species in the forest were dependent upon conifer species for larval food supply. In determining diversity, three species abundance models, and a number of diversity indices, including information statistics, were examined.

**Page**

xi, 237p

**Location**

Department of Agriculture for N. Ireland library

**Notes**

available (Thesis presented for the degree of Doctor of Philosophy. School of Biological and Environmental Studies, New University of Ulster.)

**Thesis**

Ph.D. Thesis, New University of Ulster

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**Number**

1328

**Author**

Radford Joanna

**Title**

Shelterbelts and north Antrim farmers.

**Place**

Belfast

**Series**

Northern Ireland Department of Agriculture internal report

**Date**

1978

**Key Word**

farm shelterbelts, farm forestry, agriculture, surveys, statistical analysis, windbreaks, livestock, grazing

**Abstract**

A survey on farmers' attitudes to tree shelterbelts was conducted in north Antrim. The questionnaire covered a range of topics, including farm type, physical factors, and the farmer's background in order to discover what factors might influence farmers views on this topic. The data were analysed using the SPSS statistical analysis computer package. The results of this analysis were presented mainly in the form of cross tabulations of the variables. It was concluded that few farmers really believed that shelterbelts could be an economic advantage in this area, as livestock were generally kept inside over winter. An even smaller number were prepared to give field room to sheterbelts.

**Page**

78p

**Location**

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**Number**

1329

**Author**

Government of Northern Ireland. Commission on the Natural and Industrial Resources of Northern Ireland

**Title**

Report on afforestation in Northern Ireland.

**Publisher**

HMSO

**Place**

Belfast

**Date**

1923

**Key Word**

forestry policy, forestry history, forestry development, economic policy, economic development, economic planning, land use, land acquisition, State forestry

**Abstract**

This report is divided into the following sections: 1. Dependence of Northern Ireland upon imported timber and the approaching world shortage of softwood; 2. The suitability of Northern Ireland, climatically and economically, for growing certain types of softwood; 3. The amount of labour absorbed by afforestation; and 4. State action in regard to afforestation. The Commission recommends that the State should take the lead in the development of forests, and power should be given to the Ministry of Agriculture to accelerate and extend its present programme.

**Page**

16p

**Location**

Department of Agriculture for N. Ireland library

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**Number**

1330

**Author**

MacKenzie R.F., McEwen J.A., Kilpatrick D.J., McCallion T.

(Government of Northern Ireland. Department of Agriculture)

**Title**

Report on the inventory of State forests 1974/75.

**Place**

Belfast

**Date**

1976

**Key Word**

forest inventory, production forecasting, State forests, growth rate, growth models, forest management, silviculture

**Abstract**

The primary objective of this inventory was to produce a long term forecast of production that would be of value in: (a) planning the establishment and development of timber using industries in Northern Ireland; and (b.) estimating Forest Service requirement of men and materials in the long term. Other objectives included the provision of a continuing assessment of the rate of growth, the provision of growth data required for an evaluation of State woodlands, and the provision of data for the construction of growth models in order to increase the flexibility of Forestry Commission Management Tables. The report concluded that within the overall limits of uncertainty imposed by the difficulty of predicting rotations for windthrow susceptible sites it is possible to forecast achievable production targets. However, there is scope for improvement in the following fields: growth models must be built for a much wider range of circumstances and they must have a more direct relationship to local conditions; forest management options need to be more closely defined and once a management system has been adopted change must not be made without good cause; and risk prediction should be elaborated and the method improved.

**Page**

120p

**Location**

Department of Agriculture for N. Ireland library

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**Number**

1331

**Author**

MacKenzie R.F.

**Title**

Forecast of timber production with an estimate of standing volumes for Northern Ireland State forests based on the State Forestry Inventory 1974/75.

**Publisher**

Department of Agriculture Northern Ireland

**Place**

Belfast

**Date**

1977

**Key Word**

production forecasting, production estimates, inventory, State forests, forest management

**Abstract**

The estimates in this report are based upon the inventory made in the winter of 1975/75. This inventory was broadly similar to the 1969/70 inventory but more use was made of electronic data processing methods and of the growth models constructed by the Mensuration Branch of the Forestry Commission. No detailed forecasts are included for the period before 1980 or after 2000. For the first five year period the indication is that an average production of between 50,000 and 55,000 cubic metres might be expected but this figure can be varied substantially depending on management and planning decisions. For the period after the year 2000 forecasting becomes less certain but the indication is that production will rise more steeply maximising in the second decade at about 1,100,000 cubic metres per annum and falling back thereafter to give a sustained yield of about 900,000 cubic metres per annum.

**Page**

8p

**Location**

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**Number**

1332

**Author**

Northern Ireland Forest Service

**Title**

Annual report 1979

**Publisher**

Department of Agriculture Northern Ireland

**Place**

Belfast

**Date**

1979

**Key Word**

State forestry, forestry policy, Northern Ireland Forest Service, land acquisition, forest nurseries, plantation establishment, harvesting, recreation, environment, education, training, private forestry

**Abstract**

The Forest Service acquired 1090 ha of plantable land during the year, an improvement on recent years. The amount of new planting completed during the year was 24% less than last year, and at present rates the government target for area of land afforested by the end of the century will not be met. Production increased by 7% compared with the twelve-month period April 77 - March 78, and it is expected to increase five-fold by the end of the century. Wet weather made nursery operations difficult and caused delays in growth.

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34p

**Location**

Department of Agriculture for N. Ireland library

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**Number**

1333

**Author**

Northern Ireland Forest Service

**Title**

Annual report 1978.

**Publisher**

Department of Agriculture for Northern Ireland.

**Place**

Belfast

**Date**

1978

**Key Word**

State forestry, land acquisition, land use, forest nurseries, plantation establishment, forestry policy, education, training, conservation, forestry management, production forecasts

**Abstract**

State land acquisitions for afforestation and private planting has been in decline in recent years. In 1978 the area of plantable land acquired by the State was the lowest for 30 years. The chances of achieving the Government target of 90,000 ha of State planting by the end of the century are now remote. Timber production increased by 10% in 1978. If current plans are followed through harvesting will proceed at a greatly increasing rate over the next 20 years.

**Page**

34p

**Location**

Department of Agriculture for N. Ireland library

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**Number**

1334

**Author**

Northern Ireland Forest Service

**Title**

Annual report 1976 - 1977.

**Publisher**

Department of Agriculture Northern Ireland

**Place**

Belfast

**Date**

1977

**Key Word**

State forestry, planting targets, land acquisition, forest nurseries, training, education, recreation, timber sales, species selection, forestry policy

**Abstract**

Land acquisition during the year fell badly behind that needed to meet the Government target of 90,000 ha of forested land in State ownership by the end of the century. Private planting was at the lowest level for many years. The planting programme was maintained at around 1000 ha and the nursery programme at over 3 million plants a year by reducing the plantable reserve of land. There was a marked shift away from Sitka spruce towards lodgepole pine following research findings on the nutrient status and growth rates on very poor peat and the rising cost of fertiliser needed to maintain the more demanding Sitka spruce on such sites. Timber sales increased by both volume and value per cubic metre showed an increase over the previous year. Co-operation with conservationist and naturalist bodies led to the designation of 8 new forest nature reserves.

**Page**

36p

**Location**

Department of Agriculture for N. Ireland library

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**Number**

1335

**Author**

Northern Ireland Forest Service

**Title**

Annual report 1975 - 1976.

**Publisher**

Department of Agriculture, Northern Ireland

**Place**

Belfast

**Date**

1976

**Key Word**

State forestry, forestry policy, land acquisition, planting targets, inventory, land use, plantation establishment, forest protection, conservation, recreation, training, forestry management

**Abstract**

The outcome of the of the 5-yearly review of the progress of the Government Forestry Programme, following the 1970 White Paper which outlined the Government's long term forest policy, was presented in a 1975 Review Report. The Review indicated that progress towards the achievement of the objectives laid down in the White

Paper was very satisfactory, and that major management changes introduced during the period had proved successful in reducing overheads and increasing efficiency. However, the Review also noted that the objectives set for land acquisition and tree planting had not been attained. The very dry Spring produced severe management problems in the nurseries and also led to one of the worst fire situations ever.

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48p

**Location**

Department of Agriculture for N. Ireland library

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**Number**

1336

**Author**

Northern Ireland Forest Service

**Title**

Forest Service review 1982.

**Place**

Belfast

**Date**

1982

**Key Word**

State forestry, forestry policy, land acquisition, land use, harvesting, forest nurseries, plantation establishment, forest protection, forest management, economics, education training, planning, forest development

**Abstract**

This is the second five-year review on the progress achieved since the publication of the Government's white paper, 'Forestry in Northern Ireland' in 1972. The review is divided into two parts. Part I summaries achievements since 1970 and Part II lays down the objectives and strategy for the future. During the period under review the acquisitions of land became difficult and the annual area of new planting fell by more than half although establishment and growth of plantations improved through new ground preparation methods and fertilisation techniques. The volume of timber harvested, which has remained more or less constant for many years, increased substantially towards the end of the period. At the same time felling and extraction methods became more efficient with the introduction of sophisticated machinery and improved working practices. Major changes in planning and budgeting for forest operations occurred and more meaningful financial statements became available. Despite increases in both production and the area of forest to be maintained there was a substantial fall in the number of forest workers employed as well as in the technical, professional and administrative staff.

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48p

**Location**

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**Number**

1337

**Author**

Northern Ireland Forest Service

**Title**

Annual report 1980 - 81.

**Publisher**

Department of Agriculture Northern Ireland

**Place**

Belfast

**Date**

1981

**Key Word**

State forestry, forestry research, forestry policy, land acquisition, harvesting, silviculture

**Abstract**

More than 770 ha of State forest were destroyed by fire in 1980, the highest level of damage since the beginning of State afforestation. 500 ha were acquired by the Forest Service during the year before reductions in expenditure resulted in the suspension of new agreements. The plantable reserve remained at about 5000 ha. Almost 600 employees left the service during the year as forest employment provided under the Urban and Rural Improvement Campaign came to an end. Timber production from State forests increased significantly compared with previous years, and about 60,000 cubic metres were harvested. The volume of material available for harvesting will increase each year until after the end of the century.

**Page**

53p

**Location**

Department of Agriculture for N. Ireland library

**Notes**

Available

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**Number**

1338

**Author**

Northern Ireland Forest Service

**Title**

Annual report 1981 - 82.

**Publisher**

Department of Agriculture, Northern Ireland

**Place**

Belfast

**Date**

1982

**Key Word**

State forestry, forestry policy, land acquisition, forestry management, production forecasts, afforestation, land acquisition

**Abstract**

About 294 ha of land were acquired by the Forest Service during the year, but the need to reduce expenditure resulted in the suspension of new agreements later in the year. The plantable reserve was reassessed, and reduced to 4,600 ha which will be afforested as resources become available. Staff numbers continued to be reduced. Although timber sales from State forests remained at about 60,000 cubic metres, an additional 10,000 cubic metres was offered but not taken up by timber merchants because of reduced demand for their product. The volume of material available for harvesting will increase each year until after the end of the century.

**Page**

35p

**Location**

Department of Agriculture for N. Ireland library

**Notes**

available

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**Number**

1339

**Author**

Northern Ireland Forest Service

**Title**

Annual report 1983 - 84.

**Publisher**

Department of Agriculture, Northern Ireland

**Place**

Belfast

**Date**

1984

**Key Word**

State forestry, forestry policy, land acquisition, afforestation, silviculture, windthrow, ground preparation, root development, ploughing

**Abstract**

During the year, only 424 ha of land were acquired. However, the planting and replanting programme was maintained at 1,100 ha., the plantable reserve dropping to some 4,500 ha. Timber production from State forests increased to some 106,000 cubic metres. Considerable effort was put into countering the effects of windthrow on forest productivity by improving ground preparation techniques. A particular problem in this respect is the restriction of root development caused by conventional ploughing. Much greater use will be made in the future of thinning and mole ploughing in order to create better root development and thus greater crop stability.

**Page**

34p

**Location**

Department of Agriculture for Northern Ireland library

**Notes**

available

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**Number**

1340

**Author**

Northern Ireland Forest Service

**Title**

1975 review - Forest Service: Department of Agriculture

**Publisher**

Department of Agriculture, Northern Ireland

**Place**

Belfast

**Date**

1975

**Key Word**

State forestry, forestry policy, land acquisition, afforestation, planting targets, fertilisation, silviculture

**Abstract**

Part I of this 1975 review of progress since the 1970 white paper on forestry policy summaries the achievements of the past five years. Part II lays down the objectives and strategy for the next 5 years. A major problem facing the Forestry Service during this period was the difficulty in acquiring land. The acquisition of plantable land was only half that required to achieve the planting targets set in 1970, and consequently the planting programme was reduced. Sitka spruce remained by far the most important species of tree planted with lodgepole pine rising from 2% to 13% over the period. A policy decision was made to continue with the method of fertilising plantations by helicopter. An undertaking given in 1970 that the annual volume of wood sold from State forests would not fall below 35, 700 cubic metres was honoured throughout the period. Other aspects of the work of the Forest Service reviewed include recreation, conservation, education, work practices and administration.

**Page**

39p

**Location**

Department of Agriculture for N. Ireland library

**Notes**

Available

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**Number**

1341

**Author**

Northern Ireland Forest Service

**Title**

Annual report 1987/88.

**Publisher**

Department of Agriculture, Northern Ireland

**Place**

Belfast

**Date**

1988

**Key Word**

State forestry, forestry policy, finance, land acquisition, planting targets, recreation, silviculture, education

**Abstract**

A new method of financial appraisal for acquisitions was agreed with the Department of Finance and Personnel. This came into operation on 1 October 1987. In spite of this, land acquisition remained at a low level as the amount of suitable land on the market was small. However, new planting was maintained at about 600 ha. per annum. Timber production increased by 6 - 8% to almost 133,000 cubic metres and is set to rise steadily into the next century. Prices obtained showed an 18% increase over those for last year, the income from timber sales was £2, 839, 280. Changes in the Forestry Grant Scheme, and recreation and conservation policy are also reviewed.

**Page**

42p

**Location**

Department of Agriculture for N. Ireland library

**Notes**

available

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**Number**

1342

**Author**

Collins A., Stanley B., MacSiurtain

**Title**

Forest health monitoring using remote sensing integrated geographic information systems: an application of CIR aerial photography, CASI airborne scanner data and satellite imagery.

**Publisher**

UCD Remote Sensing Laboratory

**Place**

Dublin

**Date**

1996

**Key Word**

geographic information systems, GIS, colour infrared aerial photography, Compact Airborne Spectrographic Imager, CASI, forest health, interactive visual interpretation, normalised difference vegetation indices

**Abstract**

The objective of this project was to evaluate different remote sensing media for monitoring and classifying forest health. Colour Infrared (CIR) aerial photographs and Compact Airborne Spectrographic Imager (CASI) scanner data were acquired for two test sites, Castlepollard and Ballyhoura. Integrated Geographic Information Systems (IGIS) databases were developed at resolutions of 1m, 2 m and 5 m to integrate the CIR and CASI data, and at 30 m for the satellite imagery. Scanned OS 6" map sheets and vector data of Coillte forest properties from Coillte's ARC/INFOR database were also added to the IGIS databases. All data were geometrically corrected with reference to the Irish National Grid. Image analysis was carried out to discriminate healthy and unhealthy forests. The following analysis techniques were used: Interactive visual interpretation (IVI); cluster analysis; maximum likelihood classification and normalised difference vegetation indices (NDVI). CIR and CASI data were successfully classified for both test sites using the IVI and NDVI classification techniques. The Landsat TM data were successfully classified using analysis and NDVI. NDVIs were calculated for imagery and provided a good objective evaluation of forest health on all sites. The results of this research project suggest that integrated geographic information system databases will have an important role in monitoring forest health. The integration of airborne scanner data and satellite imagery with conventional CIR aerial photography is seen as a new supplementary source of data within the context of continuous forest health monitoring. The integration of various remotely sensed media facilitates expansion from individual tree to subcompartment forest health

monitoring over large areas of forest.

**Page**

44p

**Location**

Coillte library

**ISBN**

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**Notes**

Available

**Address of author**

UCD Remote Sensing Laboratory, Dept. of Forestry, Agriculture Building, Belfield, Dublin 4

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**Number**

1343

**Author**

Van Eck H., Govers A., Lemaire A. , Schaminee J.

**Title**

The exploitation of peatlands in Ireland - afforestation.

**Publisher**

Catholic University Nijmegen

**Place**

Nijmegen

**Date**

1984

**Source**

Irish bogs - a case for planning: the controversy between exploitation and conservation of ombrothrophic peatlands in the Republic of Ireland (Chapter 3).

**Key Word**

peatland afforestation, raised bogs, blanket bogs, economic development, environment, silviculture, forestry policy, State forestry, peatlands

**Abstract**

During the last few decades, planting of forests on peatlands has become an essential part of the State's afforestation programme. Mainly virgin blanket bogs are afforested. The planting of raised bogs has not contributed much to the total area of peatlands under forest. The historical background to this programme is summarised. The development of State forestry in Ireland is outlined, and the extent of peatland afforestation over the past number of years is estimated. About 50% of the Government's planting target of 200,000 ha will be on peatlands. The various technical aspects of peatland afforestation including drainage, fertilisation, choice of species, fencing, and thinning are discussed. Research being carried out on biomass production from short rotation forestry is described, and policy regarding private afforestation of peatlands is outlined.

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pp 85 - 109

**Location**

Coillte library

**Notes**

Available

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**Number**

1344

**Author**

Lyons G. J.

**Title**

Short rotation forestry: an energy crop for Irish farms.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

June/1982

**Source**

Farm & Food Research

**Key Word**

short rotation forestry, energy crops, farm forestry, coppicing, economics, woodfuel, electricity generation

**Abstract**

This article examines the potential for energy crop production on Irish farms. Much of the land in Ireland classified as marginal may be highly productive from short rotation forestry. The process of producing a usable fuel from short rotation forestry is explained. There are three main applications for wood fuel: 1. electricity; 2. commercial/industrial heating, and; 3. domestic space and water heating. A wide variety of broadleaved species have potential as SRF energy crops, and several are currently under investigation by the Agricultural Institute and the Dept. of Fisheries and Forestry. The fuel yield from a medium density plantation is estimated, the possible income from SRF fuel production is compared with that of other farm enterprises.

**Page**

pp 68 - 70

**Location**

Coillte library

**Notes**

Available

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**Number**

1345

**Author**

O'Driscoll J.

**Title**

Six-year Douglas-fir provenance experiment.

**Publisher**

B.C. Ministry of Forests

**Place**

Victoria

**Date**

1978

**Source**

Proceedings of the IUFRO joint meeting of working parties, Vancouver, Canada, 1978.

**Volume**

Volume One

**Key Word**

Douglas fir, *Pseudotsuga menziesii*, phenology, silviculture, tree growth, provenance

**Abstract**

Phenological study of thirty two provenances of Douglas-fir over a period of six years is reported. Criteria assessed were total height growth, annual height increment, daily height increment, diameter growth, length of growing season, flushing and cessation of growth. Significant differences occurred between provenances for all data assessed. Variation in growth characteristics was found to follow no obvious clinical pattern. Ranking of provenances by height growth criteria was very variable both between criteria and years. Geographic location data were poorly to moderately correlated with latitude having the lowest values. Of the meteorological data entered in the regression equation percentage rainfall in September/June period had the largest correlation coefficient. Both length of the growing season and time of cessation of growth were strongly and positively correlated with height growth, flushing time on the other hand was negatively and poorly correlated with growth. The most consistent provenance was from Coquille (1104) Oregon with the most consistent region being the Sedro Woolley, Granite Falls of area of Washington.

**Page**

pp 265 - 295

**Location**

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**Notes**

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**Number**

1346

**Author**

Dick William, Kent Tom, Healion Kevin  
(DuQuense Ltd.)

**Title**

Short rotation forestry: conventional forestry or biofuels.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1994

**Source**

The Irish Energy Centres: Renewable Energy and Economic Development, 2 - 3 November, 1994 - Galway, Ireland.

**Key Word**

short rotation forestry, energy crops, Common Agricultural Forestry, CAP, Miscanthus, economics, land use, grants, subsidies

**Abstract**

The various reasons why biomass is being considered as an alternative agricultural activity in Ireland are discussed. Assessments made on the suitability of Ireland for short rotation forestry, based on soil types, are summarised. The technical aspects of biomass production from conventional forestry, single stem forestry and short rotation forestry are discussed. Conventional forestry will not be planted on land set-aside under the reform of the Common Agricultural Policy because of the permanence of this land use option and because of the down grading of the land this would entail. The market for conventional forestry products will continue to be the timber sector with energy having a minor role only. Single stem energy forestry will not be planted on any land, at least not until the fundamental problems associated with maintaining soil fertility and transport on site are solved. Short rotation forestry can be applied successfully to a broad range of agricultural lands, given subsidisation, and could play an important role in taking better agricultural land out of food production. Miscanthus is a very promising species with great potential on better quality agricultural sites. However, much basic research into the physiological and technical aspects of biomass optimisation, must be carried out before this species can be recommended for commercial production.

**Page**

20p

**Location**

Coillte library

**Notes**

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**Number**

1347

**Author**

Carey M.L., Farrell E.P., McAleese D.M.

**Title**

Mobilisation of nutrients in a Sitka spruce (*Picea sitchensis* (Bong.) Carr.) forest floor.

**Publisher**

Elsivier Scientific Publishing

**Place**

Amsterdam

**Date**

1980

**Source**

Forest Ecology and Management

**Volume**

Vol. 3

**Key Word**

nutrient mobilisation, Sitka spruce, *Picea sitchensis*, fertilisers, fertilisation, lime, rock phosphate, calcium ammonium nitrate, forest floor nutrients

**Abstract**

A series of incubation experiments was conducted at 12 degrees C in order to investigate the mobilisation of nitrogen and phosphorus from Sitka spruce (*Picea sitchensis* (Bong.) Carr.) forest floor material following the addition of lime, rock phosphate and calcium ammonium nitrate. Lime application decreased the levels of KCl-extractable nitrogen, although it increased NO<sub>3</sub>-N. Rock phosphate, although it reduced NO<sub>3</sub>-N levels, increased NH<sub>4</sub>-N and total extractable nitrogen. The mechanism of the phosphate effect on nitrogen was unclear. In a supplementary experiment KH<sub>3</sub>PO<sub>4</sub> application had no effect on extractable nitrogen. Nitrogen application did not affect the mineralisation of forest floor nitrogen and although there was some evidence that lime and nitrogen application increased the release of forest floor phosphorus (3N H<sub>2</sub>SO<sub>4</sub> -soluble), the effects were inconsistent. Despite the numerous changes that occur in the nutrient dynamics of the forest floor following the addition of inorganic fertilisers, it is concluded that the quantities of nutrients involved are small in relation to the overall nutrient budget in polestage crops of Sitka spruce. Manipulation of the nutrient stores in the forest floor through silvicultural operations such as thinning would appear to be more effective in nutrient mobilisation.

**Page**

pp 209 - 227

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

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**Number**

1348

**Author**

Carey M.L., Farrell E.P., McAleese D.M.

**Title**

Mobilisation of nutrients in a Sitka spruce (*Picea sitchensis*) (Bong.) Carr.) forest floor. II. Interaction of leaching with lime and fertilisers under laboratory conditions.

**Publisher**

Elsevier Scientific Publishing

**Place**

Amsterdam

**Date**

1980

**Source**

Forest Ecology and Management

**Volume**

Vol. 3

**Key Word**

nutrient mobilisation, Sitka spruce, *Picea sitchensis*, fertilisers, fertilisation, lime, rock phosphate, forest floor nutrients

**Abstract**

Samples of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) litter incubated at 12 degrees C were leached periodically with water following addition of lime and fertilisers over a period of 94 days. The leaches were examined for levels of N, P and K. The results showed that nitrogenous fertilisers were easily leached from Sitka spruce forest floor material and that their application results in a significant release of phosphorus and potassium. Phosphorus and lime application, although not leached out as easily, resulted in a significant increase in the release of nitrogen and potassium from the forest floor. In general the quantities of nutrients released from the forest floor following the application of lime and fertilisers appear small relative to the overall nutrient cycle.

**Page**

pp 229 - 236

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

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**Number**

1349

**Author**

Clear T.

**Title**

Modern tree husbandry and management.

**Publisher**

Irish Society of Agronomy and Land Use

**Place**

Dublin

**Date**

1979

**Source**

Irish Society of Agronomy and Land Use. Symposium: Tree Planting on the Farm, Blesington 1979.

**Key Word**

forestry history, silviculture, forest management, land use, forest policy, forestry development, fertilisers, economics

**Abstract**

The development of modern silvicultural and forest management practice is outlined. The experience gained over the last 30 years of extensive plantation in Ireland has helped to formulate a number of important guidelines for future forestry investment and plantation management. The effects of restricting plantation to marginal lands, on species choice and technical developments, especially in ploughing and fertiliser techniques, are discussed. The correct application of the knowledge gained through these developments is necessary to ensure that a high and predictable rate of growth is achieved, that plantations are protected against hazard, and to ensure that the structure of the crops and their location with regard to roads and markets make harvesting possible.

**Page**

pp 23 - 32

**Location**

Coillte library

**Notes**

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**Number**

1350

**Author**

O'Flanagan Liam

**Title**

An examination of the reliability of eleven methods of estimating the standing volume in conifer crops.

**Publisher**

International Union of Forestry Research Organisations.

**Place**

Munich

**Date**

1967

**Source**

XIV. IUFRO - Congress. Munich 1967: Papers VI. Section 25

**Key Word**

volume estimation, inventory, volume measurement, timber sales, harvesting

**Abstract**

This project was undertaken to find the best method of measuring standing conifers for sale purposes. The volume obtained from each of the eleven methods at each test site was compared with the volume found when the trees involved were felled and each stem measured individually. This was carried out at eleven sites. The following methods were used for estimating the volume at each test site: tariff tables; land-tariff method; 40% rule; mean basal area tree method; general volume tables; 16% rule ( one set of volume trees); 16% rule (two sets of volume trees); volume by quarter girth categories (using 40% rule); volume by girth categories (using mean basal area method); Wimmenauer's 41.5% method; Wimmenauer's 42.4% method. It was found that the tariff system is the most reliable method of measurement of standing conifer crops within economic limits of time and expenditure. This system shows a bias of -2.94% on the mean with a standard deviation of +/- 1.64%. For smaller lots the best system would be the mean basal area method applied to the whole population or the population broken into girth categories. The 40% rule is the least reliable of the above methods. When used on the whole population it has the largest standard deviation and standard error.

**Page**

pp 426 - 437

**Location**

Coillte library

**Notes**

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**Number**

1351

**Author**

O'Carroll N.

**Title**

Early growth of conifers on machine-cutover peatland.

**Publisher**

International Union of Forestry Research Organisations

**Place**

Munich

**Date**

1967

**Source**

XIV. IUFRO - Congress Munich 1967: Papers IV - Section 23.

**Key Word**

cutover bog, peatlands, peat soils, fertilisers, phosphate, soil nutrients, tree growth, growth rate, Japanese larch, *Larix kaempferi*

**Abstract**

Results after eight years growth on machine cutover bog at Clonast, Co. Offaly, indicate that phosphate is necessary at planting time, particularly where the remaining peat is deep ( 6 - 11ft) and composed entirely of raised bog material. Growth is generally better where only a shallow (2 - 5ft. approx.) layer of peat is left. Under such conditions there is a significant curvilinear relationship between height growth of Japanese larch and the amount of calcareous mineral matter added to the rooting zone. Growth is better in the presence of moderate quantities than at zero, very low or very high quantities. This may hold for other species also. Potential mean annual increments of about 200 hoppus feet per acre are indicated for spruces, grand fir, western hemlock and red cedar.

**Page**

pp 471 - 482

**Location**

Coillte library

**Notes**

available

**Address of author**

Forest Service, Leeson Lane Dublin 2

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**Number**

1352

**Author**

Gallagher G.

**Title**

Thinning grades C, C/D, and D in terms of stems per acre, basal area stocking, % basal area removal and spacing.

**Publisher**

Department of Lands

**Place**

Dublin

**Series**

Department of Lands. Forestry Division Research Note No. 1

**Date**

1966

**Key Word**

thinning grades, crop characteristics, silviculture, spacing

**Abstract**

This research note describes the quantitative difference between three grades of thinning, with particular reference to crop growth factors. The three main thinning grades, light or C grade, moderate or C/D grade, and heavy or D grade are given quantitative expression in a table. Four different ways of expressing the thinning grade in terms of crops characteristics are given.

**Page**

11p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Forest Service, Leeson Lane, Dublin 2

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**Number**

1353

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1950 to the 31st March, 1953.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1953

**Key Word**

forestry legislation, forestry policy, land acquisition, plantation establishment, forest management, harvesting, timber marketing, wildlife conservation, forest protection, amenity forestry, forest research, State forestry, private forestry

**Abstract**

The publication of the Food and Agriculture Organisation report on Irish forestry in 1950 had an important influence on forestry policy during the period under review. The progress of acquisition of land for forestry purposes is shown by a series of tables which also include figures for each of the two preceding three-year periods for comparative purposes. Details on various aspects of forest operations, including plant supply and nursery work, planting operations, maintenance, forest protection and timber sales, are provided.

**Page**

54p

**Location**

Coillte library

**Notes**

Available

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**Number**

1354

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1966 to 31st March, 1967.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1967

**Key Word**

land acquisition, plantation establishment, forestry policy, forest management, harvesting, timber marketing, wildlife conservation, disease control, forest protection, amenity forestry, education, State forestry, private forestry

**Abstract**

The total productive area acquired for State forestry purposes during the period under review was 18,313 acres. The total area planted was 20,028. The area recorded as thinned was 13,255 acres, yielding 4.8 million cubic feet of produce. Felling of mature timber and blown material yielded 2.8 million cubic metres. The first State Forest Park was opened to the public at Gougane Barra, Co. Cork, and new public access facilities were provided in other areas.

**Page**

40p

**Location**

Coford library, Coillte library

**Notes**

Available

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**Number**

1355

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on the Forest and Wildlife Service for the period from 1st April, 1969 to 31st, March 1970.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1970

**Key Word**

nature conservation, land acquisition, plantation establishment, forestry policy, forest management, harvesting, timber marketing, forest game, wildlife conservation, disease control, forest pests, forest protection, amenity forestry, forest use, forest employment, State forestry

**Abstract**

20,993 acres of productive land were acquired for State forestry purposes during the period under review, and 22,023 acres were planted. 15,684 acres were thinned. The volume of material sold was 6.3 M hoppus feet. The four main areas of research are identified as: site amelioration by cultivation, drainage and fertilising; tree

improvement; plantation management in matters of spacing, pruning and thinning; and forest protection. Figures are also provided on applications for private planting grants and on total income and expenditure.

**Page**

48p

**Location**

Coillte library

**Notes**

Available

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**Number**

1356

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report Of The Minister For Lands On The Forest And Wildlife Service for the period from 1st April, 1967 to 31st March, 1969.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1969

**Key Word**

land acquisition, plantation establishment, forestry policy, forest management, harvesting, timber marketing, forest game, wildlife conservation, disease control, forest protection, amenity forestry, forest use, forest employment, education, State forestry, private forestry

**Abstract**

The total productive area acquired for State forestry purposes in 1967/68 was 14,842 acres and in 1968/69 was 12,231 acres. 22,383 acres were planted in the first year and 21,945 in the second. Figures are provided for the area recorded as being thinned and for the produce yield from these thinnings. 95% of the 6.7 million cubic feet of material sold was sold standing to timber merchants. The four main lines of research are identified as: 1, site amelioration by cultivation, drainage and fertilising; 2. plantation management in matters of spacing, pruning and thinning; 3. tree improvement by new introductions, selection and breeding; 4. the control of harmful insects and fungi.

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48p

**Location**

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**Notes**

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**Number**

1357

**Author**

An Roinn Tailte. Fo-Roinn na Foraoiseachta

**Title**

Report of the Minister for Lands on forestry for the period from 1st April, 1957 to 31st March, 1958.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1958

**Key Word**

land acquisition, plantation establishment, forestry policy, forest management, harvesting, timber marketing,

wildlife conservation, disease control, forest pests, forest protection, amenity forestry, State forestry

**Abstract**

23,268 acres of land were acquired for planting during the year. The planting target of 20,000 acres was achieved. The volume of material sold was exceptionally high owing to the large quantity of windthrown material marketed in the year. The first full-scale census of growing stock in the State plantation was initiated during the year. A special research section was established and a programme of priority research projects was settled.

**Page**

28p

**Location**

Coford library, Coillte library

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**Number**

1358

**Author**

Department of Lands. Forestry Division

**Title**

Report of The Minister for Lands on The Forest and Wildlife Service for the period 1st April, 1971 to 31st March, 1972.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1972

**Key Word**

land acquisition, plantation establishment, forestry policy, forest management, harvesting, timber marketing, wildlife conservation, disease control, forest pests, forest protection, amenity forestry, forest research, State forestry, private forestry

**Abstract**

12,404 hectares of productive area was acquired for State forestry purposes, and a total of 10,087 hectares were planted during 1971/72. The area thinned was 5,952 hectares, and a total of 308,000 cubic metres of timber was sold. Work continued in several areas of non-timber forest use including game development and forest amenities. In the area of general administration and cost control an integrated computer-based management information system was designed. Work continued in the four main areas of research: site amelioration; tree improvement; plantation management; and forest protection.

**Page**

54p

**Location**

Coford library, Coillte library

**Notes**

Available

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**Number**

1359

**Author**

Mooney O.V.

**Title**

*Stereum sanguinolentum*: a report on the occurrence of a fungus causing a red heart rot in Sitka spruce.

**Publisher**

Department of Lands

**Place**

Dublin

**Series**

Department of Lands. Forestry Division Research Record No. 3

**Date**

1965

**Key Word**

forest protection, Sterum sanguinolentum, heart rot, fungal diseases, fungi, forest diseases

**Abstract**

The route of infection and habitat of Stereum sanguinolentum, a fungus which causes heart rot in conifers, are described. The most commonly used treatment systems are outlined.

**Page**

2p

**Location**

Coillte library

**Notes**

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**Number**

1360

**Author**

Joyce P.M., Gallagher G.

**Title**

Provisional yield tables for contorta pine (coastal).

**Publisher**

Stationery Office

**Place**

Dublin

**Series**

Department of Lands. Forestry Division Research Record

**Date**

1965

**Key Word**

yield tables, lodgepole pine, Pinus contorta

**Abstract**

A brief account of the natural range of Pinus contorta, the history of its introduction and development in Ireland, and its timber qualities is provided. The variables used in yield tables are defined, and the process involved in the preparation of the tables is explained. A height/age graph is constructed using data obtained from height analyses of 97 samples each representing the mean height/age curve for three objectively chosen stems.

**Page**

15p

**Location**

Coillte library

**Notes**

Available

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**Number**

1361

**Author**

Mooney O.V.

**Title**

The properties of home-grown contorta pine.

**Publisher**

Department of Lands

**Place**

Dublin

**Series**

Department of Lands. Forestry Division Research Record No. 2

**Date**

1965

**Key Word**

lodgepole pine, *Pinus contorta*, timber properties, grading, timber preservation, preservatives, timber processing

**Abstract**

This report is part of a series of studies on certain physical and anatomical properties of plantation grown lodgepole pine. The test material was cut from trees in the Forest of Clogheen in Tipperary. Ten of the eighteen logs cut were set aside for grading studies, and those remaining were used for tests in wood structure, seasoning properties, timber mechanics, wood preservation and woodworking. It was found that the incidence of spiral grain was high but not enough to be a serious factor affecting utilisation. Exposure produced eccentric growth and the development of compression wood. The timber was denser and stronger for its age than any home-grown lodgepole pine previously tested and was more difficult to impregnate with preservatives. The results of the tests on the Clogheen timber were compared with those from a previous study carried out on timber from Blessington, Co. Wicklow.

**Page**

14p

**Location**

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**Notes**

Available

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**Number**

1362

**Author**

Mooney O.V.

**Title**

Group dying disease of conifers.

**Publisher**

Department of Lands

**Place**

Dublin

**Series**

Department of Lands. Forestry Branch Research Record No. 1

**Date**

1965

**Key Word**

group dying, root rot disease, fungal diseases, fungi, forest pests, forest protection, *Rhizina undulata*, forest fires, fire prevention, forest pathogens

**Abstract**

Group dying is a root rot disease of conifers. The causal organism appears to be the fungus *Rhizina undulata*. Infection of tree roots by the fungus is made possible by the creation of fire sites. The disease is of economic importance because it causes loss of increment, potential loss of timber through the provision of foci for the building up of pest insects and parasitic fungi, and because it creates gaps in stands leading to extensive windthrow. Fire sites resulting from 'drumming up' and slash burning fires are the main sources of disease initiation. It is recommended that the lighting of these fires, whether by Departmental employees or by employees of timber merchants, be discontinued.

**Page**

5p

**Location**

Coillte library

**Notes**

Available

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**Number**

1363

**Author**

Tottenham Robert

**Title**

Forestry as an alternative farming enterprise.

**Publisher**

Irish Society of Agronomy and Land Use

**Place**

Dublin

**Date**

1979

**Source**

Irish Society of Agronomy and Land Use. Symposium: Tree Planting on the Farm, Blessington 1979.

**Key Word**

farm forestry, costs, investment, land use, agriculture, marginal land, Sitka spruce, Picea sitchensis, investments

**Abstract**

The author attempts to show why forestry, in particular Sitka spruce planting, should be recognised as an alternative farming enterprise. It is argued that tree farming is particularly suited to heavy gley soils sites, such as the Leitrim drumlins, but not for steep slopes or infertile peatlands. The author describes the establishment and maintenance of the plantation on his own farm in Co. Clare. The gross output, net expenses and family farm incomes for a number of farm enterprises are compared with the projected figures for Sitka spruce.

**Page**

pp 33 - 36

**Location**

Coillte library

**Notes**

Available

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**Number**

1364

**Author**

Hussey Brian

**Title**

High yield class woodland as an investment.

**Publisher**

Irish Society of Agronomy and Land Use

**Place**

Dublin

**Date**

1979

**Source**

Irish Society of Agronomy and Land Use. Symposium: Tree Planting on the Farm, Blessington 1979.

**Key Word**

investment, private forestry, costs, returns, finance, economics, land use, land prices, farm forestry

**Abstract**

The relative performance of the following six types of investment are examined: consols; actauries; office property; beef production; letting poor quality land; high yield class forestry. By far the most valuable investments were those in land because of the huge increase in land prices during this period under review. There is considerable appreciation in the value of the land planted with trees, but there is also an appreciation of £1,025 per hectare attributable to the increase in the value of the tree stock. A 3% tax free inflation proof return on an investment is regarded as good. This can be achieved from woodlands. It is concluded that an investment in trees and land in Co. Leitrim in 1970 would provide a good return.

**Page**

pp 37 - 45

**Location**

Coillte library

**Notes**

Available

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**Number**

1365

**Author**

Keogh Raymond A.

**Title**

Forestry on soils in the western drumlin region.

**Place**

Dublin

**Date**

1972

**Key Word**

environment, forest soils, soil structure, water quality, water table, land use, afforestation

**Abstract**

This study examined the effects of forests on the soil and water regime in an area near Carrick-on-Shannon Co. Leitrim. From the investigations carried out there is evidence of an improvement in soil structure, profile development and soil moisture relationships in the afforested areas. Undoubtedly, there is a significant increase in the percentage of large pores and there is a lowering of the water table in some areas. Thus, because of better percolation of water in at least the surface layers, the soils do not become saturated with water as rapidly as do the open spaces. This may have contributed to the stability of the crops on the estate where the experiments were carried out. The overall conclusion is that afforestation protects these weakly structured soils and improves their drainage, and is a suitable form of land use in this area.

**Page**

21p

**Location**

Coillte library

**Notes**

Available (Thesis submitted for the award of Degree of Master of Agricultural Science in UCD)

**Thesis**M.Ag.Sc. Thesis, UCD

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**Number**

1366

**Author**

Bulfin Michael

**Title**

Trees on the farms.

**Publisher**

Tree Council of Ireland

**Place**

Dublin

**Date**

1992

**Key Word**

private forestry, farm forestry, silviculture, forest management, investment, plantation establishment, economics, conservation, agriculture, land use

**Abstract**

This is an introductory account of forest plantation and management, and is aimed principally at farmers and landowners who are thinking of planting some of their land or already have some land under forestry. The various forest and woodland systems are described, and the economic, recreational and environmental uses to which they are put are outlined. The main factors in assessing sites for tree planting, location, type of climate regime and soil, are examined. The issues involved in choosing species are outlined. The chapter on plantation management explains the practices of pruning, thinning, clearfelling and other matters in the area of harvesting. Conservation and environmental issues, legislation, and the availability of grants and subsidies are also examined.

**Page**

134p

**Location**

Coillte library

**ISBN**

09519147

**Notes**

Available

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

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**Number**

1367

**Author**

O'Carroll Cormac

**Title**

The economics of State afforestation on blanket peat.

**Place**

Dublin

**Date**

1985

**Key Word**

investment, finance, costs, peatland afforestation, economics, Present Net Worth, financial returns, peatlands

**Abstract**

In a financial study of blanket peat afforestation it was found that lodgepole pine would have to achieve a local yield class of 18 or greater and Sitka spruce a local yield class of 20 or greater to generate a positive Present Net Worth. If the cost of land is included then it is very unlikely that either species will generate a positive Present Net Worth. Very substantial losses are incurred for the lower yield classes of both species. Sitka spruce was found to be the financially superior species even when inputs of nitrogen are necessary. It was also found that neither species was being managed according to its optimum financial regime. It is concluded that the extra cost of tunnel ploughing is justified.

**Page**

76p

**Location**

Coillte library

**Notes**

Available (Thesis submitted for award of B.Ag.Sc. degree, UCD)

**Thesis**

B.Ag.Sc. Thesis, UCD

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**Number**

1368

**Author**

Cole Andrew J.

**Title**

Third highlight paper. Experience and progress in the alternative use of midland peatlands.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Series**

Royal Dublin Society Seminar Proceedings. Number 3

**Date**

1989

**Source**

The Utilisation of Irish Midland Peatlands: The proceedings of a workshop held in the Royal Dublin Society from September 21 - 24, 1988. (Edited by Charles Mollan)

**Key Word**

peatland afforestation, cutaway bogs, environment, peatland exploitation, agriculture, land use, peatlands

**Abstract**

The current state of peatland exploitation is described and new areas of development opportunity are identified. The range of available options may be reduced by unplanned activities in the region. Forestry becomes a permanent feature of the landscape and therefore restricts the development of alternative enterprises in the area. It is recommended that the planting of trees on shallow Bord na Mona cut-away should be for the purpose of aiding horticultural, agricultural and landscape development. The planting of Sitka spruce as a base for industrial expansion should be curtailed until the factors limiting the growth of older plantations are more clearly identified.

**Page**

pp 33 - 45

**Location**

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**ISBN**

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**Notes**

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**Address of author**

Teagasc, Lullymore, Co. Offaly

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**Number**

1369

**Author**

Carey Michael, McCarthy Richard, Hutchinson Kevin, Hendrick Eugene

**Title**

Response to A.J. Cole's paper.

**Publisher**

Royal Dublin Society

**Place**

Dublin

**Series**

Royal Dublin Society Seminar Proceedings Number 3

**Date**

1989

**Source**

The Utilisation of Irish Midland Peatlands: The proceedings of a workshop held in the Royal Dublin Society from September 21 - 24, 1988. (Edited by Charles Mollan)

**Key Word**

cutaway bogs, yield class, peatland afforestation, land use, landscape, economics, employment, peatlands

**Abstract**

This paper responds to a number of points made by another contributor to the conference. The issues raised include the permanency of forestry plantations on the landscape, the stability of trees planted on peatland, employment generation by forestry, and the factors limiting the growth of Sitka spruce on typical Bord na Mona cutaway bog. A summary of the results of the Forest and Wildlife experiment at Trench 14 Clonast bog, which demonstrate that the yield class attained by Sitka spruce is considerably higher than that given by Cole in his paper, is presented.

**Page**

pp 46 - 48

**Location**

Coillte library, RDS library

**Notes**

Available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

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**Number**

1370

**Author**

Forest and Wildlife Service. Research Branch

**Title**

Research report year ended June 1978.

**Publisher**

Department of Fisheries and Forestry

**Place**

Dublin

**Date**

1978

**Key Word**

fertilisers, soil nutrition, forest protection, genetics research, inventory, crop structure, biometrics, plant ecology, silviculture, thinning, forest ecology, forestry research

**Abstract**

This annual report of the Research Branch of the FWS is divided into the following sections: soils and nutrition; forest protection; weed control; genetics; inventory; crop structure and biometrics; JFK Park; and plant ecology. Although research in soils and nutrition continued to be on experiments at establishment (first rotation) and in established (pole stage crops), this section of the Research Branch is becoming more involved in re-forestation research. The major project in the area of forest protection was a study of species susceptibility to *Fomes annosus*, heart rot. Tree breeding work was again confined to two species with the emphasis on the further testing of lodgepole pine clones and the expansion of the gene pool of selected Sitka spruce. A brief summary of progress on the forest inventory is given. A series of national forecasts of production has been generated as part of the crop structure and biometrics research programme. These forecasts show the results of simulating the effects of rotation length reduction and MMAI reduction. The other major study in this section was on the effect of a range of different spacings on the growth of lodgepole pine.

**Page**

125p

**Location**

Coillte library

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**Number**

1371

**Author**

Forest and Wildlife Service

**Title**

Research report year ended December 1979.

**Publisher**

Department of Fisheries and Forestry

**Place**

Dublin

**Date**

1979

**Key Word**

forestry research, forest protection, crop structure, genetics, soil nutrition, Forest and Wildlife Service

**Abstract**

The major study undertaken in the area of soils and nutrition was an economic evaluation of the use of fertiliser nitrogen on checked Sitka spruce. Results show that treatment of Sitka spruce crops with herbicide and nitrogen fertiliser was more attractive in money terms than interplanting/replanting with lodgepole pine. Other studies included an examination of the effects of copper deficiency in Sitka spruce, a study of drainage on surface water gleys, and several reforestation experiments. In the area of crop structure and biometrics a good deal of work

was carried out in production forecasting. A number of additional forest forecasts for species by county and nationally have been generated during the year. New work with Bishop pine, Monterey pine, noble fir and southern beech was undertaken. Work continued on a number of forest protection studies. Analysis of data from the stump protection experiment - delayed application - showed that 20% urea and 10% salt solutions gave protection against fomes. An experiment was established in Ballyhoura forest to assess the economic impact of the pine shoot moth (*Rhyacionia buoliana*) on timber production.

**Page**

108p

**Location**

Coillte library

**Notes**

Available

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**Number**

1372

**Author**

Seirbhis Foraoise agus Fia-Dhulra

**Title**

Report of the Minister for Fisheries and Forest on the Forestand Wildlife Service 1980.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1980

**Key Word**

Forest and Wildlife Service, forest establishment, recreation , forest amenities, State forestry, forestry policy

**Abstract**

A total of 4,282 hectares was acquired by the Forest and Wildlife Service during 1980. 6,613 ha. were planted of which 5,922 was new plantation and 691 ha reforestation. 9,391 ha were marked for thinning, yielding 470,052 cubic metres. The total volume of timber sold amounted to 529,326 cubic metres. Work continued on development of forest parks, nature trails and long distance walks. The first statutory nature reserves were established by Ministerial Orders during 1980. In the area of research work continued on inventory of State woodlands, genetics, soils and nutrition, crop structure, protection, arboriculture, and plant and animal ecology. Details are also given on numbers of people employed, grants for private forestry, and expenditure and income are provided.

**Page**

50p

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Coillte library

**Notes**

Available

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**Number**

1373

**Author**

Seirbhis Forasoise agus Fia-Dhulra

**Title**

Report of the Minister for Fisheries and Forestry on the Forest and Wildlife Service 1981.

**Publisher**

Stationery Office

**Place**

Dublin

**Date**

1981

**Key Word**

Forest and Wildlife Service, forest establishment, recreation , forest amenities, State forestry, forestry policy, forestry policy, forestry research

**Abstract**

A total of 7,758 ha was acquired by the Forest and Wildlife Service during 1981. 6,994 ha were planted, of which 6,099 ha were new plantation and 895 ha. reforestation. 9,105 ha were marked for thinning, yielding 441,030 cubic metres; 1,430 ha were marked for clear felling, yielding 380,903 cubic metres. The total volume of timber sold amounted to 771,894 cubic metres. Work continued on development of forest parks, nature trails and long distance walks. The first statutory nature reserves were established by Ministerial Orders during 1980. In the area of research, work continued on inventory of State woodlands, genetics, soils and nutrition, crop structure, forest protection, arboriculture, and plant and animal ecology. Details are also given on numbers of people employed, grants for private forestry, and expenditure and income are provided.

**Page**

54p

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Coillte library

**Notes**

Available

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**Number**

1374

**Author**

Parnell J.

**Title**

Variation and hybridisation of *Alnus* Miller in Ireland.

**Place**

London

**Date**

1994

**Source**

Watsonia

**Volume**

Vol. 20, No. 1

**Key Word**

*Alnus glutinosa*, *Alnus incana*, alder, hybrids, hybridisation, botany, taxonomy, plant morphology

**Abstract**

Measurements were made of mature leaves and mature catkins from 17 widely spread populations of alder. A total of 17 characteristics were obtained. The leaf morphology of one population was intermediate between *Alnus glutinosa* and *A. incana*. Individual specimens of this apparent hybrid had characteristics common to one or both parents, or were different from both parents. Some were intermediate between them. It had a much higher gland density on its leaves than either parent, a factor which could aid identification.

**Page**

pp 67 - 70

**Location**

UCD library

**Notes**

Available

**Address of author**

School of Botany, Trinity College, Dublin 2.

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**Number**

1375

**Author**

McCarthy C.J., Birkinshaw C., Pembroke J.T., Hale M.

**Title**

Dynamic mechanical analysis as a technique for the study of fungal degradation of wood.

**Date**

1991

**Source**

Biotechnology Techniques.

**Volume**

Vol. 5, No. 6

**Key Word**

fungal diseases, forest protection, timber decay, *Coniophora puteana*, timber properties, forest products, forest diseases

**Abstract**

The effect of an attack of *Coniophora puteana* on the properties of Scots pine was examined using dynamic mechanical analysis. Over the 42 day observation period shear modulus fell steadily. This correlated with weight loss. There was relatively little change in tan delta implying uniform degradation of the structural polymers.

**Page**

pp 493 - 496

**Location**

UCD library

**Notes**

Available

**Address of author**

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---

**Number**

1376

**Author**

O'Toole P., Cahalane D.G., Farrell E.P.

**Title**

Effects of phosphate fertiliser on biomass production and N<sub>2</sub> (C<sub>2</sub>H<sub>2</sub>) fixation by pot-grown *Ulex gallii* Planchon in a forest soil.

**Date**

1991

**Source**

Biology and Fertility of Soils

**Volume**

Vol. 12, No. 3

**Key Word**

*Ulex gallii* Planchon, dwarf gorse, dwarf furze, nitrogen fixation, soil nutrients, fertilisation, silviculture

**Abstract**

After 8 months of growth in very acid forest soil deficient in nitrogen and phosphate, N<sub>2</sub> (C<sub>2</sub>H<sub>2</sub>) fixation by *Ulex gallii* seedlings was determined. Application of Na<sub>2</sub>HPO<sub>4</sub>.12H<sub>2</sub>O or ground rock phosphate fertiliser was essential for growth, nodulation and C<sub>2</sub>H<sub>2</sub> reduction activity. Overall, both the sodium phosphate and the rock phosphate were equally P sources and the maximum acetylene reduction by intact roots was measured as 4.09 and 4.69 micromol. C<sub>2</sub>H<sub>4</sub>/g fresh weight nodule per hour, respectively. Applied NH<sub>4</sub>Cl severely inhibited nodulation and restricted acetylene reduction activity but not seedling growth. The results are discussed in relation to the spread *U. gallii* in and its potential as a leguminous nurse crop for Sitka spruce on impoverished soils.

**Page**

pp 177 - 181

**Location**

UCD library

**Notes**

Available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield, Dublin 4

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**Number**

1377

**Author**

Forrest M.

**Title**

Post-harvest treatment of cut foliage.

**Date**

1991

**Source**

Acta Horticulturae

**Volume**

No. 298

**Key Word**

Eucalyptus gunnii, cut foliage, vase life, post-harvest storage, dried stems

**Abstract**

A series of experiments was carried out on the vase life of cut foliage of *Eucalyptus gunnii*. Cut stems were wet or dry stored for 2 or 4 weeks at 5 degrees C. and vase life was measured in an unheated greenhouse (3.4 - 6.2 degrees). The vase life of stems stored for 2 weeks at 5 degrees was also compared with freshly harvested stems in a heated greenhouse (16 - 18 degrees). The effect of floral preservatives on vase life was assessed by pulsing stems in 2 mm silver thiosulphate (STS) or 8 mg 8 - hydroxyquinoline citrate (HQC)/litre for the duration of the experiment and by placing stems in 200 mg 8-HQC/litre + 20 g sucrose/litre for the duration of the experiment and by placing stems in tap water or distilled water. In a further experiment the vase life of *E. gunii* was assessed. Foliage stored at 5 degrees for 2 and 4 weeks had an average vase life of 31-59 days and 32 - 69 days respectively. Dry stored stems had a longer vase life than wet stored stems. The vase life of stems stored for 2 weeks at 5 degrees was longer than that of freshly harvested stems at 16 - 18 degrees. The chemical treatments did not increase the vase life of *E. gunnii* foliage.

**Page**

pp 255 - 262

**Location**

UCD library

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, Belfield, Dublin 4

**Number**

1378

**Author**

Farrell E.P.

**Title**Long-term study of Sitka spruce (*Picea sitchensis* (Bong.) Carr) on blanket peat: 1. The response to fertilisers and lime.**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1985

**Source**

Irish Forestry

**Volume**

Vol. 42, No. 2

**Key Word**fertilisers, fertilisation, soil nutrients, nitrogen, lime phosphorus, Sitka spruce, *Picea sitchensis*, silviculture**Abstract**

A nitrogen and phosphorus fertiliser experiment on Sitka spruce (*Picea sitchensis* (Bong.) Carr., which had been running since 1967, was subdivided in 1977. Half of the original experimental plots were left untreated, half received lime and further applications of nitrogen and phosphorus in factorial combination. In the plots of the section unlimed and unfertilised in 1977, the 1967 fertiliser application has shortened the rotation by 6 to 9 years. The section limed and fertilised in 1977 showed growth responses to the new applications of nitrogen and phosphorus. Nevertheless, the indications were that no benefit is to be gained from liming under these circumstances. There is no evidence of nitrogen deficiency in either experiment, but it is possible that further applications of phosphate will prove beneficial.

**Page**

pp 76 - 91

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield, Dublin 4

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**Number**

1379

**Author**

Farrell E.P.

**Title**

Long-term study of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) on blanket peat: 2. Water-table depth, peat depth and nutrient mineralisation studies.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1985

**Source**

Irish Forestry

**Volume**

Vol. 42, No. 2

**Key Word**

nutrient mineralisation, soil nutrients, fertilisers, fertilisation, nitrogen, phosphorus, blanket peat, peatlands, peat depth, Sitka spruce, *Picea sitchensis*

**Abstract**

Depth to water table was monitored during two growing seasons, peat depth changes over a 15 year period measured and nitrogen and phosphorus mineralisation studies conducted in a fertiliser and lime experiment on a pole stage crop of Sitka spruce (*Picea sitchensis* (Bong.) Carr) on oligotrophic blanket peat. The original fertiliser experiment, a nitrogen and phosphorus factorial was established in 1967 and in 1977 it was subdivided, one part receiving no further treatment (Experiment 1) with lime and further applications of nitrogenous and phosphatic fertilisers being made to the other (Experiment 2). When the two experiments were treated as one, mean depth to water table was linearly related to growth parameters. The best relationship was obtained with basal area. However, there were marked differences between experiments and significant differences in water table depth were recorded between treatments in Experiment 2, where fertiliser induced growth differences were also measured, but not in Experiment 1 where the 1967 treatments were no longer producing growth increment differences. Peat subsidence has occurred in the experimental plots at an average rate of 1.2 cm per year. In shallow peat situations experimentation on peat-soil mixing should be initiated to test long-term effects. Levels of mineral nitrogen were depressed in forest floor samples from limed, fertilised plots. Neither total nitrogen concentrations nor mineral nitrogen levels showed any evidence of a residual effect of fertilisation. Plots treated with phosphate in 1977, by contrast had markedly higher extractable phosphorus concentrations than material from Experiment 1.

**Page**

pp 92 -105

**Location**

Coillte library

**Notes**

Available

**Address of author**

Dept. of Environmental Resource Management, UCD, Belfield, Dublin 4

---

**Number**

1380

**Author**

Carey M.L., Hammond R.F., McCarthy R.G.

**Title**

Plantation forestry on cutaway raised bogs and fen peats in the Republic of Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1985

**Source**

Irish Forestry

**Volume**

Vol. 42, No. 2

**Key Word**

cutaway bogs, raised bogs, fen peats, peatland soils, fertilisers, minerals, silviculture, peatlands

**Abstract**

Coniferous plantations have been established on sizeable areas of hand cutaway raised bogs and modified fen peats in Ireland over the last thirty years. Whereas Scots pine and Norway spruce were used almost exclusively up to the mid 1960s, Sitka spruce has now become the dominant species because of its higher production potential (20 cubic metres/ha. +). Mixtures of Scots pine and Norway spruce were often used where competition from heather was envisaged on the handcutaway bogs. Phosphorus and potassium application are essential on the handcutaway peat types in order to ensure good growth. There are increasing indications that copper application may also be necessary, particularly for pines and Sitka spruce. Potassium application alone is essential on the modified fen peats. Although Scots pine grew well in the early years on many of the site types described there is increasing evidence of dieback at about 25 years of age on handcutaway sites, the causes of which are under investigation. Machine cutaway bogs, both sod peat and milled peat, appear to have a high production potential for forestry (22 - 24 cubic metres/ha). However, further research is necessary on milled bogs to ensure this potential is attained. The depth of peat left behind will be critical because of the highly calcareous nature of many of the underlying subsoils.

**Page**

pp 106 - 1222

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

---

**Number**

1381

**Author**

McCarthy R.

**Title**

The energy potential of forest biomass in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1979

**Source**

Irish Forestry

**Volume**

Vol. 36, No. 1

**Key Word**

energy production, forest biomass, coppicing, costs, economics, energy imports, silviculture

**Abstract**

The Forest and Wildlife Service is participating in an EEC Energy Project with the aim of investigating the energy potential of forest biomass. The first phase of this project, consisting of growth trials of a range of woody species at four representative forest sites (western blanket bog, midland raised bog, Old Red Sandstone podzol and drumlin-gley) was established in 1977. Plant spacing was narrower than that used in conventional forest management practice in order to increase productivity per unit area. Early results of plant survival and dry matter production from the growth trials indicate that, of the species being investigated, lodgepole pine, Sitka spruce and Eucalyptus are performing best. Above average forest land is required for satisfactory growth of species capable of coppicing and, of the four sites, only the drumlin-gley appears to fulfill this requirement. The possibility of direct seeding reducing the establishment costs of the successful, though non-coppicing conifers, is being tested. Preliminary results from these trials, of seedling emergence, are encouraging. Yields of forest biomass ranging from 25 - 40 tonnes dry matter/ha/year have been obtained on productive forest lands in the United States; this is a productivity almost competitive with coal at 1974 prices. Similar yields are possible in Ireland on comparable sites. Estimates of the possible energy contribution of forest biomass, as waste material and as pure energy plantations, are made. It is postulated that the energy import demands of this country could be reduced by 27% based on 1977 imports and assuming the equivalent of the total forest area were managed on a 20 year rotation.

**Page**

pp 7 - 18

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow.

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**Number**

1382

**Author**

Carey M.L, O'Brien D.

**Title**

Biomass nutrient content and distribution in a stand of Sitka spruce.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1979

**Source**

Irish Forestry

**Volume**

Vol. 36, No. 1

**Key Word**

soil nutrients, nutrient uptake, nutrient content, silviculture, Sitka spruce, Picea sitchensis, nitrogen, phosphorus, potassium

**Abstract**

The annual uptake of nitrogen, phosphorus and potassium by an unthinned 33 year old crop of Sitka spruce was estimated by destructive sampling of eight trees. Extrapolation of their nutrient contents to the total crop gave estimates of 81 kg N, 4 kg P and 15kg K. Although the stemwood and bark accounted for half of the total dry

matter production they only contained 17, 14 and 36 per cent of the total quantities of N, P and K present in the crop and forest floor, the main bulk of the nutrients being in the needles and branches.

**Page**

pp 25 - 35

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

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**Number**

1383

**Author**

Savill P. S.

**Title**

Rate of weight loss of small round timber.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1979

**Source**

Irish Forestry

**Volume**

Vol. 36, No. 1

**Key Word**

timber weight loss, small round wood, timber purchasing, timber market, timber prices

**Abstract**

The purpose of this study was to find the rates at which small sized timber loses weight according to species, season of cutting and size of material. A number of billets were cut from randomly selected samples of 16 tree species. Each piece was weighed on the day it was felled to the nearest 100g and then two and four weeks after felling up to the end of about 35 weeks. The rate of weight loss is linear over the period examined and can vary between over 5% per month to less than 1% depending on the species. The fastest weight losers are the spruces, which at present form the bulk of all timber which is being produced, with the most common species being Sitka spruce which loses weight faster than Norway spruce.

**Page**

pp 48 - 56

**Location**

Coillte library

**Notes**

Available

**Address of author**

Oxford Forestry Institute, Dept. of Plant Sciences, University of Oxford, South Parks Road, Oxford OX1 3RB, England

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**Number**

1384

**Author**

O'Brien Tim

**Title**

Private forestry in Ireland: recent achievements and future direction.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1991

**Source**

Society of Irish Foresters Symposium: Challenges and Perspectives in Irish Forestry - Friday 5th April, 1991.

**Key Word**

private forestry, grants, subsidies, farm forestry, investment, economics, economic development, environment

**Abstract**

Until the 1980s there was a very low level of interest in private forestry in Ireland. This situation has improved in recent years with the introduction of new grant schemes. The author identifies the reasons for expansion in this sector as the introduction of the Western Package, the new 4 year fixed price package, and the lead given by the financial institutions. The main challenge to the expansion of private forestry is identified as selling the concept to farmers and private investors. The steps which need to be taken to meet the objections raised by the environmental lobby are outlined. The importance of maintaining standards in plantation establishment, and the role played by the various advisory agencies in this area is discussed. Farm forestry has a major contribution to make to achievement of the targets for private forestry which have been set for the 1990s.

**Page**

pp 29 - 41

**Location**

Coillte library

**Notes**

Available

**Address of author**

Green Belt Ltd., Virginia, Co. Cavan

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**Number**

1385

**Author**

Hendrick E.

**Title**

Noble fir: 1988 planting survey.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Development Internal Report

**Date**

1989

**Key Word**

noble fir, *Abies nobilis*, tree mortality, silviculture

**Abstract**

The mean survival rate of 625,000 noble fir planted in 1988 was 72%. The main factors associated with mortality were nursery of origin, plant age, planting date, soil type and site preparation. The cost of losses was estimated to be £32,000

**Page**

30p

**Location**

Coillte Research & Development

**Notes**

Available

**Address of author**

National Council for Forest Research & Development, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

1386

**Author**

Cassidy John Joseph

**Title**Restocking of Sitka spruce (*Picea sitchensis*) on upland sites.**Date**

1990

**Key Word**stocking levels, tree growth, silviculture, forest establishment, drainage, restocking, Sitka spruce, *Picea sitchensis***Abstract**

A survey of several establishing compartments of Sitka spruce in 15 sites in Co. Derry showed that stocking levels were well below the optimal of 2,500 stem per hectare. The factors that were thought to contribute to this low stem count were investigated, and the relationship between these factors and tree growth was examined. Discriminant analysis showed that brash has a large effect on tree growth over the first two or three growing seasons. Over the later stages of the establishment phase drainage patterns (especially area of compacted soil) became the dominant discriminatory function for tree height hence tree growth. Weed growth had a larger discriminatory function for trees in the smaller height classes. As each site had varying discriminatory functions it was clear that a general programme of restocking cannot be applied to the uplands, rather each site type must be treated by itself to ensure that adequate stocking levels and tree growth are reached.

**Page**

65p

**Location**

Coillte library

**Notes**

Available (Thesis submitted for award of Degree in Forestry from the University of Wales)

**Thesis**

B.Ag.Sc. Thesis, University of Wales

**Number**

1387

**Author**

Keane Michael

**Title**

Factors affecting the top dying of Norway spruce.

**Publisher**

Coillte Research &amp; Development

**Place**

Bray

**Series**

Coillte Research &amp; Development. Information Note No. 2

**Date**

1994

**Key Word**silviculture, Norway spruce, *Picea abies*, top dying, forest health, forest protection, transpiration, weather patterns, site conditions**Abstract**

Top dying of Norway spruce appears to be closely related to site conditions and weather patterns. Mild windy winters followed by dry springs and summer, and removal of side shelter through thinning seem to cause an increase in the extent of this problem. Top dying can be reduced by avoiding heavy thinning and establishment on soils where drought may be a problems, and by salvaging trees as quickly as possible in severely affected stands.

**Page**

2p

**Location**

Coillte library

**Notes**

Available

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**Number**

1388

**Author**

O'Driscoll J.

**Title**

IUFRO Douglas fir provenance experiment in Ireland.

**Publisher**

International Union of Forest Research Organisations

**Date**

1973

**Source**

International Union of Forest Research Organisations S2.02-05 Working Party on Douglas fir: Papers presented at the meeting in Gottingen West-Germany, September 3 -5, 1973.

**Key Word**

Douglas fir, *Pseudotsuga Menziesii*, provenance, seeds, seedlings, seedling characteristics

**Abstract**

Thirty-two provenances of Douglas fir from the 1966-68 IUFRO collection were sown in 1968. Chosen provenances were mainly of coastal origin, some interior ones being included for comparison. Characteristics assessed were seed widths, seed length, germination height growth at 1,2 and 3 years, total growth at 1 and 2 years and lammas growth. There were highly significant differences between provenances for all characters assessed and their locations criteria proved to be very variable. Elevation of origin was seen to have the greatest effect followed by latitude of origin. Relationship between each of the assessed characteristics was also variable. At the end of three years in the nursery the southern coastal provenances were at the top of the height growth rankings with the interior provenances at the bottom. No north-south clinal trend has yet emerged. Plants have now been out planted on five sites throughout Ireland.

**Page**

pp 173 - 187

**Location**

Coillte, Bray

**Notes**

Available

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**Number**

1389

**Author**

O'Driscoll J.

**Title**

IUFRO grand fir (*Abies grandis*) provenance experiment in Ireland nursery stage results.

**Publisher**

Forestry Commission

**Place**

Edinburgh

**Series**

Forestry Commission Research and Development Paper 139

**Date**

1986

**Source**

IUFRO *Abies grandis* provenance experiments: nursery stage results

**Key Word**

grand fir, *Abies grandis*, nursery experiments, nursery stage, provenance, tree growth

**Abstract**

The experiment was laid down in 1976 and 1978. Results presented here are an updating to the end of the

nursery phase. Significant differences occurred between provenances in all parameters measured in the 1974 collection. The factor having the highest correlation with height was length of the longest branch. Height was more highly correlated with elevation than latitude. In the 1976 collection differences between provenances were significant for height growth, number of growing points and length of longest branch. Morphological characteristics were strongly correlated with growth. Height was more highly correlated with latitude than elevation.

**Page**

pp 86 - 98

**Location**

Coillte, Bray

**ISBN**

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**Number**

1390

**Author**

Coillte Teo.

**Title**

Report to the Forest Service, Department of Energy on forest research 1989.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Coillte Research & Technology internal report

**Date**

1989

**Key Word**

Coillte Teoranta, forestry research, State forestry, genetics, forest protection, silviculture, site productivity, environment

**Abstract**

The projects summarised in this report were undertaken during the year as part of Coillte's contribution to national forest research. The areas covered include: genetic improvement; crop establishment; protection and stand management; wood quality; analytical, advisory, and information services; and environmental issues related to forestry. There are two major projects being undertaken as part of the programme for the genetic improvement of Sitka spruce: provenance studies; and tree breeding, which exploits variation that exists within selected populations (i.e. good provenances) to produce breeds that are better suited to the needs of commercial forestry. The major studies carried out in the area of site productivity were the site evaluation system for Douglas fir, and a study of the effects of forestry, in particular aerial fertilisation operations, on water quality. Forest protection studies included work on Fomes root and butt rot, atmospheric pollution, and pest management of the large pine weevil. The most important investigation in the area of wood technology was a study of how strength properties of Sitka spruce are affected by silviculture.

**Page**

93p

**Location**

Coillte library

**Notes**

Available

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**Number**

1391

**Author**

O'Reilly Conor

**Title**

Effect of root-wrenching treatments on the physiology of Sitka spruce transplants: final research report.

**Place**

Tralee

**Series**

Report for Coillte Teo.

**Date**

1992

**Key Word**

root wrenching, silviculture, tree physiology, nursery practice, seedlings, Sitka spruce, *Picea sitchensis*, dormancy development, cold hardiness, hardiness acclimation

**Abstract**

Root wrenching treatments are commonly used to induce dormancy in conifer seedlings. This study examined the effect of root wrenching on dormancy and cold hardiness of Sitka spruce transplants during the 1991/92 season. It was found that root wrenching slowed early bud and dormancy development but had no effect on the time of initiation of deep dormancy. Cold hardiness acclimation of shoots was reduced. Wrenching did reduce root mitotic activity in December, but the reduction in root activity perhaps slowed shoot dormancy and cold hardiness development.

**Page**

12p

**Location**

Coillte, Bray

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, UCD, Belfield, Dublin 4

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**Number**

1392

**Author**

Pfeifer A.R., Murphy P.G.

**Title**

The development of a high yielding multi-clonal variety of Sitka spruce.

**Date**

1987

**Source**

European Seminar on Wood Production and Harvesting: Proceedings: 1.1 Selection and Improvement of Forest Reproductive Material, Bologna 2, 3, 1987.

**Key Word**

forest genetics, multi-clonal varieties, Sitka spruce, *Picea sitchensis*, tree breeding, reproductive material, tree improvement

**Abstract**

During the period of the project the first stages in the development of a high yielding multi-clonal variety of Sitka spruce were initiated. Biological constraints such as length of propagation cycles and the period required for field testing did not allow the variety to be released. However, during the 2 year period of the project, work was concentrated on the selection, collection and propagation of genetic material from which a multi-clonal variety will be developed. Plant material and seeds were collected from the best available sources at the start of the project. Sources included mature and semi-mature forest stands, transplant lines in commercial nurseries, progeny tests both in the field and in the nursery, and seed and plant exchange with Association Forêt Cellulose (Afocel), France. A breeding strategy was adopted that would include, not only a clonal testing programme, but also the means by which new and more refined genetic variation can be developed and incorporated into the variety. A study was also undertaken investigating both inter and intra provenance variation in wood density. This was initiated to determine the possible effects on wood quality in developing a rapidly growing variety of Sitka spruce.

**Page**

pp 30 - 35

**Location**

Coillte, Bray

**Notes**

Available

**Address of author**

Coillte Research & Development, Bray, Co. Wicklow

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**Number**

1393

**Author**

Deasy J.J.

**Title**

Notes on the raising of forest trees in the nursery.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1954

**Source**

Irish Forestry

**Volume**

Vol. 11, No. 1

**Key Word**

nursery practice, silviculture, forest nurseries, lining out, planting

**Abstract**

Various aspects of forest nursery practice are discussed. The main points to be considered when selecting and developing a nursery site are: soil type; topography and aspect; shape and size. The selection of seeds from local sources is recommended, and the correct treatment for seeds of various species is described. There are a number of points to be noted when lining out. The depth and shape of the trench receiving the trees, placement of soil, and care of roots are described. The most suitable methods for maintaining soil fertility on nursery ground are explained. In the area of forest protection the correct treatment for fungal diseases, insect pests, and frost damage are outlined.

**Page**

pp 10 - 19

**Location**

Coillte library

**Notes**

Available

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**Number**

1394

**Author**

Stanley Bill

**Title**

Using colour infrared aerial photography to monitor forest health.

**Publisher**

Coillte Research & Development

**Place**

Bray

**Series**

Coillte Research & Development. Information Note No. 3

**Date**

1994

**Key Word**

colour infrared aerial photography, CIR, forest health

**Abstract**

The use of colour infrared aerial photography as a tool for monitoring forest health is described. Interpretation keys have been developed for both Sitka spruce and lodgepole pine, and these are used to classify the condition of individual tree crowns on colour infrared (CIR) aerial photographs. The use of these keys in monitoring forest health is explained, and a number of other forestry applications for CIR aerial photography are outlined.

**Page**

2p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray Co. Wicklow.

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**Number**

1395

**Author**

McEvoy T.

**Title**

A review of Irish forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1954

**Source**

Irish Forestry

**Volume**

Vol. 11, No. 1

**Key Word**

forestry history, native woodlands, deforestation, politics, forestry policy, economics, woodlands exploitation

**Abstract**

By 1600 A.D. a substantial area of Ireland's woodlands had been cleared. However, forest clearance before the seventeenth century is almost entirely unrecorded. The importance of the forest in Gaelic culture is reflected in the Brehon laws and in the number of place-names which are derived from the names of trees. Early seventeenth descriptions of the countryside provide evidence of a heavily wooded country, but this was rapidly altered during and immediately after the Tudor conquest. The shortage of timber in Britain ensured that Ireland's natural timber resources would be heavily exploited. Extensive re-planting and attempts to maintain existing woodlands began in the early eighteenth century. Forest statistics show slight but steady increase in acreage over most of the nineteenth century. This process ended with the division of the estates beginning in the late nineteenth century. State intervention succeeded in preventing the almost total destruction of woodlands in the early twentieth century.

**Page**

pp 21 - 27

**Location**

Coillte library

**Notes**

Available

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**Number**

1396

**Author**

McEvoy T.

**Title**

Afforestation of peat soils.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1954

**Source**

Irish Forestry

**Volume**

Vol. 11, No. 2

**Key Word**

peatland afforestation, peat soils, *Pinus contorta*, lodgepole pine, raised bogs, blanket bogs, State forestry, peatlands

**Abstract**

This paper provides a broad outline of the role of peat soils in Irish forestry. The most widely planted species in Irish peatlands is *Pinus contorta*, and has thrived in conditions where all other species have failed. The development of peatland afforestation in Ireland and other countries is summarised. The problems of forestry in relation to the two main Irish peat types, raised and blanket bogs, are examined. A detailed description is provided of the first plot planted on deep blanket bog in the spring of 1951 at Nephin Beg Forest.

**Page**

pp 65 - 75

**Location**

Coillte library

**Notes**

Available

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**Number**

1397

**Author**

McKay R., Clear T.

**Title**

A further note on group dying of Sitka spruce and *Rhizina inflata*.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1955

**Source**

Irish Forestry

**Volume**

Vol. 12, No. 2

**Key Word**

group dying, Sitka spruce, *Picea sitchensis*, Norway spruce *Picea abies*, forest diseases, forest protection, root systems, *Rhizina inflata*

**Abstract**

The problem of group dying is usually reported from established plantations of Sitka spruce 20 to 30 years old. Norway spruce is also liable to disease. In several reported cases the association of the fungus *Rhizina inflata* with the disease was quite evident. The sequence of aerial symptoms of group dying in Sitka spruce is described. The prolific formation of cones, the first aerial symptom of the disease, and the ultimate death of the tree are the result of a diseased root system.

**Page**

58 - 63

**Location**

Coillte library

**Notes**

Available

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**Number**

1398

**Author**

O'Kelly P.F.

**Title**

Some considerations in connection with the thinning of conifers in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1956

**Source**

Irish Forestry

**Volume**

Vol. 13, No. 1

**Key Word**

thinning, harvesting, costs, forest management, silviculture

**Abstract**

The optimum level of thinning depends on the following considerations: windfirmness of the species; powers of recovery of crown; suitability of one species as compared with another or others in mixed woods. A hypothetical stand is used to derive a formula which indicates the most suitable way to proceed with first, second and subsequent thinnings. A number of approaches to reducing the cost of thinning are considered.

**Page**

pp 52 - 64

**Location**

Coillte library

**Notes**Available

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**Number**

1399

**Author**

Gruneil T.

**Title**

A note on peat afforestation with special reference to work carried out in Cloosh Valley, Connemara.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1956

**Source**

Irish Forestry

**Volume**

Vol. 13, No. 2

**Key Word**

peatland afforestation, blanket bogs, peatland, peat soils, planting, establishment, peatlands

**Abstract**

The utilisation of blanket bog for forestry is examined. The author argues that despite the progress that has been made in this area in recent years, a great deal remains to be learned on the subject of site preparation. The correct approach to ploughing peat sites in order to ensure sufficient aeration is outlined. A description of work carried out in Cloosh Valley in Connemara is provided, and the following recommendations are made for successful planting of similar sites: 1. drain intensively and prepare ground at least 6 months to wash out

harmful acids and allow for decomposition of the peat; 2. plant ages: 1 + 1 pines, 2 + 1 spruces, 1 + 1 broadleaved species; 3. apply fertiliser immediately after planting.

**Page**

pp 64 - 68

**Location**

Coillte library

**Notes**

Available

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**Number**

1400

**Author**

Thornhill J.J.

**Title**

Planting spacings.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1956

**Source**

Irish Forestry

**Volume**

Vol. 13, No. 2

**Key Word**

spacing, planting, forest establishment, silviculture

**Abstract**

A number of factors must be taken into consideration when deciding on the optimum spacing for a new plantation. The advantages and disadvantages of both close spacing and open spacing are outlined. Close planting is more suitable for poorer soils because of the greater risk of failure and greater need for soil improvement. The use of open spacing helps to reduce costs.

**Page**

pp 68 - 71

**Location**

Coillte library

**Notes**

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**Number**

1401

**Author**

Kearney J.C.

**Title**

Willow growing and utilisation in the Suir Valley.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1956

**Source**

Irish Forestry

**Volume**

Vol. 13, No. 2

**Key Word**

willow growing, weaving, silviculture, forest products, timber uses, timber processing

**Abstract**

The history of willow cultivation is briefly. A surviving willow plantation and weaving business is described. Various aspects of the cultivation, harvesting and processing of the willow crop are explained. The various uses to which willow has been put in the past and areas of future development are identified.

**Page**

pp 73 - 77

**Location**

Coillte library

**Notes**

Available

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**Number**

1402

**Author**

Scully Gerald

**Title**

The case for insignis pine in Irish forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1957

**Source**

Irish Forestry

**Volume**

Vol. 14, No. 1

**Key Word**

insignis pine, Pinus radiata, silviculture, transplanting, New Zealand forestry

**Abstract**

The author argues that the potential value of insignis pine (*Pinus radiata*) as a forest tree have not yet been appreciated in Ireland. The natural habitat of insignis pine is identified, and its performance in forestry plantations in New Zealand and Ireland is described. The biggest problem associated with growing the species outside its native habitat is the difficulty in transplanting it successfully. It is recommended that insignis pine should be planted pure. This is much more acceptable than would be the case with less attractive conifer species.

**Page**

pp 39 - 49

**Location**

Coillte library

**Notes**

Available

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**Number**

1403

**Author**

Mooney O.V.

**Title**

*Pinus contorta* in Irish forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1957

**Source**

Irish Forestry

**Volume**

Vol. 14, No. 2

**Key Word**

lodgepole pine, *Pinus contorta*, silviculture, harvesting, thinning

**Abstract**

The development of the use of *Pinus contorta* in Irish forestry is examined. The history and current condition of a number of stands at various sites are described. One of the problems faced by Irish foresters planting lodgepole pine is the limit in the number of available provenances which have been proved suitable for Irish conditions. On the evidence available it appears that coastal types of the species are much more suited to Irish conditions than inland types. A number of recommendations are made regarding correct silvicultural practice and protection in stands of *Pinus contorta*. The quality of the timber is briefly assessed. Despite harsh weather conditions *Pinus contorta* has performed very well on deep western climatic peats. However, the species is most likely to thrive on Old Red Sandstone sites.

**Page**

pp 77 - 89

**Location**

Coillte library

**Notes**

Available

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**Number**

1404

**Author**

McKay R., Clear T.

**Title**

Violet root rot (*Helicobasidium purpureum*) on Douglas fir (*Pseudotsuga taxifolia*) and *Pinus contorta*.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1957

**Source**

Irish Forestry

**Volume**

Vol. 14, No. 2

**Key Word**

violet root rot, *Helicobasidium purpureum*, fungal diseases, forest pathogens, forest protection, fungi, Douglas fir, lodgepole pine

**Abstract**

The aerial and underground symptoms of a plot of Douglas fir and lodgepole pine affected by violet root rot (*Helicobasidium purpureum*) are described. The fungus is mainly a soil-inhabitant and attacks the underground parts of the host. The life cycle of the fungus is described. Infection arises from sclerotia, and probably also from mycelium, left in the soil from a previously diseased crop. Control of the disease is difficult, but rotation of crops helps to keep it in check.

**Page**

pp 90 - 97

**Location**

Coillte library

**Notes**

Available

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**Number**

1405

**Author**

Gavigan Hugh

**Title**

A plea for the more extensive planting of ash.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1957

**Source**

Irish Forestry

**Volume**

Vol. 14, No. 2

**Key Word**

hurley manufacturing, ash, harvesting, silviculture, timber uses

**Abstract**

The growing of ash for the manufacture of hurley-sticks is relatively easy as the saplings which are required for this purpose can grow well on poor soils. The manner in which the timber needs to be harvested for this purpose and the manufacture of the stick itself are described. It is recommended that natural underwood regeneration of ash should be encouraged in order to meet short-term needs in hurley ash.

**Page**

pp 108 - 111

**Location**

Coillte library

**Notes**

Available

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**Number**

1406

**Author**

Parker R. E.

**Title**

Some problems arising in the afforestation of peatland in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1957

**Source**

Irish Forestry

**Volume**

Vol. 14, No. 2

**Key Word**

peatland afforestation, silviculture, Calluna, Sphagnum, growth check, peatlands

**Abstract**

A number of ecological problems associated with the planting of peatlands in Northern Ireland are identified. Afforestation has been hampered by the lack of a satisfactory scheme of vegetation classification and site evaluation for silvicultural purposes. As a result the silvicultural potentialities of land cannot be accurately estimated. The second problem identified is that of check in Sitka spruce a few years after planting on poor peat, largely due to competition from Calluna plants. The problem of Sphagnum growth occurs at the second-thinning stage

**Page**

pp 118 - 121

**Location**

Coillte library

**Notes**

Available

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**Number**

1407

**Author**

Crowe A.P.

**Title**

Some experiences in the survey and inventory of growing stock for forest management purposes.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1958

**Source**

Irish Forestry

**Volume**

Vol. 15, No. 1 & 2

**Key Word**

forestry management, inventory, forestry history, education, yield management, silviculture, forestry development, economics

**Abstract**

Until recently, the main emphasis in forestry practice in Ireland was on establishment with relatively little attention being paid to the areas of management and marketing. The techniques of refined tree measurement and sustained yield management gradually increased in significance as Irish forestry developed. The development of a range of forestry management disciplines was greatly assisted by the publication of a number of Forestry Commission works on silviculture and forest economics. Other important influences included the experience Irish forestry students gained in forestry inventory while working in other countries. The author describes his own work in developing a course in forest mensuration and management specific for Irish conditions.

**Page**

pp 18 - 25

**Location**

Coillte library

**Notes**

Available (Paper read at the Annual Meeting of the British Association for the Advancement of Science held in Dublin, Sept., 1957)

---

**Number**

1408

**Author**

Dunne Seamus P.

**Title**

The use of colour infrared aerial photography in monitoring the health of Irish forests.

**Place**

Dublin

**Date**

1993

**Key Word**

colour infrared aerial photography, CIR, Sitka spruce, Picea sitchensis, Norway spruce, Picea abies, silviculture, forest health, forest inventory, monitoring, remote sensing, fertilisers, fertilisation, mapping

**Abstract**

Although colour infrared aerial photography has been used to monitor forest health for many years, it is only recently that an attempt has been made to harmonise interpretation of CIR aerial photographs among Member

States of the European Union. The four studies presented in this thesis are part of Ireland's contribution to this programme. The first study is a description of the development of a damage interpretation key for Sitka spruce. Details of the development process are provided and the completed key is presented with visual aids. The second study is an inventory of forest damage taken from a number of forests photographed in 1989. The inventory procedure is described and a summary of the results is presented. The third study assesses the use of CIR aerial photography in detecting the spectral response resulting from the application of potassium fertiliser in deficient Sitka spruce crops, and finds that CIR aerial photography can successfully detect the response due to fertilising. The fourth study describes how CIR aerial photography can be successfully used to map areas in which top dying in Norway spruce is evident, and how satellite imagery (SPOT XS) can also be used for this purpose. It may be concluded from the four studies presented that CIR and satellite imagery can be successfully used for operational monitoring of forest health in spruce forests in Coillte plantations in Ireland. Future studies should concentrate on the integration of CIR, airborne imagery, satellite imagery and GIS for monitoring and mapping the impact of forest health.

**Page**

140p

**Location**

Coillte, Bray/ UCD Dept. of Forestry

**Notes**

Available (Thesis submitted for award of M.Agr.Sc., Dept. of Forestry, UCD)

**Thesis**

M.Ag.Sc. Thesis, UCD

**Address of author**

Forest Service, 2 Leeson Lane, Dublin 2

---

**Number**

1409

**Author**

McCarthy R., Hogan J.

**Title**

EC Project No. 89601IR0020. A study of the cause-effect relationships underlying forest decline, Ireland 1989.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Date**

1989

**Key Word**

forest health, forest decline, atmospheric pollution, environment, forest protection, forest damage

**Abstract**

This report summaries the work of an EC funded study, initiated in 1988, of the effect of air pollution on forests using permanent sample plots. Results show that minimal or negligible forest damage has occurred in the 25 plots monitored. Over 70% of all Sitka spruce and Norway spruce assessed, and over 97% of Noble fir, had less than 25% defoliation and discoloration, a threshold below which trees are not considered to be damaged. A pattern of decreased defoliation and discoloration was evident from 1988 to 1989 in both of the spruce species. For Noble fir, a similar trend occurred, with little difference in discoloration. The factors responsible for the minimal levels of defoliation and discoloration found are not definitely known, but are thought to be primarily due to wind exposure, and, in the case of the spruces, to the green spruce aphid (*Elatobium abietinum*). Nutrient levels in the tree foliage were found to be more than adequate in almost all cases. Further studies will be required to estimate the level of forest damage caused by pollution. Results thus far show that its role in an insignificant one. Finally, even the small levels of forest damage recorded are thought to be an exaggeration of the situation in the forest as a whole. This is because trees assessed generally had to be chosen from the plot boundaries, since the crowns of internal trees could not be viewed satisfactorily.

**Page**

42p

**Location**

Coille Research & Development

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray

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**Number**

1410

**Author**

McCarthy R., Fitzsimons B.

**Title**

Study on forest biomass plantations in the EC - coniferous forest biomass production in Ireland.

**Publisher**

Coillte Research & Development

**Place**

Bray

**Date**

1986

**Key Word**

forest biomass production, yields, timber prices, forest products, energy sources, woodfuel

**Abstract**

This report presents the results of biomass studies carried out on coniferous species by the Irish Forest and Wildlife Service. In addition the results are analysed with the objective of estimating the biomass potential required to compete with conventional forest production. The dry matter yields obtainable from coniferous crops on marginal lands in Ireland are 5 - 12 tonnes/ha/year, as total overground material, 9 years after planting at about 10,000 trees/ha. Based on the biomass production that can reasonably be expected from coniferous crops in Ireland a price greater than that currently paid for sawlog is required to make coniferous biomass plantations profitable. It seems almost certain that such a price will not be obtainable within the next ten years, or by the time crops planted now would be harvested.

**Page**

23p

**Location**

Coillte Research, Bray

**Notes**

Available

**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow

---

**Number**

1411

**Author**

Murphy Eoin

**Title**

Fertiliser requirements of Sitka spruce on Bord na Mona milled cutaway raised bog.

**Place**

Dublin

**Date**

1989

**Key Word**

fertilisers, fertilisation, Sitka spruce, Picea sitchensis, cutaway bogs, raised bogs, peat soils, peatland afforestation, peatlands

**Abstract**

A trial was designed to assess nutrient requirements of Sitka spruce on milled peat cutaway raised bog. Eight different combinations of phosphorus, potassium and copper were examined. The trial was established on a shallow and deep peat site. This was to determine whether or not peat depth had an effect on fertiliser requirements. The assessment was carried out after seven growing seasons. Height and peat depth data as well as foliage analysis and visual assessment were used for this purpose. It was found that fertiliser requirements were affected by peat depth. Within the peat depth range of 0.1 to 1.0 metre phosphorus was found to be

deficient, but was not a limiting factor for survival. At depths of peat greater than 1.4 metres both phosphorus and potassium were deficient. Addition of phosphorus was essential for survival. Potassium was found to increase height growth by 100% when in combination with phosphorus. There were no visual signs of copper deficiency at any peat depths. Further foliage analysis from individual plots would have to be carried out before making any firm recommendations about application rates.

**Page**

74p

**Location**

Coillte Research & Development

**Notes**

Available ( Thesis submitted for award of B.Agr.Sc., UCD)

**Thesis**

B.Agr.Sc. Thesis, UCD

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**Number**

1412

**Author**

Trees Committee of An Taisce

**Title**

The case for tree preservation in Ireland.

**Publisher**

An Taisce

**Place**

Dublin

**Date**

1973

**Key Word**

trees preservation, environment, urban landscape, education, planning laws, legislation, forestry policy, conservation

**Abstract**

The arguments for tree preservation and planting in both urban and rural areas are presented. The improvements to people's living conditions, that would be brought about by an increase in the number of trees, are outlined. The economic, ecological and aesthetic needs for such a project are discussed. The various arguments put forward against tree preservation orders are dealt with. Examples of areas where trees have been lost in the past, but could have been saved by tree preservation orders, are outlined. This includes the felling of deciduous woods with the permission of the Department of Lands but without public consultation. The technical aspects of tree preservation are discussed and examples given of areas where lack of technical knowledge led to the loss of trees that otherwise might have been saved. A number of recommendations for amendments to the relevant legislation to ensure greater preservation and increased planting, particularly in urban areas, are given.

**Page**

40p

**Location**

Coillte library, Leeson Lane

**Notes**

Available

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**Number**

1413

**Author**

McEvoy T.

**Title**

Forestry.

**Publisher**

Institute of Public Administration

**Place**

Dublin

**Date**

1979

**Source**

Irish resources and land use - Chapter 7. (Edited by D.A. Gillmor)

**Key Word**

land use, forestry management, silviculture, economics, forestry policy, forestry history

**Abstract**

The contribution made by forestry to the Irish economy is explained, and a brief description of prevailing forestry policy, silvicultural methods, choice of species and land acquisition practice is provided. The development of State forestry policy since the dissolution of the landlord's estates, and the institutional framework within which present policy is implemented are described. The various economic, social and developmental considerations which influence the manner in which the forest resource is managed are outlined. The advances made in the technical and research side are reflected in the impressive growth in yield class on sites which would have failed to grow trees using the methods of the 1940s. Future developments in the European timber market are examined, and the need for Irish forestry to adjust to these changes is emphasised.

**Page**

pp 137 - 151

**Location**

Coillte library, Leeson Lane

**Notes**

Available

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**Number**

1414

**Author**

Neenan M., Bulfin M., Kennedy T., K. Heslin, Kavanagh B.

**Title**

Maintaining the yield in short rotation forestry crops.

**Publisher**

Elsevier Applied Science

**Place**

London

**Date**

1988

**Source**

Energy From Biomass 4: Proceedings of the Third Contractors' Meeting, Paestrum, 25 - 27 May 1988

**Key Word**

short rotation forestry, energy production, woodfuel, forest protection, insect pests, fungal diseases, forest pathogens, coppicing, *Cryptorhynchus lapathi*

**Abstract**

Factors which inhibit the maintenance of high yields in short rotation forestry include the inherent capacity of the species to coppice, adaptability to soil conditions, competition from weeds at the coppicing stage, and the incidence of disease and pests. All of these problems are in the process of being overcome. The best coppicing species are willows. These can maintain high yields over long periods even in poor soils. During 1986 and 1987, an epidemic of the rust disease *Melampsora* occurred on *Salix aquatica* (Sag) - hitherto the highest yielding clone. Some clones, imported mainly from Sweden, are resistant to the disease, and better yielding than Sag. On better quality soils, and on improved peat soils, hybrid poplar is a potentially useful species, it is sensitive to competition from perennial weeds at the coppicing stage. Two important insect pests, *Operophtera brumata* and *Cryptorhynchus lapathi* have occurred on the native willow *S. viminalis*. Natural methods of control are known for *Operophtera*. *Cryptorhynchus* may not become as important in coppice as it is in high forest. Both pests can probably be controlled by spraying. Some edible fungi have been observed in decayed stumps.

**Page**

pp 34 - 46

**Location**

UCD library

**Notes**

Available

**Address of author**

Teagasc, Oak Park Research Centre, Carlow.

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**Number**

1415

**Author**

Spann Erwin

**Title**

A study of the main site factors affecting forest windthrow in Ireland.

**Place**

Dublin

**Date**

1993

**Key Word**

windthrow, soil type, drainage, exposure, elevation, silviculture, forest soils

**Abstract**

The objectives of this study were to examine the effect of soil type, drainage, exposure and elevation on windthrow hazard, and to study the relative extent of the various soil types, drainage classes, exposure classes and elevation classes as defined in the Reconnaissance Resource Survey carried out by Coillte on its forest estate in 1991. Soil type, drainage, exposure and elevation all had a significant impact on the windthrow hazard. It was found that the mean windthrow hazard increased with wetter soils, poorer drainage, higher exposure and an increase in elevation. Results from the second portion of the study found that (a) peats and gleys are the most important soil types in Coillte's forest estate (63%), (b) the majority (73%) of the forest area is moderately to well drained, (c) the greater part (79%) of the forest area is moderately to highly exposed, (d) most (60%) of the forest area is situated between 100m and 300m above sea level and that (e) the majority (76%) of the forest area is assessed as having a moderate to high risk for windthrow.

**Page**

v, 71p

**Location**

Coillte Research

**Notes**

Available (Thesis submitted for award of B.Agr.Sc. from UCD)

**Thesis**

B.Agr.Sc. Thesis, UCD

---

**Number**

1416

**Author**

Schneider Frederic

**Title**

Site amelioration for reforestation with Sitka spruce and Douglas fir on brown podzolic earth using cultivation methods and phosphate fertiliser.

**Place**

Dublin

**Date**

1993

**Key Word**

reforestation, cultivation, fertilisers, fertilisation, plantation establishment, ploughing, ripping

**Abstract**

The objective of this study was to examine the effects of different soil cultivation methods (namely ploughing and ripping) and to determine the optimum rate of phosphate fertiliser application on second rotation crops. Two experiments were carried out on brown podzolic earth sites. The two species tested were Sitka spruce and Douglas fir. Height assessments were carried out after 3, 5, and 9 years after planting. A diameter assessment at breast height was carried out after 17 years. Results in the Shillelagh experiment show that: (a) Sitka spruce clearly outgrew Douglas fir in terms of basal area growth after 17 years; (b) the most productive treatment

combination was Sitka spruce, with Clark ploughing and 90 kg P/ha; (c) for Douglas fir, ripping and 69 kg P/ha gave the best results; and (d) on this type of freely-draining soil, ripping, for better development and stability, would be more appropriate than ploughing.

**Page**

ix, 104p

**Location**

Coillte Research

**Notes**

Available (Thesis submitted for award of B.Agr.Sc., Forestry Dept., UCD)

**Thesis**

B.Agr.Sc. Thesis, UCD

---

**Number**

1417

**Author**

Von Ow Felix

**Title**

Examination of factors affecting the establishment of natural regeneration of Sitka spruce on clearfelled sites in forest areas of counties Wicklow and Dublin.

**Place**

Dublin

**Date**

1993

**Key Word**

natural regeneration, reforestation, planting, soil nutrients, establishment, silviculture

**Abstract**

The objective of this study was to examine the effect of various site factors on the establishment of natural regeneration in order to make it more predictable for forest managers. It was also intended to examine the extent of natural regeneration in the study area, which was confined to State-owned forest of County Wicklow and Dublin. Results show extensive regeneration on sites with a previous crop of Sitka spruce. Over 50% of planted sites had an adequate cover of natural regeneration. It was found that poor soils, which only sustain a thin cover of ground vegetation, regenerate more readily than richer soils such as minerals and gleys. Good seed-years were also shown to have a significant impact on the establishment of natural regeneration, especially on sites which are recolonized quickly by very dense vegetation. Some shade appears to favour the development of natural regeneration, probably by protecting seedlings from environmental extremes. An examination of ground cover types shows that Sitka spruce regenerates most readily on a thin cover of vegetation and on open ground, and that regeneration generally does not occur in areas with dense grass or brash. The main conclusion of this study is that, while there are many different factors which influence the establishment of natural regeneration, it can be predicted with a fair degree of accuracy if all important factors are taken into account.

**Page**

ix, 85

**Location**

Coillte Research

**Notes**

Available (Thesis submitted for award of B.Agr.Sc. from Dept. of Forestry, UCD)

**Thesis**

B.Agr.Sc. Thesis, UCD

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**Number**

1418

**Author**

Patton L., Jones M.B

**Title**

Some relationships between leaf anatomy and photosynthetic characteristics of willows.

**Publisher**

Academic Press

**Date**

1989

**Source**

New Phytologist

**Volume**

Vol. 111, No. 4

**Key Word**

photosynthesis, transpiration, *Salix viminalis*, *Salix aquatica*, *Salix dasyclados*, plant physiology, water balance, foliage, tree breeding, tree anatomy, willow

**Abstract**

The photosynthetic light response curves and stomatal conductance of four cultivars of *Salix viminalis*, *S. burjatica* [*S. aquatica*] and *S. X dasyclados* were measured using leaves growing on unshaded plants from the field. Light saturated rates of net photosynthesis ranged from 13.9 to 22.5  $\mu\text{mol}/\text{m}^2$ . Cultivars of *S. viminalis* had the highest net photosynthesis but the lowest stomatal conductances, and as a consequence they also had the highest water use efficiency. Observations on anatomical characteristics of leaves used for photosynthesis measurements indicated that max. net photosynthesis had a significant positive correlation with the ratio of the exposed surface area of mesophyll cells to leaf surface area and chlorophyll content, and a significant negative correlation with the area of fully expanded leaves. Therefore, a number of selection criteria based on both physiological and anatomical measurements may be used to select for potentially high yielding willows.

**Page**

pp 657-661

**Location**

UCD library

**Notes**

Available

**Address of author**

Dept. of Botany, Trinity College Dublin

---

**Number**

1419

**Author**

Lynch T.J., Gallagher G.J.

**Title**

Norway spruce IUFRO stem reduction experiment at Granard forest, Republic of Ireland.

**Publisher**

IUFRO

**Place**

Freiburgh

**Date**

1981

**Source**

The European stemnumber - experiment in Norway spruce (*Picea abies* Karst)

**Key Word**

thinning, Norway spruce, *Picea abies*, windthrow, silviculture, tree growth

**Abstract**

As part of the Forest and Wildlife's participation in an international thinning experiment for Norway spruce, a vigorous twelve years old crop near Granard, Co. Longford was selected for examination. The site was divided into six blocks and different thinning treatments applied to each one. The dominant height in each block was then compared. The report concludes that the experimental design in terms of treatment range and the number of replications should allow satisfactory analysis of results. The project has provided useful experience in the measurement, data collection and analysis of sample plot material. It has also allowed development in computer stand mapping and cutting schedules.

**Page**

pp 105 - 115

**Location**

Coillte library

**Notes**

Available

**Address of author**

Forest Service, Dept. of Agriculture, Food and Forestry, Leeson Lane, Dublin 2

---

**Number**

1420

**Author**

Collins J.F., Farrell E.P., O'Toole P.

**Title**

Soils of Avondale Forest Park, Rathdrum, Co. Wicklow

**Publisher**

UCD. Soil Science Department

**Place**

Dublin

**Series**

UCD. Soil Science Department. Soil Bulletin No. 5

**Date**

1979

**Key Word**

soil survey, soil types, soil science, geology, Avondale

**Abstract**

The purpose of this bulletin is to record the findings of a survey of the soils of the Forest Park and to form a framework on which studies of soil/forest-tree relationship can be scientifically based. The wide variety in the soil types occurring in Avondale is due more to the heterogeneity of the local geology and to the glacial and post glacial history of the area rather than to any other external factor of the environment. However, landscape position has had a profound influence on soil development in the estate, and in this bulletin the soils are grouped into those of the following three main geomorphological units: upland plateau; valley slope; and valley bottom. A considerable number of soil Great Groups and Subgroups occur in the forest, and these are discussed under their respective Great Groups as follows: brown podzolic soils; brown earth soils; gleys; regosols/rankers/lithosols.

**Page**

45p

**Location**

Coillte Research

**Notes**

Available

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**Number**

1421

**Author**

Stanley Bill

**Title**

European Community Programme for the Protection of the Community's Forests against Atmospheric Pollution (Council Regulation (EEC) 3528/86: Monitoring old research experiments and fertiliser trials using CIR aerial photography.

**Publisher**

Coillte Teoranta

**Place**

Bray

**Series**

Task 1, Project No. 93.60.IR.004

**Date**

1996

**Key Word**

colour infrared aerial photography, CIR, atmospheric pollution, fertilisers, fertilisation treatment, tree growth,

silviculture

**Abstract**

Colour infrared (CIR) aerial photographs were acquired of four research trials at approximate scales of 1:5,000 and 1:2,000 using two different techniques of photo acquisition - a standard metric survey camera system and a medium format twin camera system mounted on a helicopter. Each trial was designed to investigate the management of forest crops on nutrient deficient sites and means of improving the condition and growth of forest crops on such sites. The difficulties encountered in distinguishing trees of small size are described. On the aerial photographs, it was possible to distinguish different crown sizes and shapes, different heights and different species, and providing mortality was not too high, different mixture rates and patterns were also distinguishable. The reproduction of colour and the size of crowns on the stereo model were found to give a good indication of the conditions of the plots. Phosphorus application at establishment was shown to have a much more dramatic effect on the condition of Sitka spruce, which appeared to require application rates of 90kg P/ha or heavier to grow satisfactorily on these sites, than on lodgepole pine which have grown well without phosphorus application. Application of both dairy and municipal sludge, and applications of nitrogen, were shown to have a very beneficial effect on both the survival and growth of Sitka spruce in separate trials. The presence of nurse species or furze was observed to have a beneficial effect on Sitka spruce.

**Page**

vi, 23p

**Location**

Coillte library

**Notes**

Available

**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co. Wicklow

---

**Number**

1422

**Author**

Binggeli P.

**Title**

Detection of protandry and protogyny in sycamore (*Acer pseudoplatanus* L.) from inflorescences.

**Publisher**

Botanical Society of the British Isles.

**Date**

1990

**Source**

Watsonia

**Volume**

Vol. 18, No. 1

**Key Word**

broadleaves, *Acer pseudoplatanus*, reproduction, botany, fruit, flowers, sycamore

**Abstract**

In *A. pseudoplatanus*, trees may be protandrous (inflorescences start with a sequence of male flowers followed by a sequence of female flowers) or protogynous (reverse sequence occurs). The sex expression on an inflorescence may change more than once. In Northern Ireland, five modes of sex expression have been observed. When studying such heterodichogamous species it is essential to determine their sexual morphs. Using a variety of characters such as fruit size, percentage parthenocarpy, infructescence length, size of terminal bud scar and position of the fruit on the first secondary axis, it is possible to distinguish between protandrous and protogynous individuals of *A. pseudoplatanus*, using infructescences only.

**Page**

pp 17 - 20

**Location**

UCD library

**Notes**

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**Address of author**

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---

**Number**

1423

**Author**

Bulfin M., Lyons G. J., Neenan M.

**Title**

Short rotation forest biomass plantations in Ireland. Part 1: broadleaves.

**Publisher**

Elsevier Science Publications

**Place**

Barking, Essex

**Series**

Commission of the European Communities. Third Biomass Development Programme. Energy From Biomass 3

**Date**

1988

**Source**

Biomass forestry in Europe: a strategy for the future. (Edited by F. C. Hummel, W. Palz and G. Grassi)

**Key Word**

short rotation forestry, biomass production, forestry research, alternative energy sources, fuel production, silviculture, economics, timber markets, woodfuel market, marginal land

**Abstract**

A summary of research into biomass production from short rotation forestry carried out in Ireland since 1977 is provided. The potential competitiveness of SRF biomass in the domestic consumer and industrial fuel markets is assessed. Availability of fuel markets, cash-flow problems, landowner attitudes and organisational/institutional difficulties, may detract from the short-term potential for SRF in Ireland. Government incentives (in the form of grants, subsidies or taxation allowances) would certainly alleviate most of these problems. Early research work showed virgin peat sites present most problems for SRF development. Production levels increased on peats or mineral soils which had been ameliorated by agricultural usage. Of the species tested, hybrid poplars are shown to be most suited to better soils, while *Salix*, *Populus* and *Alnus*, spp. are the best species on poorer soils. *Populus* species are the most promising for mineral soils. Silvicultural research is briefly summarised, and the factors which influence spacing and thinning are outlined. The portion of the total cost of production made up by harvesting and transport costs is estimated. The importance of continuing the research programme, especially the establishment of an information base, is emphasised.

**Page**

pp 402 - 455

**Location**

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**Address of author**

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**Number**

1424

**Author**

McCarthy R., Fitzsimons B.

**Title**

Short rotation forest biomass plantations in Ireland.

**Publisher**

Elsevier Science Publishing

**Place**

Barking, Essex

**Series**

Commission of the European Communities. Third Biomass Development Programme. Energy from Biomass 3

**Date**

1988

**Source**

Biomass forestry in Europe: a strategy for the future. (Edited by F. C. Hummel, W. Palz & G. Grassi)

**Key Word**

short rotation forestry, energy sources, energy production, woodfuel, biomass production, economics, costs, yield

**Abstract**

This report presents the results of biomass studies carried out on coniferous species by the Forest and Wildlife Service. In addition the results are analysed with the objective of estimating the biomass potential required to compete with conventional forest production. The dry matter yields obtainable from coniferous crops on marginal lands in Ireland are 5 - 12 tonnes/ha/year, as total overground material, 9 years after planting at about 10,000 trees/ha. Based on the biomass production that can reasonably be expected from coniferous crops in Ireland a price greater than that currently paid for sawlog is required to make coniferous biomass plantations profitable. It seems almost certain that such a price will not now be obtainable within the next ten years, or by the time crops planted now would be harvested.

**Page**

pp 456 - 477

**Location**

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**ISBN**

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**Notes**

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**Address of author**

Coillte Research & Development, Sidmonton Place, Bray, Co. Wicklow

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**Number**

1425

**Author**

Convery Frank J., Clinch Peter J.

**Title**

Forestry as a land use in Ireland.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1994

**Source**

Rural land use on the Atlantic periphery of Europe: Scotland and Ireland.

**Key Word**

land use, rural development, forestry history, forestry policy, forest planting, forestry development, farm forestry, grants, subsidies, environment

**Abstract**

The evolution of forestry as a land use in Ireland is discussed, with particular reference to developments in the 20th century. Since 1981, there has been a radical change in the Republic of Ireland in terms of the volume of planting, the participation of the private sector and the types of sites being planted. Forest planting over the 1982-91 period has been analysed in depth, with particular attention being devoted to private planting. The pattern overall is rapid growth in the area planted, with most of the increase concentrated in the western and northern counties of the Irish republic. The private sites being planted are highly productive, mainly concentrated on grass/rush sites at relatively low elevations. Sitka spruce is the preferred species, accounting for about 90% of the total planting. Approximately 11% of the total lots grant-aided were referred first for further screening to evaluate environmental suitability. Full-time farmers account for around 65% of the total area planted but investors are concentrated on the larger lots. Environmental issues, including impacts on ecosystems, ecological effects, impacts on aquatic systems and landscape effects, have emerged in recent years as significant factors for debate and analysis, and these are discussed.

**Page**

pp 131 - 42

**Location**

RIA library

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**Address of author**

UCD Environmental Institute, Richview, Clonskeagh Drive Dublin 14

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**Number**

1426

**Author**

Ni Dhubhain Aine, Gardiner John

**Title**

Farm forestry in the rural economy in the Republic of Ireland.

**Publisher**

Aberdeen School of Agriculture

**Place**

Aberdeen

**Date**

1995

**Source**

Rural Realities Trends and Choices: Proceedings of the 35th Seminar of the European Association of Agricultural Economists (EAAE), 27 - 29 June 1994 at Aberdeen, Scotland. (Edited by A. K. Copus & P. J. Marr).

**Key Word**

land use, agriculture, farm forestry, European Union, European Community, EC, EU, farm enterprise, rural development, private forestry

**Abstract**

Forestry, in particular farm forestry, has been identified as an important component of rural development programmes in the less-favoured areas of the EC and has been identified as a viable alternative farm enterprise. Consequently, EC funded incentives for farm forestry have increased significantly over the past ten years. This increase in funding has resulted in a considerable transfer of marginal agricultural land into forestry. This paper examines the problem of inefficient agricultural structure in Ireland. It will trace the development of forestry on farms and will highlight the problem of inefficient forestry structure. Modifications to existing incentives to encourage the development of efficient forestry enterprises are proposed.

**Page**

pp 69 - 76

**Location**

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**Address of author**

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---

**Number**

1427

**Author**

Psaltopoulos Demetrios, Thomson Kenneth J.

**Title**

Forestry and rural development in Scotland and Ireland.

**Publisher**

Aberdeen School of Agriculture

**Place**

Aberdeen

**Date**

1995

**Source**

Rural Realities Trends and Choices: Proceedings of the 35th Seminar of the European Association of Agricultural Economists (EAAE), 27 - 29 June 1994 at Aberdeen, Scotland. (Edited by A. K. Copus & P. J. Marr).

**Key Word**

land use, rural development, farm forestry, forestry development, private forestry, rural economy, timber processing, economics

**Abstract**

This paper outlines two aspects of work being done within a tripartite study of forestry in rural development in Scotland and Ireland. The first section reports data from two of several field surveys which have been carried out, into wood processing and forest contracting respectively. Illustrative data indicate the economic and social links between these forestry-related sectors and the rest of the rural economy. The second section reports the nature and some results of scenario analyses of extrapolating alternative planting and management policies into the next century. The afforestation scenarios range from a 50% acceleration of recent past planting rates to a 'green' strategy oriented towards public relations and nature enhancement. The analysis employs ten-year cohorts of forest areas along with long-term assumptions on labour productivity trends, on land and employment shifts between agriculture and forestry, and on timber output. The study as a whole is intended to throw light on the implications of afforestation for economy-wide output, job creation and income levels.

**Page**

pp 77 - 91

**Location**

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**Number**

1428

**Author**

Rodgers Michael, Hendrick Eugene, Casey Angela  
(Coillte Teoranta/UCG. Dept. of Civil Engineering)

**Title**

Determination of the effects of site preparation treatments on the stability of Sitka spruce on wet mineral soils.

**Place**

Dublin

**Date**

1989

**Key Word**

windthrow, tree stability, dynamic loading, monotonic loading, rooting, rootplate, soil behaviour, site preparation, wet mineral soils

**Abstract**

The objectives of this study were: 1. to develop a mechanical rocking device and high speed data logging system which could be used to assess the stability of trees in the field; 2. to measure the behaviour of the tree and rootplate when subjected to dynamic loading -; 3. to compare the laboratory behaviour of soils subjected to repeated loading with the behaviour of soils subjected to monotonic loading; 4. to identify parameters which are important for tree stability. A methodology for the dynamic loading of the tree system in the field - consisting of a versatile tree rocking machine and a sophisticated computer data logging system - which plots field measurements immediately after they are obtained - was successfully established. The mechanism for rootplate failure on these saturated surface water gley soils in windthrow conditions was identified. The maximum static

moments in the tree pulling test would appear to be much larger than the dynamic moments applied by the rocker just prior to the first build up of pore water pressure. This would indicate that smaller moments are required to cause the tree to approach failure dynamically than are required to fail the tree system by static pulling tests. A limited number of monotonic and repeated loading triaxial tests were carried out on reconstituted soil. The test results indicated that the strength of the soil under repeated loading is much less than the strength determined under monotonic testing.

**Page**

48p

**Location**

Coillte Research

**Notes**

Available (The report was produced as part of a fixed contract between the European Commission and Coillte Teoranta)

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**Number**

1429

**Author**

Traynor Brian G.

**Title**

The importance of leaf litter as a hydrological variable

**Place**

Dublin

**Date**

1979

**Key Word**

forest litter, water retention, hydrological cycle, rainfall, soil surface, forest soils

**Abstract**

The main objectives of this study were, firstly, to determine the physical processes governing the retention of water by litter using laboratory experiments and, secondly, to determine the amount of litter intercepted in the field and the influence litter has on the hydrological cycle. A broadleaf litter and a conifer needle litter were chosen for study. The importance of litter in retaining rainfall was emphasised by the fact that it accounted for up to 30% of interception loss. It is unlikely that the annual interception figure for litter would be this high. Because the litter has a slower drying rate than the tree canopy above, the annual rate is probably closer to 10%. The retentive properties of litter appear to be more related to thickness and aggregate nature than to individual leaf or needle characteristics. Litter was seen to exert the following beneficial effects on the soil: a more open soil structure is developed thereby increasing the infiltration capacity and the storage capacity within the root zone; the soil surface is protected from raindrop impact thus preventing clogging of the pores and interstices; infiltration is increased and overland flow reduced; the amount of soil water lost through evaporation is reduced.

**Page**

92p

**Location**

Coillte Research

**Notes**

Available (Thesis submitted for B.A. Moderatship in Trinity College Dublin)

**Thesis**

B.A. Thesis, TCD

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**Number**

1430

**Author**

Savill P. S., Dickson D.A., Wilson W.T.

**Title**

Effects of ploughing and drainage on growth and root development of Sitka on deep peat in Northern Ireland.

**Place**

Helsinki

**Date**

1974

**Source**

Proceedings of the International Symposium on Forest Drainage.

**Key Word**

ploughing, drainage, Sitka spruce, Picea sitchensis, root development, deep peat, peatlands, rooting

**Abstract**

Early results of ploughing and drainage experiments on deep peat in Northern Ireland have indicated that drainage alone has little effect upon the growth of young Sitka spruce. The main stimulus to growth appears to come from the increased availability of nitrogen in peat which is thrown above the original surface of the ground during ploughing or draining. Drains or plough furrows cause a serious restriction to rooting which is likely to affect the stability of crops as they get to a windthrow susceptible stage. It is suggested that it might be an advantage to sacrifice some early growth by reducing the intensity of ploughing in the expectation that much greater benefits will accrue as a result of increased stability at the other end of the rotation.

**Page**

pp 241 - 252

**Location**

Coillte Research

**Notes**

Available

**Address of author**

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---

**Number**

1431

**Author**

Lyons Gerard J.

**Title**

Evaluating investments in short-rotation forestry.

**Publisher**

Elsevier Applied Science Publishers

**Place**

London

**Date**

1986

**Source**

Biomass: recent economic studies.

**Key Word**

short rotation forestry, investment analysis, woodfuel, energy sources, economic indicators, cash flow analysis, costs, agriculture, farm forestry, investment models

**Abstract**

The decision to grow short rotation forestry (SRF) must take account of : (i) prospective income in comparison with other land uses, and; (ii) production costs of SFR fuel with respect to other commercial fuel prices. This paper describes a systems modelling approach to examine SFR investments. The ENCROP and SALIX models generate an investment lifetime cash flow table for the SRF plantation; the financial appraisal is then reduced to a discounted cash flow analysis, which yields Present Worth, Equivalent Annual Value, Internal Rate of Return, and other economic indicators. Extensive sensitivity testing is also performed to assess the effects of different yield levels, cutting cycles, planting densities, fuel prices, and input costs. Results of a recent analysis are used to illustrate application of the investment models. These suggest that SRF plantations could produce wood fuel at costs ranged from \$55 to \$130 per tonne oil equivalent. Financial returns were most sensitive to expected fuel price and input costs level, and biomass yield to a lesser extent.

**Page**

pp 18 - 30

**Location**

Coillte Research

**ISBN**

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**Notes**

Available (A seminar in the CEC Research Programme on Energy in Agriculture, held in Brussels, Belgium, 10 - 11 October, 1985 - Sponsored by the Commission of the European Communities, Directorate General for Agriculture, Co-ordination of Agricultural Research.)

**Address of author**

Agricultural Institute, Oak Park Research Centre, Co. Carlow

---

**Number**

1432

**Author**

Killen Lynn

**Title**

An initial assessment of short rotation forestry linked to a glasshouse enterprise.

**Publisher**

Elsevier Applied Science Publishers

**Place**

London

**Date**

1986

**Source**

Biomass: recent economic studies. (Edited by J.C. Sourie & L. Killen)

**Key Word**

short rotation forestry, greenhouse enterprises, agriculture, economics, investment, horticulture

**Abstract**

This study makes an initial evaluation of the integration of a greenhouse enterprise and a short rotation forestry (SRF) plantation, the output from the SRF being used as fuel to heat the greenhouse. It could be argued that there could be fuel savings resulting from a windbreak effect of siting the greenhouse in the centre of the plantation, but this effect is assumed to be negligible and therefore not allowed for in this evaluation. Two levels of SRF yield (12 and 15 tonnes dry matter per ha per year) are examined in conjunction with two greenhouse types (standard glasshouse and double-clad polythene). Using a 25-year evaluation period it is found that the returns to be earned from the SRF/greenhouse project, under assumptions of any of the cases considered, are well in excess of those earned from existing enterprises on the same type of land. The single problem is, however, that of time lag between making the investment and reaping the benefits. The payback period is of the order of 15 - 20 years (depending on the discount rate) and can be more in certain circumstances. It is proposed to extend this study to evaluate this type of enterprise under the assumptions of a variety of different SRF yield levels, cost levels, and so on.

**Page**

pp 31 - 42

**Location**

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Available (A seminar in the CEC Research Programme on Energy in Agriculture, held in Brussels, Belgium, 10 - 11 October, 1985 - Sponsored by the Commission of the European Communities, Directorate General for Agriculture, Co-ordination of Agricultural Research).

**Address of author**

Agriculture Institute Economics & Rural Welfare Research Centre, 19 Sandymount Avenue, Dublin 4

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**Number**

1433

**Author**

McCarthy R.

**Title**

Silvicultural trials by Forest and Wildlife Service.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1980

**Source**

Production of energy from short rotation forestry. (Edited by M. Neenan & G. Lyons)

**Key Word**

short rotation forestry, energy production, silviculture, coppicing, woodfuel

**Abstract**

The contribution of the Forest and Wildlife Service to the EEC Energy, Research and Development programme, specifically in the project entitled 'Photosynthetic production of organic matter, choice and development of the most suitable energy crops for the different regions of Europe', is described. The objectives of the project were as follows: to ascertain the likelihood of commonly grown forest species giving an economic yield on blanket bog, raised bog, drumlin and Old Red Sandstone sites; to make projections of the extent to which yields could be increased in order to obtain the maximum utilisation of solar energy, and; to determine the maximum output of utilisable energy per hectare. Early results from trials indicate that on low quality forest soils non-coppicing (coniferous) species may be more suitable than coppicing (generally hardwoods) species for producing biomass.

**Page**

pp 29 - 44

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**Address of author**

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**Number**

1434

**Author**

Neenan M., Devereux J., Kelly J.

**Title**

Silvicultural trials by An Foras Taluntais.

**Publisher**

An Foras Taluntais.

**Place**

Dublin

**Date**

1980

**Source**

Production of energy from short rotation forestry. (Edited by M. Neenan & G. Lyons)

**Key Word**

short rotation forestry, energy production, silviculture, soil types, spacing, coppicing, harvesting, fertilisers, fertilisation, drainage, soil temperature

**Abstract**

This paper describes a series of silvicultural trials being undertaken by An Foras Taluntais and which were designed to deal with a number of problems surrounding the cultivation of short rotation forestry. The most significant aspect of this work is a series of soil by species interaction trials at four centres. The soil types being examined are good arable soil, improved blanket peat, cut-over raised peat. The remaining part of the project involves the following experiments: spacing trials on blanket peat; nitrogen fertiliser trial on peat; factorial fertiliser trials on peat; nitrogen trials on *Alnus incana*; time of harvesting trials; and coppicing trials. The results obtained so far from this series of trials indicate that, while there was some response to calcium and trace elements, the main difficulties are associated with temperature and drainage. A soil which is waterlogged will have a temperature quite different from the air above and this affects the pattern of root and shoot growth.

**Page**

pp 45 - 63

**Location**

Teagasc library

**ISBN**

0905442482

**Notes**

Available

**Address of author**

Teagasc Research Centre, Oak Park, Co. Carlow

---

**Number**

1435

**Author**

Lyons G.

**Title**

Transportation of short rotation forest biomass.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1980

**Source**

Production of energy from short rotation forestry. (Edited by M. Neenan & G. Lyons)

**Key Word**

transportation, forest biomass, short rotation forestry, energy production

**Abstract**

This paper assesses the current level of development of short rotation forest biomass transportation. A brief review of the following factors affecting the selection of transportation methods is presented: material parameters of the harvested wood fuel; quantity of material; transportation distance; and transportation terrain. From the investigation conducted a number of broad guidelines for transporting and handling wood fuel biomass were derived.

**Page**

pp 73 - 82

**Location**

Teagasc library

**ISBN**

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**Notes**

Available

**Address of author**

Teagasc Research Centre, Oak Park, Co. Carlow

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**Number**

1436

**Author**

Lyons G., Lunny F., O'Flaherty, McNamara N.

**Title**

Combustion of short rotation forest biomass.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1980

**Source**

Production of energy from short rotation forestry. (Edited by M. Neenan & G. Lyons)

**Key Word**

short rotation forestry, energy production, fuel combustion, fuel production, heating systems, woodfuel

**Abstract**

The feasibility of using the combustion of short rotation forestry biomass for space heating, process steam and electricity generation is assessed. The advantages of using wood chips as a combustion fuel are outlined, and a number of burning tests conducted on a range of domestic and industrial scale solid fuel boilers are described. The main factors governing the combustibility of wood chips are: chip shape and size; characteristics of parent wood; and moisture content. The efficiency of the process depends both on combustion system design and on physical characteristics of the fuel. In order to achieve the greatest energy and economic return from the fuel, it may be necessary to consider intermediate processing (drying) and storage of the freshly harvested wood material.

**Page**

pp 87 - 93

**Location**

Coillte Research

**ISBN**

0905442482

**Notes**

Available

**Address of author**

Teagasc Research Centre, Oak Park, Co. Carlow

---

**Number**

1437

**Author**

Lyons G.

**Title**

Systems analysis of short rotation forestry energy plantations.

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

1980

**Source**

Production of energy from short rotation forestry. (Edited by M. Neenan & G. Lyons)

**Key Word**

short rotation forestry, systems analysis, energy production, economics, computer models, investment, forestry management, planning, SALIX systems model, IMPACT systems model

**Abstract**

This report describes the use of systems analysis to assess the economic potential of the short rotation forestry energy supply system. Two investment analysis computer models are used to evaluate the economics of SFR production. IMPACT is a forestry management subroutine developed by the USDA Forest Service to assist in the long term planning of forestry investment opportunities. A series of SRF investment studies conducted with the IMPACT sub-routine have shown favourable economic returns with respect to current fuel equivalence prices for imported coal and oil and indigenous peat. The economic and data parameters which are likely to be most critical are identified. These include discount rates, productivity estimates, harvesting, transportation, maintenance and other frequently occurring cost items, such as fertilisation. The SALIX systems model is a purpose designed economic analysis routine for evaluating SFR energy plantation management decisions. It has been used to establish overall long-term economic feasibility of SRF energy plantations, through the evaluation of three main economic indicators: present net worth, equivalent annual cost and benefit/cost ratios. The effects of varying the main endogenous parameters, including productivity level, planting density and cutting cycle, are discussed.

**Page**

pp 99 - 111

**Location**

Coillte Research

**ISBN**

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**Notes**

Available

**Address of author**

Teagasc Research Centre, Oak Park, Co. Carlow

**Number**

1438

**Author**

Steinbeck K.

**Title**

An assessment of the short rotation programme for the production of energy in the republic of Ireland.

**Publisher**

An Foras Talunatais

**Place**

Dublin

**Date**

1980

**Source**

Production of Energy from short rotation forestry. (Edited by M. Neenan &amp; G. Lyons)

**Key Word**

short rotation forestry, biomass production, energy production, electricity generation

**Abstract**

An assessment of the Irish biomass programme was carried out over a two week period in March 1979. A series of species screening trials identified promising candidate species and eliminated others. *Alnus* spp. and rooted plants of *Salix* spp. appear promising on peat bogs and mineral soils. *Salix* cuttings were total failures on bog sites. *Populus* grew well only on mineral soils. The system analysis phase of the project estimates that biomass yields of about 4 dry tons/acre/year would be financially competitive with sod peat as a fuel for electric generators. Once yields of this order appear feasible, harvesting and handling phases could be accelerated. With regard to conversion, Ireland has unique opportunities for trials on an operational scale because of several relatively small (4 megawatt) generating stations in the country.

**Page**

pp 113 - 118

**Location**

Coillte Research

**ISBN**

0905442482

**Notes**

Available

**Number**

1439

**Author**

Ward D., Keane M., Seaby D.

**Title**

Harmful organisms in forestry production.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1993

**Source**

Plant Health and 1992: Proceedings of seminar held on 8 and 9 March 1990. (Edited by J.A. Kavanagh &amp; P.

Brennan).

**Key Word**

forest protection, plant imports, forest pathogens, forest pests

**Abstract**

A list is presented which outlines the more common organisms harmful to forest trees. The most important of these in forestry production are discussed within a framework of the life of a crop from the nursery stage through the younger stages and on to maturity. Finally, the vulnerability of exotic conifers in monocultures is briefly examined.

**Page**

pp 45 - 54

**Location**

RIA library

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**Notes**

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**Address of author**

Coillte Research & Technology, Sidmonton Place, Bray, Co. Wicklow

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**Number**

1440

**Author**

O'Leary Tomas N., McCormack Art G.

**Title**

Public perception of forestry - where to next?

**Series**

European Forest Institute Proceedings, No.4.

**Date**

1995

**Source**

Multiple-use and Environmental values in Forest Planning.

**Key Word**

environment, forest landscape design, landscape aesthetics, forest art, forest architecture, forestry policy

**Abstract**

While more research has been carried out on public perceptions to forestry than on any other landscape issue, many of the findings, to-date, could be regarded as predictable and could be assumed to be common knowledge. This paper attempts to provide a direction for future research which can relate the issues of public perceptions of forestry and landscape design. This can be achieved through the use of theories of aesthetics and ecology, by encouraging technical innovation and high-lighting the difficulties of incorporating findings in forest landscape design and management. Theories of landscape aesthetics and ecology should be assimilated into surveys in order to gain a better understanding of the reasoning behind public preferences. The theory of landscape aesthetics could also provide for the creation of the concepts of both "forest art" and "forest architecture". "Forest art" suggests that forestry can function as an artistic expression in the public domain, albeit in limited situations. The concept of forest architecture is used to describe a more sophisticated and sensitive approach to design of forest interiors. Technical innovation can include the use of visual simulations in assessing preferences for alternative landscape scenes.

**Page**

14 p

**Location**

Department of Forestry, Faculty of Agriculture, University College, Dublin, Belfield, Dublin 4.

**Notes**

Available.

**Address of author**

Dept. of Landscape Horticulture, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

1441

**Author**

MacSiurtain M., Collins A.

**Title**

The accuracy of forest stand mapping from satellite imagery.

**Publisher**

Blenheim Online

**Place**

London

**Date**

1991

**Source**

Remote Sensing of the Environment: Proceedings of the conference held in Birmingham, October 1991.

**Key Word**

forest stand mapping, satellite imagery, remote sensing, SPOT imagery, area calculation, geographic information systems, GIS

**Abstract**

Satellite imagery was displayed and enhanced on the Apple Macintosh for the purpose of stand mapping. Combined SPOT XS and P imagery was found to be particularly useful for this purpose because of its high resolution. The imagery was used for stand mapping by visual interpretation and interactive delineation of forested areas. The accuracy of this technique was determined by comparing the forested and non-forested areas obtained with areas obtained from a ground survey. On-screen digitisation enables efficient and accurate identification, delineation, coding and area calculation of forested areas. This information can be subsequently used as input to a GIS. Colour hardcopy of imagery with overlaid stand map boundaries is one of the main results.

**Page**

pp 185 - 190

**Location**

Dept. of Forestry, UCD

**ISBN**

0863532837

**Notes**

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**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

1442

**Author**

Mac Siurtain Mairtin, Jordan Paul  
(UCD. Department of Forestry)

**Title**

Final construction of stand overbark volume assortment tables for Sitka spruce.

**Publisher**

Coillte Teoranta

**Place**

Dublin

**Date**

1991

**Key Word**

stand overbark volume assortment tables, Sitka spruce, Picea sitchensis, volume estimation

**Abstract**

This reports sets out the findings of the study into the construction of stand overbark volume assortment tables for Sitka spruce crops in the range  $< \text{or} = 30\text{cm DBH}$  that have been thinned. This is the only range from which reliable estimates can be obtained. Fortunately this range also represents a large proportion of Coillte Teoranta's Sitka spruce growing stock. Analysis of this reliable range showed that the Forestry Commission tables currently in use by Coillte Teoranta under estimate the volume assortments to the majority of top diameter

classes. In particular the tables produced suggest that the volume assortments to top diameters of 14 and 20 cm differ appreciably from estimates produced by the Forestry Commission.

**Page**

23p

**Location**

Dept. of Forestry , UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield Dublin 4

---

**Number**

1443

**Author**

MacSiurtain, M.P., Collins A.P., McCormick N.L.M.

(UCD FIRST)

**Title**

Final report on SPOT XS - P remote sensing of woodlands in less favoured areas for Commission of the European Communities Joint Research Centre, ISPRA. Contract No. 4106 - 90 - 10 ISP IRL.

**Publisher**

UCD FIRST

**Place**

Dublin

**Date**

1992

**Key Word**

SPOT XS-P imagery, satellite remote sensing, land cover classification, GIS, geographic information systems

**Abstract**

Satellite remote sensing can now be used successfully on an operational basis for locating, monitoring and classifying forests in Ireland. The CORINE Land Cover Classification for forests, with three levels, has been used and found to be adequate for the basis forest classes of broadleaved and coniferous forest. However, the CORINE system would require extension to level 4 if it were desirable to further classify forests. An extension of the CORINE system for forests is proposed which is based on 'tree genus'. A technique of semi-automatic updating existing forest vector data combines the use of an unsupervised classification technique with interactive visual interpretation (IVI) of high resolution SPOT XS - P imagery. The classifier locates naturally occurring spectrally distinct classes which may not be immediately apparent to the interpreter using VI. The classification output can be used in conjunction with IVI to assist in the location and delineation of forest boundaries. The forest vector data obtained from this procedure may be integrated with the imagery to give a vector raster overlay. The vector data may be incorporated into a GIS database as provisional updates. Comprehensive guidelines for further work in the working group on forestry are presented.

**Page**

51p

**Location**

Forestry Dept., UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

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**Number**

1444

**Author**

MacSiurtain M.P., Joyce P.M., Muirgheasa N.O., Hoey M.J., McCormick N.L.M.

(Department of Forestry, UCD)

**Title**

Use of second generation earth observation satellite data in the implementation of forest management models within the less favoured areas in the Republic of Ireland: Subcontract 3088-86-12-ED ISP DK.

**Publisher**

Department of Forestry, UCD

**Place**

Dublin

**Date**

1989

**Key Word**

European Community, European Union, Less Favoured Regions, SGEOS, Landsat, SPOT imagery, Geographic Information Systems, GIS, mapping, forest maps, image processing, land use planning

**Abstract**

Recent developments of hardware and software systems in the areas of Geographic Information Systems and image processing, and the availability of Second Generation Earth Observation Satellite (SGEOS) data, especially Landsat Thematic Mapper and SPOT imagery, have allowed for cost effective large scale mapping, monitoring and modelling of land use classes throughout the Member States of the European Community. The Irish Science and Technology Agency (EOLAS) has grant aided research into the application of SGEOS data in forest resource management within the Irish Less Favoured Areas and the development of a forest Geographic Information System. This remote sensing research has produced satellite classified and unclassified forest maps at operation scales of 1 : 50,000, 1 : 25,000 and 1 : 10,000. The GIS developed at UCD, UCDGIS, allows for the capture, storage, retrieval, manipulation and presentation of forest vector and attribute data. The database was designed to be fully compatible with the Irish National Grid and all data stored in datasets that correspond to four square kilometre grid cells. The UCDGIS EDITOR facilitates interactive updating of the vectors within the database. Foresters can use the database to investigate the spectral composition of specific forest polygons and to observe and quantify changes which appear in the imagery within the polygons. Current areas of research in the UCD remote sensing centre are outlined. Integrated Natural Resource Management Models which incorporate SGEOS, vector and attribute data with crop growth, yield and econometric data will provide the foundation for Strategic Rural Land Use Planning within the Less Favoured Areas of the EC.

**Page**

154p

**Location**

Forestry Dept., UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

1445

**Author**

MacSiurtain M.P., McCormick N.L.M., Gardiner J.J.

**Title**

New remote sensing and IGIS products for Irish forestry.

**Publisher**

Irish Society of Surveying, Photogrammetry and Remote Sensing

**Place**

Dublin

**Date**

Nov/1988

**Source**

Survey Ireland

**Volume**

No. 7

**Key Word**

remote sensing, georeferenced satellite images, Geographic Information Systems, GIS, forest management

**Abstract**

Remote sensing technology is capable of producing georeferenced, classified and unclassified satellite images at operational scales of 1:50,000, 1:25,000 and 1:10,560. Integration of georeferenced vector data with satellite

data within an integrated geographical information system (IGIS) provides a mechanism for production of vector extracted georeferenced satellite images. Such images provide a framework for sampling, monitoring and quantifying changes in vegetative cover classes. The new generation of remote sensing and IGIS products opens up many new opportunities for inventory, monitoring, management and planning of forests and land uses in Ireland.

**Page**

pp 18 - 22

**Location**

Dept. of Forestry, UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

1446

**Author**

MacNaiedhe F.S.

**Title**

The effect of incorporation of calcareous mineral subsoil on the growth of *Salix aquatica gigantea*.

**Publisher**

A.A. Balkema

**Place**

Rotterdam

**Date**

1989

**Source**

Agricultural Engineering. Proceedings of the Eleventh International Congress on Agricultural Engineering, Dublin, 4-8 September 1989. Volume 1: Land and water use. (Edited by Vincent A. Dodd & Patrick M. Grace)

**Key Word**

incorporation depth, calcareous mineral subsoil, soil chemistry, establishment, tree growth, rooting, root growth, peat soils, *Salix aquatica gigantea*, willow, peatlands

**Abstract**

The effect of depth of incorporation of calcareous mineral subsoil on the growth of *Salix aquatica gigantea* and on the pH and mineral content of peat was investigated in sod-cutover raised bog. The investigations showed that incorporation of calcareous mineral subsoil at a depth greater than 110 cm was necessary for maximum growth. The main benefit of application was an increase in the pH of the peat. Subsoil additions of 3% by volume (20% by weight) increased in pH to greater than 6.0 thus creating a suitable environment for root growth. Growth was influenced more by depth of incorporation than by peat depth. The indications from those investigations are that the minimum depth of incorporation required for maximum yields of *Salix aquatica gigantea* in acid peat is one metre.

**Page**

pp 115 - 121

**Location**

Coillte library

**ISBN**

9061919800

**Notes**

Available

**Address of author**

Teagasc, Johnstown Castle Research Centre, Wexford, Ireland

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**Number**

1447

**Author**

Nieuwenhuis M.A., Corcoran T.J.

**Title**

A computerized optimal forest road network location procedure.

**Publisher**

A.A. Balkema

**Place**

Rotterdam

**Date**

1989

**Source**

Agricultural Engineering. Proceedings of the Eleventh International Congress on Agricultural Engineering, Dublin, 4-8 September 1989. Vol. 1 : Land and water use. (Edited by Vincent A. Dodd & Patrick M. Grace)

**Key Word**

forest road networks, forest road construction, transportation scheduling, geographic information systems, GIS, computerized location procedure

**Abstract**

The high costs of forest road construction, maintenance, and timber transportation warrant extensive planning of forest road network layout and transportation scheduling. The integration of these efforts in the overall management decision making process will result in more efficient timber harvesting operations. During the last decade, the use of computerized geographic information systems for forest management has increased rapidly. The capability of these systems to facilitate the accessibility of diverse data allows for the inclusion of all essential information in management planning procedures. A forest road network location procedure was developed using both the spatial and descriptive data bases of an existing geographic information system. The objective is the optimal location of a road network in areas not yet serviced by existing roads, constrained by a user-defined maximum service zone width. A local search algorithm was designed, producing optimal or near-optimal solutions in all cases examined.

**Page**

pp 207 - 213

**Location**

Coillte library

**ISBN**

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**Notes**

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**Address of author**

Department of Forestry, Agriculture Building, UCD, Belfield, Dublin 4

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**Number**

1448

**Author**

O'Donnell B., Rice B.

**Title**

Storage and drying of forest biomass.

**Publisher**

A.A. Balkema

**Place**

Rotterdam

**Date**

1989

**Source**

Agricultural Engineering. Proceedings of the Eleventh International Congress on Agricultural Engineering, Dublin, 4-8 September 1989. Volume 4 : Power, processing and systems. (Edited by Vincent A. Dodd & Patrick M. Grace)

**Key Word**

forest biomass, drying, biomass storage, moisture content, short rotation forestry, woodfuel

**Abstract**

High and variable moisture content is one of the main deterrents to the use of short rotation forestry as a fuel source. Heat generation, resulting from respiration of living tissue, in storage piles of chipped SRF was reduced

by drying, thus making the material easier and safer to store. Field seasoning, as a method of reducing moisture content prior to storage, was found to be dependent on time of cutting and length of seasoning period. Moisture contents as low as 15% were recorded for material cut during the period April to June 1987 and removed from the field twelve months later.

**Page**

pp 2349 - 2354

**Location**

Coillte library

**ISBN**

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**Notes**

Available

**Address of author**

Agricultural Engineering Department, Teagasc, Oak Park Research Centre, Carlow.

---

**Number**

1449

**Author**

Gallagher G.J.

**Title**

The development of thinning systems in young Sitka spruce and contorta pine crops.

**Publisher**

HMSO

**Place**

London

**Series**

Forestry Commission Bulletin No. 55

**Date**

1976

**Source**

Aspects of Thinning. (Edited by G.J. Hamilton)

**Key Word**

thinning, Sitka spruce, lodgepole pine, *Picea sitchensis*, *Pinus contorta*, silviculture, windthrow

**Abstract**

This paper describes various types and intensities of thinning in plantations of *Picea sitchensis* or *Pinus contorta* in Irish State forests. Results obtained so far from studies in this area suggest that thinnings of moderately heavy intensity ( 33% standing volume removal) will be feasible for Sitka spruce. No definite trend was discernible over a range of thinning intensities for contorta pine. Windthrow may cause considerable problems for lodgepole pine, but the range of Sitka spruce sites in Ireland suggests less difficulties with this species.

**Page**

PP 49-55

**Location**

Coillte library

**ISBN**

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**Notes**

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**Address of author**

Forest Service, Leeson Lane, Dublin 2

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**Number**

1450

**Author**

Dunleavy J.A., Fogarty W.M.

**Title**

Studies on the permeability increase of refractory spruce wood during water storage.

**Publisher**

Applied Science Publishers Ltd.

**Date**

1971

**Source**

Biodeterioration of materials.

**Key Word**

timber preservation, water permeability, wood permeability, refractory timber, Sitka spruce, Norway spruce, creosote preservatives, *Picea sitchensis*, *Picea abies*

**Abstract**

Sitka spruce (*Picea sitchensis*) and Norway spruce (*Picea abies*) logs stored in a fresh-water lake showed a significant increase in permeability when dried and treated subsequently with creosote. Further experiments showed that the increase in permeability with ponding time was a gradual process and associated with this increase was a distinct pattern of bacterial invasion of the sap-wood. Studies on bacterial isolates from the ponded material demonstrated their ability to improve the permeability of small blocks under laboratory conditions. Experiments with commercial enzymes indicated that a pectinase preparation showed a similar increase under comparable conditions. Microscopic examination of the ponded sap-wood showed that the tori and bordered pit membranes were destroyed, together with partial break-down of the cross-field pit membranes of the ray cells.

**Page**

pp 330-335

**Location**

Coillte library

**Notes**

Available (reprinted from Biodeterioration of Materials)

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**Number**

1451

**Author**

Larkin Eamon

**Title**

Urban forestry comes of age.

**Place**

Birr

**Date**

June/1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 6

**Key Word**

urban forestry, amenity forestry, forest recreation, Amenity Woodland Scheme, Urban Woodland Scheme, landscape

**Abstract**

The origins of urban forestry and the role which can be played by local authorities and communities in urban forestry programmes are examined. In Ireland, the development of urban forestry grew from an initial project, Crann sa Cathair, established in Dublin in 1987. Grants are available to local authorities through the Amenity Woodland Scheme and the Urban Woodland Scheme. The operation of these schemes during the period 1996 - 1999 is discussed.

**Page**

pp 8-9

**Location**

Coillte library

**Notes**

Available.

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**Number**

1452

**Author**

Collins Kevin D.

**Title**

Creating urban woodlands - a practical perspective.

**Place**

Birr

**Date**

June/1996

**Source**

Irish Timber and Forestry

**Volume**

Vol. 5, No. 6

**Key Word**

urban forestry, amenity forestry, ECO, Environmental Conservation Organisation, forest design, species selection, environment, forest management, landscape

**Abstract**

The various social, economic and environmental benefits of urban forestry are outlined. The practical aspects of establishing woodlands in urban areas are discussed and the issues of design, species selection, stock size and spacing, and safety and security considered. The importance of involving local people in the planning, planting and care of trees and woodlands in their own area is emphasised. The role played by ECO, Ireland's Environmental Conservation Organisation, in the urban woodlands programme is outlined.

**Page**

pp 10-12

**Location**

Coillte library

**Notes**

Available.

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**Number**

1453

**Author**

Walsh James E.

**Title**

Spectral reflectance and crop efficiency.

**Place**

Dublin

**Date**

1992

**Key Word**

remote sensing instruments, spectral reflectance measurements, canopy reflectance, crop efficiency

**Abstract**

A number of remote sensing radiometers and spectroradiometers, which have been designed, constructed and tested in UCD Physics Department, are described. These instruments are used to take spectral reflectance measurements over vegetation in the visible and near infrared regions of the electromagnetic spectrum, with a spectral resolution of about 10 nm. The vegetation targets include glasshouse grown nursery stock, mature forest stands and sugar beet crops. Crop ground truth parameters, such as efficiency and change of biomass, are predicted to be related to spectral reflectance. Correlations between certain spectral reflectance features and available ground truth data are demonstrated. Variance in reflectance data over typical crop canopies is shown to be smaller than the corresponding ground truth data variance. The real canopy reflectance variance provides an upper limit on the ability of remote sensing instruments to detect canopy reflectance change. More rigorously sampled ground truth is required for future experiments which aim to accurately determine the relationship between ground truth and reflectance data.

**Page**

180p

**Location**

UCD Physics Dept.

**Notes**

Available (Thesis submitted for degrees of Philosophiae Doctor, Physics Dept., UCD)

**Thesis**

Ph.D Thesis, Physics, UCD

---

**Number**

1454

**Author**

O'Brien Keelin

**Title**

Facts and opinions on potential of biomass for direct combustion to electricity.

**Publisher**

Electricity Supply Board

**Place**

Dublin

**Series**

ESB Technical Information Note

**Date**

Feb/1980

**Key Word**

forest biomass production, electricity production, timber end use, forest product, forest residue, Electricity Supply Board

**Abstract**

The possibility of generating electricity from forest biomass produced from Ireland's existing forest estate is examined. The potential contribution which private forestry on marginal land could make to the production of this fuel is considered. Forest production on cutaway bogs and the potential value of forest residues in fuel production is also examined.

**Page**

18p

**Location**

E.S.B. Information Centre, No. 16, Saint Stephen's Green, Dublin 2.

**Notes**

Available. (A technical information note produced at the E.S.B. Project Department, Nuclear Section.)

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**Number**

1455

**Author**

Ahloowalia B.S.

**Title**

In vitro propagation of tree clones for biomass production.

**Publisher**

Solar Energy Society of Ireland

**Place**

Dublin

**Date**

1980

**Source**

Solar Energy Society of Ireland/An Foras Taluntais. Joint one day conference: The Key Role of Biomass in Ireland's Energy Future. Thursday, 10 May, 1979 IMI Conference Centre, Sandyford, Co. Dublin.

**Key Word**

tree clone, cloning, forest genetics, in vitro propagation, micropropagation, biomass production

**Abstract**

Planting of large areas for biomass production requires large numbers of trees and saplings of uniform growth habit and age. Tissue culture techniques provide methods for producing large numbers of uniform clones in a short duration, small space and with less labour. The clones may be propagated by culturing buds, leaf tips, shoot apices or from stem cuttings on synthetic growth media. The resulting plants are hardened and transplanted to give populations of genetically similar individuals. The rapid multiplication in tissue culture has the added advantage of freedom from insect pests and fungal diseases and a better establishment in the field. The technique allows rapid multiplication of genetically superior (elite) trees, without resorting to seed propagation and maintains the hybrid vigour and heterozygosity of elite trees. The tissue culture technique has been exploited for rapid multiplication of various trees, including date palm, pines, Douglas fir, spruces, birches, Sequoia, Thuja, Acacia, poplars, eucalypts, and several shrubs and ornamentals.

**Page**

8p

**Location**

E.S.B. Information Centre, No. 16 Saint Stephen's Green, Dublin 2.

**Notes**

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**Number**

1456

**Author**

Lyons G.J.

**Title**

Storage and combustion of wood fuel chips.

**Publisher**

Solar Energy Society of Ireland

**Place**

Dublin

**Date**

1980

**Source**

Solar Energy Society of Ireland/An Foras Taluntais. Joint one day conference: The Key Role of Biomass in Ireland's Energy Future. Thursday, 10 May, 1979 IMI Conference Centre, Sandyford, Co. Dublin.

**Key Word**

forest thinning, timber end use, forest product, energy production, biomass production, short rotation forestry, fuel timber, woodfuel chip

**Abstract**

An examination of wood fuel chips as a convenient and economic alternative to fossil fuels for both domestic central heating and large-scale applications is presented. This paper discusses the concept of producing wood fuel from existing forest thinnings, residues and, more specifically, from short rotation timber, grown as an energy crop. Results of recent EEC funded research into the production, storage and combustion of wood fuel chips are presented. The advantages of using chipped, rather than log-wood, fuel are discussed with respect to the main parameters affecting combustion and storage of wood. The paper concludes with a brief outline of small and large-scale applications of wood-chip combustion and an indication of the potential contribution of this fuel to the Irish economy.

**Page**

23p

**Location**

Coillte Research, E.S.B. Information centre, No. 16, Saint Stephen's Green, Dublin 2.

**Notes**

Available.

**Address of author**

Teagasc Research Centre, Oak Park, Co. Carlow

---

**Number**

1457

**Author**

Gallagher P., O'Connell L.

**Title**

Combustion trials on biomass in an E.S.B. Generating station at Cahirciveen.

**Publisher**

Solar Energy Society of Ireland

**Place**

Dublin

**Date**

1980

**Source**

Solar Energy Society of Ireland/An Foras Taluntais. Joint one day conference: The Key Role of Biomass in Ireland's Energy Future. Thursday, 10 May, 1979 IMI Conference Centre, Sandyford, Co. Dublin.

**Key Word**

Electricity Supply Board, biomass production, woodfuel, timber end use, short rotation forestry, alternative energy sources, forest products

**Abstract**

A biomass project based on the growing of short rotation forests for energy was suggested by the National Science Council. As part of the proposals for the project, the ESB agreed that the 5MW sod-peat burning station at Cahirciveen would be available for combustion trials. The biomass from short rotation forestry would not be available for some years and it was considered that some useful combustion tests on existing forest wastes could be carried out. These test were carried out on timber block and timber/sod-peat mixtures to determine what problems were involved in using such fuel on the existing installation without modifications. They showed that, provided that adequate preparation of the timber was made so as to limit block size and moisture content, its use as a fuel is practical from a technical point of view.

**Page**

11p

**Location**

E.S.B. Information Centre, No. 16, St. Stephen's Green, Dublin 2.

**Notes**

Available.

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**Number**

1458

**Author**

Healy J.

**Title**

Biomass potential on Bord na Mona cutaway bog.

**Publisher**

Solar Energy Society of Ireland

**Place**

Dublin

**Date**

1980

**Source**

Solar Energy Society of Ireland/An Foras Taluntais. Joint one day conference: The Key Role of Biomass in Ireland's Energy Future. Thursday, 10 May, 1979 IMI Conference Centre, Sandyford, Co. Dublin.

**Key Word**

energy production, biomass production, land use, Bord na Mona, cutaway peat bogs, peatlands, woodfuel

**Abstract**

At present, Bord na Mona are producing fuel and horticultural peat on 60,000 hectares of bog. Peat harvesting will have be completed on these bogs within fifty years. Much research and development work on the use of the cutaway bog following fuel production has already been carried out. The land use options for this land at present are: grassland, arable crops, horticulture or forestry. The potential of this land to produce biomass for energy is being investigated, and a pilot demonstration project is now planned in co-operation with the National Board for Science and Technology, Department of Forestry and Fisheries, the Electricity Supply Board and the Agricultural Institute.

**Page**

18p

**Location**

Coillte Research, E.S.B. Information Centre, No. 16, Saint Stephen's Green, Dublin 2.

**Notes**

Available.

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**Number**

1459

**Author**

Department of Agriculture and Technical Instruction for Ireland.

**Title**

Report on the Departmental Committee on Irish Forestry.

**Publisher**

HMSO

**Place**

Dublin

**Date**

1908

**Key Word**

forestry history, forestry policy, State forestry, afforestation, economic development, timber processing, agriculture, land use, Land Purchase Acts

**Abstract**

This report inquires into the following matters related to the improvement of forestry in Ireland: (1) The present provision for State aid to forestry in Ireland; (2) The means whereby, in connection with the operation of the Land Purchase Acts, existing woods may be preserved, and land suitable for forestry acquired for public purposes; and (3) The financial and other provisions necessary for a comprehensive scheme of afforestation in Ireland. The Committee found that forestry had been badly neglected by Government in Ireland, and that the area under forest, already too low for the welfare of the country, is being further diminished under the indirect influence of the Land Purchase Acts. A comprehensive scheme of forestry, including the preservation and extension of existing woods, is necessary and can only be carried out by or under the direction of the State. It is estimated that there are approximately 700,000 acres of land suitable for plantation. It is recommended that 200,000 acres of plantable land be acquired by the Forestry Section of the Department of Agriculture and developed and maintained as State forest. Recommendations are also made regarding support for private owners of woodland, provision for the training of working foresters, and the proper organisation of the timber trade and the establishment of a recognised system of business management.

**Page**

552p

**Location**

Coillte library (Leeson Lane)

**Notes**

Available

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**Number**

1460

**Author**

Neenan M.

**Title**

Maximising the yield from biomass.

**Publisher**

Solar Energy Society of Ireland

**Place**

Dublin

**Date**

1980

**Source**

Solar Energy Society of Ireland/An Foras Taluntais. Joint one day conference: The Key Role of Biomass in Ireland's Energy Future. Thursday, 10 May, 1979 IMI Conference Centre, Sandyford, Co. Dublin.

**Key Word**

forest biomass, woodfuel, alternative energy sources, timber end use, forest product, short rotation forestry

**Abstract**

A model of the potential yield of biomass on the basis of solar radiation data falls far short of the actual yields being obtained with farm crops. The most likely explanation is that the light radiation is not efficiently harvested at all seasons of the year or, in the case of perennial crops, in the first two or three seasons of growth. A series of trials have been undertaken which aim at maximising the rate of growth of short rotation forestry on peatland and on some other soils. It has been found that the calorific value of twigs and small branches is not appreciably different from that of wood, but there are some differences in dry content and specific gravity. There is, therefore, good reason to believe that short rotation forestry should be a relatively efficient system of utilising solar energy.

**Page**

13p

**Location**

Coillte Research, E.S.B. Information Centre, No. 16, Saint Stephen's Green, Dublin 2.

**Notes**

Available.

**Address of author**

Teagasc Research Centre, Oakpark, Co. Carlow

---

**Number**

1461

**Author**

Forest Service

**Title**

Avondale.

**Publisher**

Forest Service

**Place**

Dublin

**Date**

1987

**Key Word**

Avondale estate, forest history, amenity forestry

**Abstract**

This booklet provides a general guide to the Avondale Estate in County Wicklow. A brief account of the events surrounding the establishment of a forestry school on the estate is provided, and the various amenities which are available to visitors to the forest on the estate are outlined. These include an 'exotic tree trail' and a pine trail'.

**Page**

41p

**Location**

Coillte library

**Notes**

Available.

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**Number**

1462

**Author**

Forest and Wildlife Service

**Title**

Code of practice for planning and construction of forest roads.

**Publisher**

Forest and Wildlife Service

**Place**

Dublin

**Series**

Forest and Wildlife Service internal report

**Date**

1977

**Key Word**

forest road construction, forest engineering, forest management, infrastructure, transport, forest roads

**Abstract**

Various issues concerned with the planning and lay-out of road systems in forests are discussed including site classification, designing road systems and design standards. The pre-construction work involved in tree clearance and excavation of mineral sites, shallow peats and deep peats is described. Several aspects of the formation stage in road construction are examined. These include the maintenance of formation before surfacing, types of formation not requiring surfacing, and the issues to be considered when undertaking surfacing.

**Page**

70 p

**Location**

Coillte Library

**Notes**

Available.

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**Number**

1463

**Author**

Bradshaw Richard H.W.

**Title**

Changing patterns in the post-glacial distribution of *Pinus sylvestris* in Ireland.

**Publisher**

Blackwell Scientific Publications

**Place**

Oxford

**Date**

1987

**Source**

Journal of Biogeography

**Volume**

Vol. 14

**Key Word**

*Pinus sylvestris*, Scots pine, forest history, post-glacial forestry, native woodlands, pollen analysis

**Abstract**

The largest *Pinus sylvestris* populations in Ireland were in upland and western districts, but the pollen records from two mountain areas show that upland populations disappeared soon after the *Ulmus* decline. Fire was a factor in the survival of *Pinus* after the *Ulmus* decline at a lowland site on coarse-textured acid soil. Four pollen diagrams from the Nephin Beg mountains in Co. Mayo reveal the history of *Pinus* at differing altitudes and on contrasting soil types, showing the controlling influence of competitive interactions with other trees and peatland. Isolated lowland and bog populations survived into the historic period, and today, after extensive plantation, naturalised populations are building up. *Pinus sylvestris* is an opportunistic tree that will tolerate many habitats, but only in the absence of its competitors. Analysis of several sites in a small area demonstrates fine-scale pattern in *Pinus* distribution not detected in surveys covering larger areas. Changing patterns at a local scale provide material for successional hypotheses.

**Page**

pp 237 - 248

**Location**

UCD library

**Notes**

Available

**Address of author**

School of Botany, Trinity College, Dublin 2

---

**Number**

1464

**Author**

Union of Professional & Technical Civil Servants

**Title**

Ireland's forestry - a review.

**Publisher**

Union of Professional & Technical Civil Servants

**Place**

Dublin

**Date**

1986

**Key Word**

forestry policy, forestry development, trades unions, forest industry structure

**Abstract**

This booklet outlines the position of Ireland's major civil service Union on the country's forestry programme. The development of forestry policy in Ireland is described, and the issues of land acquisition and management efficiency in the Forest and Wildlife Service examined. The topics of harvesting, training, private forestry, research & development and marketing are also examined. The present organisational structure of the State forestry sector is described, and the problems of centralisation and dual management structure examined. A number of possible options for the re-organisation of the Service are assessed.

**Page**

20 p

**Location**

Coillte library

**Notes**

Available. (Preface by Prof. Frank J. Convery, Environmental Policy Centre, University College, Dublin.)

---

**Number**

1465

**Author**

O'Halloran John, Giller Paul S.

**Title**

The interaction between forestry and water resources: a review.

**Publisher**

UCG. Civil Engineering Department

**Place**

Cork

**Date**

1991

**Source**

Environmental Engineering: Proceedings of the First Irish Environmental Engineering Conference held at University College Cork, 21 - 22 March, 1991. (Edited by G.K. Kiely, E.J. McKeogh & P.J. O'Kane)

**Key Word**

afforestation, water quality, environment, water resources, pollution, aquatic ecology, acidification

**Abstract**

This paper examines the possible consequences of afforestation on surface water quality, water yields and aquatic ecology. Surface water quality from afforested catchments on poorly buffered soils can be significantly changed with respect to ionic composition with an increase in acidity and an increase in metal ions. The loss of water due to afforestation in a catchment can be very significant for water yields. The effect which changes in water quality, caused by afforestation, has on the aquatic ecology of streams running on poorly buffered geologies is explained. At present very little is known about the influence of afforestation on water resources in

Ireland. All negative effects documented so far have been in geologically sensitive areas and/or those receiving high atmospheric pollution.

**Page**

pp 105 - 115

**Location**

Trinity library

**Notes**

Available

**Address of author**

Dept. of Zoology, UCC, Lee Maltings, Prospect Row, Cork

---

**Number**

1466

**Author**

Wilson W.L., Day K.R.

**Title**

Variation in the relative abundance of the large pine weevil among Sitka spruce plantation sites.

**Publisher**

Oxford University Press

**Place**

Oxford

**Date**

1996

**Source**

Forestry

**Volume**

Vol. 69, No. 2

**Key Word**

pine weevil, *Hylobius abietis*, Sitka spruce, *Picea sitchensis*,

**Abstract**

Over 160 forest sites in Northern Ireland were sampled to obtain indices of pine weevil densities. Overall 48 variables were tested for their ability to explain variables in weevil numbers between compartments. The models generated from the sample data identified 14 variables as significant in influencing weevil densities. In this research note the variables are identified, and their relationship to forest management outlined.

**Page**

pp 176 - 179

**Location**

Coillte library

**Notes**

Available

**Address of author**

Environmental Research Group, University of Ulster, Coleraine, BT52 1SA, Northern Ireland

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**Number**

1467

**Author**

Gallagher Gerhardt

**Title**

Thinning in state forests in the Republic of Ireland: problems and progress.

**Publisher**

IUFRO

**Date**

1987

**Source**

Proceedings of the meeting of IUFRO Project Group P4.02 and Subject Group S1.05-05, Scandinavia (Sweden,

Norway, Denmark) 9-18 June, 1987.

**Key Word**

thinning systems, safety, timber market, harvesting, thinning cost, site classification, extraction systems

**Abstract**

The rapid growth in production of thinnings from Irish state forests has meant that a flexible approach is necessary to deal with problems relating to site, species, technology and market fluctuations. Systems are being developed which are based on past experience in research and practice. Future progress in this area will depend to a large extent on the following developments: a greater degree of forward planning taking into account the features of each site; training of motor manual and machine operators in more complex thinning systems in relation to site; the continuous need for cost-effective methods involving ergonomic improvements and appropriate machines; a programme to quantify site damage causal factors and implications on ground leading to a long-term research programme on acceptable levels of tree damage; a suitable information system by which new varieties of forest harvesting machinery will quickly come to attention followed by demonstrations or videos of performances and tests of chosen machines, on-site; accurate management forecasts of thinning by region so that resources will be available; support of better-class harvesting contractors and encouragement to training; and a better understanding of the level of activity to be under-taken directly by the Forest Service in relation to the whole harvesting of thinning operations.

**Page**

pp 341 - 353

**Location**

Coillte library

**ISBN**

91-576-3104-2

**Notes**

Available.

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**Number**

1468

**Author**

Phillips Henry

**Title**

Tracked forwarders in thinning - experience in the north-west of Ireland.

**Publisher**

IUFRO

**Date**

1987

**Source**

Proceedings of the meeting of IUFRO Project Group P4.02 and subject Group S1.05-05.

**Key Word**

harvesting, forest engineering, tracked forwarders, thinning, timber extraction, ground damage, soil induration, forest operations guidelines, windthrow hazard, forest soils

**Abstract**

Tracked forwarders cause less ground damage than conventional wheeled forwarders when extracting thinnings on the sensitive soil-types found in the north-west of Ireland. The incidence of windthrow is reduced by adopting either a rack and selection or pure selection thinning system at the time of first thinning as opposed to a line systematic thinning system. Limiting the forwarder load size on sensitive sites to suit ground conditions reduces the amount of ground damage. By applying restrictions on load size, the amount of ground damage can be kept to within acceptable limits on the majority of sites. Limiting the length of haul on sensitive sites helps reduce the amount of ground damage to within acceptable limits. Good brush cover is required on the extraction rack, even with a smaller tracked forwarder, if ground damage is to be minimised. The timing of first thinning is critical if the risk of windthrow is to be reduced: then the thinning should be early rather than late.

**Page**

pp 305-318

**Location**

Coillte library

**ISBN**

915762377

**Notes**

Available.

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**Number**

1469

**Author**

McCormack Art G., O'Leary Tomas N.

**Title**

A performance approach to the assessment of the aesthetic resources of forest parks by landscape experts.

**Series**

European Forest Institute Proceedings, No.4

**Date**

1995

**Source**

Multiple use and environmental values in forest planning.

**Key Word**

forest aesthetics, landscape, forest parks, forest planning, environment, forest recreation, amenity forestry, recreation

**Abstract**

It is much more difficult to evaluate the benefits of amenity forestry than those of commercial or industrial forestry. In order to broaden understanding of the manifold implications of forestry, a complex, multi-variate model was produced to integrate and correlate the manifold factors which affect popularity and which are, therefore, indicators of effective economic value of forty three diverse forest parks scattered between three European countries, including Ireland. The authors were selected as landscape experts to produce and apply a methodology to determine and evaluate the quantity of aesthetic resources of the forest parks, producing quantitative results which could be fitted to the model. Rather than adopting a prescriptive approach, where assessment would be based upon pre-conceptions of what a park should contain or how it should look, a performance approach was developed, examining the quality of the net experience of visitors to the parks. The findings of the assessment were validated by statistical analysis showing a positive relationship between aesthetic quality and willingness-to-pay as determined by interview.

**Page**

12 p

**Location**

Department of Forestry UCD

**Notes**

Available.

---

**Number**

1470

**Author**

Flanagan E.S., MacSiurtain, Joyce P.M.

(UCD FIRST)

**Title**

Field validation of Swedish Space Corporation private woodlands remote feasibility study.

**Publisher**

UCD FIRST

**Place**

Dublin

**Date**

1989

**Key Word**

remote sensing, mapping, private forestry, SPOT imagery, private woodlands survey, multispectral imagery, panchromatic imagery, GIS, geographic information systems

**Abstract**

Field validation of a 37,311 ha test site in Co. Cork has established that an overall classification accuracy of

72% for locating and mapping private woodlands can be expected through the classification technique of manual visual interpretation of multispectral SPOT imagery which has a resolution of 20 x 20 metres. This was the technique used by the Swedish Space Corporation. It has been established through the National Survey of Private Woodland Remote Sensing Feasibility Study that higher classification accuracies are attainable. The technique used in these studies was interactive visual interpretation (IVI) of SPOT imagery with a 10 metre resolution. This is obtained through the use of the combined multispectral (XS) and panchromatic (P) bands. Classification accuracies of 97.5% have already been achieved by this method. Manual visual interpretation of SPOT imagery is therefore a less accurate method of locating and mapping private woodlands than interactive visual interpretation. Within the context of a National Survey of Private Woodlands in Ireland it has been established that the high classification accuracies required can only be obtained by interactive visual interpretation of SPOT imagery with a resolution of 10 metres obtained through the use of multispectral (XS) and panchromatic (P) imagery.

**Page**

40p

**Location**

Dept. of Forestry, UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

1472

**Author**

O'Sullivan Aidan

**Title**

Exploring ancient woodlands.

**Place**

Dublin

**Date**

Summer/1996

**Source**

Archaeology Ireland

**Volume**

Vol. 10, No.2

**Key Word**

forest history, ancient woodlands, native species, archaeology, native woodlands

**Abstract**

This article discusses the economic, religious and social significance of woodlands in the Neolithic era. The importance of sacred tree and groves in pre-Christian Ireland is described, and the manner in which the exploitation of woodlands and agricultural land use developed between the Stone Age and Bronze Age is outlined. The types of woodland examined are Scots pine-oak, oak-alder and alder.

**Page**

pp 14-15

**Location**

Coillte library

**ISBN**

0790-982X (ISSN)

**Notes**

Available.

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**Number**

1473

**Author**

Ni Dhubhain Aine, Gardiner John

**Title**

Small-scale farm forestry in the Republic of Ireland.

**Publisher**

International Union of Forestry Research Organisations

**Place**

Dublin

**Date**

1993

**Source**

Forestry and Rural Development in Industrialised Countries: Where are we going: Proceedings of IUFRO Symposium, Working party S.6.11-02. Sept. 1993, Fredericton, Canada.

**Key Word**

farm forestry, farmers' attitudes, private forestry, small scale forestry, rural development, agriculture, land use, forestry policy

**Abstract**

Although the area being planted with trees by farmers in Ireland has increased dramatically over the past decades, very little research has been carried out on the reasons why farmers plant trees, their attitudes to forestry and the impact the development of farm forestry has had on agricultural production. This paper describes the background to the involvement of farmers in forestry in the Republic of Ireland. It also presents the results of a farm survey carried out in 1992 to redress the lack of research into farm forestry. Both farmers that had planted trees and those that had not were surveyed. The reasons why some farmers have planted were ascertained as well as farmers' attitudes to forestry in general. In addition, farmers' intentions regarding planting trees in the future as well as factors that determine this decision were established. The impact of farm forestry on agricultural production was also determined.

**Page**

16p

**Location**

Dept. of Forestry, UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

1474

**Author**

Ni Dhubhain, A., Gardiner J.J., O'Reilly Gerry

**Title**

Farmers' attitudes towards forestry: cross cultural differences.

**Publisher**

UCD. Department of Geography

**Place**

Dublin

**Series**

LLAS Working Paper No. 8

**Date**

1994

**Key Word**

farm forestry, private forestry, small-scale forestry, agriculture, land use, agriculture, grants, subsidies, forestry policy, environment, landscape

**Abstract**

This paper outlines the development of farm forestry in the Republic of Ireland, Scotland and Northern Ireland. Current incentives and disincentives for farm forestry are described, and the results from a survey for farmers' attitudes to forestry presented. The survey shows that the vast majority of farmers remain uninterested in converting parts of their farm to forestry despite the sizeable financial incentives that are now available. There are regional differences in the attitude to the role of trees in the countryside amongst those intending to plant trees. In Scotland and Northern Ireland much of the future tree planting will continue to be for amenity and aesthetic reasons, while in the Republic of Ireland greater emphasis is placed on the financial benefits of

woodlands. If the contribution of forestry to rural development is to be maximised, emphasis must be placed on the multi-functional role of forests. Finally, as the majority of farm woodlands are small, attention must now focus on appropriate methods of managing and harvesting these woods.

**Page**

23p

**Location**

Coillte library/Dept. of Forestry, UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

1475

**Author**

Bulfin M.

**Title**

Will the sun shine on farm forestry?

**Publisher**

An Foras Taluntais

**Place**

Dublin

**Date**

April/1986

**Source**

Farm & Food Research

**Volume**

Vol. 17, No. 2

**Key Word**

farm forestry, private forestry, agriculture, farm incomes, grants, subsidies, European funding, investment, afforestation

**Abstract**

On wet mineral lowland soils, the gross margin per acre from forestry is much greater than from other agricultural enterprises. However, there is a time lag before the income is available from forestry. This article discusses what is presently available by way of grants and EEC schemes, and examines what else could be done to bridge the gap between planting and harvesting of trees. Until full support systems are in place, including provision of an annual income, the uptake of afforestation grant schemes is likely to be slow.

**Page**

pp 61 - 64

**Location**

Coillte library

**Notes**

Available

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

---

**Number**

1476

**Author**

MacSiurtain M.P., O Mongain E.O., Joyce P.M., McCormick N.L.M., Collins A.P., Walsh J.

**Title**

An operation PC - based remote sensing integrated GIS.

**Publisher**

UCD Forestry Department

**Place**

Dublin

**Date**

1991

**Key Word**

remote sensing, satellite imagery, satellite mapping, computer applications, information technology, inventory, forest protection, radiometric experimentation

**Abstract**

The analysis of LANDSAT TM and SPOT satellite imagery has enabled the production of high quality satellite image maps at scales suitable for practical applications, namely 1: 50,000 and 1: 25,000. Satellite mapping has an important role to play in forestry inventory and environmental protection. A new software package, PC-UCD GIS, permits the interactive extraction of vector information from high resolution imagery, and its configuration was designed to produce high quality colour hardcopy products of satellite images and vector maps. Extensive ground-based radiometric experimentation has provided multi-temporal information on the spectral properties of Sitka spruce and Japanese larch seedlings. Remote sensing devices were developed for this experimentation. The information content of individual spectral bands and band ratios was analysed and optimal band combinations were identified for species and productivity differentiation. The airborne radiometric flight over forest stands of Sitka spruce, lodgepole pine and Japanese larch of different yield classes was undertaken in September 1990. The spectral range from 400 to 900 nanometres was sampled for each crop, thus facilitating the comparison of the spectral differences between the forest types. The airborne data were modified to produce LANDSAT TM and SPOT-compatible spectral data. Standard multispectral image classification techniques indicated that certain species and yield classes were spectrally homogenous and differentiable. Further research will include the development of airborne remote sensing devices capable of providing images of very high resolution and from user-specified spectral bands.

**Page**

52p

**Location**

Dept. of Forestry, UCD

**Notes**

Available

**Address of author**

Dept. of Crop Science, Horticulture and Forestry, Agriculture Building, UCD, Belfield, Dublin 4

---

**Number**

1477

**Author**

Phillips Henry

**Title**

Effects of spacing, pruning and thinning on wood quality.

**Series**

Coillte Research & Technology internal report

**Date**

1978

**Key Word**

timber quality, silviculture, spacing, pruning, thinning, knots, ring width, slope of grain, specific gravity, forest products

**Abstract**

This study examines the relative importance of a number of silvicultural practices on timber quality. The factors effecting timber quality examined in this study are knots, ring width, slope of grain and specific gravity. It was found that wider spacing through its influence on branch development and its effect on ring width has a detrimental effect on timber quality. Spacing has only a slight effect on specific gravity. Pruning reduces knot size and improves timber quality. Increased thinning intensity results in increased knot size. Thinning also increases the average ring width, but this is only of importance to timber quality in the higher yield classes.

**Page**

50p

**Location**

Coillte Research

**Notes**

Available

**Address of author**

Coillte Teo., Government Buildings, Cranmore Rd., Sligo

---

**Number**

1478

**Author**

Atanackovic A., Knaggs G.R.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Upgrading the use of small diameter logs from European forests.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1986

**Key Word**

timber quality, grading, timber processing, forest products, laminated timber, lamination, strength properties, sawn timber

**Abstract**

In order to achieve a higher timber grade from small diameter logs it was proposed to use timber laminating techniques. Prepared laminated timber samples were assessed against solid pieces of timber of the same origin, through a series of tests. The results of Modulus of Elasticity and ultimate bending strength tests provided some evidence that full length laminated timber produced higher values than solid pieces of timber, and in some cases when timber finger jointed. Laminated timber displayed smaller distortions than solid timber in general. This evidence was obtained from a limited sample. The second test estimated sawn timber recovery from a conversion of small diameter logs into sawn timber with references to taper equation. The results of this test showed the size and frequency of knots could be reduced by increasing marginally the recovery from total log volume by reducing sawing allowance, adjusting saw setting and revising drying schedules.

**Page**

48p

**Location**

Forest Products Dept., Forbairt/Coillte library

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

1479

**Author**

Robinson W.J.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Testing of punched metal plates in Irish timber.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/Research Studies on Irish Timber. Study 19

**Date**

1987

**Key Word**

punched metal plates, nails, roof trusses, timber processing, forest products

**Abstract**

The primary objective of this report was to determine allowable nail loads for punched metal plates in Irish timber. This would enable the plates to be accurately sized during the design stage and thus assist the use of Irish timber in the manufacture of roof trusses. The following were the types of plate tested: twinplate; truswal; hydro-air; gangnail; and bevplate. The method of testing used involved estimating a maximum load for a particular test sample. Samples were tested with the plate at several different angles to the applied load, with an angle of load to the grain of 0 and 90 degrees. The test results were compared with allowable nail loads given for imported timber. In the case of the angle of load/grain of 90 degrees almost all the test results gave higher allowable nail loads in Irish timber than the permissible in imported timber. From consideration of all the relative test data a factor of 0.9 was applied to the permissible nail values for imported timber.

**Page**

60p

**Location**

Forest Products Dept., Forbairt/Coillte library

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

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**Number**

1480

**Author**

Picardo Valez

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Scaffold boards of Irish grown Sitka spruce: basic data and relationship between mechanical properties.

**Publisher**

Institute for Industrial Research and Standards. Forest Products Department

**Place**

Dublin

**Series**

Promotion/Research Studies on Homegrown Timber. Study 5

**Date**

1983

**Key Word**

scaffold boards, grading, strength properties, physical properties, modulus of rupture, modulus of elasticity, forest products, timber processing, timber end use

**Abstract**

Scaffold boards of three different thickness' were obtained from four different sawmills. A total of 59 boards of 38 mm nominal thickness, 56 of 44 mm nominal thickness and 88 of 63 mm nominal thickness were tested. Visual and mechanical grading was carried out according to the rules in BS 2482. Results were analysed for both the visual and mechanical grades and overall relationships were determined between modulus of rupture (ultimate bending stress) and modulus of elasticity measured in three different ways. An alternative method for obtaining the minimum value is presented.

**Page**

61p

**Location**

Forest Products Dept., Forbairt/Coillte library

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

1481

**Author**

Farrell E.P.

**Title**

Forestry and rural development.

**Publisher**

Agricultural Science Association

**Place**

Dublin

**Date**

1990

**Source**

ASA Record

**Volume**

Vol. 51

**Key Word**

afforestation, environment, water quality, forest ecosystems, blanket bogs, landscape, visual impact

**Abstract**

The author describes Ireland's forestry programme as the restoration of a lost resource. The difficulties involved in promoting this programme in a country without a culture of forestry are outlined. There was, and still is, strong resistance to forestry on land considered useful for agriculture. The development of forestry on poor land, especially blanket bogs, has been criticised by environmentalists because of the effect on the landscape and the damage to blanket bogs. However, the lack of concern with the impact of forestry on the environment during earlier periods of extensive afforestation has been replaced by a more sensitive approach. Several of the accusations made by environmentalists against forestry, including the adverse effects on water systems, are examined.

**Page**

pp 11 - 14

**Location**

UCD library

**Notes**

Available

**Address of author**

Dept. of Environmental Resource Management, University College Dublin

---

**Number**

1482

**Author**

Atanackovic Andreja

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Developing an inexpensive mechanical grader. Technical report No. 3: evaluation of the experimental deflection limits to be used for the F.P. timber stress grading machine.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/Research Studies on Irish Timber. Study 3

**Date**

1984

**Key Word**

grading, mechanical grader, timber properties, strength properties, timber processing, forest products

**Abstract**

The working performance of the production model of the F.P. grader was reported in the Technical Report No. 2. The experimental deflection limits were calculated for the timber grade - M75, from limited data generated during the experimental work in assessing the prototype and production model of the mechanical stress grader. Using these experimental deflection limits, a series of tests were carried out. This report assesses the results of this experimental work.

**Page**

10p

**Location**

Forest Products Dept., Forbairt/Coillte library

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

1483

**Author**

Picardo V.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Analyses of visual grading characteristics of homegrown Sitka spruce for grading.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/Research Studies on Irish Timber. Study 61.06

**Date**

1988

**Key Word**

visual grading, Sitka spruce, Picea sitchensis, strength properties, timber processing, forest products

**Abstract**

The objectives of this study were to: (a.) compare the bending strength values of actual SS graded Sitka spruce planks with published values; (b) to establish whether a higher visual grade is justified and suitable grading rules can be produced; (c) to determine whether the restriction on rate of growth can be eased or ignored altogether. The data on which the present study was based was collected during the course of Study 2 in this series. From the analyses of the data it was concluded that the material graded as SS satisfied the strength values set for the grade, except where marginal conditions exist. Although analyses showed that rings had a significant correlation with the strength properties, there was no evidence to show that the limits on rings could be eased. In fact indications are that the present limits should stay as they are.

**Page**

23p

**Location**

Forest Products Dept., Forbairt/Coillte library

**Notes**

Available

**Address of author**

Forest Products Dept., Fobairt, Glasnevin, Dublin 9

---

**Number**

1484

**Author**

Robinson W.J.

(Institute for Industrial Research and Standards. Forest Products Department)

**Title**

Testing of connectors in Irish timber.

**Publisher**

IIRS

**Place**

Dublin

**Series**

Promotion/Research Studies on Irish Timber. Study 32

**Date**

1987

**Key Word**

connectors, nails, structural timber, Standards, specifications, forest products, timber processing

**Abstract**

This report describes the technical evaluation of round wire nails in Irish timber which was carried out as part of the preparation of a new Irish Standard on Structural Timber. What is required for inclusion in this new Standard is data on allowable nail loads in lateral resistance and withdrawal. The main factors influencing nail withdrawal loads are the nail diameter and the depth of penetration of the nail itself. The objective of this study was to determine the allowable loads for nails in lateral resistance. Single shear tests on 3.3 mm and 4.0 mm diameter nails represent fairly accurately the British Standard requirements concerning headside and pointside penetrations. The results so far indicate respectively an allowable nail load of 216 N and 521 N as against the existing permissible nail loads of 235 N and 335 N. It would seem that higher permissible nail loads than at present allowed will be obtained but this is by no means assured.

**Page**

18p

**Location**

Forest Products Dept., Forbairt/Coillte library

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

1485

**Author**

Wiley S.

(Industrial Research and Standards. Forest Products Department)

**Title**

Review and applications of timber standards and practice in Ireland.

**Publisher**

IIRS

**Place**

Dublin

**Date**

1985

**Key Word**

Standards, specifications, grading, quality control, timber quality, structural timber, strength properties, timber processing

**Abstract**

This paper describes the role which standards play in the preparation of structural timber for use in Ireland. The development of timber standards, beginning with publication of the standard for Timber Trussed Rafters and Roofs - IS 193 in 1978, is described. The development of timber grading techniques is described, and the important part these play in assessing whether standards are being adhered to is outlined. The British Standard Code of Practice covering the structural use of timber - BS 5268 is explained. The importance of developing standards specifically for Irish conditions and products is outlined.

**Page**

16p

**Location**

Forest Products Dept., Forbairt/Coillte library

**Notes**

Available

**Address of author**

Forest Products Dept., Forbairt, Glasnevin, Dublin 9

---

**Number**

1486

**Author**

Martin, Audrey;  
Holden, Nicholas M.;  
Owende, Philip M.;  
Ward, Shane M.

**Title**

The effects of peripheral canopy on DGPS performance on forest roads.

**Date**

1999

**Key Word**

forest engineering  
forest machinery  
forest roads  
GPS  
canopy obstruction

**Abstract**

The purpose of this study was to evaluate differential GPS positional accuracy on Irish forest roads with typical peripheral canopies. The peripheral canopy obstruction at 20 forest road sites in Roundwood state forest, was determined using a hand held clinometer and magnetic compass. This simple field technique permitted quantification of the canopy obstruction using graphical means and resulted in a graphical skyplot of each site. The equipment, one Trimble PROXRS DGPS unit and two Trimble 4000SSi units permitted determination of the DGPS accuracy (average of 2.9 m) and precision (average of 2.1m) with a range of peripheral canopies. DGPS performance was quantified in terms of the average absolute error in PDOP (APDOP = 1.6). The relationship between APDOP and percentage of open sky was found to be statistically significant ( $r = 0.706$ ,  $p = 0.001$ ). Statistical analysis also indicated a strong relationship between the relative precision and APDOP ( $r = 0.796$ ,  $p = 0.000$ ). Satellite constellation in the measurement period was not the sole factor affecting DGPS useability. Three distinct classes of peripheral obstruction at road sites were defined (Class I: 100-66%; Class II: 65-33%; Class III: 32-0 % obstruction) and it was found that both DGPS accuracy (3.70 m, 3.23 m, 1.91 m, respectively) and precision (4.10 m, 2.43 m, 1.83 m, respectively) improved with decreasing peripheral obstruction. These classes may be used as a means of predicting signal attenuation which might be expected under particular forest canopy conditions elsewhere)

**Page**

13pp

**Location**

Forest Engineering Unit, UCD

**Notes**

internal Forest Engineering Unit report; includes tables, ills., bibliographical references

**Address of author**

Forest Engineering Unit, Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Terrace, Dublin 2

\*Department of Geomatics, Institute of Technology, Bolton Street, Dublin 1.

---

**Number**

1487

**Author**

Doolan, Patrick J.

**Title**

The growth and market potential of home-grown western red cedar (*Thuja plicata* Donn ex D.Don) in Ireland.

**Place**

Dublin

**Date**

1998

**Key Word**

timber production  
Thuja plicata  
Western red cedar  
marketing  
needle blight  
Didymascella thujina  
silviculture  
forest products  
timber processing

**Abstract**

The growth and market potential of home-grown western red cedar is examined to assess the feasibility of the tree as a commercially sustainable alternative species for plantation forestry in Ireland. Silvicultural practice, future supply and timber uses, both wood and non-wood, are reviewed for the species in its natural habitat of western North America. Also silvicultural practice with the tree and its future potential is reviewed for New Zealand, Continental Europe, Britain and Ireland.

Growth potential of WRC in Ireland is examined by reference to soil type and yield class of the existing WRC Coillte inventory. The various research trials, laid down by Coillte Research Division over many years, provide vital information to assist with the evaluation of the potential of the species. This research has demonstrated that establishment methods of cultivation, herbicide treatment and fertilization can serve to optimise the growth of the species. Other improvements with the species include the use of cycloheximide fungicides to combat the nursery disease of *Didymascella thujina* (needle blight) and the use of containerised seedlings. Recent work in Canada has demonstrated that, contrary to earlier belief, the tree exhibits genetic variation and seed collected from seed orchard trees are now recommended for best results.

The effects that a timber price of increase of 50% on current prices would have on financial returns for the species are analysed. The difficulties for marketing, due to lack of critical mass of the species, are highlighted and the need to attain this mass in the shortest feasible timescale is recommended. The market for both imported and home grown WRC material is examined through a survey of timber imports and Irish sawmill that are using WRC. The time is right to increase the level of planting of WRC. The tree is viewed as a diverse species and is encouraged by the Forest Service by way of increased grants. The planting of up to 200 ha of WRC per year for the next 40 years would ensure the attainment of critical mass for the species and meet the needs of a viable industry within the time span of the Government's current strategic plan for forestry.

**Page**

vii, 102pp

**Location**

Coillte Research & Development

**Notes**

includes tables, graphs, photos., ills; bibliographical references

**Thesis**

Thesis submitted to the National University of Ireland in fulfilment of the requirements for the degree of Master of Science (Agriculture). M.Sc.(Agr).

**Address of author**

Department of Crop Science, Horticulture and Forestry, Faculty of General Agriculture, University College Dublin, Belfield, Dublin 4.

---

**Number**

1488

**Author**

Miller, Hugh G.

**Title**

The sustainable forest.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1995

**Source**

Irish Forestry

**Volume**

Vol. 52, Nos. 1 & 2

**Key Word**

sustainable forestry  
environment  
sustainable development  
forest production  
developing countries

**Abstract**

The principles of sustainable forest development enunciated in the Rio and Helsinki declarations are examined under the headings soil, plant health, water and people. Soil erosion is one of the principle threats to biodiversity and sustainable development in tree production. Plant health is most directly threatened by pollution and fire and it is the responsibility of governments, not forest managers, to alleviate these problems. The effect of forest production on water acidity levels is discussed, and the issue of multiple-use management in order to exploit forests for the benefit of populations as a whole is examined.

**Page**

pp 15-20

**Location**

Coillte Research & Development

**Notes**

Paper presented at 'Forestry - The Social Dimension' 1994 Society of Irish Foresters Symposium

---

**Number**

1489

**Author**

Kerrigan, John

**Title**

Forestry and industrial development.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1995

**Source**

Irish Forestry

**Volume**

Vol. 52, Nos. 1 & 2

**Key Word**

forest production  
economics  
timber processing  
industry  
land use  
timber processing

**Abstract**

The author assesses the contribution made by forestry to the Irish economy in recent years. The performance of forestry-based industrial development is compared with that of other industries, and predictions are made regarding their future direction. The strengths, weaknesses, opportunities and threats facing forestry-based industries are examined and recommendations regarding short-term and long-term actions are made

**Page**

pp 21-31

**Location**

Coillte Research & Development

**Notes**

Paper presented at 'Forestry - The Social Dimension' 1994 Society of Irish Foresters Symposium. A table of key indicators for Irish forestry-based industrial development up to 2015 is included

**Address of author**  
Irish Timber Council

---

**Number**

1490

**Author**

Ní Dhubháin, Áine

**Title**

The impact of forestry on rural communities.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1995

**Source**

Irish Forestry

**Volume**

Vol. 52, Nos. 1 & 2

**Key Word**

land use

environment

employment

rural areas

agriculture

timber processing

economics

**Abstract**

This paper outlines some of the impacts of forestry on rural communities in Ireland. Forestry has provided both direct, and more significantly, indirect employment in rural areas. The effect of increased production in recent years is examined and the impact this will have on employment in the harvesting, transportation and processing areas in the future is assessed. The role of forestry in the programme of integrated rural development is outlined. While recent developments in forestry have had little effect on agricultural production, conversion of agricultural land to forestry is inevitable in the future. The social impact of forestry, in particular its alleged role in depopulating rural areas, and the effect on the landscape and environment are discussed. The role of co-operative forestry in encouraging more participation in the industry by small farmers is outlined.

**Page**

pp 31 -40

**Location**

Coillte Research & Development

**Notes**

Paper presented at 'Forestry - The Social Dimension' 1994 Society of Irish Foresters Symposium. Includes bibliographical references.

**Address of author**

Department of Forestry, University College Dublin

---

**Number**

1491

**Author**

Huss, Jurgen

**Title**

Broadleaves - an alternative to conifers in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1995

**Source**

Irish Forestry

**Volume**

Vol. 52, Nos. 1 & 2

**Key Word**

broadleaves

**Abstract**

The historical development of forestry in Europe, in particular the clearing of the broadleaved forests, especially beech, is outlined. In response to the adverse effects of coniferisation there has been a recent renaissance of broadleaves and mixed stands. The general silvicultural goals which must be observed in this process are described under the following headings: site classification; choice of sustainable provenances; production of high quality timbers; protection of broadleaf plantations, and mixtures. The importance of site conditions to the establishment of broadleaved stands is explained. Silvicultural criteria including soil preparation, selection of plants, undercutting, spacing and planting techniques are explained. The author concludes that broadleaves offer a real economic and ecological alternative to Sitka spruce plantations on many sites.

**Page**

pp 41-52

**Location**

Coillte Research & Development

**Notes**

Paper presented at 'Forestry - The Social Dimension' 1994 Society of Irish Foresters Symposium; includes map, graphs.

**Address of author**

Institute of Silviculture, Forestry Faculty, University of Freiburg, Germany

---

**Number**

1492

**Author**

Clinch, Peter J.

Convery, Frank J.

**Title**

Forestry and recreation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1995

**Source**

Irish Forestry

**Volume**

Vol. 52, Nos. 1 & 2

**Key Word**

recreation

tourism

economics

forest management

private forestry

**Abstract**

This paper reviews the existing levels and trends of forest recreation in Ireland. Its value is examined and policy implications are reviewed. Existing data demonstrate a high level of visitation to State-owned forests, and a negligible growth in visits to Forest Parks since 1976. Walking is the most significant forest recreation activity. Recent studies which attempt to value forest recreation benefits under the methods of contingent valuation, travel cost and hedonic prices are outlined. The existing availability for forests for recreation and the incentives for forest owners to provide access are examined. The results of a study which attempted to value forest

recreation in the UK in 1972 are outlined.

**Page**

pp 41 - 69

**Location**

Coillte Research & Development

**Notes**

Paper presented at 'Forestry - The Social Dimension' 1994 Society of Irish Foresters Symposium; includes map, tables, bibliographical references

**Address of author**

Department of Environmental Studies, University College Dublin

---

**Number**

1493

**Author**

O'Carroll, Niall

**Title**

The nature of forestry.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1995

**Source**

Irish Forestry

**Volume**

Vol. 52, Nos. 1 & 2

**Key Word**

economics

forestry policy

environment

social aspects

**Abstract**

The author identifies the primary purpose of forests as the improvement of the life-quality of humankind through the control and management of trees and their associated ecosystems. The various elements of the science of forestry are outlined and the economic and social aspects of the forest industries are explained. The issues around valuation of forestry, including the most suitable approach to valuation, are discussed and the author concludes that State investment in forestry is commercially justified in itself even before social values are considered.

**Page**

pp 70 - 74

**Location**

Coillte Research & Development

**Notes**

Paper presented at 'Forestry - The Social Dimension' 1994 Society of Irish Foresters Symposium; includes bibliographical references

**Address of author**

Forest Service, Department of Agriculture, Food and Forestry, Leeson Lane, Dublin 2.

---

**Number**

1494

**Author**

Nelson, Charles E.

**Title**

'The joys and riches of O' Kathay.' Augustine Henry and the trees of China.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1995

**Source**

Irish Forestry

**Volume**

Vol. 52 Nos. 1 & 2

**Key Word**

botany

history

medicinal herbs

China

environment

**Abstract**

Henry's early career and his impressions of China are recounted. His medical training encouraged an interests in Chinese medicinal herbs. He spent 15 years collecting plants and sent over 15,000 different specimens to Kew, introducing 500 new species to Europe. Henry's accounts of the wild forests of south-western China, and their gradual destruction are recalled. Henry's tranformation from a dendrophile and botantist into a promoter of planted trees in Ireland is explained. He continually emphasised the commercial nature of forestry and this formed the bulk of his contribution to the Committee on Irish Forestry.

**Page**

pp 75 - 87

**Location**

Coillte Research & Technology

**Notes**

includes photos., bibliographical references

**Address of author**

National Botanic Gardens, Glasnevin, Dublin 7

---

**Number**

1495

**Author**

Culleton, N.

Murphy, W.E.

Hicks, R.R.

**Title**

Competition control for establishment of ash (*Fraxinus excelsior* L) on lowland soil in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1995

**Source**

Irish Forestry

**Volume**

Vol. 52, Nos. 1 & 2

**Key Word**

silviculture

weeds

herbicides

ash

*Fraxinus excelsior* L.

cultivation

planting

**Abstract**

The herbicide glyphosate was used to control competing vegetation in an ash plantation on a fertile agricultural site using strip treatments of 0.5 and 1.0m width and no treatment. The best results were obtained for a 1.0m strip treatment without mowing, with a cumulative height growth of approximately 134cm. It would appear that the unmowed grass strip provides both extra nutrients and protection from wind. The poorest performance was far untreated replicates which had a cumulative height growth of about 45 cm.

**Page**

pp 88 - 94

**Location**

Coillte Research & Technology

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

Teagasc, Johnstown Castle, Co. Wexford

West Virginia University, Morgantown, WV, USA

---

**Number**

1496

**Author**

von Ow, F.

Joyce, P.

Keane, M.

**Title**

Factors affecting the establishment of natural regeneration of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1996

**Source**

Irish Forestry

**Volume**

Vol. 53, Nos. 1 & 2

**Key Word**

natural regeneration

forest management

silviculture

Sitka spruce

*Picea sitchensis*

establishment

**Abstract**

The purpose of this study was to examine the influence of various site factors on the establishment of natural regeneration of Sitka spruce, in order to make it more predictable for forest managers. Results showed extensive regeneration on sites with a previous crop of Sitka spruce. Over 50% of planted sites had an adequate cover of natural regeneration. It was found that poor soils, especially those with a peat layer which only sustain a thin cover of ground vegetation, regenerated more readily than richer soils such as brown earth or gleys. Good seed years were also shown to have a significant impact on the establishment of natural regeneration, especially on sites which are recolonized quickly by very dense vegetation. Some shade also appears to favour the development of natural regeneration, probably by protecting seedlings from environmental extremes. An examination of ground cover types showed that Sitka spruce regenerates most readily on low moss and litter and that regeneration generally does not occur in areas with dense grass, rush or brash. The main conclusion of this study is that, while there are many factors which influence the establishment of natural regeneration, it can be predicted with a fair degree of accuracy if all important variables are taken into account.

**Page**

pp 2 - 18

**Location**

Coillte Research & Technology

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

LvO-Forst, Flur Str. 14, D-84533 Haiming, Germany

Maurice Kennedy Research Centre, University College Dublin

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow

---

**Number**

1497

**Author**

Stanley, B.

Dunne, S.

Keane, M.

**Title**

Forest condition assessments and other applications of colour infrared (CIR) aerial photography in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1996

**Source**

Irish Forestry

**Volume**

Vol. 53, Nos. 1 & 2

**Key Word**

colour infrared aerial photography

CIR

forest health

forest management

Sitka spruce

*Picea sitchensis* (Bong.) Carr.

lodgepole pine

*Pinus contorta* Dougl.

Norway spruce

*P. abies* (L.)

forest condition

fertilizer

**Abstract**

Colour infrared (CIR) aerial photography is a long-established tool for monitoring forest health and condition in Central Europe. Before this technique could be used to classify forest health on a large scale in Ireland, it was necessary to develop photo-interpretation keys for Sitka spruce and lodgepole pine. These were completed as part of an EU-wide programme for investigating methods of monitoring forest condition. With these keys, a trained operator can accurately classify the damage to individual tree crowns in terms of defoliation and discoloration, based entirely on their appearance on CIR aerial photographs. A number of important practical applications of this technique are demonstrated and discussed. These include national and regional forest condition inventories that were carried out using the interpretation keys. CIR aerial photography was successfully used to detect nutrient deficient forest stands on peat sites in midland areas of Ireland, and to monitor the subsequent response of these areas to fertilizer application. The phenomenon of top dying of Norway spruce was also successfully detected and the extent of the damage zoned using this resource. Information on the habit of top dying was gathered from these aerial photographs and this is discussed. Other applications for CIR photography have also been studied and there are briefly described.

**Page**

pp 19 - 27

**Location**

Coillte Research & Technology

**Notes**

includes photos. bibliographical references

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow  
Forest Service, Department of Agriculture and Food and Forestry, Leeson Lane, Dublin 2.

---

**Number**

1498

**Author**

Culleton, N.  
Murphy, W.E.  
McLoughlin, A.

**Title**

The use of fertilizers in the establishment phase of common ash (*Fraxinus excelsior* L.).

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1996

**Source**

Irish Forestry

**Volume**

Vol. 53, Nos. 1 & 2

**Key Word**

fertilizer  
establishment  
common ash  
*Fraxinus excelsior* L.  
silviculture

**Abstract**

This trial reports on the effects of adding varying rates of nitrogen, phosphorous, potassium and lime to a newly planted stand of common ash (*Fraxinus excelsior* L.) on lowland fertile mineral soil at Johnstown Castle Co. Wexford. This site is moderately well drained loam over a clay loam, with a pH of 6.7 and phosphorous and potassium levels of 8.5 and 75 mg/kg soil respectively. Adding a range of fertilizers did not consistently improve height or diameter increment in any one year of the six year establishment phase. In addition, foliar concentrations of nitrogen, phosphorous, potassium and calcium assessed for the range of treatments did not differ significantly from those recorded for the treatment control. It is concluded that there is no need to add fertilizer during the establishment phase of common ash, when planted on a fertile lowland site.

**Page**

pp 38 - 35

**Location**

Coillte Research & Technology

**Notes**

includes tables, bibliographical references

**Address of author**

Teagasc Research and Development, Johnstown Castle, Co. Wexford

---

**Number**

1499

**Author**

Coggins, Karl

**Title**

An integrated study on the viability of using slash for domestic energy in the form of briquettes.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1996

**Source**

Irish Forestry

**Volume**

Vol. 53, Nos. 1 & 2

**Key Word**

slash

forest products

fuel

briquettes

energy

**Abstract**

Once the particle size and moisture content of slash have been reduced to 3 mm and 10% respectively, it is possible to produce a well-structured briquette with a calorific value of 4,380 Cal/g. County Wicklow would be an ideal location for a briquetting plant, given its proximity to the large Dublin market and the consequent reduction in haulage costs. This assessment is also supported by the potential for realizing a sustained yield of approximately 75,000 cubic metres of slash per annum from surrounding forests. The cost of harvesting slash would vary between £6.17 and £11.48 per green tonne (gt), depending on site conditions and the harvesting system employed. However, the harmful impact on the forest site after removal, in terms of soil acidity and nutrient depletion, would mean that only the most fertile sites could be harvested for slash. This limiting factor, coupled with the high cost of manufacturing this type of briquette, probably prevents this new product from becoming a commercially viable enterprise in the short term.

**Page**

pp 36 - 44

**Location**

Coillte Research & Technology

**Notes**

includes photos., graphs, tables, bibliographical references

**Address of author**

Forest Service Department of Agriculture, Food and Forestry, Leeson Lane, Dublin 2

---

**Number**

1500

**Author**

O'Reilly, C.

Keane, M.

**Title**

Root wrenching may influence dormancy development of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) seedlings in the nursery.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1996

**Source**

Irish Forestry

**Volume**

Vol. 53, Nos. 1 & 2

**Key Word**

roots

Sitka spruce

*Picea sitchensis*

root wrenching

nursery

**Abstract**

The influence of root wrenching on the dormancy and cold hardiness development of Queen Charlotte Island (QCI) provenance of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) seedlings was investigated. The root wrenching treatment was carried out in mid September, 1991, with the objective of inducing early dormancy to facilitate early lifting of stock for field planting. Wrenching delayed bud development, lowered root mitotic activity, and reduced cold hardiness levels during dormancy development, compared with unwrenched seedlings. The rate of root mitotic activity and cold hardiness deacclimation in the spring was also slowed by the wrenching treatment. Although the late season root wrenching had the opposite effect to that envisaged, it may be possible to extend the lifting season by two to three weeks using this treatment, as dormancy release was also delayed.

**Page**

pp 45 - 54

**Location**

Coillte Research & Technology

**Notes**

includes graphs, bibliographical references

**Address of author**

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Coillte Research and Development, Newtownmountkennedy, Co. Wicklow

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**Number**

1501

**Author**

Quinn, Liam

**Title**

An overview of Coillte's forest resource inventory and timber production forecasting system.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1996

**Source**

Irish Forestry

**Volume**

Vol. 53, Nos. 1 & 2

**Key Word**

timber production

forest inventory

thinning

crop rotation

forecasting system

Thinning and Rotation Classification

**Abstract**

The scattered nature and extreme variations in growth rates and crop quality which characterise Coillte's forest estate has necessitated the employment of a complex forest inventory. Consistency is maximised by using local inventory managers responsible for the inventory within their specific areas. The types of information contained in the inventory are outlined. The coordination of inventories from the various sections and compartments, into which the estate is divided, is explained. The employment of the inventory in deciding on thinning and rotation is described and the most suitable regimes are incorporated into a plan referred to as the Thinning and Rotation Classification (TRC). Inventory data is in important influence in the implementation of Coillte's timber production forecasting system.

**Page**

pp 62 - 68

**Location**

Coillte Research & Technology

**Notes**

includes ill.

**Address of author**

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---

**Number**

1502

**Author**

Cullinan, E.F.

Bulfin, M.

**Title**

Development of an indicative forest strategy with specific reference to Co. Clare.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1996

**Source**

Irish Forestry

**Volume**

Vol. 53 Nos. 1 & 2

**Key Word**

Indicative Forest Strategy

tree productivity

forest management

Geographical Information Systems

information management

information technology

planning

**Abstract**

An Indicative Forest Strategy (IFS) was developed, with specific reference to Co. Clare, with the aim of providing a scientific basis to assist future policy decisions regarding potential locations of forestry, taking into account factors such as tree productivity and environmental resources. Development of the strategy was based on Geographical Information System (GIS) technology, thereby allowing the input of a large number of varied spatial information types linked to related database information. These can be subsequently displayed, analysed and queried in an interactive fashion, thereby providing answers to queries posed. Spatial and non-spatial information inputted included soil water resources, landscape, heritage, and potential European Union (EU) designated special areas of conservation. Such data and related database information were then subjected to a series of geoprocessing techniques to produce thematic datasets which included yield class. Windthrow Hazard Classification (WHC), site workability and water resource sensitivity. The resulting information was then displayed, manipulated and interrogated in an interactive fashion to answer more complex user defined queries relating to various potential locational scenarios.

**Page**

pp 69 - 77

**Location**

Coillte Research & Technology

**Address of author**

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**Number**

1503

**Author**

Whelan, Donal

**Title**

The inventory needs of private forest growers.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1996

**Source**

Irish Forestry

**Volume**

Vol. 53, Nos. 1 & 2

**Key Word**

private forestry

timber production

inventory

land use

forest management

**Abstract**

The objectives of the Irish Timber Growers Association are outlined and the importance of an inventory of private woodlands to achieving these objectives are outlined. An outline of the last inventory of private woodlands, carried out in 1971, is provided. Since then the area of coniferous high forest has increased fourfold. The likely age, proportion of scrub, and percentage of broadleaved forest and older coniferous woodland (20% and 10 respectively) is estimated. The reasons for carrying out a detailed inventory of private woodlands are outlined. These include the high proportion of broadleaved forest in private hands, the need to assess the potential of scrub for afforestation, and the highly productive nature of large areas of coniferous high forest which has been excluded from recent inventories. The author recommends a thorough inventory which would provide the following information: windthrow risk; environmental constraints on particular woodlands; details of financial rotations for the various species and yield classes; crop health details; and roading requirements

**Page**

pp 78 - 83

**Location**

Coillte Research & Technology

**Address of author**

Irish Timber Growers Association, 84 Merrion Square, Dublin 2

---

**Number**

1504

**Author**

Byrne, Kenneth A.

Farrell, Edward P,

**Title**

Long term reponse of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) to fertiliser on low level blanket peat in the west of Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No.1

**Key Word**

Sitka spruce

*Picea Sitchensis*

herbicides

diphenamid

oxyflourfen

napropamide

isoxaben  
oxadiazon  
weeds  
germination  
silviculture

**Abstract**

A nitrogen and phosphorous experiment on Sitka spruce (*Picea sitchensis* (Bong.) Carr.), which ran from 1967 to 1982, was reopened in 1992. Half the original experimental plots were left untreated, and the other half received lime and further applications of nitrogen and phosphorous in factorial combinations. Levels of foliar nitrogen and phosphorous have fallen since 1979, with nitrogen now deficient throughout. Despite this, the effect of applied nitrogen and phosphorous, coupled with estimates of top height, suggests that the lime has failed to achieve its long term objective of stimulating growth.

**Page**

pp 2 - 9

**Location**

Coillte Research & Technology

**Notes**

includes tables; bibliographical references

**Address of author**

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**Number**

1505

**Author**

O'Carroll, J.

O'Reilly, C.

**Title**

The effects of selected pre-emergence herbicide on the germination, survival, health and germinant morphology of Sitka spruce (*Picea sitchensis* (Bong.) Carr.)

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 1

**Key Word**

herbicides

diphenamid

nursery

seedlings

germination

**Abstract**

The effects of five pre-emergence herbicides, diphenamid, oxyfluorfen, napropamide, isoxaben and oxadiazon, on the germination of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) seeds over a 6 week period when sown under grit or soil were investigated. The main objective was to find a herbicide that could be used as an alternative to diphenamid, the principal pre-emergence herbicide used in Irish nurseries. The number of surviving seedlings was determined at the end of the test, 2 weeks later, after all germination was complete. The results under soil and grit were consistent, although, as expected, seeds germinated more slowly and final germination was lower under soil. Only the results from the grit are reported. Diphenamid and oxyfluorfen had little detrimental effect on the speed of germination and final (cumulative) germination of seeds, and the survival of germinants. Final germination (approximately 80%) and survival (approximately 90%) were almost the same as in the control. Morphological development and health scores, seedling height, root length and seedling dry weights also differed little from the control. Germination and survival were a little lower in those treated with napropamide

(74% and 80%) respectively), and the seedlings were healthy. Shoot growth, and to a greater extent, root growth, were however adversely affected by this treatment. Germinants in this treatment also had lower dry weights than in those from the control, diphenamdi and oxyflourfen treatments. Germination and all other variables were very poor in those treated with isoxaben and oxaidiazon. In all cases, the herbicides tested had no effect on mycorrhizal associations in germinants.

**Page**

pp 2 - 10

**Location**

Coillte Research & Technology

**Notes**

includes graphs, bibliographical references

**Address of author**

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**Number**

1506

**Author**

O'Carrol, Niall

**Title**

Irish forestry - an investment for porperity.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 1

**Key Word**

economics

industry

afforestation

investment

policy

land use

**Abstract**

Following centuries of deforestation, the eighteenth century saw the first move towards reforestation. This involved the earliest known state planting grant scheme, which was administered by a private organisations. The Land Acts from 1881, transferring land ownership from landlord to tenant, led to a further phase of deforestation. The current afforestation programme was begun in 1919. Planting was slow until the 1940s, when the Government set an annual planting target of approximately 10,000 ha. That was reached in 1959, but after 1964 there followed a gradual decline until funds form Brussels in the 1980s triggered an accelerating rate of planting, both state and private, in the 1980s and '90s. It exceeded 23,000 ha. in 1995. The expansion of planting in the 1950s is currently reflected in increasing harvest volumes. State investment in forestry, adjusted for inflation, was initially directly proportional to the planting programme but continued to increase up to the 1980s. The position since the establishment of Coillte Teoranta in 1989 has not been examined. Published valuations of the state forest vary within the range £600-£1,000 million.

**Page**

pp 11-19

**Location**

Coillte Research & Technology

**Notes**

Papeer presented to the Annual Symposium of the Society of Irish Foresters, May 1996; includes tables, graphs, bibliographical references

**Address of author**

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**Number**

1507

**Author**

Warner, Dick

**Title**

Conflicts in forestry - a changing culture.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54 No. 1.

**Key Word**

environment

afforestation

economics

tourism

species diversification

**Abstract**

The author argues that forestry development needs to be justified under economic, aesthetic and environmental considerations. One of the major causes of environmental problems associated with forestry is the planting of the wrong trees in the wrong place. Monoculture, the prevalence of exotic species, clearfell damage and water acidification all contribute to environmental damage. The author recommends radical species diversification and the use of better lands for planting through the expansion of on-farm forestry.

**Page**

pp 20 -23

**Location**

Coillte Research &amp; Technology

**Notes**

paper presented at the Annual Symposium of the Society of Irish Foresters, May 1996

**Address of author**

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**Number**

1508

**Author**

Miller, Hugh G.

**Title**

The professional forester - shaping the future.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 1

**Key Word**

forest policy  
environment  
conservation  
training  
education  
sustainable development  
multiple use  
recreation  
tourism

**Abstract**

The past decade has been one of rapid change in forest policies. There is growing acceptance that a wide range of individuals and interest groups (representing conservation, recreation, socio-economics etc.) are legitimate stakeholders in forestry along with the timber processors. These new demands came to a head at the United Nations Conference on Environment and Development (UNCED), and again in the 1993 Helsinki Conference, the conclusions of which are binding upon the European states, including the Republic of Ireland. In this environment, it is not the function of the professional forester to set policy, but rather to achieve the balance between all competing demands.

**Page**

pp 24 - 29

**Location**

Coillte Research & Technology

**Notes**

Paper presented at the Annual Symposium of the Society of Irish Foresters, May 1996; includes bibliographical references

**Address of author**

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**Number**

1509

**Author**

Lowery, Martin D.

**Title**

The forest industry beyond 2000.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Vol. 54, No. 1

**Key Word**

forestry development  
forestry policy  
forest industry  
timber processing  
genetics  
biotechnology  
environment  
sustainable development  
markets  
timber processing

**Abstract**

The author identifies the major topics which will dominate the development of forestry beyond the year 2000 as the national timber supply, sustainable development, and the application of discoveries in biotechnology. The potential sustainable timber supply could reach over 15 million cubic metres per annum which could support future developments in the timber processing industry such as mechanical paper-making and the establishment of a chemical pulpmill. MDF, OSB and other engineered wood products will continue to be significant. The

biggest change in the forestry industry will be the emergence of a large private forestry sector. The current fragmented nature of the industry is not conducive to long-term strategic thinking. While the issue of sustainability must be addressed, the author defends the record of plantation forestry and foresters must be willing to accept their role in educating the public. Irish forests must not be subject to environmental regulations which are inappropriate to local conditions. Developments in propagation technology will have a major impact on timber quality. Another major development will be the availability of clonal varieties of a number of important species. The third major technological development will be in the field of genetic engineering, and the use of transgenic genes is likely to be widespread.

**Page**

pp 30 -37

**Location**

Coillte Research & Development

**Notes**

Paper presented at the Annual Symposium of the Society of Irish Foresters, May 1996

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**Number**

1510

**Author**

Farrell, E.P.

**Title**

Managing our forests for the future.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 1

**Key Word**

forest management

forestry profession

environment

sustainable development

sustainable forest management

forestry policy

education

conservation

economics

**Abstract**

The Helsinki Process, established in 1990, developed criteria of sustainable forest management, and for each criteria, a series of indicators against which progress can be measured over time. The author identifies a number of problems with the concept of sustainable forest management. The ignore the natural tendency of soils in temperate regions toward acidification. The definitions of sustainable forestry only vaguely set out the purpose of the project and it is unclear whether the values which underline are derived from public opinion or science. While it must be made clear that forestry is an economic activity, foresters have a responsibility to show a clear commitment to the concept of sustainability. Most of our forests were established long before sustainability became an issue. Our management systems were developed to meet the primary objective of timber production. Questions relating to resource depletion, biodiversity and impacts of other ecosystems all have to be examined in the context of our forests, particularly those on thin, poorly buffered acid soils. Foresters should openly discuss the issue of sustainability and participated actively in public debate. Ultimately if the sort of forests which society requires are not produced, then foresters will be subject to ever-increasing controls by society. The author concludes that foresters owe it to their profession and to forestry to demonstrate that in managing our forests they can accommodate the primary goal of timber production with society's changing views on the role of the forest.

**Page**

pp 38-48

**Location**

Coillte Research & Technology

**Notes**

Paper presented at the Annual Symposium of the Society of Irish Foresters, May 1996; includes bibliographical references

**Address of author**

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**Number**

1511

**Author**

Hall, Valerie

**Title**

The history of Irish forests since the Ice Age.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 1

**Key Word**

history

deforestation

pollen analysis

agriculture

Ice Age

native woodlands

ancient woodlands

**Abstract**

The study of pollen grains recovered from boglands and lake muds helps us to understand the ancient Irish landscape, but provides little information on the ground flora of ancient woodlands. The first tree to invade Ireland after the Ice Age was the birch, followed by hazel, pine and, later, oak and elm. The invasion of warm-loving trees from Europe was restricted by the sea. Forests were steadily cleared during the later Neolithic, Bronze and Iron Ages, except on inaccessible ground. Soil conditions favoured growth of blanket peat on exhausted land rather than woodland regeneration. Evidence suggests that oaks and pine grew on some bogs from about 5,000 to 2,000 years ago. While many forests disappeared thousands of years ago, documentary evidence suggests that extensive oak forests survived around Killarney and the Lower Bann valley up to the seventeenth century. However, this is not supported by pollen evidence and it is likely that these areas were cleared of trees over a period of one thousand years.

**Page**

pp 49-54

**Location**

Coillte Research & Technology

**Notes**

Annual Augustine Henry Memorial Lecture, Royal Dublin Society, March 1995

**Address of author**

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**Number**

1512

**Author**

Smyth, William J.

**Title**

The greening of Ireland - tenant tree-planting in the eighteenth and nineteenth centuries.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 1

**Key Word**

history

tenant farming

afforestation

deforestation

forestry policy

planting

politics

economics

**Abstract**

In Ireland the conquests and plantations of the second half of the sixteenth and all of the seventeenth century saw the almost total eradication of the woodland cover both for economic and strategic purposes. Consequent to these changes, a cultural landscape or landlordism was created from the late seventeenth century. The planting of trees became a central symbol of this new civilization. A series of parliamentary acts between 1698 and 1791 progressively provided greater incentives to tenants to plant and eventually to claim ownership of the trees they planted. A Register of Trees for 13 counties provides detailed evidence of the scale and character of tenant tree-planting between c. 1769 and c. 1900. This paper seeks to locate tenant tree-planting in the wider economic and cultural contexts of the eighteenth and nineteenth centuries. It explores who the tenant tree-planters were, where they planted and what number and types of tree species they favoured. The greatest surge of tenant tree-planting was from the end of the eighteenth century to the period of the Great Famine. In this short phase, and enduring rural landscape of hedgerows, avenues, shelter belts and woodland plantations was created. For a variety of reasons, this expansive phase of tenant planting faded over the latter part of the nineteenth century, when the landlord system faced its last crisis and tenants were transformed into farm-proprietors.

**Page**

pp 55-72

**Location**

Coillte Research & Technology

**Notes**

Annual Augustine Henry Memorial Lecture, Royal Dublin Society, March 1996; includes maps, bibliographical references; available

**Address of author**

Department of Geography, University College Cork

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**Number**

1513

**Author**

Duffy, Brian L.

O'Halloran, John

Kelly, Thomas C.

Walsh, Paul M.

**Title**

The breeding bird community of Balrath Wood, Co. Meath, 1996: a preliminary investigation.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 2

**Key Word**

birds

woodland habitats

woodland fauna

**Abstract**

During the breeding season of 1996, the birds of Balrath Wood, Co. Meath were surveyed using the line transect technique. Twenty-four species were found to be present at the site, although four of these were unlikely to rely on the woodland directly. The bird communities of three separate habitats within the woodland, viz. woodland ridelines, completely wood areas and external woodland edges, were compared. Relative abundance values were calculated for each species for each habitat. The overall abundance estimates for each habitat varied between 15.25 and 19.67 birds/ha. Ridelines with a range of early successional stage vegetation were found to contain the greatest number of species and the highest densities of birds. Wooded areas and external woodland edges both contained the same number of species, although density was higher in the latter. A relatively low number of hole-nesting species were recorded, possibly due to a shortage of suitable nesting sites.

**Page**

pp 2-8

**Location**

Coillte Research & Technology

**Notes**

includes bibliographical references; available

**Address of author**

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**Number**

1514

**Author**

Byers, K.

Mayhead, G.J.

Lee, S.J.

**Title**

Family variation of biomass and root/shoot ratio in Sitka spruce (*Picea sitchensis* (Bong.) Carr.)

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 2

**Key Word**

Sitka spruce

*Picea sitchensis*

family variation

roots

root/shoot ration

spacing

planting

biomass

silviculture

**Abstract**

Twelve families of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) were grown at 1 m x 1 m spacing on a sheltered fertile site in weed-free conditions. After 3 growing seasons, the trees were lifted and growth parameters recorded. There was a wide range of growth rates between families and blocks and significant differences were demonstrated between dry root and dry shoot biomass, root spread and rooting depth. There were no significant differences between root/shoot ratios. Despite breeding for improved above-ground characteristics, there was no evidence of this compromising factors relating to tree stability.

**Page**

pp 9-13

**Location**

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**Notes**

includes tables, bibliographical references

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Tree Improvement Branch, Forest Research, Roslin, EH25 9SY, Scotland

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**Number**

1515

**Author**

Johnston, Mark

**Title**

The development of urban forestry in the Republic of Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 2

**Key Word**

urban forestry

forestry policy

environmental

forest management

local authorities

conservation

**Abstract**

The development of urban forestry in the Republic of Ireland is described, from its origins through to the early part of 1997. It begins by charting how the concept was initially promoted through a few pioneering projects and with the first Urban Forestry Conference, Dublin, 1991. Government recognition and support for the concept was evident from an early stage, most notably through the Forest Service's grant aid schemes for urban woodland. The Tree Council of Ireland has acted as a catalyst for action on urban forestry in a wide range of activities. The Environmental Conservation Organisation (ECO), one of its member organisations, has also played a leadership role in promoting the concept nationally and by building a network of interested organisations and individuals. The Second National Conference on Urban Forestry, held in Limerick, 1996, heralded the beginning of an urban forestry movement throughout Ireland and has stimulated interest in the development of comprehensive urban forest management systems by local authorities in the Republic.

**Page**

pp 14-32

**Location**

Coillte Research & Technology

**Notes**

includes bibliographical references; available

**Address of author**

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**Number**

1516

**Author**

Mulloy, Fergal

**Title**

Forestry and the environment - a sustainable prospect.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1997

**Source**

Irish Forestry

**Volume**

Vol. 54, No. 2

**Key Word**

sustainable forest management

sustainable development

environment

afforestation

deforestation

economics

biodiversity

United Nations

forest management

**Abstract**

The author traces the emergence of sustainable development as a significant political issues during the 1980s, particularly in regard to forests in developing countries. From about the early 1990s a new working definition of sustainable forest management began to be developed by the UN Food and Agriculture Organisation and other international bodies. However, there fundamental differences in outlook between developed and developing countries, who saw the problem in regional rather than global terms. These differences were partially reconciled in the 1996 UNCED definition of sustainability. These developments and the Helsinki Process (1996) have implications for the development of a programme of sustainable forest management in Ireland. This programme must recognise that the overriding goal of Irish forestry policy must be to re-establish the forest and associated ecosystems. However, the forest must be understood as an ecosystem within which a dynamic relationship and interdependence exists between flora and fauna and their environment, and human activity must be sensitive to this relationship. Resilience, reponse and recovery are central elements in a healthy ecosystems and these are supported by biodiversity. Forest operations should be assessed in terms of their impact on sustainability and this can be done through Life Cycle Analysis which identifies and evaluates the inputs and outputs of processes in terms of environmental costs. The change to using better land for planting has ecological as well as production and economic consequences and will enhance the process of sustainable forestry development in future years.

**Page**

pp 33-41

**Location**

Coillte Research & Development

**Notes**

Paper presented at the Annual Symposium of the Society of Irish Foresters, April 1997; includes bibliographical references; available

**Address of author**

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---

**Number**

1517

**Author**

Byrne, Kenneth A.

Farrell, Edward P.

**Title**

Long term response of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) to fertilisers on low level blanket peat in the west of Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 1

**Key Word**

Sitka spruce

*Picea sitchensis*

fertilisers

peatland forests

silviculture

**Abstract**

A nitrogen and phosphorous experiment on Sitka spruce (*Picea sitchensis* (Bong.) Carr.), which ran from 1967 to 1982, was reopened in 1992. Half of the original experimental plots were left untreated, and the other half received lime and further applications of nitrogen and phosphorous in factorial combinations. Levels of foliar nitrogen and phosphorous have fallen since 1978, with nitrogen now deficient throughout. Despite this, the effect of applied nitrogen and phosphorous on their respective foliar concentrations is still in evidence. Foliar concentrations of other nutrients, except sulphur, are adequate. The decline in the foliar concentration of nitrogen and phosphorous, coupled with estimates of top height, suggests that the lime has failed to achieve its long term objective of stimulating growth.

**Page**

pp 2-9

**Location**

Coillte Research & Technology

**Notes**

includes tables, bibliographical references; available

**Address of author**

Forest Ecosystem Research Group, Department of Environmental Resource Management, Faculty of Agriculture, University College Dublin, Belfield, Dublin 4.

---

**Number**

1518

**Author**

Gilmor, Desmond A.

**Title**

Trends and spatial patterns in private afforestation in the Republic of Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 1

**Key Word**

private forestry

afforestation

forestry incentives

investment

land use

planting

**Abstract**

Against a background of minimal activity, the huge growth in private afforestation in the Republic of Ireland has been dramatic. This trend is defined and set in the context of European Union policy and related national forestry incentives, but other influences are also involved. These are distinct spatial patterns in the amount and characteristics of private planting. These are mapped on a county basis and discussed with reference to: the extent of afforestation and its role in land use change; comparisons with the public sector; the ownership of private afforestation; and the type and size of tracts being planted. Differences between east and west are evident. These include a greater volume of private planting activity in the west, together with the greater use of enclosed land and the development of large tracts of forestry. The patterns are the outcome of many complex influences, but land type is of primary importance. In the major expansion of private afforestation which is projected, greater attention should be given to the spatial dimension.

**Page**

pp 10-25

**Location**

Coillte Research & Development

**Notes**

includes maps, graphs, tables, bibliographical references; available

**Address of author**

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---

**Number**

1519

**Author**

Lally, M.

O'Reilly, C.

**Title**

Effect of grit grade and grit source on the germination, early morphology and health of Sitka spruce (*Picea sitchensis* (Bong.) Carr.)

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 1

**Key Word**

Sitka spruce

*Picea sitchensis*

germination

seed cover

grit

germination

pH values

silviculture

**Abstract**

The impact of grit grade and source on the seed germination, early morphology and health of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) germinants and on soil pH was investigated in a greenhouse trial. Seed germination, germinant morphology and health were best in the coarse (2.0 - 6.0 mm) grits, and grit source had no effect. Germination percentage, germinant size and number of healthy germinants were lowest in the fine (0.2 - 2.0 mm) grits, and there was significant variation among grit sources. The pH of the soil was increased in three grit sources within this grade, and in one by nearly two pH units. Results for the mixed (0.2-6.0 mm) grits were closer to those obtained for the coarse grits for all variables except soil pH, but grit source effects were significant. The pH values for this grade were almost identical to those obtained for the fine grits.

**Page**

pp 26-36

**Location**

Coillte Research & Technology

**Notes**

includes tables, graphs, bibliographical references

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Coillte Research and Development, Newtownmountkennedy, Co. Wicklow

Department of Crop Science, Horticulture and Forestry, Faculty of Agriculture, University College Dublin, Belfield, Dublin 4.

---

**Number**

1520

**Author**

Johnston, Mark

**Title**

The development of urban forestry in Northern Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 1

**Key Word**

urban forestry

Northern Ireland

environment

politics

urban development

**Abstract**

Urban forestry in Northern Ireland has made excellent progress since the concept was given government recognition in 1990. This progress has been achieved against a background of severe economic difficulties exacerbated by political instability and widespread civil unrest. Despite an erratic and low level of funding, the Forest of Belfast project has developed as a model for a planned, systematic and integrated approach to urban tree management which could be replicated by other public and voluntary sector organisations outside the Greater Belfast area. With the prospect of an end to 'the Troubles', there could soon be an opportunity for urban forestry to make a major contribution to the regeneration of Northern Ireland's towns and cities.

**Page**

pp 37-58

**Location**

Coillte Research & Development

**Notes**

includes bibliographical references

**Address of author**

School of Applied Biological and Chemical Sciences, University of Ulster, Coleraine, BT52 1SA

---

**Number**

1521

**Author**

Galvin, Brian

**Title**

An overview of twentieth century Irish forestry and forest products literature.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 1

**Key Word**

literature

bibliography

**Abstract**

The development of Coillte's bibliography of twentieth century Irish forestry and forest products literature is briefly outlined. An overview of Irish forestry literature, briefly describing its development during the time covered by the bibliography, is provided. A survey of the literature recorded notes the volume of work produced on each of the major subject areas, and compares the extent to which a number of topics are covered in this literature. The report concludes with a brief account of recent developments in electronic publishing and forestry related literature.

**Page**

pp 59-67

**Location**

Coillte Research &amp; Technology

---

**Number**

1522

**Author**

O'Halloran, John

Walsh, Paul M.

Giller, Paul S.

Kelly, Thomas C.

Duffy, Brian

**Title**

An Assessment of avain biodiversity and opportunities for enhancement in Ireland's forests: preliminary results.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

biodiversity

wildlife

birds  
forest habitat  
animals  
goldcrest  
environment  
ecology

**Abstract**

Forest expansion in Ireland has led to concern for the characteristic plant and animal communities associated with the planted land. If carefully planned, however, forestry may provide opportunities for conservation and enhancement of biodiversity. This study sets out to provide systematic data on bird assemblages in Irish plantation forests, and to suggest ways in which the biodiversity, as represented by birdlife, might be enhanced. Preliminary data are presented on the general bird assemblages of 'mature' (pole-state) forests in southwest Ireland during spring/summer, autumn and winter 1996/97, and on bird/habitat relationships. A total of 38 bird species was recorded within the 20 forest compartments studied, with goldcrest (*Regulus regulus*) being the most abundant and widespread. Some species showed marked seasonal variation in forest usage. Habitat factors which showed a positive relationship to bird species richness and/or bird density included, on varying scales, the number of broadleaf species present, proximity to the forest edge, and the amount of undergrowth. Some bird species also showed evidence of association with particular species of conifer.

**Page**

pp 2 - 14

**Location**

Coillte Research & Technology

**Notes**

includes tables, graphs, bibliographical references; available

**Address of author**

Department of Zoology and Animal Ecology, University College Cork

---

**Number**

1523

**Author**

Van den Beuken, R.

Aherne, J.

Farrell, E.P.

**Title**

Deposition of ammonia to a Norway spruce (*Picea abies* (L.) Karst.) stand at Ballyhooly, Co. Cork.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

fertiliser

ammonia

dry deposition

canopy uptake

critical loads

forest ecosystems

**Abstract**

Emission of ammonia from manure spreading influences the nitrogen input and acidity of forest ecosystems in agricultural areas. This is mainly due to the interaction between ammonia in ambient air and the forest canopy. The foliage canopy effect can be considered as the difference between precipitation and throughfall fluxes, i.e. net throughfall, and is the result of leaching, dry deposition, uptake and emission. Net throughfall, calculated after a heavy shower preceded by a relatively dry period results in total wash-off, which is equivalent to total

deposition when no canopy exchange occurs. Precipitation and forest throughfall fluxes in an agricultural area (Ballyhooly, Co. Cork) have been monitored since 1989. This provides information on dry deposition of ammonia in relation to throughfall composition. Net throughfall fluxes for ammonia at Ballyhooly show a strong seasonal deposition of ammonia due to manure spreading. Negative net throughfall fluxes during spring indicate an uptake effect. Throughfall fluxes for certain ions can be used as an estimate of total deposition. Due to canopy uptake, however, total deposition of ammonia at Ballyhooly is higher than the throughfall flux

**Page**

pp 15-20

**Location**

Coillte Research & Development

**Notes**

includes graphs, bibliographical references; available

**Address of author**

Forest Ecosystem Research Group, Department of Environmental Resource Management, Faculty of Agriculture, University College Dublin, Belfield, Dublin 4

---

**Number**

1524

**Author**

Birkinshaw, C.

**Title**

Chemically modified wood - a review with consideration of the opportunities for application to Irish timber.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

timber processing

forest products

acetylation

chemical modification

durability

anti-shrink efficiency

**Abstract**

Chemical modification offers the opportunity to improve the dimensional stability and biological durability of wood. In the modification process, reagents are introduced which react permanently with the structural polymers cellulose and lignin, reducing their hygroscopicity and attractiveness as a fungal food source. Acetylation, in which the wood is reacted with acetic anhydride, was one of the earliest approaches used, and remains the most promising technique, with at least one European project now at the pilot plant stage. Although the reactive materials and the process require careful handling, the treated material presents none of the toxicity hazards associated with wood preserved by conventional means. Acetylation may give sufficient property improvement to allow fast grown softwoods to be used in higher value joinery applications, thus increasing the scope for utilisation of native materials.

**Page**

pp 21-34

**Location**

Coillte Research & Technology

**Notes**

includes graphs, ill., diagrams of chemical reactions, bibliographical references; available

**Address of author**

Department of Materials Science and Technology, University of Limerick, Plassey Technological Park, Limerick

---

**Number**

1525

**Author**

Bulfin, M.

Radford, T.

**Title**

Effect of early formative shaping newly planted broadleaves - Part 1: Quality.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

Fraxinus excelsior L.

Fagus sylvatica L.

Prunus avium L.

Quercus robur L.

Castanea sativa Mill

Q. petraea (Mattauschka) Leiblein

Acer pseudoplatanus L.

Juglans regia L.

pendunculate oak

ash

sessile oak

sweet chestnut

sycamore

common walnut

silviculture

broadleaves

leading shoot quality

formative shaping

quality measurement

apical training

early management

**Abstract**

Formative shaping for quality was applied to 1,380 trees, commencing during the second growing season after planting. A similar number was kept as a control. The purpose of this trial was to assess the effect, if any, of formative shaping on early stem quality, height and diameter growth. Over A 4-year period, trees were assessed for quality annually after leaf-fall, using a standardised ranking system. This paper (Part 1) describes the effect of formative shaping on the quality of eight species included in the trial: common ash (*Fraxinus excelsior* L.); common beech (*Fagus sylvatica* L.); cherry (*Prunus avium* L.) pendunculate oak (*Quercus robur* L.); sweet chestnut (*Castanea sativa* Mill.); sessile oak (*Q. petraea* (Mattauschka) Leiblein); sycamore (*Acer pseudoplatanus* L.); and common walnut (*Juglans regia* L.) Overall, quality among trees of all eight species was improved by formative shaping.

**Page**

pp 35-51

**Location**

Coillte Research &amp; Technology

**Notes**

includes tables, ills. graphs, bibliographical references; available

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1526

**Author**Bulfin, M.  
Radford T.**Title**

Effect of early formative shaping on newly planted broadleaves - Part 2: Height and diameter growth.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

common ash  
common beech  
*Fagus sylvatica* L.  
cherry  
*Prunus avium* L.  
pendunculate oak  
*Quercus robur* L.  
sweet chestnut  
*Castanea sativa* Mill.  
sessile oak  
*Quercus petraea*  
Mattauschka) Leiblein  
*Fraxinus excelsior* L.  
sycamore  
*Juglans regia* L.  
*Acer pseudoplatanus* L.  
common walnut  
broadleaves  
leading shoot quality  
formative shaping  
height growth  
diameter growth  
apical training  
early management  
silviculture

**Abstract**

Formative shaping for quality was applied to 1,389 trees, commencing during the second growing season after planting. A similar number was kept as a control. The purpose of this trial was to assess the effect, if any, of formative shaping on early stem quality. Over a 4-year period, height and diameter growth were also monitored, to assess the effect, if any, of formative shaping on these parameters. This paper (Part 2) describes the effect of formative shaping on the height and diameter growth species included in the trial: common ash (*Fraxinus excelsior* L.); common beech (*Fagus sylvatica* L.); cherry (*Prunus avium* L.) pendunculate oak (*Quercus robur* L.); sweet chestnut (*Castanea sativa* Mill.); sessile oak (*Q. petraea* (Mattauschka) Leiblein); sycamore (*Acer pseudoplatanus* L.); and common walnut (*Juglans regia* L.). Formative shaping had a significant positive effect on the height growth of ash, sweet chestnut and sycamore and walnut. The negative effect on diameter is regarded from a silvicultural perspective as being of negligible importance. Formative shaping should commence as early as possible in the rotation, ideally where trees are 1.0 - 1.6 m in heights.

**Page**

pp 52-61

**Location**

Coillte Research & Technology

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1527

**Author**

McCormack,, Art

O'Leary, Thomas N.

Gardiner, John J.

**Title**

Landscape planning and design for Irish forestry: approach and model proposed.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

forest landscape planning

forest landscape design

forestry strategy

landscape assessment

landscape aesthetic character enhancement potential

landscape values

environment

**Abstract**

The afforestation programme in Ireland over the next 30 years is aimed at increasing forest cover from approximately 9% to 17%. Given the frequency of adverse impacts upon the landscape arising from forestry, particularly large-scale commercial plantations, measures such as planning and design guidelines and strategies which ensure positive results and avoidance of damage, are urgently required. Focusing upon landscape issues, this paper outlines the complexity of forestry problems in Ireland identifying the need for an approach, emphasising the importance of landscape assessment based upon landscape character typology. Arising from this, a 2-part model is proposed, the first part concerning guidelines developed for nationally generic landscape types, and the second concerning strategies for specific landscape character areas applied to counties. The three main components of this model are examined: forest capabilities; landscape aesthetic character enhancement potential; and landscape values with their sensitivities. The first two components provide the basis for a proactive approach to forestry, and the third introduces the constraining or qualifying influences. As far as landscape is concerned, forests can be a major force in landscape enhancement and a medium for the aesthetic experience of nature. It is very important to rise to the challenge by developing forestry in Ireland which is decisively proactive.

**Page**

pp 62-86

**Location**

Coillte Research & Development

**Notes**

includes diagrams of design models, tables, bibliographical references; available

**Address of author**

University College Dublin, Belfield, Dublin 4

---

**Number**

1528

**Author**

Forrest, Mary

**Title**

Tree collections in Ireland.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

exotic species

introduced species

forest history

arboreta

nursery

garden design

landscape gardens

**Abstract**

In contrast to the 33 species which occur naturally, several hundred exotic or introduced species are represented in Ireland. From the 1600s, tree species from the temperate regions of the world have been cultivated in Irish parks and demesnes. In the 18th and 19th century, plant collections were established by private owners who were keen to plant recently introduced species. In this century, tree collections were established by private individuals, the State and by local authorities. Trees were planted in arboreta, such as the John F. Kennedy Arboretum, Co. Wexford, or in informal Robinsonian style gardens, such as Mount Usher Gardens in Co. Wicklow. Some 35 collections are extant on this island. Collections such as those at Powerscourt, Co. Wicklow, Birr Castle, Co. Offaly, and Castlewellan in Co. Down, are of international repute. While the tree collection are important tourist destinations, attracting some 700,000 visitors annually, they also represent a resource for the nursery industry and for genetic and taxonomic studies, and are an integral part of garden design.

**Page**

pp 87-92

**Location**

Coillte Research &amp; Technology

**Notes**

includes bibliographical references

**Address of author**

Department of Crop Science, Agriculture and Forestry, University College Dublin, Belfield, Dublin 4

**Number**

1529

**Author**

Bothwell, Karen

**Title**The potential of western red cedar (*Thuja plicata* D. Don) in Ireland.**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

Western red cedar

*Thuja plicata* D. Don

nurse species

conifers

afforestation

**Abstract**

Western red cedar (*Thuja plicata* D. Don.) is a species with enormous potential in Ireland. It is highly suited to the island's mild wet climate and the heavy wet soils currently available for forestry development. The species is capable of high growth rates and productivity, and is noted for its high quality timber which possesses several unique wood properties. It is a shade tolerant species suitable for underplanting and for use in mixtures with other conifers, notably Sitka spruce (*Picea sitchensis* (Bong.) Carr.) and Douglas fir (*Pseudotsuga menziesii* (Mirb.) Franco), and also as a nurse species in broadleaf plantations. While its growth rate does not compete with Sitka spruce on poorer site types, especially at higher elevations, western red cedar is capable of producing a high yield class crop on lower, more sheltered drumlin soils and on better quality lowland soils. While more detailed research is required, the favourable characteristics of western red cedar prompt its inclusion as a major species in future planting programmes, particularly in light of the current emphasis on diversification in Irish forestry.

**Page**

pp 93-104

**Location**

Coillte Research & Development

**Notes**

includes bibliographical references; available

**Address of author**

Department of Forest Sciences, Faculty of Forestry, University of British Columbia, Vancouver, BC, Canada

---

**Number**

1530

**Author**

Áine Ní Dhubháin

**Title**

The influence of wind on forestry in Ireland.

**Publisher**

Society of Irish Forestry

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

windblow

windsnap

pollination

climate

weather

silviculture

**Abstract**

Wind is a major abiotic factor influencing Irish forestry. The most obvious manifestations of the impact of wind are windblow and windsnap. Every year, an average of 85,000 cubic metres of timber are blown over. Wind can

influence trees in other ways. It can alter some physiological processes within the tree, and contribute to the formation of reaction wood. Not all impacts of wind upon trees are harmful. Air movement plays a vital role in the reproductive process of many species, spreading seed and pollen. This paper outlines the influence of wind upon forestry in Ireland. It also attempts to predict the future impacts of wind in light of both probable climate changes and changes in afforestation trends and practices.

**Page**

pp 105-113

**Location**

Coillte Research & Technology

**Notes**

Paper presented at the Annual Symposium of the Society of Irish Foresters entitled 'The Impact of Climate Change on Tree Growth', Tullamore, Co. Offaly, 1 May 1998; includes tables, bibliographical references; available

**Address of author**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

---

**Number**

1531

**Author**

Gillespie, John

**Title**

Forestry in Ireland.

**Publisher**

Institute of European Affairs

**Place**

Dublin

**Date**

1995

**Source**

What price CAP. Issues and challenges facing agricultural and rural policy in the European Union.

**Key Word**

land use

Common Agricultural Policy

CAP

agriculture

timber processing

forest products

forestry policy

European Union

**Abstract**

This paper describes the development of the forestry sector in Ireland in recent times and examines the prospects for future development. Particular attention is paid to three characteristics of Irish forestry that are unique in the context of the European Union, i.e. that Ireland has: the lowest proportion of land area under forest, less than 8% in 1994; the highest rate of afforestation, some 0.3% of the total land area of the country was afforested in 1991; and the state has played the predominant role in developing Irish forestry. The changes in the Common Agricultural Policy and the reform of the Structural Funds have aided the expansion of the private forestry sector by presenting it as a profitable alternative use for agricultural land. The publication and impact of the Government's Forestry Operational Programme (1989-1993) is examined. The changes in the wood processing industry in recent years are outlined and future developments, including the Medite and Louisiana Pacific plants, are noted. Future developments of forestry in Ireland will have positive economic, employment, recreational and social benefits.

**Page**

pp 51-57

**Location**

UCD library

**ISBN**

187410915X

**Notes**

includes tables; available

**Address of author**

Department of Agriculture Food and Forestry, Kildare Street, Dublin 2

---

**Number**

1532

**Author**

Heritage Council

**Title**

Policies and priorities for the national heritage: forestry and the national heritage.

**Publisher**

Heritage Council

**Place**

Kilkenny

**Series**

The Heritage Council of Ireland Series

**Date**

1999

**Key Word**

heritage

environment

forestry policy

afforestation

land use

woodland habitat

sustainable forest management

social impact

**Abstract**

Forestry has been identified by the Heritage Council as one of the activities which has great potential to impact on Ireland's heritage. There is an urgent need to integrate heritage issues at the strategic planning level of the forestry policy. This document recommends how effective measures and structures can put in place to deal with heritage concerns. These recommendations are: ensure that tree species and soil suitability are matched at local, site specific level; plant an equal number of broadleaved and conifer species, and that the planting of broadleaves species becomes a strategic policy target for Coillte; the use of local seeds should be encouraged; greater forest stand diversity should be encouraged as part of promoting sustainable forest management; that planting policy should carefully consider the negative impact on freshwater systems and archaeological heritage; encourage local participation in all decisions relating to forest management.

**Page**

64pp

**Location**

UCD library

**Notes**

Cover title: 'Policy paper on forestry and the national heritage.' Text in English and Irish

---

**Number**

1533

**Author**

Divilly, Padraic

**Title**

Forestry or farmland: a dilemma for land use and management in Ireland

**Publisher**

University College Dublin. Department of Geography

**Place**

Dublin

**Series**

LLASS Working Paper No. 16

**Date**

1995

**Source**

Forestry or farmland: a dilemma for land use and management in Ireland. (Edited by Anne Buttimer, Gerry O'Reilly)

**Key Word**

land use  
agriculture  
social impact  
economics  
farm forestry  
private forestry  
incentives  
environment

**Abstract**

The author outlines the various Government and EU incentives for private forestry which have been introduced in recent years but points to the dilemma caused by Government policy which favours non-farmers and corporate investors. This has distorted the market for land at the expense of farmers. The recent Irish Farmers Association document, Land Use Policy (1995) recommends that incentive packages should be rebalanced in favour of farm forestry, with annual premiums targeted to aid people who live in rural communities. The payment of premiums should be changed to encourage more planting of broadleaves. Guidelines concerning the effect of forestry on rural landscapes are also set out in the IFA document.

**Page**

pp 1-4

**Location**

UCD library

**Address of author**

Farm Forestry Section, Irish Farmers Association

---

**Number**

1534

**Author**

Carey, Michael

**Title**

Forestry or farmland - land use and management.

**Publisher**

University College Dublin. Department of Geography

**Place**

Dublin

**Series**

LLASS Working Paper No. 16

**Date**

1995

**Source**

Forestry or farmland: a dilemma for land use and management in Ireland. (Edited by Anne Buttimer, Gerry O'Reilly)

**Key Word**

forestry policy  
land use  
environment  
agriculture  
European Union  
farm forestry  
incentives

**Abstract**

The development of the Irish reforestation programme in the 20th century is summarised and the reasons for the confinement of plantation to poorer land are explained. The State forestry estate, managed by Coillte, has a

number of unique characteristics including the fragmented nature of the estate, its high level of productivity, its relative youth, its rate of expansion, its relative health, and the environmentally responsible way in which it is managed. The potential for future growth of this estate will be determined by the market for forest products in Europe, agricultural reform, the availability of good land, and social attitudes. The author argues that there is no conflict over land use between forestry and agriculture as there is more than enough land in Ireland to accommodate growth in both sectors. However, current use is distorted by EU payment support for agricultural products. The size of the forest estate in 2015 is predicted to be 1 million ha representing a landscape cover of 14.7%, with a sustainable production of 10 million cubic metres per annum.

**Page**

pp 5-14

**Location**

UCD library

**Address of author**

Coillte Teo, Dublin 2

---

**Number**

1535

**Author**

O'Reilly, Gerry

**Title**

Forestry or farmland in Slieveardagh.

**Publisher**

University College Dublin. Department of Agriculture

**Place**

Dublin

**Series**

LLASS Working Paper No. 16

**Date**

1995

**Source**

Forestry or farmland: a dilemma for land use and management in Ireland. (Edited by Anne Buttimer, Gerry O'Reilly)

**Key Word**

land use

agriculture

forestry policy

environment

peatlands

**Abstract**

The development of state forestry in Slieveardagh, Co. Tipperary is outlined. The forest at Urlingford and Littleton/Kilcooley are examined in terms of land use type, with conifer high forest representing by far the greatest proportion the land use. The type of land made for planting between the 1940s and the early 1990s was mainly cutaway bog. While generally afforestation has been seen as a positive development locally, good land is not being made available for afforestation in Slieveardagh. The role of agricultural co-ops in assisting the development of farm forestry is examined. The author recommends that greater access to forests by the public should be facilitated in order to encourage recreational activity and a more positive attitude to forestry general.

**Page**

pp 22-23

**Location**

UCD library

**Address of author**

Department of Geography, University College Dublin, Belfield, Dublin 4

---

**Number**

1536

**Author**

Joyce, P.M.  
Huss, J.  
McCarthy, R.  
Pfeifer, A.  
Hendrick, E.

**Title**

Growing broadleaves: silvicultural guidelines for ash, sycamore, wild cherry, beech and oak in Ireland.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1998

**Volume**

silviculture-; handbooks-; soil-types; site-requirements; broadleaves-; forest-trees; forest-plantations;  
afforestation-; cherries-

OD: Fraxinus-excelsior; Acer-pseudoplatanus; Prunus-avium; Fagus-sylvatica; Quercus-robur; Quercus-petraea

**Key Word**

silviculture  
soil types  
site requirements  
broadleaves  
plantations  
afforestation  
cherries  
Fraxinus excelsior  
Acerpseudoplatanus  
Prunus avium  
Quercus robur  
Quercus petraea

**Abstract**

This book is a complete guide to growing the native and naturalized broadleaved species of Ireland: ash (Fraxinus excelsior), sycamore (Acer pseudoplatanus), wild cherry (Prunus avium), beech (Fagus sylvatica) and oak (Quercus robur and Q. petraea). There are 8 chapters: (1) Introduction - historical background, policies and incentives for afforestation, and benefits; (2) Silvicultural strategies and procedures - national strategy, general silvicultural strategies for broadleaves, and silvicultural procedures; (3) Soils - introduction, summary of optimum site/soil conditions for broadleaved species, soil formation and distribution in Ireland, and the major soils; (4) Ash; (5) Sycamore; (6) Wild cherry; (7) Beech; and (8) Oak. The chapters which deal with the species are all arranged as follows: summary; natural distribution and occurrence; provenance; ecological demands & characteristics of the species; production goals; stand establishment; formative shaping; tending; pruning; thinning; and underplanting

**Page**

x, 144pp

**Location**

UCD library

**ISBN**

0952393891

**Notes**

includes glossary, bibliographical references, index, photos, graphs, tables, ills.; appendix (giving details of existing stands of the 5 species - forests/properties, compartments/subcompartments, species, planting year, stocking, top height, dbh (diameter at breast height), altitude and soil type;available

**Address of author**

Maurice Kennedy Research Centre, University College, Dublin, Irish Republic.  
Institute of Silviculture, University of Freiburg  
Coillte Research & Development, Newtownmountkennedy, Co. Wicklow  
COFORD, University College Dublin, Belfield, Dublin 4

---

**Number**

1537

**Author**

Heritage Council

**Title**

Archaeology and forestry in Ireland.

**Publisher**

Heritage Council

**Place**

Kilkenny

**Date**

1998

**Key Word**

archaeology

heritage

culture

history

environment

environmental impact studies

afforestation

archaeological sites

legislation

forest management

**Abstract**

The distribution of afforestation in Ireland has increased the threat to archaeological sites and monuments, but the extent of the potential impact is not yet known. There are three inter-related states in protectin archaeological sites from afforestation and the activities associated with it: 1) identifying sites and monuments, 2) enforcing their legal protection, and ensuring adherence to the Forest service guidelines on archaeology is minimised and sustaining management plans for the forest environment. An assessment of a sample of archaeological sites is required to assess the extent of damage. The statutory protectin conferred on archaeological sites is outlined. Education of forestry professionals and consultation with archaeologists is an essential part of any site protection programme. An inventory of sites in forestry in required, as is a reassessment of the standards of archaeological impact assessment. The input of experience archaeologists, in co-operation with the Forest Service and local authorities would help to mimimise the adverse impact of afforestation on archeological sites, and would ensure implementation of existing legislation. Clear identitification and marking of sites in forest areas is a necessity. A policy of management for archaeological sites in forestry is required to facilitate participation in the develoment of land-use and landscape policies.

**Page**

110pp

**Location**

UCD library

**ISBN**

13930808

**Notes**

includes photos., ills., graphs, bibliographical references; available

**Address of author**

The Heritage Council, Kilkenny

**Number**

1538

**Author**

Andersohn, Cornelia

**Title**

Phosphate cycles in energy crop systems with emphasis on the availability of different phosphate fractions in the soil.

**Publisher**

Kluwer Academic Publishers

**Place**

Amsterdam

**Date**

1996

**Source**

Plant and Soil

**Volume**

Vol. 184

**Key Word**

ash

biomass

biomass energy

Miscanthus sinensis

P cycle

P fractionalism

Salix viminalis

Salix x dasyclados

soil chemistry

**Abstract**

The phosphate cycle of a C4-grass species (*Miscanthus sinensis* "Giganteus") and two willow species (*Salix viminalis* "683" and *Salix x dasyclados*) were investigated on two different soil types (Gley and Grey Brown Podzolic) in Ireland. Above- and below-ground biomass and soil samples were collected once at each site during the most active growing season in May, June and July respectively. Samples were analysed for total P colorimetrically, for Ph, total N, and a P fractionation was undertaken to detect the different availability of the total P pools for plant uptake. Models were drawn to show the P distribution within the crop system, the yearly P fluxes and P export through harvest of the energy crops. Digestion of the only "inorganic" resin fraction (Dowex 1 x 8-50, NaHCO<sub>3</sub>) gave a considerable organic P fraction, which had not been mentioned before in the literature. Outputs of P from harvest were 4% to 20.5% of the cycled P fraction respectively 58-265 kg ha<sup>-1</sup>.

**Page**

pp 11-21

**Location**

UCD library

**Notes**

includes ill., tables, graphs, bibliographical references; available

**Address of author**

Technische Universtat Berline, Institut fur Landschaftsentwicklung, Albrecht-Thaer-Weg, D-14195 Berlin, Germany

---

**Number**

1539

**Author**

Heneghan, Liam

Bolger, Thomas

**Title**

Soil microarthropod contribution to forest ecosystem processes: the importance of observational scale.

**Publisher**

Kluwer Academic Publishers

**Place**

Amsterdam

**Date**

1998

**Source**

Plant and Soil

**Volume**

Vol. 205, No 2.

**Key Word**

microarthropods

Collembola

ecosystem hierarchy

oribatid mites  
functional redundancy  
spatial heterogeneity  
forest ecosystems  
ecology

**Abstract**

Investigations of the role of microarthropods (Acari and Collembola) in organic matter decompositions and nutrient cycling have shown that they may contribute to primary productivity in nutrient poor soils. The potential of microarthropods to affect other ecosystem properties, such as above ground plant diversity or succession, lags somewhat. In this contribution the authors demonstrate: (1) that the effect of the mobilization of nutrients promoted by microarthropods must be measured at the microhabitat scale appropriate to the scale of the faunal activity, and microarthropods must be measured at the microhabitat scale appropriate to the scale of the faunal activity, and (2) that small changes in the structure of microarthropod assemblages can have significant effects on the local mobilization of nutrients. In the first of two experiments the authors measured the nutrients leaching from field mesocosms containing litter and mineral soil, with and without fauna. After eight months, the C:N ratios of the litter differed significantly indicating that the fauna were effective in altering the decomposition rate. However, the patterns of release over time and the concentration of the measured nutrients differed little between the two sets of mesocosms. In a second experiment microarthropod assemblages, which differed only slightly, were introduced into laboratory microcosms and the nutrient fluxes were measured over a ten week period. Significant differences were detected in the concentration of nitrogen, K and Mg, leached and in CO<sub>2</sub> evolved. The authors suggest that when the potential influence of microarthropods on ecosystems properties is being assessed, specific knowledge of the relevant details of interactions at the smallest scale must be considered. These details can be incorporated or dismissed when interactions on the next level of the ecological hierarchy are examined. Using such analysis they suggest that the creation of soil nutrient hot-spots by microarthropods may have implications for maintaining plant species of lowered competitive ability in a given system.

**Page**

pp 113-124

**Location**

UCD library

**Notes**

includes graphs, tables, bibliographical references; available

**Address of author**

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Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1540

**Author**

Mitchell, Fraser J.G.

**Title**

The investigation of long-term successions in temperate woodland using fine spatial resolution pollen analysis.

**Publisher**

CAB International

**Place**

Wallingford, Oxon

**Date**

1998

**Source**

The ecological history of European forests. (edited by K. Kirby and C. Watkins)

**Key Word**

long-term successions  
temperate woodlands  
pollen analysis  
pollen profiles  
oak woodlands  
climate change  
human impact

**Abstract**

Traditional approaches to woodland succession provide data for one or two generations of the dominant canopy trees. The restricted temporal scale of such data limits their value in the elucidation of the long-term dynamics of woodland. Pollen-analysis from small sites within woodland has been demonstrated to reconstruct vegetation on a local spatial scale. The application of pollen profiles generates reconstruction of dynamics at the woodland stand scale for thousands of years. Such data can be used to test existing successional models over long time periods. The impacts of climate change and human interaction can also be traced over long time-scales. These themes will be illustrated using data from the Killarney oak woods, Bialowieza Forest, East Poland and the Ringarooma temperate rainforest, Tasmania.

**Page**

pp 213-223

**Location**

UCD library

**ISBN**

0851992560

**Notes**

includes diagrams, bibliographical references; source comprises selected papers given at an international conference held at the University of Nottingham in September 1996; available

**Address of author**

Department of Botany, Trinity College, Dublin 2

---

**Number**

1541

**Author**

Dolan, Sylvia

Bolger, Thomas

**Title**

Differences in the chemistry of leachates from forest and grassland soil associated with the addition of pig slurry - a lysimeter experiment.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1997

**Source**

Biology and Environment: Proceedings of the Royal Irish Academy

**Volume**

Vol. 97B, No. 3

**Key Word**

chemical composition

leachate

pig slurry

manure

ammonium

nitrogen

potassium

minerals

acid soil

pH

**Abstract**

A lysimeter study was carried out to compare the effects on the chemical compositions of the leachate of adding pig slurry to forest and grassland soil. The results suggest that the soil pH and the extent to which available ammonium was nitrified determined which cation was leached. Nitrification operated efficiently in grassland soil and the loss of nitrate was balanced by the loss of base cations. However, in forest soil less of the nitrogen was lost as nitrate and the cations leached included large proportions of ammonium and potassium rather than, for example, magnesium and aluminium. Pig slurry contains relatively high concentrations of heavy metals and the amount of zinc leached from the acid forest soil, to which pig slurry had been applied, were significantly

higher than those from grassland soil, which had received the same amount of slurry but had a higher pH.

**Page**

pp 173-183

**Location**

UCD library

**Notes**

includes graphs, bibliographical references

**Address of author**

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---

**Number**

1542

**Author**

Al-Saffar, Zuhair Y.

Aldrich, John C.

**Title**

Factors influencing the survival of *Pontania proxima* that attack crack will *Salix fragilis*.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1997

**Source**

Biology and Environment: Proceedings of the Royal Irish Academy

**Volume**

Vol. 97B, No. 3

**Key Word**

*Pontania proxima*

crack willow

*Salix fragilis*

insects

sawfly

weevils

parasites

forest ecology

entomology

**Abstract**

This study investigates the factors affecting mortality in the sawfly *Pontania proxima* (Tenthredinidae: Hymenoptera) that forms galls on the crack willow *Salix fragilis* inhabiting a site near the Royal Canal, north Dublin, Ireland. The ectoparasitoids *Pnigalio nemati* Westwood, (Eulophidae), *Pteromlaus dolichurus* Thomson (Pteromalidae), *Scambus vesicarius* Ratzeburg, *Diaparsis stramineipes* Brischke (Ichneumoidae), *Bracon ritricronis* Wesmael, *Bracon discoideus* Wesmael (Braconidae), and the inquiline weevil *Curculio salicivorus* Palkull (Curculionidae: Coleoptera), caused an approximate 7% reduction in population size of *Pontania proxima* during the period April-November 1995. The overall survival rate, however, reached an average of 67.48% for the observed population. The low parasite-induced mortality rate may be due to an increase in the number of galls without eggs, which constituted an average of 16.45% of the surveyed population. These might act as decoys, attracting the parasitoids and predators away from the sawfly stages, and subsequently enhancing the insects survival. In addition, it might be indicative of a particular defensive behaviour used by the sawfly larvae against their natural enemies. Evidence of larval avoidance of enemies was present in the population in the form of large numbers of clean galls, indicating continuous larval cleaning of the gall chamber and removal of any material that could be used as a cue by their enemies. The number of live larvae in the studies population was positively correlated with the number of clean galls.

**Page**

pp 219-224

**Location**

UCD library

**Notes**

includes graphs, bibliographical references

**Address of author**

Department of Zoology, Trinity College, Dublin 2

---

**Number**

1543

**Author**

Kelly, Daniel L.

Iremonger, Susan F.

**Title**

Irish wetland woods: the plant communities and their ecology.

**Publisher**

Royal Irish Academy

**Place**

Dublin

**Date**

1997

**Source**

Biology and Environment: Proceedings of the Royal Irish Academy

**Volume**

Vol. 97B, No. 1.

**Key Word**

Salicetum albo-fragilis

Osmundo-Salicetum atrocinereae

Alnus glutinosa - Carex paniculata

Carici rototae-Fraxinetum

Corylo-Fraxinetum

Betuletum pubescentis

Sphagnum palustre-Betula pubescens

wetland woods

forest habitat

woodland ecology

watterlogging

peatlands

**Abstract**

Floristic and environmental data were recorded from wetland woods in all regions of Ireland, with more intensive studies in the Killarney area. The principal gradients in the environment are found to be edaphic and hydrological. Seven vegetation groups are distinguished: two represent communities not hitherto described from Ireland. Group A is mostly riparian woodland and equates with the *Salicetum albo-fragilis*. Group B is found in stagnant conditions, mostly near lake shores and corresponds to the *Osmundo-Salicetum atrocinereae*. Groups C1, a rare community of mires irrigated by calcareous groundwater, equates with the *Alnus glutinosa - Carex paniculata* community; one site corresponds to classic swamp carr. Group C2, typically associated with springs or flushed sites, large equates with *Carici rototae-Fraxinetum*. Group D, on soils that are waterlogged in winter but dry out in summer, is classified as the *deschampsietosum caespitosae* subassociation of the *Corylo-Fraxinetum*. Group E, associated with oligotrophic peat that is relatively dry, equates with *Betuletum pubescentis*. Group F, of waterlogged oligotrophic peat, equates with *Sphagnum palustre-Betula pubescens* community. The richness and diversity of Irish wetland woods have been underrated, according to the authors, and they emphasise the need for conservation measures.

**Page**

pp 1-32

**Location**

UCD library

**Notes**

includes graphs, photos., diagrams, bibliographical references; available

**Address of author**

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---

**Number**

1544

**Author**

Thomson, K.J.

Psaltopoulos, D.

**Title**

Forestry and rural development in agriculturally over-extended areas: the cases of Scotland and Ireland.

**Publisher**

European Forest Institute

**Series**

EFI Proceedings No. 9

**Date**

1996

**Source**

Regional Development Based on Forest Resources - Theories and Practices. Proceedings of an international seminar 12-15 December 1995 Joensuu, Finland. (Edited by Pentti Hyttinen, Ari Mononen, and Paivi Pelli

**Key Word**

rural development

land use

agriculture

afforestation

economics

job creation

forestry policy

**Abstract**

The objective of this paper is to provide estimates of the impact of forestry as a land use alternative to agriculture, on rural development in areas of Scotland and Ireland characterised by depopulation, remoteness from main population centres, and adverse soil and climate conditions. It describes work conducted at and from Aberdeen as part of a tripartite 1991-1994 study of afforestation in rural development in Scotland and Ireland. In particular, two aspects of this work are focused upon: (i) the interrelationships between the forestry sector and other components of the rural economy investigated through surveys of forestry sub-sectors and input-output analysis, and (ii) analysis of alternative afforestation scenarios over the past several decades. The study as a whole is intended to throw light on the implications of afforestation of economy-wide output, job creation and income levels.

**Page**

pp 209-230

**Location**

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**ISBN**

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**Address of author**

University of Aberdeen

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**Number**

1545

**Author**

Thompson, D.G.

**Title**

Getting the species and provenance right for climate change.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

climate change

environment

precipitation patterns

frost damage

bud set

bud break

global warming

**Abstract**

The ability of global circulation models to predict climate change has yet to be determined, but the impact of increased annual temperature and changes in precipitation patterns must be considered. The rapid rate of change predicted will have implications for frost damage and the date of bud break. Genetic variation in traits associated with adaptation to local conditions, such as date of bud break, date of bud set, optimal temperature for photosynthesis, pest resistance and drought tolerance, exists not only at the species level, but also at the provenance, family and individual level. Therefore, by identifying highly adaptable sources of material, it is possible to develop new varieties which will be better able to cope with future climatic conditions than current material. This information is best obtained from classical provenance experiments. Climatic changes will probably result in changes in the natural distribution of forest tree species, and may limit the use of some species in plantation forestry. The impact on Sitka spruce (*Picea sitchensis* (Bong.) Carr.) should be minimal, but a number of other commercially important species, such as Norway spruce (*P. abies* (L.) Karst.), Scots pine (*Pinus sylvestris* L.) common beech (*Fagus sylvatica* L.), common ash (*Fraxinus excelsior* L.), sessile oak (*Quercus petraea* (Mattuschka) Lieblein) may be adversely affected. What is now required is validation that the current models are correct, followed by commitment, together with a plan, to do something about those species at greater risk.

**Page**

pp 114-121

**Location**

Coillte Research & Technology

**Notes**

Paper presented at the Annual Symposium of the Society of Irish Foresters, entitled 'The impact of climate change on tree growth.' Tullamore, Co. Offaly, 1 May 1998; includes bibliographical references; available

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow.

---

**Number**

1546

**Author**

Broadmeadow, Mark

Freer-Smith, Peter

Jacksonk, Samantha

**Title**

Climate change - the evidence so far and predictions for tree growth.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

atmospheric carbon dioxide  
climate change  
environment  
tree growth  
flux data  
rainfall

**Abstract**

Atmospheric carbon dioxide concentrations will continue to rise for the foreseeable future at a rate dependent on human activity and the success of the emission control policies prescribed in the United Nations Convention on Climate Change. Evidence suggests that this and other 'greenhouse' gases have already influenced our climate and may have had an effect on forest productivity during the course of the twentieth century. Predictions of future climate are now available, and the influence of climate change on forest growth can already be modelled through analysis of spatial clines in climatic variables such as temperature and rainfall. The direct effects of atmospheric carbon dioxide concentrations and interactions with a changing climate are, however, more difficult to model. For these purposes, physiological or process-based models are required, in which the response of individual physiological processes to changing carbon dioxide concentrations is determined in controlled environment facilities and then parameterised for input into the growth models. The individual processes of these models can be validated by comparison with whole canopy water vapour and carbon dioxide flux data, while the growth predictions can be partially validated using historic climate and yield data. Only when these models are finalised and validated can we reliably predict the impact of climate change on forest growth.

**Page**

pp 122-132

**Location**

Coillte Research and Development

**Notes**

Paper presented at the Annual Symposium of the Society of Irish Foresters, entitled 'The Impact of Climate Change on Tree Growth,' Tullamore, Co. Offaly, 1 May 1998.

**Address of author**

Forestry Commission Research Agency, Alice Holt Lodge, Farnham, Surrey, GU10 4LH, UK

---

**Number**

1547

**Author**

Stanley, Bill

**Title**

A glimpse of forestry in Nepal.

**Publisher**

Society of Irish Foresters

**Place**

Dublin

**Date**

1998

**Source**

Irish Forestry

**Volume**

Vol. 55, No. 2

**Key Word**

deforestation  
community forestry  
afforestation  
developing countries

**Abstract**

Amidst the devastating impacts of deforestation and environmental degradation, many rural communities in Nepal have adopted an approach to development centred around the principles of community forestry. Community forestry is designed to facilitate local communities to develop sustainable forest management practices which conserve natural resources while ensuring an adequate supply of forest products for the future.

This involves the participation of all forest users and potential stakeholders, and the harnessing of local knowledge and indigenous forest management practices. Through the activities of community forestry, many local communities in Nepal have gained the organisational skills, experience and confidence to address broader development needs, such as community health, education and sanitation. The author concludes that, while Irish community forestry projects are aimed at enhancing social well-being rather than securing actual physical survival, we can learn much from Nepali community foresters.

**Page**

pp 133-139

**Location**

Coillte Research and Development

**Address of author**

Coillte Research and Development, Newtownmountkennedy Co. Wicklow.

---

**Number**

1548

**Author**

Fahy, O.

Gormall, M.

**Title**

A comparison of plant and carabid beetle communities in an Irish oak woodland with nearby conifer plantation and clearfelled site.

**Publisher**

Elsevier

**Place**

Amsterdam

**Date**

1998

**Source**

Forest Ecology and Management

**Volume**

Vol. 110, Nos. 1-3

**Key Word**

vegetation

clearfelling

oak woodlands

woodland habitats

forest ecology

Carabidae

ground beetle

species richness

biodiversity

**Abstract**

In 1996, plant and carabid beetle communities were examined in a semi-natural woodland (Derryclare Wood) and compared with communities of a nearby mature conifer plantation and a plantation clearfelled in 1994. At each site, 10 quadrats (2 m x 2 m) and 10 pitfall traps were used to sample the ground vegetation and carabid beetle communities, respectively. Forty-one plant species were recorded in the oak woodland while 38 species were found in the clearfelled site and 19 in the conifer plantation. The median plant-species richness per quadrat was significantly greater ( $p > 0.01$ ) in the oak woodland (16.5) than in the other two sites and the clearfelled site (11) was significantly more species-rich ( $p > 0.01$ ) than the conifer plantation (6.5). A total of 21 carabid species (895 individuals) were captured, with 74.5, 13.9 and 11.6% of individuals being caught at the oak woodland, clearfelled site and conifer plantation, respectively. The median number of carabid species per pitfall trap was significantly greater ( $p > 0.01$ ) in the oak woodland (6) than in the clearfelled site (3.5) and conifer plantation (2). In addition, median species richness per pitfall trap was significantly higher in the clearfelled site than in the conifer plantation at  $p < 0.02$ . Median diversity per pitfall trap was also significantly less in the conifer plantation (1.19) than in the oak woodland (2.43,  $p < 0.01$ ) and clearfelled site (1.55,  $p < 0.05$ ). While the Sorenson similarity index for both vegetation and carabids shows that the conifer plantation and the clearfelled site were most similar in species composition; nevertheless, the clearfelled site has demonstrated signs of increasing species richness only 2 years after clearfelling. It is concluded that while semi-natural woodlands support a

greater range of species than conifer plantations, clearfelled areas which are not replanted can enhance species richness within commercial conifer plantations.

**Page**

pp 263-273

**Location**

Coillte Research and Development

**Notes**

includes tables, graphs, bibliographical references; available

**Address of author**

Environmental Science Unit, National University of Ireland, Galway

---

**Number**

1549

**Author**

Wright, Richard F.  
Rasmussen, Lennart

**Title**

Introduction to the NITREX and Exman projects.

**Publisher**

Elsevier

**Place**

Amsterdam

**Date**

1998

**Source**

Forest Ecology and Management  
(Special Issue: The Whole Ecosystem Experiments of the NITREX and EXMAN Projects)

**Volume**

Vol. 101, Nos. 1-3

**Key Word**

forest ecology  
forest ecosystems  
nitrogen  
sulphur  
soil  
water  
drought  
atmospheric quality  
environment  
European Union

**Abstract**

European concern over the causes of forest decline, acidification of soils and surface waters, and the nutrient enrichment of terrestrial and aquatic ecosystems, led to the establishment of the NITREX (Nitrogen saturation experiments) and Exman (Experimental Manipulation of Forest Ecosystems in Europe) projects, two research networks of large-scale manipulation experiments under the auspices of the European Commission. NITREX comprises 10 experiments at 8 sites in 7 countries (UK, Switzerland, Netherlands, Denmark, Norway, Sweden, Germany) at which nitrogen is either added to or removed from ambient atmospheric deposition to stimulate major changes in nitrogen deposition. EXMAN comprises experiments at 6 sites at which ambient atmosphere depositions is experimentally altered in chemical composition and/or quantity. The Irish experiment is at Ballyhooley. The other countries involved are Netherlands, Denmark and Germany. The ultimate goal of this research is to contribute to the scientific basis required for the refinement of EU policy on atmospheric quality, and the legislation which will emanate from that policy.

**Page**

pp 1-7

**Location**

Coillte Research and Development

**Notes**

includes map, tables, bibliographical references

**Address of author**

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Riso National Laboratory, Environmental Science and Technology Department P.O. Box 49 DK-4000 Roskilde,  
Denmark

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**Number**

1550

**Author**

Lamdersdorf, N.P

Beier, C.

Blanck, K.

Bredemeier, M.

Cummins, T.\*

Farrell, E.P.\*

Kreutzer

Rasmussen, L.

Ryan, M.\*

Weis, W.

Xu, Y.- J.

**Title**

Effect of drought experiments using roof installations on acidification/nitrification of soils.

**Publisher**

Elsevier

**Place**

Amsterdam

**Date**

1998

**Source**

Forest Ecology and Management

(Special Issue: The Whole Ecosystem Experiments of the NITREX and EXMAN Projects)

**Volume**

Vol. 101, Nos. 1-3

**Key Word**

climate

drought

nitrogen mineralization

nitrification pulses

Norway spruce

Picea abies

nutrient losses

soil solution chemistry

forest ecosystems

ecology

**Abstract**

Within the framework of the EU-funded EXMAN (Experimental Manipulation of Forest Ecosystems) project drought experiments were conducted at four different European Norway spruce (*Picea abies* (L.) Karst) plantations in the year 1992-1995. The aim of the project was to investigate if there is an additional risk of soil acidification due to nitrification/acidification pulses after extended periods of summer droughts. The site where the Irish experiment was carried out was Ballyhooly. Artificial droughts were produced by using different types of roof constructions installed below the forest canopy (non-permanent constructions in BH and HW, permanent installations in KH and SL). Each drought was started in spring time and dry conditions were maintained until the soil water tension was below a potential of -700 hPa at 70cm depth in the mineral soils. Results given are focused on changes in soil solution concentrations during the rewetting of severely dried out soils. No marked nitrification pulses were observed after any of the droughts carried out on any site. Only single lysimeters/sample locations showed the hypothesized reaction with increasing aluminum concentrations and pH values, but spatial heterogeneity was high during rewetting. In the first soil solution samples after the drought, occasionally distinct peaks of NH<sub>4</sub><sup>+</sup>, DOC and K, partly also Norg and HPO<sub>2</sub><sup>-4</sup> appeared. For the BH site the respective potassium concentrations increased 10 to 20 times compared to the level of the control plot. Presented data

indicate a certain potential for nitrification pulses at the BH and KH site, but probably due to a fast root uptake, below the rooting zone no nitrate was determined. At the HW site, the drought induced reactions in the soil solution composition were only visible in humus water samples. At SL, nitrate concentrations were generally reduced at the drought plot. During rewetting in 1992 samples from a single lysimeter indicated a clear nitrification pulse. Applied flux calculations for SL showed a significant increase of the nitrate budget but a distinct decrease of the potassium budget. It is concluded that drought phases can influence the element cycling, but there seems to be no risk that forest soil will be subjected to pronounced acidification after summer droughts.

**Page**

pp 95-109

**Location**

Coillte Research and Development

**Notes**

includes tables, time course diagrams, bibliographical references; available

**Address of author**

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**Number**

1551

**Author**

Kreutzer, K.

Beier, C.

Bredemeir, M.

Blanck, K.

Cummins, T.\*

Farrell, E.P.\*

Lammersdorf, N.

Rasmussen, L.

Rothe, A.

de Visser, P.H.B.

Weis, W.

Weib, T.

Xu, Y.-J.

**Title**

Atmospheric deposition and soil acidification in five coniferous forest ecosystems: a comparison of the control plots of the EXMAN sites.

**Publisher**

Elsevier

**Place**

Amsterdam

**Date**

1998

**Source**

Forest Ecology and Management

(Special Issue: The Whole Ecosystem Experiments of the NITREX and EXMAN Projects)

**Volume**

Vol. 101, Nos. 1-3

**Key Word**

atmospheric depositions

soil acidification

coniferous forests

forest ecosystems

forest ecology

sea salt

anthropogenic deposition

soil acidity

proton budget

A1 biogeochemistry

seepage water quality,

nitrogen  
N saturation

**Abstract**

The five sites of the EXMAN project conducted in Ireland, Denmark, Netherland, Northern and Southern Germany were compared regarding (1) the marine and anthropogenic components of depositions, (2) the acidification of soil and consequences for A1 status, and (3) the nitrate load of seepage. The marine deposition decreases with decreasing rates from the coast inland. It vanishes at a distance of more than 600 km of the sea. The most part of sea salt input in conifer forests is due to dry depositions. Sea salt  $Mg^{2+}$  in throughfall near the coast by far exceeds the demand of trees. The anthropogenic deposition of N and S at the Irish site is about 20%; at the Danish site, about 60% of that at the inland sites. At the Irish site, the anthropogenic deposition is the two to threefold of the preindustrial deposition.  $NH_4^+$  prevails at all sites as acid component in throughfall, controlling the pH values that vary between 3.9 and 5.3. In drainage water leaving the root zone, the mean pH values vary only between 4.1 and 4.4. Proton budgets for the forest floor have shown that N turnover dominates as a proton source at the inland sites, whereas at the coastal sites the dominant source results from the production of organic acids. The main proton sink is due to  $H^+$  output. Proton budgets for the forest floor have shown that N turnover dominates as a proton source at the inland sites, whereas at the coastal sites the dominant source results from the production of organic acids. The main proton sink is due to  $H^+$  output. Proton budgets for the total root zone indicate that an important proton gain is caused at the most sites by proton excretion of the roots in connection with base cation uptake. In addition, at some sites, the release and output of  $SO_4^{2-}$  appears to be a considerable proton source. At all sites, buffering and output of A1 represent the main proton sink. The A1 solubility of each layer of the EXMAN sites was compared with the solubility of a synthetic gibbsite. A1 saturation exists only at the lower boundary of the main root zone. In the soil layers above, there is undersaturation that is largest at the humus layer efflux. The relationship between A1 dissolved and A1 absorbed, both expressed in cation percentages, is rather weak for the coastal sites in contrast to the inland sites. The importance of the ionic strength effect of sea salt input is discussed with respect to the deep reaching A1 saturation and acidification of the soils. Moderate to strong A1 stress is indicated at all sites in the mineral soil. The nitrate load of the seepage water depends on the N status of the ecosystems rather than N deposition when the throughfall exceeds  $20 \text{ kg N ha}^{-1} \text{ yr}^{-1}$ . An attempt was made to classify the EXMAN sites with respect to the N status with the aid of the N flux gradient by depth.

**Page**

pp125-142

**Location**

Coillte Research and Development

**Notes**

includes tables, bibliographic references; available

**Address of author**

Department of Environmental Resource Management, University College Dublin, Ireland

---

**Number**

1552

**Author**

Kavnagh, Thomas P.

**Title**

A study of the farmers involved in Coillte's Farm Partnership Scheme.

**Date**

1999

**Key Word**

farm forestry

land use

agriculture

afforestation

incentives

Farm partnership Scheme

**Abstract**

This study sought to develop a profile of the participants in Coillte's Farm Partnership Scheme, and examines the extent to which it has contributed to farm incomes and the attitudes of current partners in scheme. A survey, involving personal interviews with 50 farmers in the west, midlands and South-east of the country was conducted between January and April 1999. For most farm partners, participation in the Coillte scheme was

motivated by economics and the need to have access to expertise. Farm holdings involved in the scheme varied from medium to large, and land quality was arable farmland in 50% of cases.

**Page**

ix, 127pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College, Dublin, Belfield, Dublin 4

**Notes**

Available (thesis submitted to the National University of Ireland for award of degree of Master of Science, Agriculture) includes tables, questionnaire

**Thesis**

M. Ag. Sc., UCD, 1999

**Address of author**

Department of Crop Science, Horticulture and Forestry, University College, Dublin, Belfield, Dublin 4

---

**Number**

1553

**Author**

Delaney, Michael M.

**Title**

An inventory for sustainable forest management for Rahin Wood.

**Date**

1999

**Key Word**

forest inventory

state forestry

sustainable forest management

environment

broadleaves

conifer

**Abstract**

The background to Coillte's sustainable forest management initiative is explained, and future inventories will have to include information on how forestry influences ecological and structural diversity. Advantage in information technology will make collection and analysis of this data easier. This study involved an inventory of Rahin Wood, which is a 60 year old, two-storey, broadleaf-conifer plantation in Rahin, Co. Kildare. The current state of species and standing volumes growing on this site in 1998 are documented in detail. An analysis on soils in Rahin Wood, as well as an inventory of the vegetation is included. The purpose of collecting such data, using fixed grid baseline sampling positions was to provide a database that could be monitored through future studies. Additional information can also be collected on the database extended to incorporate all environmental, social and economic needs.

**Page**

vii, 73pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College, Dublin, Belfield, Dublin 4

**Notes**

available; thesis submitted to the National University of Ireland for award of Master of Science (Agriculture); includes tables; bibliographical references

**Thesis**

M. Ag. Sc., University College Dublin, 1999

---

**Number**

1553

**Author**

O'Connor, Edmond

**Title**

Economic impact evaluation of catastrophic storm damage in Irish Forestry.

**Series**

Wind

**Date**

1999

**Key Word**

windthrow

forest economics

stumpage value

storm damage

climate

**Abstract**

The objective of this thesis was to identify factors influencing and methods of quantifying the economic impact of catastrophic storm damage in forestry. The study was based on data from stands which were windthrown in the Southern region of Coillte in the December 1997 storm. Two forests, Midleton and Skebbereen, were selected for detailed analysis on a sub-compartment basis. Regional analysis of invoiced sales for 1998 showed that windthrown material had stumpage values on average 10% less than those obtained from normal or premature felled material. Forest analysis of windthrow losses resulted in average combined stumpage and growth losses per ha. of £1,778 for Midleton forest and £4,141 for Skebbereen forest. These losses were for the current windthrown rotation only. Taking into account the current and next rotation the losses per ha are £1,649 for Midleton and £3,668 for Skebbereen. As a consequence of windthrow the next rotations will commence earlier than planned, resulting in a reduction in the losses. In an effort to minimise the impact of the windthrow on timber supplies, the felling of standing crops which had reached the standard felling age was deferred. The economic returns from this course of action are dependent on the yield classes of the crops. The reason is that apart from a few instances, the economic optimum felling ages and the standard felling ages do not coincide. As regards Sitka spruce standard thin crops both the economic optimum and standard felling ages are the same for YC 20, YC 22 and YC 24. This also applies for no-thin crops of Sitka spruce of YC 20. With the exception of the cases mentioned above, and YC 24 no-thin stands where the economic optimal felling age is two years less than the standard felling age, in all other instances, both for thin and no-thin crops, the economic optimal rotations are one to ten years longer than the standard relations. For low yield class crops there is a financial gain in retaining crops after the standard felling age. Windthrow loss assessment tables compiled as part of this study, outline windthrow losses for up to 20 years prior to standard felling ages for Sitka spruce standard thin and no-thin crops. This study has identified that windthrow loss has a high economic impact

**Page**

viii, 95pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College, Dublin, Belfield, Dublin 4

**Notes**

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**Thesis**

M.Ag.Sc., University College Dublin, 1999

**Number**

1554

**Author**

Gallagher, Thomas

**Title**

The impact of forest re-design and transformation on the financial and timber production outputs from Laracas Property.

**Date**

1999

**Key Word**

forest design

forest re-design

landscape

environment

species diversity

economics

**Abstract**

The need to ensure that forest design is sensitive to local landscape has become a factor in plantation policy. This study examined the implications of forestry re-design for both the volume production in the current rotation, and the financial return in both the current and the subsequent rotation. A study was carried out on Laracas forest, a Coillte property in Co. Donegal containing 518 ha. The forest crop is now in its production phase with clearfell coupes scheduled from 2003 to 2015. Annual and total production volumes were calculated using yield models under its standard forecast and on the basis of a new forest design plan. The financial outputs under both the Standard Plan and the Design Plan were also determined. The study extends to the subsequent rotation and net present values for both the Standard plan and the Design Plan, regimes were obtained, using site productivity as the main determinant. Finally the net present values for both the current and subsequent rotation were obtained for both plans and comparisons were made. A key assumption used in the calculations for the subsequent rotation, under standard planning, was the inclusion of a 10% broadleaf component to increase species diversity. In contrast, the sizes and locations of the broadleaf areas in the Design Plan were specified by the landscape architect. Results in the current rotation at Laracas indicated a volume loss due to design planning of 5.5% compared to the Standard Plan. In financial terms this represents a loss of 4.6%. For the subsequent rotation, a significant financial gain of 18% in net present value was achieved as a result of re-designing the plantation. This indicates that prescriptive approach to species diversification (e.g. 10% broadleaves in planting proposals) effects significant financial loss when compared to a designed approach. The overall financial out-turn for the property, when both the current and subsequent rotations were considered together, was a 3.3% lower net present value for the Design Plan than the Standard Plan due to the effects of transformation and re-design. The results indicates a lower impact on financial return at Laracas than impacts determined in other studies.

**Page**

52pp [67]

**Location**

Department of Crop Science, Horticulture and Forestry, University College, Dublin, Belfield, Dublin 4

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**Thesis**

M.Ag.Sc., University College Dublin, 1999

---

**Number**

1555

**Author**

Emmery, Liam

**Title**

The impact of clearfelling on water quality in a forested catchment: a case study.

**Date**

1999

**Key Word**

water quality

nutrient loss

clearfelling

blanket peat

peatland forestry

water chemistry

**Abstract**

A study of the impact of clearfelling on water quality and nutrient loss was conducted in a forested catchment in Clenard, Co. Donegal. The mixed conifer plantation was situated on an upland blanket peat site, which overlay a partially metamorphosed sedimentary mudstone. Approximately 20% of the catchment was felled and water samples were taken from above and below a stream which flows through the catchment. Water samples were taken on regular intervals for a period of one year and analysed for various elements. Short-lived pulses of some elements were evident below the harvest area in late spring and some of these may have been attributed to harvesting. A significant and sustained increase in potassium was observed below the clearfell following harvesting. Overall, clearfelling had a low-level impact on the water quality and nutrient loss from the site. The nature of the soil type (the rock in particular), the chemistry of the water and the existence of riparian zones influence the impact of harvesting on water quality at this site.

**Page**

70pp

**Location**

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**Notes**

availabe; thesis submitted to the National Univeristy of Ireland for award of Master of Science (Agriculture); includes graphs, map, photos

**Thesis**

M. Ag. Sc., University College Dublin, 1999

---

**Number**

1556

**Author**

McHugh, Frances R.

**Title**

The development and evaluation of pre-harvest inventory and cross-cutting procedure.

**Date**

1999

**Key Word**

timber processing  
sawmills  
volume estimates  
diameter distributions  
timber procurement  
decision-support system  
inventory  
pre-harvest inventory  
computer simulation  
information technology  
tree-height measurement

**Abstract**

This project is the concluding half of a larger study which aimed to develop a decision-support system, incorporating pre-harvest measurement and analysis procedures, to provide the timber procurement manager of a medium sized sawmill with estimates of the breakdown by number, volume and diameter class of log assortments that could potentially be cut from standing timber lots of mature Sitka spruce (*Picea sitchensis* (Bong.) Carr.). In order to develop such a system Malone (1998) recognised that the following tasks needed to be completed: 1) the development of a generic taper equation to provide accurate estimates of diameter at any point along Sitka spruce stems at time of clearfelling; 2) the design of a pre-harvest inventory procedure to gather information on the diameter/height relationship in a standing timber lot; 3) the development of a cross-cutting computer simulation programme, that incorporates the knowledge from 1 & 2 to forecast time yield in terms of volume, number and size of log products. The purpose of this second project was to complete the developmetn and to evaluate the pre-harvest inventory and cross cutting simulation procedure developed by Malone. Results produced by the completed pre-harvest inventory and cross-cutting simulation procedure were compared with results obtained using a dynamic programming alorithm (Nieuwenhuis, 1989), which assumed to be optimal. This comparison produced similar results to those found in earlier tests. The cross-cutting simulation programme performed very well using data from Sitka spruce and Norway spruce clearfell stand, while good results for the sawlog component of a Sitka spruce thinning were obtained.

**Page**

xi, 71pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College, Dublin

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available; thesis submitted to the National Univeristy of Ireland for award of degree of Master of Science (Agricultural); includes tables, ill. graphs, bibliographical references, computer disc containing data; cross-cutting simulation programme available from Forestry Dept., UCD

**Thesis**

M.Ag.Sc., University College Dublin, 1999

---

**Number**

1557

**Author**

McCarthy, Nicholas D.

**Title**

The impact of herbicides on tree seedling quality.

**Date**

1999

**Key Word**

seedlings

seedling quality

weed control

silviculture

herbicides

Sitka spruce

Picea sitchensis

ash

Fraxinus excelsior

**Abstract**

In this study the impact of three herbicides (Ronstar, Devrinol, and Flexidor) on the quality of ash (*Fraxinus excelsior* L.) seedlings and four herbicides (Flexidor, Simazine, Goal and Gesagard) on the quality of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) seedlings was assessed in 1993/94 and 1995/95. The efficacy of the herbicides in controlling different weed species was also evaluated. All of the herbicides used in the study were effective in controlling a wide range of broadleaf weeds in the plots, however their efficacy in adequately controlling grasses was poor. The impact of herbicides on seedling quality was assessed by studying the morphological characteristics (height, root collar diameter, and root dry weight), and physiological characteristics (cold hardiness development and root growth potential) of the seedlings taken from plots sprayed with the herbicides. Cold hardiness development and root growth potential patterns were followed from September-March each year and precise patterns were defined for both ash and Sitka spruce. The herbicide Ronstar was detrimental to the morphological characteristics, resulting in reduced height growth, smaller root collar diameters and root dry weights. It also appeared to delay cold hardiness development. Simazine appeared to be beneficial to all the morphological characteristics used in the study, however some weeds such as Groundsel *Senecio vulgaris* were not controlled thus indicating that there may be a problem in the nursery with overuse and a build up of Simazine resistant weeds. The other herbicides used had no major impact on the morphological and physiological characteristics studies.

**Page**

xiv, 115pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College, Dublin

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available; this submitted to the National University of Ireland for award of the degree of Doctorate of Philosophy; includes graphs, tables, bibliographical references

**Thesis**PhD; University College Dublin, 1999

---

**Number**

1558

**Author**

Fennessy, John

**Title**

The morphology and seasonal changes in the physiology of rooted cuttings of Sitka spruce.

**Date**

1998

**Key Word**

plant breeding  
Sitka spruce  
Picea sitchensis  
nursery  
root growth potential  
cold hardiness  
transplants  
rooted cuttings  
roots

**Abstract**

With the likely increase in the availability of vegetatively propagated Sitka spruce planting stock from the breeding programme in Ireland over the next few years, there is a need to evaluate this stock type. To this end, several morphological and physiological attributes of Sitka spruce cuttings derived from juvenile selections in the nursery bed were compared with that of conventional 2+1 transplants from Aughrim Nursery, Co. Wicklow, in 1997/98. The root collar diameter, height increment, number of first order branches, and the dry weights of the shoots and the roots were measured/counted. The cold hardiness levels, root growth potential (RGP) and dormancy intensity (days to bud break) in a heated greenhouse were evaluated in plants lifted at regular intervals from October 1997 to April 1998. While there were some highly significant differences in a number of the morphological characteristics between the stock types, the absolute differences in root collar diameter, height and height increment were quite small from an operation view point. Cuttings had significantly fewer branches per unit height and a poorer shoot: root ratio. The RGP in both stock type was generally good, but in February cuttings had substantially fewer roots than the transplants. These differences in RGP were probably related to the effects of the dormancy cycle on root growth phenology. The cuttings were less cold hardy in October and November and flushed more rapidly in the greenhouse when lifted in November compared with the transplants. Therefore, there may be a higher risk of frost damage to cuttings if planted on frost prone sites. Furthermore, since dormancy intensity and stress resistance levels (as indicated by cold hardiness levels) were lower in the cuttings than in the transplants, in the October-November period, the window of opportunity for lifting, handling, storing and planting the cuttings may differ from that of conventional transplants. The root growth potential of the cuttings was similar to that of the transplants, supporting the view that good quality cuttings can be produced using current technologies. The reason for the different physiological response of cuttings compared with transplants is unclear. Possible reasons include selection in the nursery bed and the effects of age or phase change.

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

**Notes**

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**Thesis**

M. Ag. Sc., University College Dublin, 1998

---

**Number**

1559

**Author**

Crowley, Timothy F.

**Title**

The evaluation and location of the economic impact of Coillte owned forests located in the Ballyvourney area of County Cork.

**Date**

1998

**Key Word**

plantation forestry  
economics  
forest economics  
job creation  
employment  
direct economic activity  
indirect economic activity

**Abstract**

The objective of this thesis is to evaluate the economic activity generated through plantation management and timber production from Coillte owned forests located in West Cork and South Kerry in 1996, and to identify the locations, relative to the study area, which benefited from this economic activity. The technique used in the study was input-output analysis with the data on the direct economic activity generated being sourced from Coillte's management information system and from surveys. The indirect economic activities were estimated by using an existing input-output model of the South Munster area. The Coillte forested land in the study area generated £5.364 million from direct activities in 1996 of which 70% was located within 20 miles of the epicentre of the study area. The direct employment created in full time equivalents (FTEs) as a result of the management, harvesting and primary processing, of the timber in 1996 was 119.46. Seventy-five percent of the FTEs generated as a result of the direct activities, were located within 20 miles of the epicentre of the study area. The indirect output generated, as a result of the direct activities, amounted to a further £3.35 million of output being generated giving a total of £8.716 million of economic activity. This in turn generated a further 117.18 FTEs indirectly giving a total employment of 236.64 FTEs across the Southern Region. The increase in the timber output from the Coillte owned plantations in the study area, as plantations mature, will lead to significant increase in economic output and employment in the South Munster Region. The majority of the additional output and income is likely to be captured within a 20-mile radius of the epicentre of the study area due to presence of a well developed timber harvesting and processing infrastructure located in the area.

**Page**

viii, 77pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

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**Thesis**

M. Ag. Sc., University College Dublin, 1999

---

**Number**

1559

**Author**

Smith, Elaine

**Title**

The selection of dyes capable of bonding with the fresh wood of Sitka spruce to provide verification of stump treatment with Urea against *Heterobasidion annosum* (Fr.) Bref.

**Date**

1998

**Key Word**

Sitka spruce

*Picea sitchensis*

stump treatment

fungicides

silviculture

fungus

*Heterobasidion annosum* (Fr.)

dye

treatment detection

**Abstract**

The objective of this study was to find a suitable replacement dye for Rhodamine Red, which has been used to check whether stumps have been treated with urea. Ten potentially suitable candidate dyes were selected for testing at four concentrations ranging from 0.01% to 1%. These ten dyes belonged to two groups of dyes, five acid dyes and five basic dyes. The first set of tests, carried out in the laboratory on malt agar, established that none of the dyes, at any of the concentrations tested, interfered with the inhibitions of 20% urea upon the growth of *H. annosum*. Field durability trials determined that basic dyes were highly visible at both high (1%) and low (0.01%) concentrations, while acid dyes were only visible at high concentrations. The basic dyes remained visible on stumps for at least thirty days after application. The durability of dyes under wet conditions was determined from simulated rainfall trials. In these trials, Sitka spruce (*Picea sitchensis* (Bong.) Carr.) discs were treated with a 20% solution of urea and dye. Under the first simulated showering test the tree discs were painted before being exposed to heavy simulated rainfall. In the second test, the discs were painted during showering.

Only dye/concentration combinations which were visible following the field durability tests were included in these trials. The findings of these trials were that only four dyes were visible following the second of these showering trials. These four dyes were all basic dyes and are recommended for use in stump treatment, at 0.01% concentration. Acid dyes may remain visible at higher concentrations and under less stringent testing conditions. The use of acid dyes may be favoured in the future should a problem arise over the use of basic dyes.

**Page**

x, 158pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

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**Thesis**

M. Ag. Sc., University College Dublin, 1999

---

**Number**

1560

**Author**

Neilan, James

**Title**

Review of the silviculture and management of the principal broadleaved tree species growing in Ireland.

**Date**

1997

**Key Word**

state forestry

broadleaves

spacing

planting

silviculture

broadleaf silviculture

**Abstract**

The current broadleaved estate was surveyed for area, species composition, forest type, age distribution and quality standard for both the forest and the forest products. A more in depth analysis was also conducted which examined the site types, establishment methods, apparent management practices and productive level of the forest. The overall findings of the survey are summarised as follows: The total area carrying broadleaves is approximately 100,000 ha but the productive broadleaved forest is only approximately 40,000 ha. In general, broadleaved sites are very good. However, establishment practices appear to be based on the requirement for conifers. Provenance selection appears to be based on seed availability rather than on desirable regions or outstanding crops. As an example some of the best home based provenances were only collected on rare occasions. In general the level of applied silviculture was low but a selection of the better stands indicated that where management was intensive Ireland can produce good broadleaved crops. Based on the survey results and on an extensive review of the literature, a list of recommendations was drawn up. These pointed to the need for closer spacing, planting in mixtures, thorough vegetation control, a level of formative pruning followed by high pruning and thinning to benefit the final crop. This treatment to be applied to the provenances performing best. This review found many encouraging features but also lack of attention to the extra detail required to grow good broadleaves. It also found a solidly based conifer "mind-set" which is the greatest problem to be confronted.

**Page**

vii, 126pp, [12], 23 plates

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

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**Thesis**

M. Agr. Sc., University College Dublin, 1999

---

**Number**

1561

**Author**

Duffy, Clodagh

**Title**

The effect of weed control measures on the growth and nutrition of common ash (*Fraxinus excelsior* L.) in the establishment phase on a lowland ex-agricultural site

**Date**

1997

**Key Word**

broadleaves

broadleaf plantations

weed control

herbicides

ash

*Fraxinus excelsior* L.

agriculture

nutrient levels

nitrogen levels

silviculture

**Abstract**

Weed management in broadleaf plantations is considered to be one of the critical factors in successful establishment. This trial confirms the importance of weed control at establishment on a lowland fertile site. In 1991, two-year-old ash (*Fraxinus excelsior* L.) saplings were planted on a site (60m O.D) previously used for intensive beef production. Six weed management treatments were applied to 36 plots of 77 trees, (6 treatments by 6 replications). The treatments were: total weed control (herbicide induced, weedfree strips (herbicide induced) of 1 m or 0.5 m in diameter combined with mowing or not mowing the remaining inter-row vegetation and a no weed control treatment. Tree growth (height and diameter) was monitored from 1991 to 1995. Foliar nutrient levels were assessed through the growing season in 1993, 1994 and 1995. Trees in plots that received no weed control were consistently smaller in terms of both height and diameter than those in all other plots. After five growing seasons there was no significant difference in growth terms between the weedfree and the two unmowed treatments. Mean foliar nitrogen levels of trees in the control plots were significantly lower than those in all other treatments on all sampling dates.

**Page**

vi, 78pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

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**Thesis**

M.Agr.Sc.

---

**Number**

1562

**Author**

Kilbride, Catherine

**Title**

Soil and site indicators for the production of high quality ash (*Fraxinus excelsior* L.).

**Date**

1997

**Key Word**

ash

*Fraxinus excelsior* L.

productivity

growth models  
yield class

**Abstract**

In this study the productivity of a number of ash crops, between twenty and sixty years of age, was assessed. Soil and site variables were also measured at each site. Growth models for ash were derived by stepwise regression of the measured soil and site data on yield class (YC). In the final model, Model 2, percentage sand was found to be the variable which explained 63.3% of the variation in ash growth on the YC4 and YC6 sites studied. This results indicates that the YC of ash may be closely correlated with the physical properties of the soil on which it grows. Considering the small number of sites in this study and the many limiting factors which were encountered, the fina model explained a large proportion of variation in ash growth.

**Page**

viii, 67pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

**Notes**

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**Thesis**

M. Agr. Sc.

---

**Number**

1563

**Author**

Treacy, Mary

**Title**

The relationship between wood microstructures and wood quality in four Irish grown Sitka spruce (*Picea sitchensis* (Bong.) Carr.) provenances.

**Date**

1999

**Key Word**

wood microstructure

wood quality

Sitka spruce

*Picea sitchensis*

timber quality

microfibril angle

wood density

wood stiffness

**Abstract**

The objectives of this project were to examine the variations in microfibril angle (MFA), density and strength/stiffness between provenances of Irish grown Sitka spruce, and to examine the relationship between MFA and wood strength and stiffness and to provide information which might be used in future tree breeding programmes to improve the quality of Irish grown Sitka spruce timber. Four provenances were chosen for sampling (Washington, Queen Charlotte Island, Oregon and California). Eight trees were selected from each of the four provenances and from each of these thirty two chosen trees, measurements of MFA, density and strength/stiffness were made and recorded. All of the samples for measurements were taken from the North east cardinal point of each the trees and a height straddling breast height. The MFA measurements were taken from the same four annul rings in each of the treess. The results showed that MFAs occurred close to the pith for all provenances, with the exception of the Californian provenance whose MFA peaked in ring five from the pith. The lowest MFAs occurred in ring fourteen from the pith for all of the four provenances. The results also showed that wood density in the Oregon provenance was significantly less than wood density in the Queen Charlotte Island provenance. Wood stiffness was not significantly affected by provenance. A strong negative linear relationship was found between MFA and wood stiffness. This relationship was found to be the same for all four provenances. Wood strength varied significantly between the Californian and the Washington provenances only. A linear relationship was also found between MFA and wood stiffness. This relationship was also the same for the four provenances examined. Because of the strong linear relationship between MFA an wood stiffness, it is suggested that future wood quality improvement programmes focus on selecting trees on the basis of MFA rather than density.

**Page**

viii, 105pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

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**Thesis**

M.Agr. Sc., University College Dublin , 1999

---

**Number**

1564

**Author**

O Donovan, Christy

**Title**

Profiling landowners relative to non-completion of approved afforestation schemes.

**Date**

1998

**Key Word**

afforestation

private foetry

incentives

forestry grants

farm forestry

land use

agriculture

**Abstract**

The aim of this study was to determine why such a high number of landowners (45%) who were successful applicants for grant aid towards the cost of establishing a forest plantation ultimately failed to do so. The survey sample used in the study ws stratified according to whether the respondent was a full-time farmer, part-time farmer, or non-farmers. Most of those who failed to establish plantations chose other land-use options, and many had opted for the Rural Environment Protection Scheme. Problems with getting contractors to afforest the designated sites was also given as a reason. The proposed afforestation sites were usually small but had the potential to produce very productive forest crops. Most landowners intended afforesting in the future. A sizeable number favoured planting steep, marginal, agricultural land. Very few had attended forestry courses. The survey results suggested that landowners used the grant-aid application process as a means of gathering information regarding forsetry.

**Page**

119pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

**Notes**

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**Thesis**

M. Agr. Sc. , University College Dublin

---

**Number**

1565

**Author**

Ruane, Martin J.

**Title**

Damage by the large pine weevil (*Hylobius abietis*) on a restocked site.

**Date**

1998

**Key Word**

pine weevil  
Hylobius abietis  
Sitka spruce  
Picea sitchensis  
lodgepole pine  
Pinus contorta  
clearfelling  
forest pests

**Abstract**

Pine weevil (*Hylobius abietis*) larvae were counted in the stumps of lodgepole pine (*Pinus contorta*) and Sitka spruce (*Picea sitchensis* (Bong.) Carr.) in a 130 hectare clearfelled site in West County Sligo. Clearfelling commenced in May 1996 and was completed in September 1997. Comparisons of stump larval count was made between areas with different clearfell times. Weevil host preference for oviposition, and larval numbers in relation to stump size were also examined. The results showed that in lodgepole pine there was an average of 17.4 and 20.2 larvae per stump in the areas felled June/December 1996 and January/June 1997 respectively. No larvae were found in the area felled September 1997. Lodgepole pine was the favoured host species for oviposition. Large stumps had more larvae than small stumps. For lodgepole pine, the stumps in the 7-14cm category had an average larval count of 10.4, while the 20-27cm category had an average larval count of 28.6. Regression analysis showed that there was a highly significant relationship between larvae numbers and stump size in lodgepole pine. Within the clearfelled site, 17 ha. were chosen to study the emergence of overwintering adult weevils and the damage to transplants from weevil feeding in the spring summer 1998. Three strata were identified, representing clearfell times of September 1996, April 1997 and September 1997. To count emerging weevils that had overwintered in the litter layer, four baited pitfall traps were inserted into the soil in each of the three strata. The actual number of weevils trapped were four, two and zero, in the areas felled in September 1996, April 1997 and September 1997 respectively. An assessment of feeding damage to transplant was undertaken in the study area (17 ha.) This part of the study was carried out in early July 1998 and concentrated on examining: the level of damage to transplants in areas with different clearfell times; the effect of both windrows and transplant size on the level of transplant damage. A total of 1032 transplants were assessed for damage using a score based on the severity of feeding. The damage data were subjected to an Analysis of Variance (ANOVA). The ANOVA showed that the distance from windrow did not significantly influence the average amount of damage recorded on transplants. However, in contrast, the ANOVA showed that the time of felling and the size of transplant did significantly influence the average amount of damage recorded in transplants. There was a surprisingly low level of mortality (average 5%) in the transplants assessed in the study area. The level of mortality was much higher in small transplants.

**Page**

viii, 53pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

**Notes**

available; thesis submitted to the National University of Ireland for award of degree of Master of Science (Agriculture); includes tables, graphs, photos., maps, bibliographical references.

**Thesis**

M. Agr. Sc

---

**Number**

1566

**Author**

Malone, Liam

**Title**

Value maximisation of forest stands through optimal inventory and cross-cutting methodologies.

**Date**

1998

**Key Word**

timber processing  
sawmills  
inventory  
decision support systems

computer simulation  
taper equations  
pre-harvest measurement  
timber procurement  
production planning  
cross-cutting methodologies

**Abstract**

The purpose of this research was to develop a decision support system, incorporating pre-harvest measurement and analysis procedures, to provide the timber procurement manager of a medium-sized sawmill with estimates of the volume, number and diameter class breakdown of log assortments that could potentially be cut from standing timber lots of mature Sitka spruce (*Picea sitchensis* (Bong.) Carr.) In order to develop such a system, it was recognised that the following tasks needed to be completed: 1) Develop a generic taper equation to provide accurate estimates of diameter at any point on the merchantable stems of Sitka spruce trees at the time of clearfelling; 2) Design an efficient pre-harvest inventory procedure to gather information on the relationship between dbh and tree height in a standing timber lot; 3) Develop a cross-cutting simulation programme, that incorporates the knowledge gained from tasks 1 & 2 to forecast timber yield in terms of volume, number and size of log products. Stem profile measures, consisting of 5,543 observations of diameter and height, were taken on 246 tree stems, from five Sitka spruce stands at the time of clearfell. The diameter at breast height (dbh) and tree height were also recorded for each of the sample trees. Four taper equations identified from an extensive review of research literature, were selected for evaluation. Eight dbh-height models were chosen from the literature for preliminary testing. An interactive computer programme was developed to simulate the process by which stems are cross-cut into logs. The programme employs the generic taper equation to profile the stems of sample trees of known dbh and estimated height drawn from the stand. Using log specifications supplied by the user, the programme then simulates cut-to-length harvesting and produces forecast estimates of yield for each log-type in terms of the volume and number of pieces in each of a series of small-end diameter categories. The decision support system developed in this research provides the sawmill with an efficient means of gaining a comprehensive insight into the yield potential of standing timber lots and, as such, represents a valuable aid to timber procurement and production planning.

**Page**

vii, 88pp

**Location**

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**Thesis**

M. Agr. Sc. University College Dublin, 1998

---

**Number**

1567

**Author**

Hendrick, Eugene

**Title**

The establishment, growth and stability of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) in Ireland with particular reference to wet mineral soils.

**Date**

199

**Key Word**

Sitka spruce  
*Picea sitchensis* (Bong.) Carr  
soil preparation  
wet mineral soils  
ploughing  
mounding  
subsoiling  
silviculture  
peatlands

**Abstract**

A series of replicated field experiments was established from 1971 to 1990 to investigate the effect of soil preparation on the survival, growth and stability of Sitka spruce (*Picea sitchensis* (Bong.) Carr.) crops on afforestation sites on wet mineral soils in Ireland. The soil preparation treatments investigated included single and double mouldboard ploughing, complete ploughing, mole drainage and subsoiling, excavator mounding and mole mounding (a combination of mole drainage and mounding), open drains and excavator mounding. These were compared with no soil preparation at a number of sites. All of the treatments significantly increased both tree survival and plot height and basal growth compared with no soil preparation. Subsoiling, the open drain treatment and to a lesser extent complete ploughing treatment varied from site to site. The reduction was more pronounced on flat sites and those with a surface peat layer. There was no significant difference in height or basal area production between mounding and ploughing. Planting positions or method following soil preparation had no effect on survival or subsequent height growth.

**Page**

xxiii, 370pp

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Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

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**Thesis**

Ph. D., University College Dublin, 1999

**Address of author**

COFORD, Agriculture Building, University College Dublin, Belfield, Dublin 4.

---

**Number**

1568

**Author**

Keary, Kevin C.

**Title**

An evaluation of the Woodplan software for the management of commercial forests in Ireland.

**Date**

1998

**Key Word**

forest management

computer systems

information technology

software

production forecasting

**Abstract**

The objective of this research was to evaluate the Woodplan software for the management of commercial forests in Ireland. Specifically the FOREST RECORD, the STANDING TIMBER and the VALUATION AND FORECASTING modules of the Woodplan suite of computer programmes were evaluated. These modules relate to (1) record keeping, (2) timber inventory, and (3) investment appraisal and production forecasting, respectively. The use of computer systems in forest management are presented. An overview of Woodplan and a comprehensive account of the three modules under investigation are given. The evaluation of the software shows that Woodplan is unsuitable for use in Irish commercial forestry. This was mainly due to a serious misuse of Forestry Commission theory and serious programming errors in all of the software's modules investigated. The inadequacies of each of the modules investigated are outlined.

**Page**

x, 91pp

**Location**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

**Notes**

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**Thesis**

M. Agr. Sc.

---

**Number**

1569

**Author**

Nugent, Caroline

**Title**

The development and evaluation of an operational spatial and temporal timber harvest scheduling system.

**Date**

1998

**Key Word**

harvesting

harvesting scheduling system

decision-support-tool

information technology

forest management

software

**Abstract**

Five case studies were undertaken to evaluate the Harvesting Scheduling System (HSS), a decision-support-tool, which has been formulated within the framework of linear programming and mixed integer programming to optimise harvest scheduling and allocation of timber. The study concludes that HSS can provide decision-support for Coillte managers on national, regional and forest levels. The HSS was successfully used to design forest management strategies that satisfied detailed management and processing industry demand requirements. The precise quantification of the monetary savings obtainable through implementation of the HSS with Coilltes' harvest scheduling procedures is difficult, but indicators from the analyses carried out in this study are that potential savings of several million pounds over a five year period can be expected.

**Page**

xv, 126pp

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**Notes**

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**Thesis**

M. Agr. Sc.

---

**Number**

1570

**Author**

Willis, Jacqueline M.

**Title**

The development of Sitka spruce crops (*Picea sitchensis* (Bong.) Carr.) on wet mineral soils following site cultivation.

**Date**

1999

**Key Word**

*Picea sitchensis* (Bong.) Carr

Sitka spruce

silviculture

soil cultivation

drainage

mole drainage

mounding

wet mineral soils

**Abstract**

In Ireland much of the land available for plantation establishment requires some degree of soil cultivation and drainage to improve its suitability for tree growth. The method of cultivation and drainage normally varies

depending upon the soil type and its drainage characteristics. Little research has been carried out on the impact of practices such as mounding and mole drainage upon rooting and biomass production in young crops. The research reported in this thesis was carried out on five sites where the general soil type was surfact water gley. The cultivation methods investigated included mounding, mole drainage with mounds, mole drainage only and ripping. Sitka spruce trees ranging in age from five to thirty years were excavated from these experimental sites to describe the impact of different soil cultivation techniques upon root architecture and above and below ground biomass production. Root architecture was described using detailed measurements of root angles, root depths and root diameters. In two of the experimental sites the water table level was monitored over a period of two years. The impact of mound and mole drainage upon water table level varied from site to site. However, generally mounding, whether combined with open drains or mole drains, appeared to increase tree size in terms of biomass production and enhance the depth of rooting compared with any of the other cultivation treatments examined. Larger mounds encouraged greater biomass production and greater rooting depth over the first seven growing seasons. All of the trees sampled were found to be reasonably symmetrical with a similar pattern of root spread regardless of the type of soil cultivation used.

**Page**

ix, 207pp

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**Thesis**

Ph. D., University College Dublin, 1999

---

**Number**

1571

**Author**

Aherne, Julian\*

Sverdup, Harald

Farrell, Edward P.\*

Cummins, Thomas\*

**Title**

Application of the SAFE model to a Norway spruce stand at Ballyhooly, Ireland.

**Publisher**

Elsevier

**Place**

Amsterdam

**Date**

1998

**Source**

Forestry Ecology and Management

**Volume**

Vol. 101, Nos. 1-3

**Key Word**

soil

soil chemistry

acidification

atmospheric deposition

forest ecosystems

acid rain

environment

**Abstract**

Acid rain results in qualitative and quantitative changes in terrestrial ecosystem boundary conditions. Typically these changes exceed the range of variation observed or inferred that mimic future scenarios. The dynamic biogeochemical model SAFE was applied to Ballyhooly intensive forest monitoring plot located in southern Ireland. SAFE is a dynamic, process-oriented soil chemistry model developed with the objective of studying the effects of acid deposition on soils and groundwaters. It calculates the value of different chemical state variables as a function of time. The model requires input data on soil mineralogy, soil texture, CEC and base saturation,

together with time-series data for atmospheric deposition, nutrient uptake and cycling, and hydrology. Model results indicate that the basic principles in the model are capable of describing the present soil-solution chemistry at Ballyhooly without extensive calibration. However, the gibbsite equilibrium model does not describe the observed concentrations of aluminium at Ballyhooly, and the assumption that sulphur adsorption is insignificant appears to be incorrect. Inclusion of processes such as sulphur adsorption, aluminium complexation with organic matter, or a kinetic-based aluminium model may improve model results.

**Page**

pp 331-338

**Location**

Coillte Research & Development

**Notes**

available; includes tables, graphs, bibliographical references

**Address of author**

\*Department of Environmental Resource Management, University College Dublin, Belfield, Dublin 4

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**Number**

1572

**Author**

Warfvinge, Per

Aherne, Julian

Walse, Charlotta

**Title**

Biogeochemical modelling of EMAN research sites: a comparison.

**Publisher**

Elsevier

**Place**

Amsterdam

**Date**

1998

**Source**

Forestry Ecology and Management

**Volume**

Vol. 101, Nos. 1-3

**Key Word**

forest ecosystems

ecology

experimental manipulation

acidification

acid deposition

nutrient cycling

aluminium

**Abstract**

The Experimental Manipulation of Forest Ecosystems in Europe (EXMANS) project was conducted to assess the effects caused by atmospheric deposition of forest ecosystems. The dynamic biogeochemical model, Soil acidification in Forest Ecosystems (SAFE), was used to simulate the soil and soil solution chemistry at the Irish site at Ballyhooly, Hoggwald (DE), Klosterhede (DK) and Solling (DE) from 1800 to 2000. The model considers soil processes (cation exchange, weathering, solution equilibria) and external forcing function (deposition, hydrology, nutrient uptake). The model was successfully calibrated to all EXMAN sites. Base cation budgets were evaluated, and they demonstrate the importance of nutrient cycling for the element fluxes in the rooting zone. The vital stands, Ballyhooly and Hoggwald have higher litterfall rates and the lowest canopy leaching rates than Klosterhede and Solling. SAFE suggests that the soils at Hoggwald and Ballyhooly are still being depleted of base cations, while Klosterhede and Solling are close to a steady-state or show slight recovery. Comparison with soil solution data show that SAFE reproduces the pH in solution in the most soil layers. One exception was the O-layer in Hoggwald, where underpredicted pH resulted from overestimation of nitrification. Base cation concentrations were well reproduced for all layers for all sites. SAFE predicts that base cation concentrations at all sites have reached a peak and will decline. Calculated aluminium concentrations were within the range of the observations. The model shows that nutrient cycling dominates O-layer chemistry. N-uptake appears to follow the fine root biomass distribution. To reproduce base cation fluxes correctly, base cation uptake had to be

allocated to lower soil layers. A1-solubility was similar for comparable sites. The effects of shortcomings in the S02-4 chemistry of SAFE on model predictions was discussed. The model predicted the major effects of the 'clean rain' manipulation on soil solution at Solling, decreased A1 and base cation concentrations and increased pH. The model application to the Klosterhede manipulation was difficult to evaluate due to the temporal variability in experimental data, caused by the marine influence.

**Page**

pp 143-153

**Location**

Coillte Research and Development

**Address of author**

Department of Environmental Resource Management, University College Dublin, Belfield, Dublin 4.

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**Number**

1573

**Author**

Kilbride, C.M.

Byrne, K.A.

Gardiner, J.J.

**Title**

Carbon sequestration and Irish forests.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Key Word**

carbon sequestration

carbon fixing

green house gases

carbon storage

environmen

**Abstract**

Currently, there is increasing interest in carbon sequestration by forest crops as a means of mitigating greenhouse gas emissions. This review was compiled to establish the information available at present on carbon storage in forest plantations, with particular reference to the Irish situation. With the available information, a preliminary estimate was made of the amount of carbon currently stored in Irish forests. An estimate was also made of the amount of carbon which could potentially be stored in forests established since 1990. Forests established since 1990 are eligible for inclusion in the calculation of carbon sequestration for the Kyoto period 2008-2012. The calculations indicate: the average rate of carbon storage in Irish plantations; the percentage of CO<sub>2</sub> emissions which could be offset by the achievement of various levels of planting targets; the percentage of greenhouse gas (CO<sub>2</sub> + CH<sub>4</sub> + N<sub>2</sub>O) which could be offset by the achievement of various levels of planting targets; if a model based on mean annual increment (MAI) is used to estimate carbon sequestration by forests during the Kyoto period (2008-2012) the estimates of carbon sequestered may be higher than those calculated using current annual increment (CAI) because CAI for new or young forests will be less than maximum mean annual increment (MMAI) during that period. Other important points include: the need to continually plant new land in order to maintain carbon fixation by forest growth; an increase in yield class increases carbon storage in all pools; the soil carbon pool accounts for the largest proportion of carbon storage (ca. 50%) in the tree-soil-product system. Although the model used in this review is the most suitable one currently available for the estimation of carbon storage in Irish forests, it requires adaptation to the Irish situation in order to provide more accurate estimates.

**Page**

vi, 37pp

**Location**

COFORD

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**Notes**

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---

**Number**

1574

**Author**

Clinch Peter J.

**Title**

Economics of Irish forestry: evaluating the returns of economy and society

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Key Word**

economics

cost benefit analysis

forestry policy

land use

public attitudes

farm forestry

incentives

Government subsidies

European Union

**Abstract**

Despite major recent publications outlining the future of forestry in Ireland, in particular the Government's 'Strategic Plan for the Forestry Sector' (the 'Strategy'), the net contribution that investments in forestry make to the economy and to society has not been assessed. This book attempts to calculate the economic value of investments in forestry, thereby testing the hypothesis that investments in afforestation in Ireland are socially efficient, i.e. whether they will make a positive contribution to the economy and society. The Strategic Plan for Irish Forestry is assessed using Cost Benefit Analysis. Using the Total Economic Value framework for this analysis, monetary values are placed on each of the costs and benefits of the programme including: timber, inputs, carbon sequestration, water effects, recreation and tourism, biodiversity impacts and landscape effects. The results of three surveys on various aspects of attitudes to, and the use of, forests in Ireland are outlined. The study concludes that, if the Forestry Strategy is implemented, the resulting expansion of the forest estate will provide a rate of return of approximately 4%. This is below the Government's test rate of 5%. Even if EU funds allocated to afforestation could not be made available for alternative use (in which case the Strategy would pass a cost benefit analysis at a 5% discount rate) there is still a serious doubt as to whether the social benefits of the programme justify the level of subvention required. In order to determine whether forestry is a wise investment of public funds a number of issues, not dealt with in the Strategic Plan, must be clarified. These issues include the following: the viability of forestry as compared to alternative land uses; whether forestry subsidies will merely replace agricultural subsidies; the real purpose of subsidies; the efficiency of using forestry funding to transfer income to farmers; and, the job creation potential of the afforestation programme. The author concludes that, without a serious attempt to deal with these issues, financing of the Strategic Plan is questionable.

**Page**

xxviii, 276pp

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COFORD

**ISBN**

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**Notes**

available; includes tables, graphs, maps, index, bibliographical references

**Address of author**

Department of Environmental Studies, University College Dublin, Belfield, Dublin 4

---

**Number**

1575

**Author**Binggelli, Pierre  
Rushton, Brian S.**Title**

Sycamore and ash: a review of aspects relevant to Irish forestry.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Key Word**sycamore  
Acer pseudoplatanus L.  
ash  
Fraxinus excelsior L.  
silviculture  
broadleaves  
broadleaf forestry  
ecology  
morphology  
genetics  
pests**Abstract**

The major objective of this review is to collate and integrate the extensive body of information on sycamore (*Acer pseudoplatanus* L.) and ash (*Fraxinus excelsior* L.) available from as a wide variety of relevant fields of study (biology, ecology, silviculture, provenance studies, breeding programmes, etc.) and geographical/cultural 'provenances' as possible in order to inform forestry practice. The recent history of broadleaf planting in Ireland and Great Britain is outlined. The extent of both species, and their economic importance in both countries is outlined. Both species are examined under the following headings: planting stock; provenance testing; genetic variation; and silviculture. Other issues examined include floral biology, typical pests and diseases, and the effects of weather. The authors conclude the forestry potential of sycamore and ash can only be determined through an integrated programme of research which draws on knowledge from a number of fields including forestry, ecology and morphology.

**Page**

iv, 41pp

**Location**

COFORD

**ISBN**

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available; includes photos., table; bibliographical references divided into general reading list and classified bibliography

**Address of author**

School of Applied Biological and Chemical Sciences, University of Ulster, Coleraine, BT52 1SA, Northern Ireland

**Number**

1576

**Author**

Byrne, Kenneth, Adrian

**Title**

Studies on the carbon balance in a blanket peatland forest.

**Place**

Dublin

**Date**

1999

**Key Word**

peatland afforestation

Sitka spruce

*Picea sitchensis*

forest ecosystems

ecology

CO<sub>2</sub> emission

soil chemistry

peat core experiments

root respiration

environment

climate

peatland forest

carbon balance

**Abstract**

Studies on the carbon balance in blanket peatland forest were conducted in Cloosh Forest, western Ireland. Studies were carried out at 10 sites, two on virgin peat, six forested sites varying in age from two to thirty six years and two sites clearfelled in Spring 1996. In the youngest and oldest forest sites the principal species was Sitka spruce, while in the others it was lodgepole pine. Prior to harvesting the clearfell sites carried Sitka spruce. The principal task of the project was the monitoring of soil CO<sub>2</sub> emissions in all sites using the soda-lime method. Some measurements of CO<sub>2</sub> and CH<sub>4</sub> emissions were made using the closed chamber method. Soil temperature and depth to water table was also monitored regularly. The dynamics of CO<sub>2</sub> and CH<sub>4</sub> were examined more closely in the laboratory using peat core experiments. In addition, decomposition was compared between sites using a litter bag experiment. The results of this study cast doubt on the hypothesis that forestry development increases CO<sub>2</sub> emissions. In the most recently afforested site drainage had failed to lower the water table and there was no increase in CO<sub>2</sub> emissions, compared to the virgin sites. In the lodgepole pine sites there was no increase in CO<sub>2</sub> emissions despite there being an increase in the depth to the water table. This indicated that, despite being aerated, the peat is resistant to decay. The laboratory core experiments, where CO<sub>2</sub> emissions from forested peat at 50-70 cm were negligible, supported this. In contrast to the situation in lodgepole pine, CO<sub>2</sub> emissions in mature Sitka spruce were increased. Root respiration appears to be the primary source of these emissions. CO<sub>2</sub> emissions were strongly controlled by soil temperature and depth to water table in all sites with a lag effect of depth to water table being observed in the virgin sites and the most recently afforested site. Following clearfelling CO<sub>2</sub> emissions were reduced to a level similar to that in virgin sites. The most likely cause of this was the cessation of root respiration. CH<sub>4</sub> emissions were greatly reduced following forestry development.

**Page**

xi, 180pp

**Location**

Forest Ecosystem Research Group, UCD

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**Thesis**

Ph. D., UCD, 1999

**Address of author**

Forest Ecosystem Research Group, Department of Environmental Resource Management, Agriculture Building University College Dublin, Belfield, Dublin 4

---

**Number**

1577

**Author**

Doyle, Marie

**Title**

The effect of forest-harvesting machine traffic on the aeration and pore size distribution in a blanket peat.

**Date**

1997

**Key Word**

peatland forest

harvesting

forest-harvesting machinery

surface aeration

soil compaction

environment

**Abstract**

Large areas of blanket peatland forest established in the 1950s are currently being scheduled for clearfell. Forest harvesting operations have become increasingly mechanised in recent times and it is not clear what effect the passage of such machines will have on the physical status of the peat. A study was undertaken to evaluate the effect of machine traffic on various physical properties of the peat. The study area was located on a typical blanket peatland site near Maam Cross, County Galway. Peat samples were taken from 5-10cm depth and 20-25cm prior to forest harvesting and following 1,2,4, and 8 round trips of the forwarder used to extract the timber from the forest to roadside. The water characteristic curve was used to outline changes in pore size distribution with increasing traffic intensity. In addition, changes in bulk density and aeration were measured. Results suggest that machine traffic reduced aeration and increased water retention in the peat. This effect was largely confined to the surface layer and did not extend to 20-25cm depth. The greatest impact occurred following the first machine pass, however, in many cases, further passes compounded the effects but at reduced increments. Following eight machine passes, aeration in the surface layer, while well above the 10% recommended minimum for normal root development, had been reduced by 61% and the peat was retaining significantly higher volumes of water. Bulk density, a commonly used indicator of compaction, was not as greatly affected by the passage of machines in the peat. Recommendations include pre-planning of extraction routes and, where possible, confining operations to times when the soil moisture content is at its lowest.

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

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**Thesis**

M. Agr. Sc., UCD, 1999

---

**Number**

1578

**Author**

Zhang, Zhenhua

**Title**

Impact of seasalt deposition on cation exchange processes and proton transfer in a forested peatland.

**Date**

1997

**Key Word**

marine depositon

maritime environment

acidification

soil water

seasalt depositions

cation exchange

proton transfer

peatland forests

forest ecosystems

environment

**Abstract**

The deposition in a maritime environment is dominated by marine deposition. Seasalt deposition may induce episodic acidification in soil water and in surface waters. The objective of this project is to reveal the mechanism of the seasalt effect in soils in a forested peatland. The field investigation was carried out in Cloosh fores, Co. Galway. Soil samples were collected and analysed for concentrations of exchangeable cations about once a

month during 1996 and weeks 8 and 11 during 1997. The results have shown that the composition of exchangeable cations was dominated by  $Mg^{2+}$  and  $Na^{+}$  in the 0-60 cm peat, reflecting the influence of marine deposition. However, exchangeable  $Ca^{2+}$  was the dominant exchangeable cation in the O1 horizon, which may reflect the influence of the forest and forest operations. The different distribution patterns with soil depth and the difference between the growing and the dormant seasons of exchangeable cations were very clear, reflecting the nutrient mobility and cycling in the forested peatland ecosystem. The results also indicated that there is some evidence of the the seasalt effect in the O horizons, when minor seasalt deposition occurred. This may suggest that a significant change would occur in the distribution of exchangeable cations after a major storm event. In the laboratory, leaching experiments demonstrated that the addition of a relatively high concentration of seasalt could transfer protons from the soil to the percolating water. This may imply that the episodic acidification will occur in the surface waters after storm events in maritime regions.

**Page**

viii, 107pp

**Location**

Forest Ecosystem Research Group, UCD

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**Thesis**

M. Agr. Sc., UCD, 1997

---

**Number**

1579

**Author**

de Kluizenaar, Yvonne

**Title**

Mapping of Irish SO<sub>2</sub> and NO<sub>x</sub> emission on the EMEP grid.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report Number 36

**Date**

1998

**Key Word**

CO<sub>2</sub> emissions

NO<sub>x</sub> emissions

greenhouse gases

air pollution

environment

land use

**Abstract**

In Ireland emission estimates of sulphur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) are submitted annually to the United Nations Economic Commission for Europe Secretariat. Every five years, these emission estimates are required to be disaggregated and mapped onto grids, which are used for modelling purposes. In this project a methodology has been developed to spatially disaggregate the Irish SO<sub>2</sub> and NO<sub>x</sub> emissions. Irish SO<sub>2</sub> and NO<sub>x</sub> emissions for 1995 have been mapped on the EMEP 50 x 50 km and the EMEP 150 x 150 km grid systems, using a geographic information system (GIS : Idrisi). A number of databases, including populations and employment statistics, CORINE land cover, statistics and domestic combustion, emissions of large point sources, vehicle and vehicle mileage statistics and annual aircraft movements, have been used to spatially disaggregate the national emissions. SO<sub>2</sub> and NO<sub>x</sub> emission are then allocated to specific EMEP grid squares.

**Page**

58pp

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables, graphs, maps, bibliographical references; prepared on behalf of the Environmental Protection Agency

---

**Number**

1580

**Author**

Ryan, Miriam G.

Farrell, E.P.

**Title**

Assessing the sensitivity of surface waters to acidification: a literature review.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report Number 25

**Date**

1998

**Key Word**

environment

acidification

surface waters

forest ecosystems

**Abstract**

A literature review was undertaken to examine methods used internationally to assess the sensitivity of surface waters to acidification. National guidelines and methods used in several countries were analysed and, while it was found that no single method could be applied to Ireland, key chemical and biological parameters should be measured. A number of information gaps which need to be filled are identified. A preliminary map of Ireland has been produced which identifies areas sensitive to acidification based on their geology and soils. This map should be consulted in determining acid sensitive areas when changes in land-use are proposed. The Cresser (sodium dominance) method for determining the sensitivity of individual water bodies within a catchment is assessed. In the event of this method being found suitable for Irish conditions, a sampling regime is proposed.

**Page**

iv, 34pp

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables, map, bibliographical references

**Address of author**

COFORD, Agriculture Building, University College Dublin, Belfield, Dublin 4

Department of Environmental Resource Management, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1581

**Author**

Jones, Suzanne M.

Cummins, Thomas

Boyle, Gillian

Aherne, Julian

Farrell, Edward P.

**Title**

A pilot study into the effects of clearfelling on nutrient lossess and sustainability.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report No. 22

**Date**

1998

**Key Word**

nutrient cycling

clearfelling

sustainable forest management

forest ecosystems

environment

**Abstract**

A study on the impact of clearfelling and replanting on nutrient cycling and water quality was conducted in a Norway spruce stand at Ballyhooly, Co. Cork. The stand, situated on a free-draining sandstone soil in the Blackwater Valley, had been the subject of intensive monitoring of biogeochemical processes for six years prior to clearfelling. The nutrient-cycling steady state attained by the mature Norway spruce stand at Ballyhooly was significantly disturbed by the clearfelling of the stand. Clearfelling results in a loss of organic matter and nutrients from the site and a significant re-distribution of nutrients within the ecosystem. As the study is continuing, the results should be considered an interim measure. The principal feature to date has been the occurrence of high concentrations of nitrate measured in the soil water following clearfelling. These have been more than ten times the pre-clearfelling concentrations. The concentrations of this potentially toxic ion exceeded the maximum concentrations permissible under the EU Directive on drinking water on several occasions. However, the implications of the results for surface waters are not clear as yet. There are no grounds for the extrapolation of these results to other sites.

**Page**

vi, 62pp

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables, graphs, map, bibliographical references

**Address of author**

Department of Environmental Resource Management, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1582

**Author**

Boyle, Gillian M.

Farrell, Edward P.

Cummins, Thomas

**Title**

European Community Scheme for the Protection of the Community's Forests against Atmospheric Pollution Council Regulations 3528/86 and 2157/92. Monitoring of forest ecosystems in Ireland. FOREM 3 Project Project Number 9560 IR 0030. Final Report.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report No. 21

**Date**

1998

**Key Word**

atmospheric pollution

forest ecosystems

acid soils

forest health

environment

**Abstract**

The project was carried out in the period January 1995 to December 1996 to improve understanding of atmospheric pollutions and its effect on forests. Measurements included: quantitative collection and chemical analysis of atmospheric gases; particles and precipitation in an open-field plot; quantitative collection and chemical analysis of forest throughfall and stemflow; collection and chemical analysis of forest soil solution from zero-tension lysimeters below the forest floor, and from suction lysimeters at greater depths; tensiometer measurements; soil chemical analysis; chemical analysis of tree foliage; quantitative collection and chemical analysis of above ground forest litter. In addition, detailed site, stand and soil descriptions were made. The greatest threat to forest health is in the east of the country, where anthropogenic influences are greatest. However, the levels of pollution are relatively low by European standards and only those forests located on poorly buffered acid soils, principally those derived from quartzite and granite, should be considered susceptible. Sitka spruce is the major species throughout Ireland's plantation forests and, although the fact that this single species comprises a high proportion of the total forest area is in many respects undesirable, its tolerance of acid stress gives some ground for reassurance. Forest health at all sites, including the eastern one, Roundwood, is good. Soil data from this site indicate significant acid stresses, although the consequences to date have not been serious. One of the difficulties of long-term monitoring lies in the interpretation of large volumes of data collected over many years. This problem can, however, be converted to an opportunity through the development of models to simulated process in the ecosystem. These models can, in turn, be used to predict the consequences of change within the ecosystem.

**Page**

xiv, 185pp

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

Department of Environmental Resource Management, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1583

**Author**

Boyle, Gillian M.  
Farrell, Edward, P.  
Cummins, Thomas

**Title**

European Community Scheme for the Protection of the Community's Forests against Atmospheric Pollution Council Regulations 3528/86 and 2157/92. Intensive monitoring network - Ireland. FOREM 2 Project. Project Number 9360 IR 0030. Final Report

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report No. 18

**Date**

1997

**Key Word**

forest health  
forest ecosystems  
environment  
atmospheric pollution  
acidification

**Abstract**

The project was carried out in the period September 1993 to June 1995 to improve understanding of atmospheric pollution and its effect on forests using information gathered from permanent sample plots located in important forest ecosystems in Ireland. Measurements included: quantitative collection and chemical analysis of

atmospheric gases, particles and precipitation in an open-field plot; quantitative collection and chemical analysis of forest throughfall and stemflow; collection and chemical analysis of forest soil solution from zero-tension lysimeters below the forest floor, and from suction lysimeters at greater depths; tensiometer measurements; soil chemical analysis; chemical analysis of tree foliage; quantitative collection and chemical analysis of above ground forest litter. In addition, detailed site, stand and soil descriptions were made. Forest health results indicate a generally low level of discoloration and defoliation. Deposition of major acidifying and nutrient substances, their interaction with the live tree canopy, the dead forest litter and the underlying soils, and the soil-solution composition at the western sites (Brackloon and Cloosh) do not give cause for concern for the long-term viability of the forest ecosystems. However, there is a significant impact of seasalt deposition events on soil-solution composition, both in the medium terms of weeks, and possibly in the longer term of years. The biological significance of seasalt-soil interactions are as yet unclear, but the potential for transitory acidification effects on surface waters is supported. At the eastern site, Roundwood, current deposition levels of acidifying substances and soil-solution composition, combined with the low rate of release of buffering substances from the soil minerals, strongly suggest that the critical load of acidity for this soil may be exceeded. This conclusion, if correct, has important implications for the potential for accelerated soil acidification of poorly-buffered substrates in the east of Ireland, especially under forest-mediated deposition regimes. This in turn indicates a need to closely monitor deposition levels, to further refine the application of the critical loads method to this site, and to elucidate any possible impacts on forest health and surface-water quality.

**Page**

iv, 220pp

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables, graphs, diagrams, bibliographical references

**Address of author**

Department of Environmental Resource Management, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1584

**Author**

Boyle, Gillian M.  
Cummins, Thomas  
Aherne, Julian  
van den Beuken, Roel

**Title**

European Community Scheme for the Protection of the Community's Forests against Atmospheric Pollution Council Regulations 3528/86 and 1613/89. Continued monitoring of a forest ecosystem in Ireland. BAL3 Project. Project Number 9160 IR 0020 Final Report.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report No. 17, Ballyhooly

**Date**

1996

**Key Word**

forest health  
forest ecosystems  
atmospheric pollution  
soil water  
water quality  
environment

**Abstract**

The aim of the project was to monitor the impact of atmospheric deposition on coniferous forest ecosystem. The project was based in a mature, managed plantation stand of Norway spruce (*Picea abies* (L.) Karst.) approximately 50 years old, on an orthic podzol soil (F.A.O.) derived from sandstone till/colluvium. The site is in

southern Ireland, in a location relatively remote from pollution sources and about 30 km from the sea. The project consisted of a series of site studies investigating the edaphic and vegetation components of the ecosystem and the intensive monitoring of the chemistry of water, with continuous collections being made at its point of entry to the ecosystem (precipitation) and at various points on its passage through it (throughfall, humus water and soil water). Soil water tension was monitored on a weekly basis and soil samples were collected occasionally. Forest litter was collected four-weekly. Atmospheric gas concentrations were also monitored at intervals. The conclusions of this project are: that precipitation is dominated by seasalts, with an anthropogenic component; that ammonium depositions in this region of moderately intensive dairy farming is a potential pollution effect, and ammonia deposition needs closer study; that the forest floor is central to the forest nutrient cycles, and will be crucial in the redistribution of nutrient pools following clearfelling; that the soil solution is dominated by aluminium; that seasalt inputs are important in the Irish environment; that solute movement through the root zone is very slow. The study concludes that the forests at Ballyhooly and in the region are healthy. The continuous, intensive, high-quality measurements of water chemistry over a six-year period will assist understanding of global climate systems, the impacts of regional land-use on ecosystem processes and the internal nutrient cycles which govern forest health and productivity.

**Page**

ix, 122pp

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables, graphs, diagrams, bibliographical references

**Address of author**

Department of Environmental Resource Management, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1585

**Author**

de Kluizenaar, Yvonne

**Title**

Passive sampling of atmospheric sulphur dioxide and ammonia in Ireland.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Groups Report No. 19

**Date**

1997

**Key Word**

ammonia

sulphur dioxide

NH<sub>3</sub>

SO<sub>2</sub>

acidification

forest ecosystems

forest health

atmospheric pollution

sampling

**Abstract**

In this study a passive sampler, the "Willems-badge" was tested for use in monitoring monthly average concentrations of Ammonia (NH<sub>3</sub>) and sulphur dioxide (SO<sub>2</sub>) at forest sites in Ireland where concentration levels are generally low (1 microgram per cubic metre). Field measurements with the passive sampler are compared with conventional measurement techniques (High Efficiency Denuder System (HEAD) and Fluorescent SO<sub>2</sub> analyser) to determine the precision and accuracy of the method at different concentration levels and different exposure times. Comparison of the Willems-badge for SO<sub>2</sub> with the HEAD and fluorescence analysis showed good degrees of comparability. Three different types of NH<sub>3</sub> badges were tested. Deposition estimates were made using a method based on analysis of throughfall data and a method based on

deposition velocity and concentration level. A higher value of SO<sub>2</sub>/SO<sub>4</sub><sup>2-</sup> dry deposition was found using throughfall data analysis. A negative amount of dry deposition was found using throughfall data for NH<sub>4</sub><sup>+</sup>. This can be explained by canopy uptake of nitrogen compounds.

**Page**

52pp

**Location**

Forestry Ecosystem Research Group, UCD

**Notes**

includes tables, ills., map, bibliographical references

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**Number**

1586

**Author**

Smith, Elaine, M.

Jones, Suzanne M.

Farrell, Edward P.

**Title**

The use of nursing mixtures with special reference to frost protection. BOGFOR3 Project.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report No. 38

**Date**

1998

**Key Word**

cutaway peatland

peatland afforestation

nurse species

frost damage

nursing mixtures

silviculture

peatland forestry

**Abstract**

In an attempt to overcome the problem of severe frost damage to trees planted on cutaway peatland, the use of nursing mixtures was investigated. Nurse species provide protection from frost damage by increasing the temperature within crops and by shading trees from direct sunlight following severe frosts. An extensive literature review was undertaken to determine which species are used in nursing mixtures, the methods of establishment used and which have proved successful. It is recommended that 1.) a series of species trials should be established to examine the growth of a range of nursing mixtures on cutaway peatland 2.) species suggested for testing as the main species are Sitka spruce (*Picea sitchensis* (Bong.) Carr.), Norway Spruce (*Picea abies* L.; as the nurse species, Birch (*Betula* spp.) alder (*Alnus* spp.), Scots pine (*Pinus sylvestris* L.) and slow-growing lodgepole pine (*Pinus contorta* Dougl.) Japanese larch is not considered effective 3.) the mixtures should be established by strip planting and underplanting 4.) further trials should be established with species such as oak in mixture with alder 5.) future trials should be extended to identify problems later in the rotation.

**Page**

ii, 23pp

**Location**

Forest Ecosystem Research Group

**Notes**

includes bibliographical references

**Address of author**

Department of Environmental Resource Management, Agriculture Building, University College Dublin, Belfield, Dublin 4.

---

**Number**

1587

**Author**

Seymour, E.M.\*

Mitchell, P.I.\*

Vintró, L. León \*

Little, D.J.

**Title**

Monitoring, modelling and recycling radiocaesium in a semi-natural oak forest at Brackloon Wood, Westport, Co. Mayo.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report No. 39

**Date**

1998

**Key Word**

atmospheric pollution

forest ecosystems

radioactive material

anthropogenic radionuclides

radiocontaminants

radionuclide recycling

litter

**Abstract**

Studies have shown that forest ecosystems efficiently accumulate and recycle a wide range of pollutants including anthropogenic radionuclides, and that radiocontaminants, once deposited, will persist in such environments. Following the release of radioactive material to the atmosphere, the proportion of the initial deposition intercepted by forests is generally higher than that for agricultural systems. In an attempt to understand the behaviour of radiocaesium in a deciduous forest ecosystem, a combined field and modelling study was carried out in a semi-natural sessile oak (*Quercus petraea*) forest located at Brackloon, County Mayo. The study found that soil is the major repository of <sup>137</sup>Cs in a deciduous forest ecosystem, 94% of the total inventory retained within the Of and Oh horizons. In contrast, the wood, roots and litter, which together constitute almost 98% of the forest biomass, contain only 2-3% of the total inventory. The bulk (>90%) of the <sup>137</sup>Cs in the surface organic horizons is present in a non-labile form, most likely as a result of complexation with decomposing organic matter. Very little appears to be leached to the underlying mineral horizons, and it is predicted that most of the <sup>137</sup>Cs will remain in the surface organic layers for many years.

**Page**

14pp

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables maps bibliographical references

**Address of author**

\* Department of Experimental Physics, University College Dublin, Belfield, Dublin 4

Department of Environmental Resource Management, Agriculture Building, University College Dublin, Belfield, Dublin 4

**Number**

1588

**Author**

Turner, Peter

**Title**

Larger mammal activity in Brackloon Wood, Co. Mayo (July-September 1998).

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report No. 41

**Date**

1998

**Key Word**

forest ecosystem

forest habitat

mammals

wildlife

ecology

**Abstract**

As part of the development of Brackloon wood as an element of the proposed Irish Ecological Monitoring Network, a survey of mammal populations of the wood was carried out in 1997. As part of that study larger mammal traces in the wood were recorded over 3 periods of 5, 12, and 3 days in July-September 1997. Traces were found of badger, pine marten, fox, hare, hedgehog, stoat and mink. The most significant being those badger and pine marten. The object of this study was to obtain more data on mammal activity in the wood, in particular on the badger. Such data were seen as reinforcing the baseline studies carried out as part of the development of long term ecological monitoring at this site.

**Page**

6pp [5]

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes graphs, maps

---

**Number**

1589

**Author**

Ciaurriz Jaso, Puy

**Title**

Environmental factors and human influence on vegetation dynamics at Brackloon Wood Co. Mayo.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group. Report No. 27

**Date**

1997

**Key Word**

foresty ecosystems

seminatural woodland

broadleaf woodland

human impact

soil

topography

flora

beech

Fagus sylvatica

**Abstract**

Brackloon Wood near westport in Co. Mayo was deemed to be a good example of seminatural woodland in which to study anthropogenic impact in conjunction with edaphic and physical factors on ground vegetation dynamics and distribution. Three study areas, under mature deciduous woodland cover, were intensively studied;

the sites differed in topography, soil type, canopy density and degree of human impact. Though topography, soil-type, light attenuation and canopy density influence vegetation dynamics appreciably, recurrent human impact, supported by considerable archaeological evidence, was found to be the single most important influence on ground flora distribution. However, the presence of a number of ancient woodland species in the ground flora indicates that there were refuge sites for these species, which re-colonised disturbed areas subsequent to major disturbance events. Topography and soils exert the greatest influence on ground flora distribution. Light attenuation and soil moisture content played important roles in specific localities. One of the most recent human impacts has been the introduction of beech (*Fagus sylvatica*). The results of this study indicate that beech is likely to out-complete oak in the future on brown earth soils on well drained slopes. Although the principle dispersal agents of beech are unknown, it is likely that it will continue to dominate and spread within the western section of Brackloon Wood.

**Page**

43pp, 3 plates [29]

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

thesis submitted to the National University of Ireland for the award of degree of Master of Science (Agriculture)

**Thesis**

M. Agr. Sc., UCD, 1997

---

**Number**

1590

**Author**

Dowling, Lisa

**Title**

Assessment of Brackloon Wood, Co. Mayo as a habitat for wild mammals.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forestry Ecosystem Research Group. Report No. 26

**Date**

1997

**Key Word**

forest ecosystems  
forest habitats  
semi-natural woodlands  
broadleaf woodlands  
oak  
mammals  
wildlife  
animals

**Abstract**

The chief objective of this project was to evaluate Brackloon Wood, Co. Mayo as a habitat for mammals. Wood mouse populations were sampled in an intact oak stand, and area clearfelled three years ago and a shrub-covered area. A nearby lodgepole pine site was also studied for comparative purposes. Significantly more wood mice were trapped in the clearfell area than in the oak wood or coniferous plantation respectively. However, no significant difference was noted when comparing trapline mean in the major sites with the numbers found in the shrub-covered area. Five species of bat were recorded using modified radio-receivers. Evidence was found for the presence of badgers, pine martens, foxes, Irish hares, mink, stoat, hedgehog and brown rat. Tree cover for the provision of both food and refuge seemed to important features for most of these mammals.

**Page**

41pp [21]

**Location**

Forestry Ecosystem Research Group

**Notes**

includes tables, maps, graphs; copy of report submitted to National University of Ireland for award of degree of

Master of Science (Agriculture),  
**Thesis**  
M. Agr. Sc., UCD, 1997

---

**Number**

1591

**Author**

Cummins, Fiona M.

**Title**

A general soil and vegetation survey of Brackloon Wood, County Mayo, Ireland.

**Series**

Forest Ecosystem Research Group Report No. 28

**Date**

1997

**Key Word**

forest ecosystems  
semi-natural woodlands  
oak  
Quercus petraea  
soil  
topography  
forest management  
environment

**Abstract**

The restoration and management of Brackloon Wood, a semi-natural oak woodland is currently being undertaken by its owners. It is a typical acidophilous Atlantic oakwood association dominated by Quercus petraea and a rich flora of ferns, typical of the prevailing oceanic conditions. The purpose of this study was to establish the principle soil types occurring in the wood, map their distribution, and examine the relationship between soil, vegetation and topography. Therefore, a baseline soil/vegetation/topographical survey was carried out on the entire wood. A variety of soil types ranging from acid brown earths to well developed podzols and gleys, exists within the wood. The pH range for surface soil samples varied from extremely acid to slightly acid. Plant associations were generally correlated to pH, and in some instances topographical position. These observations are discussed with a view to helping the establishment of a forest management plan for the ecosystem.

**Page**

32pp

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables, maps, bibliographical references; submitted to National University of Ireland for award of degree of Master in Science (Agriculture)

**Thesis**

M.Agr. Sc., UCD, 1997

---

**Number**

1592

**Author**

Daly, Laura

**Title**

Conservation plan for Brackloon Wood, Co. Mayo.

**Series**

Forest Ecosystem Research Group, Report No. 29

**Date**

1997

**Key Word**

forest ecosystems  
conservation  
woodland restoration  
semi-natural woodlands  
broadleaf woodlands  
ecology

**Abstract**

The wood is a typical Atlantic oakwood association, dominated by sessile oak (*Quercus petraea* (mattuschka) Lieblein) and a rich flora of ferns which are typical of the prevailing oceanic conditions. It is a relatively species-rich acidophilous oakwood. Semi-natural woods are considered to be considerable ecological value. Their value extends to all components of the ecosystem - tree and shrub layers, ground flora, undisturbed soil profiles. This wood is one of the few fragments of semi-natural woodland remaining in County Mayo and is considered to be an oakwood of national importance. The major management objectives are the maintenance and restoration of the wood, the monitoring of changing ecological status, and research on the effects and sustainability of different management practices. A number of problems need to be addressed including grazing, the spread of alien shrub and tree species, and the occurrence of bracken in areas which have been disturbed.

**Page**

47pp, [40]

**Location**

Forest Ecosystem Research Group

**Notes**

thesis submitted to National University of Ireland for award of degree of Master of Science (Agriculture); includes tables, maps, bibliographical references

**Thesis**

M.Agr. Sc., UCD, 1997

---

**Number**

1593

**Author**

Gaughran, Antonia

**Title**

Brackloon oak woodland: a survey of the litter invertebrate fauna.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group

**Date**

1998

**Key Word**

semi-natural woodland  
broadleaf woodland  
forest ecosystem  
forest habitat  
forest health

**Abstract**

Brackloon Wood is a typical example of a mature, acidophilous, semi-natural oak woodland (*Quercus petraea*). A pilot study of the invertebrate fauna of Brackloon was carried out between June and September, 1996. The purpose of this part of the investigation was to produce a list of invertebrate groups present in the wood and to establish which should be studied in greater detail as part of a future sampling regime for long-term monitoring.

**Page**

11pp [9]

**Location**

Forest Ecology Research Group, UCD

**Notes**

includes tables, bibliographical references

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4.

---

**Number**

1594

**Author**

Reynolds, Noínín

**Title**

A bat survey of Brackloon Wood, Westport Co. Mayo.

**Series**

Forest Ecosystem Research Group Report No. 33

**Date**

1998

**Key Word**

forest ecosystems

semi-natural woodland

bats

woodland habitat

forest health

mammals

**Abstract**

The aims of this study were to establish a sampling programme which would be repeatable and practical for biomonitoring, and to determine the number, species and activity in the study area, Brackloon Wood. In total 124 bats were recorded present in or surrounding Brackloon Wood over the course of the study. The largest population of bats present in the wood were Daubenton's bats. This study indicates quantities more prolific than the average numbers found in similar land classes in a recent large scale survey of Britain. The author recommends extending the survey, and that a number of old or dead trees should be left in the wood as they used for roosts by Leisler's bats.

**Page**

14pp

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1595

**Author**

Farrell, E.P.

Aherne J.

Cummins T.

Ryan, M.G.

**Title**

Fluxes of water and ions in forest ecosystems.

**Publisher**

Irish Committee for IGBP

Royal Irish Academy

**Place**

Dublin

**Date**

1997

**Source**

Global Change and the Irish Environment. (Edited by John Sweeney)

**Key Word**

soil conservation  
biogeochemical cycles  
nutrient cycling  
hydrological cycles  
forest ecosystems  
environment  
erosion

**Abstract**

Natural succession, climate change and human intervention all exert their influence on soil conservation and development, and on regional hydrological and biogeochemical cycles. Change, resulting from natural processes, may be very slow, as in the case of rock weathering, or dramatically rapid, the consequence of volcanic eruption or coastal inundation. In the context of geological time, the human influence on the natural world is insignificant. Nevertheless, interference with natural ecosystems may influence the health, prosperity and even the survival of human populations. The efficient cycling of nutrients is essential to the sustainability of forest ecosystems. The interaction of forest ecosystems with hydrological and biogeochemical cycles is described in the paper and the potential interaction with climate change is discussed in the context of the results of recent research. Data is presented which illustrate the influence of major Atlantic storm events and of summer drought on soil processes in forest ecosystems. A deeper understanding of ecosystem and soil processes is essential for the development of models for the simulation of change and the prediction of its impacts. Long-term monitoring of ecosystems is also necessary to provide real-time data on the response of natural systems to change.

**Page**

pp 69-77

**ISBN**

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**Notes**

text of paper presented at IGBP Symposium; includes graphs, tables, bibliographical references

**Address of author**

Forest Ecosystem Research Group, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1596

**Author**

Duffy, Brian L.  
O'Halloran, John  
Kelly, Thomas C.

**Title**

A bird survey of Brackloon Wood, Westport, Co. Mayo

**Series**

Forest Ecosystem Research Group, Report No. 30

**Date**

1999

**Key Word**

forest ecosystems  
semi-natural woodland  
broadleaf woodland  
forest habitat  
birds  
ecology

**Abstract**

Brackloon Wood is a semi-natural mature oak forest. This study is part of an ecological monitoring programme at the wood. The main aims of this study were: to establish a sampling procedure which would be practical and repeatable, so that any future change in the bird community could be monitored; give an assessment of species richness and relative density; ensure that sampling procedures would be compatible with other aspects of the management of the wood. The bird community was sampled using a transect method. In all, 31 species were recorded at Brackloon Wood, of which 25 were directly associated with the woodland habitat. Total abundance at the site was estimated at 121.4 birds/10ha

**Page**

24pp

**Location**

Forest Ecosystem Research Group, UCD

**Address of author**

Department of Zoology and Animal Ecology, University College Cork

---

**Number**

1597

**Author**

Jones, Suzanne, M.

Farrell, Edward P.

**Title**

Survey of plantation forests on Bord na Móna cutaway bog. BOGFOR Project Final Report.

**Publisher**

University College Dublin. Department of Environmental Resource Management. FERG

**Place**

Dublin

**Series**

Forest Ecosystem Research Group Report No 20

**Date**

1997

**Key Word**

peatland forestry

bogs

frost damage

**Abstract**

The survey area (2991 ha) comprised plantations planted on Bord na Móna cutaway bog in the midlands of Ireland. The survey was conducted in May-August 1994. In all 1058 plots were assessed. The survey included assessing the health and productivity of the forest crops as well as the properties of the growing media. The principal tree species planted within the survey area were Sitka spruce and lodgepole pine. Other species of importance were Norway spruce and oak. The overall failure rate was high (31%). Only 29% of the stands assessed were growing satisfactorily. The main causes of poor growth and tree mortality were frost, competition from weed vegetation, nutritional problems and pest damage. Lodgepole pine is the best option for the reconstitution of failed areas, although it may be possible to plant Sitka spruce, if frost was not the cause of failure of the original crop. Despite the susceptibility of Sitka spruce to frost damage, where it escaped serious damage, potential productivity was high. Shallow peat sites (less than 60cm) should not be reconstituted at the present time. Large scale afforestation of cutaway peatland should not be considered until outstanding problems have been resolved through further research. The priorities of a research programme to deal with these problems are outlined.

**Page**

xiii, 180pp [30]

**Location**

Forest Ecosystem Research Group, UCD

**Notes**

includes tables, graphs, maps, bibliographical references

**Address of author**

Department of Environmental Resource Management, Agriculture Building, University College Dublin, Dublin 4.

---

**Number**

1598

**Author**

CoillteTeoranta

**Title**

Coillte's forests: a vital resource.

**Publisher**

Coillte

**Place**

Dublin

**Date**

1999

**Key Word**

sustainable forest management

forest ecosystems

environment

Coillte

State forestry

forestry policy

Helsinki Process

forest health

economics

forest recreation

research

**Abstract**

This documents presents and explains Coillte Teoranta's (Irish Forestry Board) position in regard to sustainable forest management in its forests. The background to the development of this concept is described, and the key inputs into the framework of Coillte's Sustainable Forest Management Initiative are outlined. The six criteria and 35 individual indicators that comprise the company's framework for sustainable forest management are outlined. These criteria, and the accompanying indicators which provide a basis for assessing physical conditions and measuring progress are as follows: 1.) Forest resources, aim is to demonstrate how forests are managed at corporate level and how this contributes to reducing global warming; 2.) Forest ecosystem health and vitality, aim is to monitor the health of forest ecosystems; 3.) Productive functions of forests, aim is to examine the productivity of wood and non-wood forests 4.) Biodiversity and nature conservation, aim is to describe aspects of biodiversity on Coillte's estate ; 5.) Protective functions of forests, aim is to demonstrate the company' commitment to protecting soil and water resources in, and adjacent to Coillte's estate; and 6.) Socio-economic and cultural functions and conditions, aim is to describe how the company contributes to socio-economic and cultural aspects of its business. These six criteria have been adopted directly from the Ministerial Conference on the Protection of Forests in Europe (the Helsinki Process).

**Page**

56pp

**Location**

Coillte library

**Notes**

available; includes photos., ills., maps, graphs, tables

---

**Number**

1599

**Author**

Dawson, Malcolm

**Title**

Electricity from wood - a Northern Ireland Perspective.

**Publisher**

COFORD

Agriculture and Forestry Biomass Network

EU Altener Programme

**Place**

Dublin

**Date**

1999

**Source**

Community-based Development of Bioenergy Survey & Workshop: Proceedings of a workshop held on the 9th December in Bru Boru, Cashel, County Tipperary, Ireland, presented by the Agriculture and Forestry Biomass

Network. (Edited by Clifford Guest, Kevin Healion, and Seamus Hoyne).

**Key Word**

energy production

bioenergy

renewable energy

willow

land use

environment

Short Rotation Coppice

**Abstract**

The options for alternative agricultural enterprises in Northern Ireland are limited. The production and use of short rotation coppice has good potential. This potential could be harnessed through the installation of small-scale systems fuelled by willow and providing heat/power direct to energy consumers. However, willow as a fuel is presently marginally economic. The viability of willow production and use can be improved in a number of ways. One important possibility is the use of willow for bioremediation. Municipal wastewater can be used to irrigate willow plantations, providing nutrients for the willow and a treatment method for the wastewater.

Willow can also be used to treat landfill leachate, and in buffer strips between agricultural land and water catchments. If these possible environmental benefits were allocated their proper financial value the economics of willow production and use would be significantly improved. The vision is for the community-based heat and power plants, fuelled by locally produced willow which would be grown using locally produced wastewater, this providing environmental, economic and social benefits.

**Page**

pp 23-27

**Location**

COFORD, UCD

**ISBN**

1902636069

**Notes**

available; paper includes tables and bibliographical references; conference report also include results of EU wide survey of Existing and Developing Community Owned Bioenergy Plants

**Address of author**

N.I. Horticultural & Plant Breeding Station, Monor House, Loughall, Armagh BT61 8JB, Northern Ireland

---

**Number**

1600

**Author**

Healoin, Kevin

**Title**

A strategy and action plan for bioenergy in Ireland.

**Publisher**

COFORD;

Agriculture and Forestry Biomass Network;

EU Altener Programme

**Place**

Dublin

**Date**

1999

**Source**

Community-based Development of Bioenergy Survey & Workshop: Proceedings of a workshop held on the 9th December in Bru Boru, Cashel, County Tipperary, Ireland, presented by the Agriculture and Forestry Biomass Network. (Edited by Clifford Guest, Kevin Healion, and Seamus Hoyne).

**Key Word**

bioenergy

renewable energy

enviorment

wood fuel

climate change

wood residues

forest products  
short rotation forestry

**Abstract**

Harnessing the potential of biomass often provides environmental, energy, agricultural, economic and social advantages. However, the complexity of the sector requires close integration of policy from a number of Government Departments, which presently have room for improvement. Anaerobic digestion is particularly relevant for the farm, industrial and sewage treatment sectors. An adequate electricity price, grid access and a Greenhouse Gas policy are desirable for the promotion of anaerobic digestion. Biodeisel allows vehicles to run on a renewable fuel sources. The present focus is on biodiesel produced from waste cooking oil and tallow, providing waste management advantages. However, for the biodiesel sector to develop, it is necessary to have remission or reduction of exise duty on biodiesel. A coherent Government policy on the sector is required. Green electricity is presently being produced from landfill gas sites in Ireland. However, more electricity could be generated with some additional grant aid. Additional Government drive to promote the sector is required, in particular to created favourable conditions for bioenergy in the liberalised eletricity market. Wood fuel presently contributes a small but significant percentage of our energy supply, based on the domestic use of firewood and the use of wood residues for heating in the wood processing industry. However, there is potential for the expanded and more effecient used of wood in the domestic, commercial and public sectors. The wood industry has potential for wood fuelled CHP. Small scale CHP based on wood gasification has good potential, using sawmill residues, forest residues or short rotation forestry. However, additional support for research, development and demonstration is required for teh wood fuel sector!

**Page**

pp 56-59

**Location**

COFORD, Agriculture Building, UCD

**ISBN**

1902636069

**Notes**

available; conference report also include results of EU wide survey of Existing and Developing Community Owned Bioenergy Plants

**Address of author**

TRBDI, Thurles, Co. Tipperary

---

**Number**

1601

**Author**

Robinson, Bill

**Title**

The National Programme for the Introduction of Eurocode 5. Interim report year 1995.

**Publisher**

Forbairt

**Place**

Dublin

**Series**

[Study 95.00.06]

**Date**

1995

**Source**

Technical support for Irish timber 1995. Supported by the Forest Service.

**Key Word**

standards

timber processing

forest products

industry

strenght class

timber grades

strength classess

visual strength

**Abstract**

Eurocode 5 is the new European standard for the design of timber structures and timber components. It has been issued by CEN as a pre-standard (designated as an ENV) and NSAI will issue the standard as an experimental Irish standard with the designation of XIS. The introduction of the new code will also see the introduction of complimentary backup standards. Effectively every current timber standard will be replaced with a new CEN standard and this could represent a substantial change to the timber industry and specifically to the use of Irish timber. It was therefore imperative to assess the effect of the new code and its corresponding standards on the Irish trading situation and on the use of Irish timber in particular. A National Programme was devised with the following objectives: to provide support for Irish timber associated with technical and trade matters associated with the new CEN standards; to prepare and support the Irish timber industry in relation to the changes that will be brought about by the introduction of the new CEN standards; to address the concerns of Irish industry concerning Irish timber and the effect of the new CEN standards on current and future practice. The report concludes by describing the various steps taken in fulfilling the goals of the National Programme. It was decided that the preparation of IS 444 should be continued and that load spans tables for IS 444 would be produced using the CEN strength class system. The position of Irish timber (and other timbers) in the CEN strength class system is given in prEN 1912. Irish Sitka spruce, GS grade is in C14 and SS grade is in C18. Irish timber will be able to be maching graded into any strength class although strength classes above C245 may not be commercially viable.

**Page**

21pp

**Location**

Forest Service;  
Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service; includes appendix listing ISO and European standards

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1602

**Author**

Wiley, Sean

**Title**

Development of quality standards for primary processing.

**Publisher**

Forbairt

**Place**

Dublin

**Series**

[Study No. 95.00.05]

**Date**

1995

**Source**

Technical support for Irish timber 1995. Supported by the Forest Service.

**Key Word**

standards

timber quality

Coillte Allocation Scheme

timber processing

forest products

sawmilling

**Abstract**

The objective of this programme is to achieve consistency across the entire sawmilling sector by ensuring compliance with the requirements of the CAS (Coillte Allocation Scheme) scheme on quality development. The development of quality systems during 1995 is described and the work programme undertaken during the year is outlined under the following headings: Quality System Development; Monitoring Quality Systems and CAS Requirements; and, Possible Developments. The overall objective of CAS are outlined as follows in an appendix: maximise the potential of the resource and create added value wherever possible; develop a quality image for Irish timber at home and abroad; introduce quality emphasis and philosophy throughout the industry;

generate confidence through the quality of products produced; ensure customer satisfaction; develop a quality system throughout the Irish sawmilling industry that will make the quality of timber produced a positive marketing agent; through the quality emphasis generate greater efficiency and profitability for the industry.

**Page**

8pp [16]

**Location**

Forest Service:

Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service in 1995; appendix outlines details of Coillte Allocation Scheme

**Address of author**

Timber and Furniture Development, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1603

**Author**

Cahill, Declan

**Title**

Monitoring new European standards on wood preservation.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1995

**Source**

Technical support for Irish timber 1995. Supported by Forest Service

**Key Word**

wood preservation

timber processing

standards

**Abstract**

Following the EC Directive on Building Materials in 1988, the European Standards Body, (CEN) was asked to co-ordinate the work to harmonise the Standards on wood preservation operating in the member countries. The objective of the work was to produce agreed European standards in this sector so that free and open trade could take place throughout Europe. The Technical Committee, CEN/TC 38, was given the responsibility of conducting the work. For the past three years, the Forest Products Department has monitored the work of CEN/TC38 on behalf of the Forest Service. The objectives of the work undertaken are outlined as follows: to monitor the European Standards on wood preservation produced by CEN/TC 38; to advise the Forest Service of developments as they occur; to disseminate, when appropriate, information to relevant sectors of the industry in Ireland. The work carried out during the year is summarised.

**Page**

4pp

**Location**

Forest Service;

Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to the Forest Service

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1604

**Author**

Picardo, Valez

**Title**

Determination of bending strength properties of H.G. lodgepole pine. Final report Phase 1.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1995

**Source**

Technical support for Irish timber 1995. Supported by Forest Service.

**Key Word**

lodgepole pine

Pinus contorta

basal sweep

timber processing

forest products

standards

twist

timber strength

stress grading

physical properties

**Abstract**

Despite being introduced to Ireland mainly as a 'pioneer species', lodgepole pine of the South coastal variety is considered suitable for sawlog. Previous testing of the species has been limited, and it now important to generate new data in order that lodgepole pine be included in the new CEN standard as one of the European species used for structural purposes. The objectives of this study were: to determine the bending strength properties and set up a database for the visual and mechanical grading of home-grown lodgepole pine; and, for the present investigation, to establish the database by determining the bending strength properties of the 105 x 38 cross-sectional size. The sampling strategy, involving getting material from 4 regions around the country and confined to South coastal variety, is outlined. The following sizes were obtained: 125 x 44; 105 x 38; and 72 x 34. The average rate of recovery for the three sizes are presented. The grade out-turns for visual grading based on assessment of knots only, resulted in yields of 15.4% of GS and 14.2% if SS if grading for the two grades is done at the same time. This means that the yield for GS alone would be the sum of the two i.e. 29.6%. Although distortions did not appear to be significant for grading purposes, twist could be the more relevant factor contributing to rejection. There was no difference in strength between the two visual grades - they would both satisfy the C14 strength class in EN338. Machine stress grading provides the best returns - C14-80%, C16-50%, C18-25%. These yields are based on grading to one grade at a time. This means that the yield shown for C14 contains also all planks higher than C14; and C16 contains all grades higher than C16. The type of breaks tended to be 'brash' in nature. This could be attributed to grain distortion caused by large knots and a significant occurrence of compression wood.

**Page**

14pp [30]

**Location**

Forest Service:

Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service; includes tables, graphs, map, bibliographical references

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1605

**Author**

Picardo, Valez

**Title**

Use of scanning as a means of optimising the use of home grown timber. Final report.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1995

**Source**

Technical support for Irish timber. Supported by the Forest Service

**Key Word**

forest products

timber processing

machine vision

information technology

vision scanning

timber quality

picture image acquisition

**Abstract**

There a number of vision systems being used commercially in the timber industry for surface inspection of timber for sorting planks by quality or grade. It can also be used to identify areas not reaching the required quality which can then be removed by cross-cutting. There are a number of vision scanning systems available but only three are suitable for Irish conditions. The Forest Products Department took the opportunity to purchase and test such a system. Since vision scanning had never been used on home-grown timber it was necessary to understand the new technology as applied to timber and to gather information and data on Irish timber that would be required in the use of this new technology. The objective of this study was to investigate the use of scanning to enhance the use of home-grown Sitka spruce. Three systems were evaluated - SCANWOOD, DISCAN, and WOODEYE. Three software systems were involved in the evaluation - Mauchamp, Grecon, and KAR. The report concludes that a satisfactory level of expertise has been reached in understanding this new technology. The experience gained in the use of vision technology with home grown timber shows that it has potential but it would be difficult to justify the initial capital outlay against the benefits, particularly given the small existing market. A black and white version of the SCANWOOD system was tested, and was found to have limited application. A colour system is being developed which should have far greater capacity for distinguishing defects both in number and accuracy. All the software systems tested could be used in home-grown timber. Grecon would be most suitable for upgrading product value. Mauchamp could be used either for panelling or pallet grading. KAR is a useful research tool, but not commercially viable as a means of stress-grading. The main uses for vision technology were identified as being for: production of long lengths of improved grade Sitka spruce; grading and finger jointing of Sitka spruce for studding; grading and jointing of lodgepole pine for joinery.

**Page**

23pp [29]

**Location**

Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service; includes tables, graphs

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1606

**Author**

Cahill, Declan C.

**Title**

Database on anti-spastain chemicals for the timber industry. Final report.

**Series**

[Study No: 95.31.06]

**Date**

1995

**Source**

Technical support for Irish timber. Supported by Forest Service.

**Key Word**

forest products

timber processing  
chemicals  
pesticides  
forest pests  
timber quality  
sapstain  
anti-sapstain chemicals

**Abstract**

In 1994 the Forest Service requested Forbairt to draw up a database of anti-sapstain chemicals and suppliers. Information was sought on anti-sapstain chemicals from timber technology centres throughout Europe and from the manufacturers of these chemicals. The Irish Pesticide Control Service was contacted regarding the registration of these products. Twenty-two different anti-sapstain products were identified, only four of which were registered and available in Ireland: Antiblu 3739; Protim Stainguard; Hickson NPI; and Timbor.

**Page**

8pp, 12pp

**Location**

Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9.

---

**Number**

1607

**Author**

Robinson, Bill

**Title**

Draft new Irish standard for roof trusses (IS 193).

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1998

**Source**

Technical programme for Irish timber. Supported by the Forest Service.

**Key Word**

timber processing  
forest products  
standards  
strength testing  
roof trusses

**Abstract**

The specification for factory manufactured roof trusses is Irish Standard IS 193. The objectives of this study were: to update the IS 193 to reflect changes brought about by the CEN standards; to review changes in the UK standard for possible influence on the Irish Standard; to review technical advice issued by TRA; to ensure that changes to the standard do not penalise unfairly Irish timber; to encourage as far as possible the use of Irish timber in roof trusses. The work programme undertaken to achieve these objectives is outlined.

**Page**

36pp

**Location**

Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service;

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1608

**Author**

Picardo, Valez

**Title**

Finger joints made with Irish grown Sitka spruce.

**Publisher**

Enterprise Ireland

**Place**

Dublin

**Source**

Technical programme for Irish timber. Supported by the Forest Service

**Key Word**

forest products

timber processing

finger joints

Sitka spruce

Picea sitchensis

timber strength

glues

timber density

**Abstract**

A finger joint is defined and its usefulness in eliminating knots is explained. The objective of this study was to evaluate the performance of finger-jointed Irish grown Sitka spruce in terms of strength for use in structural applications (other than glulam). The factors incorporated in the test scheme included: different types of test; profile; size; density; glue. The sub-objectives of the investigation were: to investigate the effect of various factors on finger joint strength; to compare the strength of two commonly used finger profiles. The factors studied were profile, glue, size, density and test type. The results of the investigation show that finger jointed Sitka spruce can be used in structural applications. All the various factors tested significantly affect the strength. The results are summarised as follows: the 15mm profile is stronger than the 20mm in bending the opposite is true in tension; all the glue tested may be used for structural purposes; MUF glue produces the strongest joint followed by RF and the lowest is UF. Although it appears that for the 20mm joint there is no distinction in bending between the RF and UF glues; all the profile/glue combinations tested could be used at least in C14 designs; the 15mm joint could be used in at least C16 designs; the MUF glue could be used in design using higher strength classes provided adequate quality control is put in place.

**Page**

23pp [40]

**Location**

Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service; includes tables, diagrams, bibliographical references

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1609

**Author**

Robinson, Bill

**Title**

Glulam load span tables for Eurocode 5.

**Publisher**

Enterprise Ireland

**Place**

Dublin

**Date**

1998

**Source**

Technical support for Irish timber. Supported by the Forest Service.

**Key Word**

forest products  
timber processing  
glulam load spans  
strength classes  
strength testing

**Abstract**

A design programme has been developed to calculate appropriate load spans for glulam members in accordance with Eurocode 5. The design programme covers 4 glulam Strength Classes as designated in prEN 1194; GL24H; GL28H; GL32H; and GL36H (the H signifies homogenous glulam). The design programme is for a uniformly distributed load and covers ultimate limit states for bending, shear, bearing. The design programme covers serviceability limit state for: instantaneous deflections of the variable load (limited to  $L/300$ ; final deflections of the variable load (limited to  $L/200$ ); final deflections of the permanent and variable loads (limited to  $L/200$ ); final deflections of the permanent and variable loads (limited to  $L/333$ ); final deflections of the permanent and variable loads (limited to 14mm). The design programme, which is based on an Excel spreadsheet, is flexible and is easily amending for changes to stress, load, member sizes, member spacing or any other changes that might arise.

**Page**

12pp

**Location**

Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1610

**Author**

Atanackovic, Andreja

**Title**

Long term investigation into durability of Irish timbers in service or ground contact. (Report for 1997).

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1998

**Source**

Technical programme for Irish timber. Supported by Forest Service.

**Key Word**

forest products  
timber processing  
timber durability  
timber life expectancy  
timber deterioration  
physical properties

**Abstract**

A long term investigation in durability and life expectancy of home grown timbers commenced in Glenealy Co. Wicklow in 1987. The progress of timber deterioration has been recorded regularly each year and this report presents the summary of the work carried out in 1997 and the test results up to date. The main objectives of the project can be summarised as follows: to obtain information on durability and life expectancy of various Irish grown timber species in above ground conditions, and in ground conditions; to assess the life expectancy of treated and untreated timber; to evaluate the effect of preservatives, and treatment schedules on timber durability. A pendulum impact test was used to measure strength and the Pilodyn was used to measure density.

All samples were also visually inspected to observe the physical appearance, degree of decay and any other visible degrade in timber due to external exposure. The investigation concluded that: the test procedure appears to be adequate; Pilodyn readings and the pendulum test provide useful information about the condition of a sample but they are only indicators; an advanced state of fungal decay in untreated samples dictates that a yearly inspection is necessary until all untreated samples have failed; to compliment the results obtained in Glenealy site, an additional test ground should be established for a better representation of Irish climatic conditions.

**Page**

22pp

**Location**

Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service; includes graphs, tables, ills.,

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1611

**Author**

Picardo, Valez

**Title**

Determination of bending strength properties of H.G. lodgepole pine. Final report. Phase 3.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1998

**Source**

Technical programme for Irish timber. Supported by the Forest Service

**Key Word**

forest products

timber processing

bending strength

lodgepole pine

Pinus contorta

standards

physical properties

**Abstract**

One of the requirements in the latest CEN standards for lodgepole pine is that at least three different cross-sections should be tested. As a result this project was undertaken in three phases. Each phase consisting of testing one size thus enabling an assessment to be made on the results of each phase. The results of the study reported here are from the tests carried out on the 72 x 35. The overall objective of the programme was to determine the bending strength properties and set up a database for the visual and mechanical grading of home-grown lodgepole pine. The objectvie of this investigation was to add bending strength properties of the 75x35 cross-section to the database established in phases 1 and 2. The report concludes that the grade out-turns for visual grading, based on assesment of knots only, resulted in yields of 22.5% of GS and 26.5% of SS if grading for the two grades is done at the same time. This means that the yield for GS alone would be the sum of the two i.e. 49%. Only the SS grade would satisfy the C14 strength class in EN338. Machine stress grading provides the best returns. The bending strength properties obtained from the tests meet the requirements for the respective strength class. The type of breaks tended to be 'brash' in nature as was the case in the previous tests. This could be attributed to grain distortion caused by the large knots and a significant occurence of compression wood.

**Page**

11pp, [23]

**Location**

Enterprise Ireland. Timber and Furniture Department

**Notes**

Presented to Forest Service; includes tables, bibliographical references

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1612

**Author**

Knaggs, Gordon

**Title**

Survey of moisture content of timber in buildings.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1998

**Source**

Technical programme for Irish Timber. Supported by Forest Service

**Key Word**

forest products  
timber processing  
moisture content  
building components  
construction

**Abstract**

The moisture content of a wide range of timber components in completed buildings and buildings under construction was measured by moisture meter, the results collated and analysed. It was found that most current moisture content recommendations are still valid, despite having being drawn up before the marked change in the pattern of usage and heating of buildings. The moisture content of external joinery in service was found to be generally lower than the 17+ or - 2% specified in IS 63 (windows) and IS 196 (doors). A reduction in this value to 15 + or- 2% should be considered.

**Location**

Forest Service;  
Enterprise Ireland. Timber and Furniture Department

**Notes**

Report presented to Forest Service

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1613

**Author**

Cahill, Declan

**Title**

Implementation of EU standards for wood preservation.

**Publisher**

Forbairt

**Place**

Dublin

**Date**

1998

**Source**

Technical programme for Irish timber. Supported by the Forest Service.

**Key Word**

forest products  
timber processing

standards  
timber preservation  
preservatives  
wood durability

**Abstract**

The harmonisation of European wood preservation standards has been going on for several years under the umbrella of CEN/TC 38 - Technical Committee/Wood Durability. This report describes the current investigation into how treated Irish softwood species would perform when assessed against the new standards in terms of uptake and penetration of preservative. The report: outlines the background to the current situation regarding wood preservation; explains the rationale of the European preservation standards; indicates how European standards are likely to operate; and presents further data on how some Irish softwoods perform, from a preservative penetration viewpoint, when treated with CC and creosote preservatives using conventional pressure techniques. The results from penetration tests (in mm) for Douglas fir, Sitka spruce, and lodgepole pine samples are presented. The CCA penetration results show that regarding fence posts: Japanese larch would not reach the minimum requirement for a 15 year service life; Douglas fir would struggle to reach this level; Sitka spruce and European larch would just reach the minimum level; none of these species would be allowed in the 60 year service life; only Scots pine and lodgepole pine would comply with the penetration requirements for all service lives. The implication of these results is that more permeable species need to be planted if the roadside fencing post market is to be supplied from Irish sources in the future.

**Location**

Enterprise Ireland. Timber and Furniture Department

**Notes**

Presented to Forest Service; includes tables

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9.

---

**Number**

1614

**Author**

Knaggs, Gordon

**Title**

Kiln drying of Douglas fir.

**Publisher**

Enterprise Ireland

**Place**

Dublin

**Date**

1998

**Source**

Technical programme for Irish timber. Supported by the Forest Service

**Key Word**

timber processing

forest products

kiln drying

Douglas fir

**Abstract**

Douglas fir, although a minor species, is often considered for up market end uses and as such needs to be dried to lower (10 to 12%) moisture contents than structural timber. It also has a reputation of being difficult to dry. This study was carried out to determine the most appropriate drying schedule for Irish grown Douglas fir. Consignments of 'green' Irish-grown Douglas fir were dried in the kiln at Enterprise Ireland. The schedules employed were standard commercial schedules, the first being relatively mild, (slow and unlikely to cause degrade). Subsequent kiln runs were increased in severity. The first two kiln runs produced little or no degrade in the timber. The third, the final and most severe kiln run had a slight increase in degrade. "Star checking" was a feature in knots after each kiln run and is considered to be unavoidable.

**Location**

Enterprise Ireland. Timber and Furniture Department

**Notes**

Presented to Forest Service

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1615

**Author**

Mulqueen, John;\*

Rodgers, Michael;\*

Hendrick, Eugene;\*\*

Keane, Michael;

McCarthy, Richard

**Title**

Forest drainage engineering: a design manual.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Key Word**

silviculture

forest management

environment

drainage

cultivation

water

peatland forestry

wet mineral soils

erosion

**Abstract**

This manual aims to facilitate the correct identification of drainage problems and the rational design of solutions. Forest drainage has many environmental consequences and affects wildlife, drinking water, water for industrial use, and water for recreational use. Properly designed and executed forest drainage, which is essential for crop establishment, tree stability, harvesting and profitability, should not have an adverse impact on the environment and should not be in conflict with non-wood beneficial uses of forestry. This manual describes the drainage problems that occur in Irish conditions and how they should be investigated and solved. Each drainage problem is site specific and should be examined individually in relation to design. Designs are also provided for the minimisation and control of soil erosion. In Chapter 2 the benefits of drainage and control of soil erosion are discussed. Drainage problems and their solutions are described in general terms in Chapter 3; this chapter also includes a description and discussion of erosion and its control. The detailed investigative and design techniques for well-defined problems of drainage and erosion are given in Chapter 4. Technical assistance is strongly recommended in cases of uncertainty in relation to problem diagnosis and detailed design.

**Page**

vi, 44pp

**Location**

COFORD

**ISBN**

1902696042

**Notes**

includes graphs, photos., ill., bibliographical references

**Address of author**

\*Civil Engineering Department, National University of Ireland, Galway

\*\*COFORD, Agriculture Building, University College Dublin, Belfield, Dublin 4

Research & Development, Coillte, Newtownmountkennedy, Co. Wicklow

---

**Number**

1616

**Author**Lefort, L.;  
Douglas, G.C.**Title**

Occurrence and detection of triploids by microsatellite analysis.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

Strategies for Improvement of Forest Tree Species. Proceedings of the Symposium on Forest Genetics March 9th, 1998 at Swift Theatre, Arts Building, Trinity College Dublin, Ireland. (Edited by G.C. Douglas)

**Key Word**genetics  
tree improvement  
microsatellites  
polyploidy  
stomata  
Quercus  
triploidy**Abstract**

Triploidy occurs frequently in nature but most of the time it does not give viable organisms, however, viable and fertile triploids appear sometimes which may display advantageous characters compared to diploids. In trees, polyploids including triploids have been known for a long time. Polyploids are rare in the gymnosperms and abundant in the angiosperms where they represent a third of all the tree species. The development of cytological techniques allowed the detection of polyploidy in trees as early as 1927 and ploidy assessment in trees has been extensively investigated in the period 1935-1960. Forest scientists in that period expected to increase productivity by creating triploid or polyploid clonal lines which could be valuable in terms of productivity. The development of biochemical tools such as isoenzyme analysis in the sixties and seventies also showed the effects of ploidy changes. More recently, the development of molecular markers in the field of molecular biology, such as AFLPs, RFLPs, RAPDs and specific gene markers have been applied to forest trees and they have also shown evidence for changes in ploidy level as possible explanations for certain molecular patterns. Molecular methods can now be used to detect or confirm changes in ploidy when used in conjunction with cytological and other morphological traits such as stomata length. We report here for the first time, the confirmation of triploidy on a confirmed 3x oak as well as the occurrence of polyploidy (triploidy / aneuploidy) among elite oaks by the use of microsatellite DNA profiling which is the most recent method for analysing genetic polymorphisms at the DNA level. The historical and recent literature on polyploidy in trees and its utility in programmes for tree improvement is reviewed.

**Page**

pp 19-36

**Location**

COFORD, Agriculture Building, UCD

**ISBN**

1902696026

**Notes**

includes tables, photos., ills., bibliographical references

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

**Number**

1617

**Author**

Lefort, F.

**Title**

Resources in nuclear and chloroplast microsatellite sequences and primer sets for microsatellite amplification in trees.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

Strategies for Improvement of Forest Tree Species. Proceedings of the Symposium on Forest Genetics March 9th, 1998 at Swift Theatre, Arts Building, Trinity College Dublin, Ireland. (Edited by G.C. Douglas)

**Key Word**

genetics

tree improvement

breeding

microsatellites

**Abstract**

The author has compiled references to all the relevant information on microsatellite loci and amplification primers designed for some of these loci. This reflects the information that was available only at the time of publication of these proceedings for 38 genera and 89 species. Some additional information on minisatellites and dispersed repetitive sequences have been added also at the end of the chapter. A number of names of species are given in brackets; these are species for which some of the microsatellites isolated from the first mentioned species are usable. Accessions are GenBank accessions and sequences may be retrieved at the address <http://www3.ncbi.nlm.nih.gov>.

**Page**

pp107-118

**Location**

COFORD

**ISBN**

1902697026

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1618

**Author**

Douglas, Gerard C.

**Title**

A glossary of terms in forest genetics.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

Strategies for Improvement of Forest Tree Species. Proceedings of the Symposium on Forest Genetics March 9th, 1998 at Swift Theatre, Arts Building, Trinity College Dublin, Ireland. (Edited by G.C. Douglas)

**Key Word**

genetics

tree improvement

**Page**

pp 119-133

**Location**

COFORD

**ISBN**

1902696026

**Notes**

includes bibliographical references

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

---

**Number**

1619

**Author**

Wall, Sarah;

Áine ni Dhubháin

**Title**

Management requirements for farm woodlands.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1998

**Key Word**

forest management

farm forestry

private forestry

agriculture

land use

incentives

**Abstract**

The recent shift to better quality land has facilitated a greatly increased level of private broadleaf afforestation, and a level of forest management skill will be required if these new plantations are to succeed. In attempting to develop a management programme for the owners of private forests, the variety of motivations and concerns which lead people to become involved in forestry must be acknowledged. This study was instigated as a result of the low level of owner participation in the management of private forests in Ireland. This may be a consequence of the generous grant schemes to encourage afforestation. Other difficulties facing the development of this sector include the low level of forest management skills and the fragmented nature of holdings. The primary objective of this study was to assess private forest owners' knowledge of and level of participation in forest management. The results of a survey demonstrate that the majority of respondents would not have planted trees if they had not received grants. The objectives of forest owners for their forests were typically multiple-use rather than singular and almost all owners considered the production of timber for sale as an objective. Results revealed that only a small proportion of forest owners are responsible for managing their forests themselves. A peculiar feature of the privately owned forest estate in Ireland is the predominance of forests in the establishment and thicket age classes. The principal recommendations of the report are: 1. That forest owners participate in the drawing up of their management plans; 2. that a database of silvicultural conditions of private forest holdings be developed in order to assist those agencies involved in private forestry; 3. that greater resources be allocated for the provision of advisory services and innovations encouraged in their design.

**Page**

ii, 50pp

**Location**

COFORD

**ISBN**

190269600X

**Notes**

includes farm survey questionnaire and details execution and analysis of survey, bibliographical references

**Address of author**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

---

**Number**

1620

**Author**

Fennessey, John

**Title**

Determining suitable seed sources of noble fir (*Abies procera* Rehd.) for Christmas tree production.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

Report on Christmas tree research 1999.

**Key Word**

noble fir

*Abies procera*

seed sources

Christmas trees

**Abstract**

In the mid 1990's, following the establishment of Coillte Christmas Tree Farms, a tree improvement programme in noble fir was initiated. The criteria used in the selection of the noble fir stands, together with the criteria for individual trees selected in this study are set out. The overall objectives of the project are: to test the genetic potential of a range of home grown and foreign seed sources of noble fir for Christmas tree production; to evaluate elite registered seed stands based on progeny test information for home seed production; to raise awareness within the Christmas tree industry of the importance of seed sources and the value of Irish collected seed in the production of Christmas trees.

**Page**

pp 2-10

**Location**

COFORD

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow

---

**Number**

1621

**Author**

Sage, R.B.;

Tucker, K.

**Title**

The distribution of *Phratora vulgatissima* (Coleoptera: Chrysomelidae) on cultivated willows in Ireland and Britain.

**Publisher**

Blackwell Wissenschafts-Verlag

**Place**

Berlin

**Date**

1998

**Source**

European Journal of Forest Pathology

**Volume**

Vol. 28, No. 4

**Key Word**

forest pathology

pests

blue willow beetle

*Phratora vulgatissima*

forest health

pest management

**Abstract**

Insect samples were collected from the canopy of 24 willow short rotation coppice sites on farmland in Britain and Ireland in 1995. The blue willow beetle *Phratora* (=Phyllodecta) *vulgatissima* (L.) (Coleoptera: Chrysomelidae), previously identified as the main defoliating pest of this crop, was recorded from 13 of these at varying levels of abundance. Data describing aspects of the environment at each site were also collected. These data were used to create potential explanatory variables for a regression analysis of beetle abundance. This analysis indicated that *P. vulgatissima* were most likely to occur and were most abundant at older willow sites on clay soils and at sites that had certain free-living willow species living nearby. Within sites, most willow clones sampled contained *P. vulgatissima*, although two, *Salix burjatica*, 'Germany' (*Aquatica Gigantea*) and *Salix mollissima* 'Q83' (*Salix triandra* x *Salix viminalis*), were avoided. Chrysomelid pest avoidance and clonal resistance could form part of an integrated pest management strategy for SRC crops.

**Page**

pp 289-297

**Location**

Coillte library

**Notes**

includes tables, map

**Address of author**

Game Conservancy Trust, Fordingbridge, Hampshire SP6 1EF, UK

---

**Number**

1622

**Author**

McCracken, A.R.;

Dawson, W.M.

**Title**

Growing clonal mixtures of willow to reduce effect of *Melampsora epitea* var. *epitea*.

**Publisher**

Blackwell Wissenschafts-Verlag

**Place**

Berlin

**Date**

1997

**Source**

European Journal of Forest Pathology

**Volume**

Vol. 27, No.5

**Key Word**

forest pathology

disease

forest health

rust

*Melampsora epitea*

fungicide treatment

fungal infection

mixed clonals stands

willow

**Abstract**

Rust (*Melampsora epitea* var. *epitea*) is the single most limiting factor in the production of biomass from short rotation coppice willow. The use of fungicides is unacceptable for economic, environmental and practical reasons. Consequently, clonal mixtures were investigated as an alternative disease control strategy. At one of the two sites *Salix x dasyclados*, *Salix burjatica* 'Korso', *S. burjatica* 'Germany', *Salix viminalis* 'Bowes Hybrid' and *S. viminalis* '683' were included in the clonal mix. At the second site six clones were used. These were as above with the exception of *S. burjatica* 'Korso' and including, *Salix x calodendron*, *Salix mollissima-undulata* 'SQ83'. At both sites all clones were also planted in monoclonal stands. Throughout each growing season disease levels were recorded on individual clones, both in monoclonal stands and mixtures. Fungicide treatments were included to compare their effectiveness to mixtures in reducing disease impact. Growing willow in mixed clonal stands delayed the onset of disease, slowed its build up and resulted in lower disease levels at the end of the

growing season. These reductions in disease impact contributed to the increased yields obtained from clonal mixtures and were generally comparable to those achieved with fungicides.

**Page**

pp 319-329

**Location**

Coillte library

**Notes**

includes graphs, bibliographical references

**Address of author**

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, Northern Ireland BT9 5PX;

Northern Ireland Horticulture and Plant Breeding Station, Loughall, Co. Armagh NI BT61 8JB

---

**Number**

1623

**Author**

Culleton, N.;

McLoughlin, A.;

Murphy, W.E.;

Duffy, C.

**Title**

Deciduous trees for farm forestry.

**Publisher**

Teagasc

**Place**

Dublin

**Date**

1996

**Source**

Farm & Food

**Volume**

Vol.6, No. 3

**Key Word**

farm forestry

private forestry

ash

broadleaf forestry

weed control

forest health

**Abstract**

There has been increasing interest in farm forestry recently, partly as a result of EU agriculture policy and partly from the availability of grants. Some broadleaved species can compete with coniferous species, the traditional trees planted, on rotation length and have become increasingly popular. Farm forestry trials on ash saplings at Johnstown Castle have demonstrated the critical importance of good weed control in the establishment stage. Relatively simple management techniques, involving weed control and sapling quality, have been devised which give good establishment growth and rates. A detailed strategy for weed control is outlined and the effects of nutrition are explained. The article concludes that significant improvements in ash growth rates can be made by utilising relatively simple management techniques.

**Page**

pp 4-7

**Notes**

includes tables, photos.

**Address of author**

Trace Elements and Agroecology Department, Teagasc, Johnstown Castle Research Centre, Co. Wexford

---

**Number**

1624

**Author**

Broad, L.R.

**Title**

Allometry and growth.

**Publisher**

Society of American Foresters

**Date**

1998

**Source**

Forest Science

**Volume**

Vol. 44, No. 3

**Key Word**

multivariate allometry

multivariate growth equations

growth modelling

**Abstract**

A theory of multivariate allometry is developed. Bivariate and multivariate allometry are then shown to be compatible, the defining differential equations being analogs of each other and invariant under analogous allometric transforms. The relevance of allometric equations to growth modelling is examined. Commonly used growth models that are invariant under allometric transforms are capable of being formulated in terms of allometric (growth) differential equations. Methods for formulating and solving multivariate growth models are demonstrated.

**Page**

pp 458-464

**Location**

Coillte Research and Development

**Notes**

includes equations, bibliographical references

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow, Ireland

---

**Number**

1624

**Author**

Purvis, G.;

Dunne, R.;

Chauzat, Marie-Pierre

**Title**

Biological control of Eucalyptus psyllid.

**Publisher**

Teagasc

**Place**

Dublin

**Date**

1998

**Source**

Farm & Food

**Volume**

Vol. 8, No. 4

**Key Word**

forest health

pests

forest pathology

Ctenarytaina eucalypti

psyllid

Eucalyptus psyllid

**Abstract**

Cut foliage is a new industry in Co. Kerry which developed a valuable export trade. However, further expansion and development has been hampered by an accidentally-introduced Australian insect, the psyllid *Ctenarytaina eucalypti*, which affects eucalyptus leaves. Conventional control measures would involve the regular use of insecticidal sprays. The psyllid problem has been controlled by introducing a small Australian wasp which is a natural parasite of the psyllid insect.

**Page**

pp 24-25

**Notes**

includes photos.

**Address of author**

Department of Environmental Resource Management, University College Dublin, Belfield, Dublin 4.;  
Teasgas, Kinsealy Research Centre, Malahide Road, Dublin 17.

---

**Number**

1625

**Author**

Day, K.R.;  
Cameron, A.

**Title**

Effect of contemporary infestation by the spruce aphid (*Elatobium abietinum*) on root growth in Sitka spruce transplants.

**Publisher**

Institute of Chartered Foresters

**Place**

Oxford

**Date**

1997

**Source**

Forestry

**Volume**

Vol. 70, No. 1

**Key Word**

forest health  
forest pathology  
aphids  
forest pests  
*Elatobium abietinum*  
root growth  
Sitka spruce  
*Picea sitchensis*  
transplanting

**Abstract**

The short-term relative effects on root growth of aphids living on the needle leaves of spruce transplants were examined experimentally. Ultimately, aphids caused the loss of foliage and so defoliation was simulated in two of the treatments. Aphid population at a density frequently reached in forest conditions, caused no relative inhibition in root growth over a 62-day period. Aphids were expected to have a longer term impact, however, since artificial defoliation had significant effects on root development.

**Page**

pp 1-5

**Location**

Coillte library

**Notes**

includes tables, bibliographical references

**Address of author**

Environmental Research, University of Ulster Coleraine BT52 1SA, N. Ireland

---

**Number**

1626

**Author**

Wilson, W.L.;

Day, K.R.;

Hart, E.A.

**Title**

Predicting the extent of damage to conifer seedlings by the pine weevil (*Hylobius abietis* L.): a preliminary risk model by multiple logistic regression.

**Publisher**

Kluwer

**Place**

Amsterdam

**Date**

1996

**Source**

New Forests

**Volume**

Vol. 12, No.3

**Key Word**

forest pathology

forest health

pine weevil

*Hylobius abietis* L.

multiple logistic regression

forest pests

planting

seedlings

**Abstract**

Damage to conifer seedlings caused by the pine weevil, *Hylobius abietis*, was estimated within eighty-two forest sites in Northern Ireland. A wide range of environmental variables were compared with the variation in damage between study sites using multiple logistic regression. Although 45 explanatory variables were considered only four were identified as significant within the final model. The four variables were the size of the planted area, the age of the planting, whether the majority of seedlings were self-seeded or planted, and if the site had been previously planted or was a newly planted area. The identification of these four variables indicates that it is possible to build a model identifying areas at risk to weevil damage. Further, although three of the factors have been recognised as significant influences on weevil damage for some time, they still remain important variables within British Isles forestry, suggesting that there is further scope for more precise targeting of weevil control measures.

**Page**

pp 203-222

**Location**

Coillte library

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

Environmental Research Group, University of Ulster, Coleraine, Northern Ireland, BT52

---

**Number**

1627

**Author**

McGowran, E.\*

Douglas G.C.;\*\*

Parkinson, M.\*

**Title**

Morphological and physiological markers of juvenility and maturity in shoot cultures of oak (*Quercus robur* and *Q. petraea*).

**Publisher**

Heron

**Place**

Victoria, CA.

**Date**

1998

**Source**

Tree Physiology

**Volume**

Vol. 18, No. 4

**Key Word**

physiology  
morphology  
nondestructive markers  
rejuvenation  
oak

*Quercus robur*

*Quercus petraea*

**Abstract**

Evaluation of potential techniques for rejuvenating oak shoots requires robust quantitative markers for juvenile and mature plants. To identify suitable *in vitro* markers, shoot cultures of *Quercus* species of juvenile, adolescent and mature origin were screened for a range of morphological and physiological markers of juvenility and maturity. Criteria examined included angle of the shoot to the horizontal, stem length, stem diameter (tip, mid, base), leaf number, scale leaf number and shoot number. Image analysis was also carried out to determine leaf area, size, perimeter and breadth and length of leaves. Mature *Q. robur* L. clones had a larger mid-stem and tip diameter than juvenile clones, whereas mature *Q. petraea* ex Liebl. clones were characterized by plagiotropic growth and larger mid-stem and tip diameters compared with juvenile clones. Based on discriminant analysis of the data, the authors propose the following formulae for discrimination of juvenile and mature shoots, where a negative value for the discriminant score (D) indicates juvenility. For *Q. petraea*:  $D = -1.30 - 0.0351 SA + 2.206 TD + 1.435 MSD$ , (1)

where SA is stem angle (°), TD is tip diameter (mm) and MSD is mid-stem diameter (mm). For *Q. robur*:

$$D = 3.546 + 2.418 TD + 2.202 MSD. (2)$$

*Quercus robur* clones derived from stump sprouts and designated as juvenile had a negative D value suggesting a juvenile status for these clones. Clones sources from a hedged, grafted *Q. robur* tree of mature origin had a positive D value indicating mature status. Clones initiated from a 20-25-year-old *Q. petraea* tree displayed morphology *in vitro* consistent with a mature status and had a positive D value; however, these clones displayed other traits such as vigour suggesting that vestiges of juvenility remain. Multiplication rate and leaf size and shape were variable among clones and did not provide suitable markers for juvenility or maturity for these *Quercus* species.

**Page**

pp 251-257

**Location**

Coillte library

**Notes**

includes tables, bibliographical references

**Address of author**

\*School of Biological Sciences, Dublin City University, Glasnevin, Dublin 9  
Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1628

**Author**

Thompson, David

**Title**

The potential to clone noble fir (*Abies procera* Rehd.)

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

Report on Christmas tree research 1999.

**Key Word**

propagation

micropropagation

cloning

breeding

embryogenesis

genetics

noble fir

Abies

**Abstract**

It takes a considerable length of time to improve most forest trees, including noble fir, by conventional breeding. Vegetative propagation has an advantage over sexual reproduction as an exact copy of the original is produced. However, it takes to 5 to 7 years in the plantation for noble fir to demonstrate its traits. Micropropagation, in which cells and tissues are induced to regenerate complete copies of the original plant, is a promising alternative. The two methods associated with this technique, 'organogenesis' and 'embryogenesis' are explained. The later is the most useful as it is less labour intensive. The possibility of using somatic embryogenesis in the true firs is assessed. The success of such a project could significantly reduce the time required to put genetically improved noble fir into commercial production.

**Page**

pp 11-18

**Location**

COFORD

**Notes**

includes ill.

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow

---

**Number**

1629

**Author**

Ryle, Sinead

**Title**

A baseline study of the distribution and factors associated with the occurrence of needle discolouration in noble fir (*Abies procera* Rehd.)

**Publisher**

COFORD

**Place**

Dublin

**Source**

Report on Christmas tree research 1999.

**Key Word**

forestry health

forest pathology

disease

needle discolouration

noble fir

*Abies procera*

Christmas trees

**Abstract**

Current Season Needle Necrosis has become a serious problem in many Christmas tree plantations. This study set out to: 1. Determine the extent of the disorder by means of a survey of Christmas tree growers; 2. Trace the seasonal development of the disorder by observation and measurement of trees during the growing season; 3. Identify any causative organisms and observe the disorder at a cellular level using Scanning Electron Microscopy (SEM); 4. Chemically analyse both healthy and CSNN affected foliage to determine nutrient levels. The results of the survey are presented. Indications from the development study suggest CSNN symptoms first appear as the growth rate of the new foliage stabilises. In the nutritional study some differences in nutrient concentrations between healthy and necrotic foliage was found. The scanning electron microscope observation did not detect any causative organism.

**Page**

pp 19-29

**Location**

COFORD

**Notes**

includes tables, photos. (from electron microscope)

**Address of author**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4.

---

**Number**

1630

**Author**

Mahoney, Brian

**Title**

A base line assessment of the nutritional requirements of noble fir (*Abies procera* Rehd.) for Christmas trees.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

Report on Christmas tree research 1999.

**Key Word**

silviculture

nutrients

tree growth

soil

noble fir

*Abies procera* Rehd.

Christmas trees

**Abstract**

The objective of the fertiliser field trial, established in December 1997, was to examine the impact of nitrogen at six levels upon the growth and development of noble fir (*Abies procera* (Rehd.) Christmas trees. There were 12 separate treatments: two seasons of application (spring and autumn) and six levels of nitrogen. The results of site assessments in December, 1997, and December, 1998 are presented. It was found that no single fertiliser treatment consistently gave the best response over the range of response variables. The objective of the biomass and nutrient content study, established in January 1998, was to determine the annual nutrient demands which noble fir Christmas trees place on a site. Figures for the annual accumulation of biomass and nutrients, nutrient concentrations and the distribution of biomass and nutrients are presented. There was an unexpected decline in foliar N, P and K rose dramatically in the foliage, for all the treatments. Results indicate that fertiliser applied in October produced a rapid change in the foliage colour.

**Page**

pp 30-47

**Location**

COFORD

**Notes**

includes graphs, tables

**Address of author**

Department of Crop Science, Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

---

**Number**

1631

**Author**

Murphy, Gerard

**Title**

Development of an electronic log market in Ireland - a short outline.

**Publisher**

European Forest Institute

**Place**

Joensuu

**Series**

EFI Proceedings No. 26

**Date**

1998

**Source**

Analyzing structural changes in roundwood and forest product markets in Europe: empirical studies and research priorities. (Edited by Birger Solberg and Alex Moiseyev).

**Key Word**

timber markets

auction

information technology

timber processing

**Abstract**

This paper gives an outline of the elements of the new electronic based auction system developed in Ireland. The rationale for the system is described. The paper uses the Structure-Conduct-Performance paradigm to identify the key market dynamics which had to be taken into account in the design of the system, particularly in relation to improving market information flows. Although the system is only operational for 18 months, the paper gives a short review of its performance to date.

**Page**

pp 105-110

**Location**

Coillte library

**ISBN**

9529844441

**Address of author**

Coillte Teo., Leeson Lane, Dublin 2

---

**Number**

1632

**Author**

O'Sullivan, Aileen

**Title**

Ireland.

**Publisher**

European Forest Institute

**Place**

Joensuu

**Series**

EFI Proceedings No. 16

**Date**

1999

**Source**

Research in forest reserves and natural forests in European countries. Country reports for the COST Action E4: Forest Reserves Research Network.

**Key Word**

semi-natural woodlands  
forest history  
deforestation  
forest habitat  
forest ecology  
environment

**Abstract**

Natural forest vegetation in Ireland was almost wiped out by human activity over thousands of years. The term "semi-natural" is generally used to refer to those stands which survive, and those which most resemble the potential natural vegetation, while the term "woodland" is generally preferred over "forest". Research on the semi-natural woodlands in Ireland has been sporadic, with, as yet, no national programme of research operating under any one authority. The research to date has been primarily concerned with ecological accounts and surveys; assessing the effects of herbivores and of invasive exotic species; history of vegetation development and disturbance; soils; monitoring of soil and ecological processes. (There is very little published research on stand structure and development.) Traditionally, projects of this kind have been funded by conservation bodies, but in latter years, forestry authorities have invested in research and monitoring of ecological processes. Irish forestry is a relatively young industry, which was first developed in the early part of this century, and expanded dramatically during the 1980s and 1990s. Native stands play an insignificant role in commercial forestry. However, the planting of broadleaved species has become more commonplace in recent years. The establishment of a national programme of research and stand structure of native species would benefit the development of a national broadleaves programme, while evaluating the true potential role of native stands in the link between silviculture and conservation. This report aims to provide an account of the current status of Ireland's natural forests and current research projects.

**Page**

pp 145-162

**Location**

Coillte library

**ISBN**

952984431X

**Notes**

includes tables, graphs, map

**Address of author**

Dúchas, The Heritage Service, National Parks and Wildlife, Office of Public Works, Dublin

---

**Number**

1633

**Author**

Alexander, Kieth

**Title**

Some records for scarcer scolytidae (coleoptera).

**Publisher**

Irish Naturalists' Journal

**Place**

Dublin

**Date**

1997

**Source**

Irish Naturalists' Journal

**Volume**

Vo. 25, No. 11/12

**Key Word**

bark beetle  
insects  
forest fauna

forest ecology  
Coleoptera  
zoology  
forest pests

**Abstract**

The writer provides a record of a number of scarcer species of bark beetle he has encountered in Ireland in recent years. The species found include *Phloeotribus rhodadactylus*; *Tryodendron domesticum* (L.); and *Dryocoetes villosus*.

**Page**

pp 451-452

**Address of author**

14 Partridge Way, Cirenchester, Glos GL7 1BQ

---

**Number**

1634

**Author**

Mulqueen, J.

**Title**

Depth, spacing and length of mole drains with applications to afforestation.

**Publisher**

Teagasc

**Place**

Dublin

**Date**

1998

**Source**

Irish Journal of Agriculture and Food Research

**Volume**

Vol. 37, No. 1

**Key Word**

afforestation

drainage

mole drains

ploughing

**Abstract**

The draught of a mole plough and the spacings of mole drains for soil loosening and control of the groundwater table were calculated from theory and compared with measured values in two gley soils with stratification. The stability of mole channels against loads on the soil surface was also considered. There was good agreement between calculated and measured values of draught and drain spacing. Maximum measured draughts of the mole plough were low, in the range 30 to 40 kN. Mole drain spacing for soil loosening and control of the watertable was similar at about 1 m apart; this spacing conforms with tree planting practice in rows 2 m apart. The depth at which mole drains are drawn should be related to the soil profile. Surcharge loads from machinery are unlikely to cause roof failure of mole channels in soils with significant friction. The results are discussed in relation to the role of mole drainage in the prevention of windthrow in forests on gley soils and in particular to the need for soil loosening for effective drainage. Practical aspects of the installation of mole drains on gley soils in relation to slope, mole length and stability, erosion and ageing of the mole channels are considered. Further research is required on the effects of closure of the mole channel in some soils over time on watertable control and tree stability.

**Page**

pp 39-49

**Location**

UCD library

**Notes**

includes tables, bibliographical references

**Address of author**

Department of Civil Engineering, National University of Ireland, Galway

---

**Number**

1635

**Author**

Sanger, L.J.;

Anderson, J.M.;

Little, D.;

Bolger, T.

**Title**

Phenolic and carbohydrate signatures of organic matter in soils developed under grass and forest plantations following changes in land use.

**Publisher**

Blackwell Science

**Place**

London

**Date**

1997

**Source**

European Journal of Soil Science

**Volume**

Vol. 48, No 2.

**Key Word**

soil

soil profiles

Sitka spruce

ash

litter

phenolic signatures

carbohydrate signatures

**Abstract**

Comparisons were made between the phenolic and carbohydrate signatures of soil profiles developed under grass, spruce and ash stands. Samples were collected from a brown earth soil which was originally under the same land use, but over the past 43 years has supported different monocultures. Distinct signatures associated with each litter type were recorded in individual profiles. A relatively undecomposed phenolic fraction from lignin and hydrolysable carbohydrate fraction from plants had accumulated in the soils under spruce and ash. This largely reflected the quantity and quality of the litter inputs from the spruce and ash compared with the grass. The phenolic and hydrolysable carbohydrate fractions accounted for as much as 60% of the total organic carbon concentration in the deep horizons. In the grassland profile both fractions were more decomposed than under ash and spruce suggesting that the forest profiles had readily accumulated a carbon pool with a comparatively slow rate of decomposition. This was most apparent from the spruce profile (which contained 398 mg/g C carbohydrate hydrolysed using trifluoroacetic acid (TFA) in the C horizon compared with 165 and 45 mg/g C under ash and grass respectively). The authors conclude that the decay rate of these fractions is a function of the vegetation type.

**Page**

pp 311-317

**Location**

UCD library

**Notes**

includes tables, graphs

**Address of author**

\*Biological Sciences Department, Hatherly Laboratories, Exeter University, Exeter EX4 4PS, UK

\*\*Department of Zoology, University College Dublin, Belfield, Dublin 4

**Number**

1636

**Author**

O'Connell, J.E.;

Fox, P.F.

**Title**

Effect of extracts of oak (*Quercus petraea*) bark, oak leaves, aloe vera (*Curacao aloe*), coconut shell and wine on the colloidal stability of milk and concentrated milk.

**Publisher**

Elsevier

**Date**

1999

**Source**

Food Chemistry

**Volume**

Vo. 66, No. 1

**Key Word**

oak

*Quercus petraea*

bark

forest products

food chemistry

**Abstract**

Additions of aloe vera extract, non-dialyzable red wine residue or aqueous methanol extracts of oak bark, oak leaves or coconut shell increased the heat stability of skim milk (at 140° C) and concentrated milk (at 120°) and retarded rennet coagulation, but had no effect on the alcohol stability of milk. The calcium ion concentration in milk was reduced by the addition of these extracts but calcium chelation does not appear to be the exclusive mechanism responsible for promoting micellar stability. The extracts contained a high concentration of polyphenols, which are highly reactive and may be the active agents in the extracts, responsible for the enhanced stability of casein micelles.

**Page**

pp 93-96

**Location**

UCD library

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

Department of Food Chemistry, University College Cork

---

**Number**

1637

**Author**

Lefort, F.

Douglas, G. C.

**Title**

An efficient micro-method of DNA isolation from mature leaves of four hardwood tree species *Acer*, *Fraxinus*, *Prunus* and *Quercus*.

**Publisher**

INRA

**Place**

Paris

**Date**

1999

**Source**

Annals of Forest Science

**Volume**

Vol. 56, No. 3

**Key Word**

DNA purification

genetics

biochemistry

Acer pseudoplatanus  
Quercus petraea  
Quercus robur  
Prunus avium  
Fraxinus excelsior  
plant breeding

**Abstract**

It is difficult to purify DNA from mature tree leaves at the end of the growing season, because of their thick cell wall, and high content in polysaccharides, phenolic compounds and endonucleases. A simple, fast and efficient method for DNA purification from 100 mg fresh weight leaf samples is described here. It has been developed for extracting DNA from mature leaves of Quercus robur, Q. petraea, Fraxinus excelsior, Prunus avium and Acer pseudoplatanus, harvested in October from greenhouse-grown plants, arboretum plants, and, in some cases, from in vitro stock. The protocol is a modified CTAB (hexadecyl trimethylammonium bromide) method including a combination of beta-mercaptoethanol, polyvinylpyrrolidone, sodium dodecyl sulfate and lithium chloride including short centrifugation runs. It is very efficient, yielding up to 950 µg DNA/g of fresh weight, even when very mature leaves are processed. The extracted DNA was used as template to characterize the oaks by microsatellite analysis. Its efficiency has been compared to four commercially available kits and two other published CTAB protocols. The protocol is also inexpensive compared to commercial kits.

**Page**

pp 1-10

**Location**

UCD library

**Notes**

includes graphs, bibliographical references

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1638

**Author**

O'Reilly, C.;

Harper, C.

**Title**

The morphological characteristics, root growth potential and flushing response of rooted cuttings compared with transplants of Sitka spruce.

**Publisher**

INRA

**Place**

Paris

**Date**

1999

**Source**

Annals of Forest Science

**Volume**

Vol. 56, No. 1

**Key Word**

plant morphology

roots

root growth potential

rooted cuttings

transplanting

Sitka spruce

Picea sitchensis

propagation

plant physiology

**Abstract**

The morphological and some physiological attributes of Sitka spruce (*Picea sitchensis*) rooted cuttings derived from juvenile selections in the nursery were compared with those of conventional unimproved transplants grown

in Ireland in 1996 and 1997. A field trial was established in the second year to assess flushing and growth responses of the stock. Although some were highly significant, absolute differences between stock types in most morphological characteristics were small. Cuttings had much fewer branches/cm shoot, and root dry weights were smaller than in transplants, but the shoot/root ratio differed little between stock types. The root growth potential (RGP) of cuttings was good, but was lower than that of the transplants in 1997 but not in 1996. Cuttings flushed 3-5 days earlier than the transplants in the RGP tests, and up to 10 days earlier in the field trial. The earlier flushing of the cuttings probably occurred largely because the cuttings were derived from material selected for having rapid juvenile growth rates. The height increment of cuttings was greater than that of transplants after one growing season in the field.

**Page**

pp 11-18

**Location**

UCD library

**Notes**

includes tables, bibliographical references

**Address of author**

Department of Crop Scienc Horticulture and Forestry, University College Dublin, Belfield, Dublin 4

---

**Number**

1639

**Author**

van der Werf, Paul

**Title**

Composting yard trimmings in Ireland.

**Publisher**

JG Press

**Place**

Emmaus, CA

**Date**

1998

**Source**

BioCycle

**Volume**

Vol. 39, No. 2.

**Key Word**

compost

waste

re-cycling

forest products

environment

yard trimmings

**Abstract**

The setting up and operation of Ireelan's composting facility, in St. Anne' s Park in Dublin, is described. The facility is run by Dublin Corporation and in each of its first two years in operation it received over 30,000 Christmas trees to be composted or used for mulch. Other material deposited includes grass, leaves, brush and other yard trimmings. Following a series of windrows, completed compost in produced in about 20 weeks. Approximately 5,000 cubic metres of compost were produced at the site in 1996.

**Page**

pp 82-83

**Location**

UCD library

**Notes**

includes photos

**Address of author**

Green Lane Environmental Group, Lambeth, Ontario

---

**Number**

1640

**Author**

McHugh, Roland

**Title**

Corticulous Myxomycetes from Glen Mhuire, Co. Wicklow.

**Publisher**

British Mycological Society

**Place**

Cambridge

**Date**

1998

**Source**

Mycologist

**Volume**

Vol. 12, No. 4

**Key Word**

Myxomycetes

bark culture

oak

bark

mycology

fungi

Minakatella

Diacheopsis

forest ecosystems

**Abstract**

The results of bark cultures of 43 oak trees in a copse in the Wicklow Mountains are presented. 38 species of myxomycetes were obtained, including three new to Ireland. The conservation interest of the site is discussed.

**Page**

pp 166-168

**Location**

UCD library

**Notes**

includes bibliographical references

**Address of author**

Dublin Institute of Technology, Cathal Brugha Street, Dublin 1

---

**Number**

1641

**Author**

Harrington, Rory

**Title**

How much do you know about money puzzle?

**Place**

Birr

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

June, 1997

**Key Word**

monkey puzzle

Araucaria araucana

**Abstract**

Monkey puzzle or Chile pine (*Araucaria araucana*) belongs to the genus *Araucaria*, which forms a distinct grouping of early (Triassic) evolved conifers. The species has a wide distribution from upland sites in Argentina and Chile. The most suitable conditions for growth, the tree's characteristics and the history of its cultivation in Ireland are described.

**Page**

pp 18-19

**Notes**

includes map, photos.

---

**Number**

1642

**Author**

Knaggs, Gordon

**Title**

Parana pine and monkey puzzle: the timber.

**Place**

Birr

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

June, 1997

**Key Word**

Parana pine

*Aracaucaria angustifolia*

monkey puzzle

*Araucaria anaucana*

timber properties

**Abstract**

The timber characteristics of Parana pine (*Aracaucaria angustifolia*) and the Chile pine or monkey puzzle (*Araucaria anaucana*), two distinct but closely related species are described. Strength properties, drying, shrinkage, durability and machining are also briefly summarised

**Page**

p 20

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1643

**Author**

Berridge, Dominic

**Title**

The forester's friend.

**Place**

Birr

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

June/1997

**Key Word**

forest pests

bank voles  
rodents  
barn owls  
forest health

**Abstract**

Recent changes in farming practice have deprived the barn owl of much of its food source, especially mice. By attracting barn owls to forests, through the use of nestboxes or barrels, foresters could help to keep the numbers of troublesome bank voles in check.

**Page**

p 20

**Address of author**

Rathsillage, Adamstown, Co. Wexford

---

**Number**

1644

**Author**

Wall, Sarah

**Title**

Vegetation control.

**Key Word**

forest health  
silviculture  
tree growth  
weeds  
herbicides  
vegetation control

**Abstract**

Factors which determine the intensity of weeding required on a site include the fertility of the soil, the tolerance of tree species to shade, and the rate of growth of the trees. Vegetation control should start early in order to avoid water stress and nutrient deficiency caused by competition with weeds. The early growth of trees can be seriously effected by the presence of weeds. Physical methods of controlling vegetation include hand weeding, cutting, mulching and tramping down, but herbicides are the most common form of vegetation control. It is particularly important to control the growth of woody plants such as gorse.

**Page**

pp 28-29

**Notes**

includes bibliographical references

---

**Number**

1645

**Author**

Lawton, Colin

**Title**

The grey squirrel in Ireland: current distribution and damage to woodland.

**Place**

Birr

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

June/1997

**Key Word**

grey squirrel  
Sciurus carolinensis

forest health  
pests  
animals  
forest ecosystems  
broadleaves

**Abstract**

The American grey squirrel, *Sciurus carolinensis*, was introduced to Ireland around 1920 and is commonly found in mature broadleaved woodlands. It is fairly widespread in the eastern part of the country and has displaced the red squirrel in many areas. The grey squirrel causes considerable damage to trees by stripping the outer bark to get at the sap. A study has been initiated to investigate the current status of the grey squirrel, its distribution, habit preferences and dispersal patterns, and to estimate the extent of the bark stripping problems with a view to developing methods to reduce the damage in future.

**Page**

p 32

**Notes**

includes graph, photos.

**Address of author**

Wildlife Ecology Group, Trinity College Dublin

---

**Number**

1646

**Author**

Kent, Tom

**Title**

Will poplar ever be popular in Ireland?

**Place**

Birr

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

June/1997

**Key Word**

poplar

broadleaves

forest management

private forestry

**Abstract**

The ability of poplar to grown on very short rotations makes it attractive to the private investor. A recently established research project is assessing the suitability of new poplar clones, in particular Belgian poplar clones, to Irish conditions. The siting and preparation of the ground for the experimental sites used in the study are described. Management requirements in the establishment phase are outlined the most important diseases of poplar are listed. 2 trials established in 1996 have performed well. An assessment of poplar stands in Ireland found relatively good performance on all stands.

**Page**

pp 14-15

**Notes**

includes photos.

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17.

---

**Number**

1647

**Author**

Irish Timber and Forestry

**Title**

How much do you know about Irish Elm?

**Place**

Birr

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

July/August 1997

**Key Word**

Irish elm

Ulmus glabra

Dutch elm disease

Ceratocystis ulmi

broadleaves

disease

genetics

breeding

**Abstract**

The Irish elm, also known as the wych elm, is one of about 20 species of the genus *Ulmus*. In recent decades Dutch elm disease, *Ceratocystis ulmi*, has reduced the number of this species significantly. Other common elm species in Ireland include the English elm, *Ulmus procera*, and *Ulmus carpiniifolia*, which is resistant to Dutch elm disease. Irish elm is common in hedgerows and grows fast given good soil conditions. Germination, distribution, and damage to the tree from animals is described. Resistance to disease in the future may depend on advances in breeding research.

**Page**

pp 18-19

**Notes**

includes map, photos

---

**Number**

1648

**Author**

Knagg, Gordon

**Title**

Elm, the timber.

**Place**

Birr

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

July/August 1997

**Key Word**

elm

timber properties

timber strength

timber processing

forest products

disease

**Abstract**

The timber of elm is described. Almost all supplies come from old stock or from dead trees killed by Dutch elm disease. The presence of the fungus can reduce strength properties. Other properties described are shrinkage, drying, steam bending and machining.

**Page**

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1649

**Author**

McAree, Diarmuid;

Cahalane, Gerard

**Title**

Dutch elm disease.

**Place**

BirrC

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

July, August/1997

**Key Word**

elm

Ulmus glabra

forest health

disease

Dutch elm disease

fungal infection

bark beetle

**Abstract**

There are two strains of the fungus which cause Dutch elm disease in Ireland, an aggressive strain which can kill trees within weeks, and non-aggressive strain. It is a wilt disease and can appear very suddenly. The symptoms of the disease are described. The disease is caused by a fungus, *Ophiostoma* spp which is introduced to the elm trees as spores by either of two bark beetles, *Scolytus scolytus* or *Scolytus multistriatus*. The spread and effect of the fungus on the tree is described. Control of the spread of the disease depends to a large extent on preventing the bark beetle in, and spreading from, infected elms.

**Page**

pp 18-19

**Notes**

includes map, photos.

**Address of author**

Forest Service, Leeson Lane, Dublin 2

---

**Number**

1650

**Author**

Binggeli, Pierre

**Title**

The need for shelter when growing ash & sycamore.

**Place**

Birr

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

July, August/1997

**Key Word**

ash  
sycamore  
broadleaves  
shelter  
frost damage  
forest management  
farm forestry  
silviculture

**Abstract**

This article provides an overview of an environmental survey of ash and sycamore plantations around Sligo. Factors such as soil type, altitude, composition of competing vegetation and shelter and the tree's growth rate were assessed. The results of the study demonstrated a considerably higher growth rate for trees growing on sheltered sites than for those on open field sites. Other factors were unimportant in comparison. It would appear from the study that the provenance of ash used is not suitable for local conditions. Ash was found to be susceptible to frost and often lost its leading shoot. Correct management practice for ash and sycamore is outlined and the importance of shelter, regular fertilising, and formative pruning of ash stressed.

**Page**

pp 32-33

**Notes**

study carried out by Pierre Binggeli and Philip Blackstock; includes photos.

---

**Number**

1651

**Author**

Irish Timber and Forestry

**Title**

Herbicides for the farm-forest.

**Place**

Birr

**Date**

1997

**Source**

Irish Timber and Forestry

**Volume**

July, August/1997

**Key Word**

vegetation control  
weeds  
herbicides  
forest health

**Abstract**

It is advisable not to destroy all ground vegetation. A spot 1.3 meters in diameter surrounding the tree, or a band 1.3 meters running along the planting line is sufficient. Herbicides may be divided into three categories: residual herbicides; foliar acting; and contact herbicides. Descriptions of the most common types of sprayers are provided. The most commonly applied forestry herbicides are asulam; atrazine; glyphosate; imazpyr; propyzamide; terbuthylazine; and triclopyr.

**Page**

pp 22-23

---

**Number**

1652

**Author**

Nieuwenhuis, Maarten  
Malone, Liam

**Title**

A decision support system for the value maximisation of standing timber.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

The Thinning Wood Chain. Proceedings of IUFRO (Research Unit 3.09.00) Conference on Harvesting and Economics of Thinnings, Ennis, Ireland 4-7th May 1999.

**Key Word**

decisions support systems

timber procurement

timber processing

preliminary testing

inventory

computers

information technology

yield potential

production planning

thinning

**Abstract**

The purpose of this research was to develop a decision support system, incorporating pre-harvest measurement and analysis procedures, to provide the timber procurement manager of a medium-sized sawmill with estimates of the volume, number and diameter class breakdown of log assortments that could potentially be cut from standing timber lots of mature Sitka spruce (*Picea sitchensis* (Bong.) Carr.). Stem profile measurements, consisting of 5,543 observations of diameter and height, were taken on 246 tree stems, from five Sitka spruce stands. The diameter at breast height (dbh) and tree height were also recorded for each of the sample trees. Four taper equations, identified from an extensive review of research literature, were selected for evaluation.

Performance ranking, based upon values of bias and standard error of estimate, revealed an eight-variable taper equation developed from modifications proposed by Newnham (1992) to the 'variable-form' equation of Kozak (1988) to be the best overall. Eight dbh-height models were chosen from the literature for preliminary testing. The three model that generated estimates of tree height with the least bias and minimum standard error of estimate were further investigated. The recommendation is to employ a combination of the Curtis 11 dbh-height model (Curtis, 1967) and five height sample trees drawn by simple random sampling in conducting the pre-harvest inventory. However, it is recommended that further research is undertaken to finalise inventory procedures, primarily with respect to minimum height sample sizes(s). An interactive computer programme was developed to simulate the process by which stems are cross-cut into logs. The programme employs the generic taper equation to profile the stems of known dbh and estimated height drawn from the stand. Using log specifications supplied by the user, the programmes then simulates cut-to-length harvesting and produces forecast estimates of yield for each log-type on terms of the volume and number of pieces in each of a series of small-end diameter categories. The decision support system developed in this project provides the sawmill with an efficient means of gaining a comprehensive insight into the yield potential of standing timber lots and, as such, represents a valuable aid to timber procurement and production planning.

**Page**

pp 12-24

**Location**

COFORD, Agriculture Building, UCD

**ISBN**

1902696050

**Notes**

includes tables bibliographical references

**Address of author**

Department of Forestry, University College Dublin, Belfield, Dublin 4

Coillte Teoranta, Credit Union Buildings, O'Brien Street, Mallow, Co. Cork

---

**Number**

1653

**Author**

Caplice, Sean

**Title**

Coillte thinning practice Mid Southern Region (Ireland).

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

The Thinning Wood Chain. Proceedings of IUFRO (Research Unit 3.09.00) Conference on Harvesting and Economics of Thinnings, Ennis, Ireland 4-7th May 1999.

**Key Word**

thinning

harvesting

forest management

mechanical harvesting

**Abstract**

A summary of recent management structure changes in Coillte is summarised. The new system is called Team Based Process Management Structure. Coillte's thinning policy in the region is described and the factors which determine selection of thinning classification in particular areas outlined. Recent developments in harvesting in the region are explained. The increase in mechanical harvesting has environmental consequences and thinning operations on sensitive sites are confined to summer months.

**Page**

5pp

**Location**

COFORD, Agriculture Building, UCD

**ISBN**

1902696050

**Notes**

The text of the paper was not included in the Conference proceedings. It is available as a separate document.

**Address of author**

Coillte, River View House, Carlow Road, Kilkenny

---

**Number**

1654

**Author**

Gerely, Ferenc

Phillips, Henry\*

**Title**

Thinning practices and economics; Hungary and Ireland compared.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

The Thinning Wood Chain. Proceedings of IUFRO (Research Unit 3.09.00) Conference on Harvesting and Economics of Thinnings, Ennis, Ireland 4-7th May 1999.

**Key Word**

thinning

forest management

economics

harvesting

**Abstract**

The historical development and economics of forestry in Ireland and Hungary, and the prevalent management systems in both countries, are compared. The extent of thinning in Irish forests and the factors influencing thinning decisions are outlined. These include: stability; yield class; prices; access; cost and crop form/quality. Notes on thinning intensity and timing of first thinning are included.

**Page**

pp 86-94

**Location**

COFORD, Agriculture Building, UCD

**ISBN**

1902696050

**Notes**

includes tables, graphs

**Address of author**

Cloot na Bare, Rathonoragh, Co. Sligo

---

**Number**

1655

**Author**

Martin, Audrey\*;

Owende, Philip\*;

Ward, Shane\*;

O'Mahoney, Michael\*\*

**Title**

Planning for timber extraction based on pavement serviceability and forest inventory data.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

The Thinning Wood Chain. Proceedings of IUFRO (Research Unit 3.09.00) Conference on Harvesting and Economics of Thinnings, Ennis, Ireland 4-7th May 1999.

**Key Word**

pavement classification

thinning

forest access roads

timber extraction

GIS

GPS

harvesting

forest engineering

**Abstract**

A methodology for integrating pavement classification and forest inventory data, to determine the capability of forest access roads with weak subgrades to support timber extraction is described. GPS location data, recorded both in stand-alone mode and using differential techniques, was superimposed on forest and Ordnance Survey maps. Within GIS, the acquired spatial data was manipulated and integrated with pavement attribute information and the current and projected forest inventory data. Potential pavement damage by a typical timber haulage truck with payloads of 22, 27, 30 and 35 tonnes was then assessed. It was found that by overloading the truck by three and eight tonnes (GVW of 44t and 48 t, respectively), the total volume of timber that could be conveyed without damaging the serviceable pavements reduced by an average of 16 and 44% respectively. Rerouting of timber to avoid critical and failed sections could significantly increase the transportation costs. Rerouting was found to be impractical where forest compartments were accessible by single routes, hence, necessary repairs to facilitate the extraction are recommended in such cases. The final database could be extended to include specific costing of repair and maintenance requirements, hence, determine the economic implications of respective routing strategies.

**Page**

pp 96 -114

**Location**

COFORD

**ISBN**

1902696050

**Notes**

includes tables, graphs, map, bibliographical references; paper also delivered at Global Positioning System in Forestry: Western Workshop '98. November 16-18, 1998 Kelowna, BC, Canada

**Address of author**

\*Department of Agriculture and Food Engineering, University College Dublin, Earlsfort Terrace, Dublin 2  
Cork Institute of Technology, Rossa Avenue, Bishopstown, Cork

---

**Number**

1656

**Author**

Gallagher, Gerhardt

**Title**

Developments in thinning technology and implications for sustainable operations.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1999

**Source**

The Thinning Wood Chain. Proceedings of IUFRO (Research Unit 3.09.00) Conference on Harvesting and Economics of Thinnings, Ennis, Ireland 4-7th May 1999.

**Key Word**

thinning

harvesting

forest management

sustainable forest management

environment

**Abstract**

Continued afforestation in Ireland over the last fifty years has resulted in an increasing volume of thinnings. In recent years rapid growth in the use of machines in thinning operations has been encouraged by financial assistance to purchase harvesting and extraction machinery through two forestry operational programmes administered by the Forest Service and supported by the European Union. As harvesting has increased so has the need for best operational practices to ensure that economics, environmental and social forest values are respected.

**Page**

8pp

**Location**

COFORD

**Notes**

includes tables

**Thesis**

Paper not included in published conference proceedings. Available as a separate document.

**Address of author**

Forest Service, Department of the Marine and Natural Resources, Leeson Lane, Dublin 2

---

**Number**

1657

**Author**

O'Connel Sandra

**Title**

Money from trees.

**Place**

Dublin

**Date**

1999

**Source**

Business and Finance

**Volume**

September, 1999

**Key Word**

finance

investments

pension funds

private forestry

**Abstract**

The high, tax-free, yields on investments in forestry have encouraged many private individuals to see forestry fund investment as an efficient way of topping up retirement income. However, investors in schemes such as the Sixth Irish Forestry Fund have to consider issues such as rotation lengths, trends in the timber market and demand for woodpulp thinnings. The scheme also includes the potential value of forest land in its projections. Other issues to be considered are future Government policy on grants and lack of liquidity. Until now the main investors in forestry have been the State and pension funds, but private investors are likely to become increasingly involved.

**Page**

p 24

**Notes**

includes phot.o

---

**Number**

1658

**Author**

Ryan, Tom;

O'Neill, Jim

**Title**

Reverse roads methods

**Publisher**

Institute of Agricultural Engineers

**Place**

Bedford

**Date**

1999

**Source**

Forestry Engineering for Tomorrow. (Roads technical papers) June 28-30 1999 Edinburgh University, Edinburgh, Scotland.

**Key Word**

forest engineering

forest roads

road construction

reverse road method

timber extraction

**Abstract**

Forest roads constitute a necessary element of any forest estate. Roads are essential for the maintenance, protection and harvesting of the timber crop. Roads represent a substantial part of the overall investment in the estate and any reduction in the cost of construction will therefore result in a significant reduction in the initial investment. One method of road construction which is used in Ireland is the reverse road method. This method, which utilises on-site material produces a highly effective, low cost road. It is a useful method on low lying sites which are difficult to drain. The finished road is raised above the water table and facilitates timber extraction. As well as the financial savings which result from this method, little damage is done to the local road network during the construction period.

**Page**

9pp

**Location**

Coillte library

**Notes**

Paper 3 of 12 delivered at conference; includes ills., diagrams, tables.

**Address of author**

Coillte Teo., Government Buildings, High Road, Letterkenny, Co. Donegal

---

**Number**

1659

**Author**

COFORD

**Title**

Decision Support Tools in Forest Planning. Workshop presentations. Tuesday 26th May 1998. Room 118 Agriculture Building, UCD.

**Publisher**

COFORD

**Place**

Dublin

**Date**

1998

**Key Word**

decision support tools

forest management

timber production

computers

statistics

information technology

inventory

harvesting

**Abstract**

This report comprises a number of presentations given at the meeting. 'Growth and yeild models: an overview' was presented by L.R. Broad. This presentation gave an overview of some common properties and unifying threads of growth models. The following concepts are explained by way of analogy with a micro-economic production plant: growth modes; productivity measures; stand management issues; state space concepts; model aggregation levels. Presentation 2, 'Growth and yield models for diverse species,' was given by Myles MacDonncadha. The presentation was divided into the following parts: Diverse species - work to date; Some new model concepts; New mode vs. BFC yield table. Presentation 3, 'Forest inventory sampling on successive occasions' was given by David Kilpatrick & Michelle Allen. This presentation describes the statistical work involved in estimating volume, growth and future production (inventory) for a number of sampling situations. Presentation 2, 'Value maximisation of forest stands through optimal inventory and cross-cutting methodology,' was given by Liam Malone. This describes a pre-harvest measurement and analysis procedure which has been developed to provide an efficient means of obtaining and analysing information on standing timber to generate predictions of the volume, number and diameter classes of potential log assortments. Presentation 5, 'Inventory and forecasting for the private grower,' was given by Nick Hennessy. This presentation described the development of the "HomeForester" computer application for forest inventory and management decision support. Presentation 6, 'Harvest scheduling and timber allocation,' was presented by Gary Williamson and Maarten Nieuwenhuis. This presentation examined the use of linear programming in production scheduling.

**Page**

50pp

**Location**

Coillte library

**Notes**

The text of Presentation 1 (Broad) is included; notes and overheads from Presentations 2-6 are included

---

**Number**

1660

**Author**

Coillte

**Title**

Environmental plan - Portlaoise District with focus on Camross Forest 1997-2001.

**Publisher**

Coillte

**Place**

Dublin

**Date**

1997

**Key Word**

environment

forest management

state forestry

Coillte

landscape

water

conservation

recreation

**Abstract**

The objective of this plan is to provide an attractive and productive forest which will blend with the landscape, have greater diversity in species, create habitat for flora and fauna and simultaneously have forests which are efficient to manage. The features of the particular forest for which this plan was devised are described.

Camross Forest in Portlaoise district is managed by Coillte, the Irish Forestry Board. The main elements of Coillte's environmental policy are outlined and actions which the company has taken to ensure its implementation are explained. The plan examines the policy and the intended approach to implementation of the following environmental themes: landscape design; water; archaeology; conservation; education and public relations

**Page**

47pp

**Location**

Coillte library

**Notes**

includes photos., ill., maps, tables; appendices include Forest Service environmental guidelines and Coillte harvesting guidelines

---

**Number**

1661

**Author**

Tompkins, Dennis

**Title**

Irish tree industry targets Europe.

**Date**

1999

**Source**

American Christmas Tree Journal

**Volume**

July/1999

**Key Word**

Christmas trees

silviculture

private forestry

business

marketing  
forest management

**Abstract**

This article describes a visit by the author to three different Christmas tree growers and their efforts to introduce noble fir to the British and European Christmas tree markets. Irish exports are dominated by six major producers who have switched from Pacific Northwest seed sources to Danish seed to reduce the risk of current season needle necrosis. A profile of each of the following growers is provided: The Emerald Group; Wicklow Christmas Trees; Coillte Christmas Tree Farms. Emerald had sales of 170,000 trees in 1998 and expect to produce 500,000 trees per year. About 70% of sales are to the UK and 20% are to Germany. Recent developments, including the mechanization of basal pruning, are described. Wicklow Christmas Trees aims to increase current production of 70,000 trees a year to 200,000. The company supplies the Irish, British, German and French markets, and each one has different requirements. Coillte Christmas Tree Farms, like the other companies visited, face problems with respect to seed sources, culturing techniques, harvesting, labour shortages and transportation. Each company has had increased demand for palletized trees, and Coillte expects this will account for 70% of its products in 1999. A target of 400,000 trees harvested per year is expected. Coillte's foliage business is also described.

**Page**

pp 19-25

**Location**

copy of article in Coillte library

**Notes**

includes photos;

---

**Number**

1662

**Author**

Lynch, Ted

**Title**

New perspective as regards thinning softwoods.

**Publisher**

Joint FAO/ECE/ILO Committee on Forest Technology, Management and Training

**Date**

1999

**Source**

Forest Operations of Tomorrow. Seminar. Pessac, 20-24 September 1999.

**Key Word**

thinning

---

**Number**

1663

**Author**

Gill, E.;

Ward, S.M.

**Title**

Automatic vehicle location.

**Publisher**

A.A. Balkema

**Place**

Rotterdam

**Date**

1989

**Source**

Proceedings of the Eleventh International Congress on Agricultural Engineering/Dublin/4-8 September 1998. Volume 4. Power, processing and systems. (Edited by Vincent A. Dodd, Patrick M. Grace).

**Key Word**

transportation  
peatlands  
bogs  
engineering

**Abstract**

Bord na Mona, the Irish peat development authority, has a large amount of rolling stock on its bogs as part of its peat transporting operation. It has many kilometers of rail, both temporary and permanent throughout the bogs and to the peat burning generation stations. The extensive coverage of the railways and the layout of the bogs means that it is very difficult to have an accurate knowledge of the position and progress of vehicles. Investigation using a shipping navigation system, Decca, has shown a promising degree of reproducibility and accuracy. This would enable the development of a cheap location system.

**Page**

pp 3105-3109

**Location**

Forest Engineering Unit, UCD

**ISBN**

9061919797

**Address of author**

Department of Agricultural Engineering, University College Dublin, Earlsfort Tce., Dublin 2

---

**Number**

1664

**Author**

O. Donnell, B.\*

Rice, B.\*

Dodd, V.A.\*\*

**Title**

Storage and drying of forest biomass.

**Publisher**

A.A. Balkema

**Place**

Rotterdam

**Date**

1989

**Source**

Proceedings of the Eleventh International Conference on Agricultural Engineering / Dublin / 4-8 September 1989. Volume 4: Power, processing and systems. (Edited by Vincent A. Dodd, Patrick M. Grace).

**Key Word**

short rotation forestry

forest biomass

fuel

drying

moisture content

**Abstract**

High and variable moisture content is one of the main deterrents to the use of short rotation forestry as a fuel source. Heat generation, resulting from respiration of living tissue, in storage piles of chipped S.R.F. was reduced by drying, thus making the material easier and safer to store. Field seasoning, as a method of reducing moisture content prior to storage, was found to be dependent on time of cutting and length of seasoning period. Moisture contents as low as 15% were recorded for material cut during the period April to June 1987 and removed from the field twelve months later.

**Page**

pp 2349-2354

**Location**

Forest Engineering Unit, UCD

**ISBN**

90619199797

**Notes**

includes tables, ills., graphs, bibliographical references

**Address of author**

\*Agricultural Engineering Department, Teagasc, Oak Park Research Centre, Carlow.  
Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Tce., Dublin 2

---

**Number**

1665

**Author**

Owende, P.M.O.\*;  
Martin, O.\*;  
O'Mahony, M.J.\*\*;  
Ward, S.M.\*

**Title**

Effect of logging traffic on forest access roads with peat subgrade.

**Publisher**

Institute of Agricultural Engineers

**Place**

Silsoe

**Date**

1999

**Source**

Forestry Engineering for Tomorrow. (Roads technical papers) June 28-30 1999 Edinburgh University, Edinburgh, Scotland.

**Key Word**

timber haulage  
forest engineering  
subgrade  
Benkelman beam  
peatland forestry  
roads  
transportation

**Abstract**

Significance of the thickness of peat substratum on the bearing capacity of forest access roads laid on peat soils in Ireland is evaluated. Bearing capacity on an experimental pavement was assessed on the basis of its surface deflection measured using a Benkelman beam. The mean deflections for winter, spring, and summer seasons were 2.7, 5.1 and 5.4mm, respectively, and the lower value for winter was attributed to the frozen pavement and lower soil moisture conditions. Pavement response in winter was a function of the interaction term of linear components of thickness of pavement layers and the peat substratum ( $R^2=0.67$ ), while in spring ( $R^2=0.70$ ) and summer ( $r^2=0.72$ ), it also included a moderating quadratic term of thickness of the peat substratum. Deflection generally increased with thickness of pavement and peat substratum, and effect of pavement thickness was pronounced under peat layer greater than 1000mm which was attributed to inherent weakness of the pavements over such areas. It is suggested that thickness of the peat substratum, may be a basis for developing specifications for timber haulage vehicles, or routeing of such traffic for envirogentle timber transportation.

**Page**

11pp

**Location**

Forest Engineering Unit, UCD

**Notes**

includes bibliographical references

**Address of author**

\*Forest Engineering Unit, Department of Agriculture and Food Engineering, University College Dublin, Earlsfort Tce., Dublin 2  
Department of Mechanical and Manufacturing Engineering, Cork Institute of Technology, Rossa Avenue, Bishopstown, Cork, Ireland

---

**Number**

1666

**Author**

O'Mahony, M.J.;

Ueberschaer, A.

Owende, P.M.O.;

Ward, S.M.

**Title**

Predictors of bearing capacity of forest access roads with peat subgrades, under changing weather conditions.

**Publisher**

Council on Forest Engineering (US)

**Date**

1998

**Source**

Harvesting Logistics: From Wood to Markets. Portland, Oregon, July 20-23, 1998.

**Key Word**

forest roads

forest engineering

peat subgrades

bearing capacity

pavement strength

peatlands

**Abstract**

Forest access roads with peat subgrades are extraordinarily weak, hence, exhibit fast and severe deterioration on overloading, leading to expensive repair and maintenance. Consequently, there is a need to develop methods with which pavement strengths may be predicted to allow strategic control of the axle loads of timber haulage vehicles. This paper evaluates the significance of depth of peat in the pavement subgrade as a potential approach to resolution of this problem. Results of investigations on typical peat-based road in County Mayo are presented. Pavement strength was assessed on the basis of deflections measured by a Benkelman beam in three series of experiments that were also designed to evaluate possible influence of weather conditions. The results were subsequently analyzed in linear and non-linear (quadratic) regression and correlation analyses. It was found that the correlation was mainly quadratic, and pavement surface deflection is expected to increase in depth of peat in the subgrade at a reducing rate and getting to a constant at specific depths of peat, which is in agreement with the theory of pavement loading by wheeled traffic. Measured deflections were in the 0.5 - 10mm range, and were lower for frozen pavements. The predicted maximum in the regression models was evaluated to be 7 mm for specific depths of 2400 mm and 2700 mm. Corresponding coefficients of determination varied from 0.63 to 0.66, indicating that the significant source of variation (63%-66%) was the inherent thickness of peat in the subgrade. Depth of underlying peat can therefore be used to set load restrictions, or axle load limits for logging operations through such pavements. The measured deflection suggests that the commonly used deflection and strain based empirical strength indices are not always applicable for pavements with peat subgrades. However, there was also evidence to suggest the existence of a 'critical' depth of peat, which may limit deflection to rationalize their use. Unfortunately, this depth was influenced by the prevailing moisture regime. There is need therefore, to develop independent indices for weak flexible pavement such as those with peat and soft soil subgrades.

**Page**

9pp

**Location**

Forest Engineering Unit, UCD

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

Forest Engineering Unit, Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Terrace, Dublin 2

---

**Number**

1667

**Author**

Lyons, John

**Title**

Current use of excavators in Irish Forestry.

**Publisher**

Swedish University of Agricultural Sciences. Department of Forest Management and Products

**Place**

Uppsala

**Series**

Research Note No. 1, 1999

**Date**

1999

**Source**

Excavators and Backhoe Loaders as Base Machines in Forest Operations. Proceedings from the first meeting of a Concerted Action FAIR - CT 98 -3381. (Edited by Jerry Johansson)

**Key Word**

forest machinery

excavators

site preparation

roadmaking

harvesting

forest engineering

**Abstract**

The use of excavators in Irish forestry is described under the following headings: site preparation; roadmaking; and harvesting. Excavator mounding is the dominant method of cultivation for establishment of all forests.

These machines have proven to be reliable and have no difficulty on bare ground and for afforestation work on poor or marginal agricultural land. Excavators are predominantly used in roadmaking and can be used in most sites all year round. On deeper peats, the reversal road system is used. Since the late 1980s tracked excavators have had a role to play in harvesting. Details of a survey on 145 harvesting machines, of which 54 were on excavator bases, are provided.

**Page**

pp 9-16

**Location**

Forest Engineering Unit, UCD

**Address of author**

Coillte, Sullivans Quay, Cork

---

**Number**

1668

**Author**

Owende, O.P.M.;

Ward, S.M.

**Title**

Computer based analysis and modelling of ground damage.

**Publisher**

Swedish University of Agricultural Sciences. Department of Forest Management and Products

**Place**

Uppsala

**Series**

Research Note No. 1, 1999

**Date**

1999

**Source**

Excavators and Backhoe Loaders as Base Machines in Forest Operations. Proceedings from the first meeting of a Concerted Action FAIR - CT 98 -3381. (Edited by Jerry Johansson).

**Key Word**

forest engineering

ground damage

computer models

information technology

forest vehicles

transportation  
excavators

**Abstract**

Utilisation of machines on forest floors should consider the size and suitability of their tractive devices, dynamic loading in the machine-floor interface, and effects of operation variables such as speed, number of passes and ground pressure due to the tractive devices. These must comply with with pertinent environmental concerns, and therefore requires knowledge of potential adverse effects of machine traffic. Due to the varied conditions of the forest floor, soil physical and mechanical properties and vehicle load regimes, empirical results have limited applications, as they cannot be extrapolated beyond the respective test conditions. Modelling of ground damage therefore provides a convenient method of adapting vehicle parameters to inherent terrain conditions. This paper discusses a model based on dimensional analysis, for vehicles with pneumatic wheels. Ground damage is discussed on the basis of changes in bulk density, soil macropores space and wheel sinkage. Based on data from literature, it is estimated that significant variation in level of ground damage by compaction lies within a narrow range of machine operation variables of wheel load, speed and number of passes. Machine operation skills, safety considerations, and motivation may therefore be key to environmentally operations. These may be supported by presentation of model outputs in a form that is convenient for locating optimal operation points.

**Page**

pp 73-86

**Location**

Forest Engineering Unit, UCD

**Notes**

includes tables, illus., photo., graph, bibliographical references

**Address of author**

Forest Engineering Unit, Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Terrace, Dublin 2

---

**Number**

1669

**Author**

Smith, Neil

**Title**

Excavators in forestry, from a contractor's experience.

**Place**

Uppsala

**Series**

Research Note No., 1 1999

**Date**

1999

**Source**

Excavators and Backhoe Loaders as Base Machines in Forest Operations. Proceedings from the first meeting of a Concerted Action FAIR - CT 98 -3381. (Edited by Jerry Johansson)

**Key Word**

forest machinery

excavators

**Abstract**

A case history of a seven years old Atlas 1104 excavator which has clocked 25,000 hours is given. Various adjustments were made to the manufactured machine to improve thinning access and driver visibility. A list of weaknesses and faults that have become apparent with excavators in Irish forestry harvesting are also given.

**Page**

pp 87-89

**Location**

Forest Engineering Unit, UCD

**Address of author**

Irish Forestry Contractors Association

---

**Number**

1670

**Author**

Raftery, Ciaran

**Title**

GPS guided forest harvester data system.

**Date**

1997

**Key Word**

harvesting

Geographical Information Systems

Global Positioning Systems

**Abstract**

This thesis attempts to outline the basic information that is needed before a Global Positioning System (GPS) guided forest harvester data system can be implemented. The concept of GPS is explained and the use of Geographical Information Systems in forestry is described. There are two chapters on cut-to-length forest harvesting methods.

**Page**

35pp

**Location**

Forest Engineering Unit, UCD

**Thesis**

B. Sc. Agr. Thesis, Department of Agricultural and Food Engineering, UCD, 1997

---

**Number**

1671

**Author**

Greene, Caroline

**Title**

Central tyre inflation.

**Date**

1999

**Key Word**

forest engineering

vehicles

tyre inflation

transportation

**Abstract**

Incorrectly inflated tyres cause damage to the vehicle, the soil and the tyre itself. The objective of this thesis was to design a tyre monitoring system for the measurement of operational temperatures at different inflation pressures.

**Page**

40pp

**Location**

Forest Engineering Unit, UCD

**Notes**

includes tables, photos., diagrams

**Thesis**

B. Agr. Sc. Thesis, Department of Agriculture and Food Engineering, UCD, 1999

---

**Number**

1672

**Author**

Clerkin, Gavin

**Title**

Improving the cost efficiency of the road haulage of round timber.

**Date**

1999

**Key Word**

forest engineering

haulage

timber extraction

vehicles

**Abstract**

This thesis examines ways of making the road haulage of round timber most cost effective. This can be achieved by exploiting recent developments in vehicle design and technology. The issue is examined under the following headings: new legislation; tyres; improving fuel consumption; developments in crane technology and vehicle bodywork; and developments in vehicle technology.

**Page**

viii, 71pp

**Location**

Forest Engineering Unit, UCD

**Thesis**

B. Agr.Sc. Thesis, Department of Agricultural and Food Engineering, UCD.

---

**Number**

1673

**Author**

O'Mahony, M.J.;

Owende, P.M.O.

**Title**

Safe axle load limits for short haul forestry vehicles.

**Publisher**

UCD. Department of Agricultural and Food Engineering

**Place**

Dublin

**Date**

1999

**Key Word**

forest

**Abstract**

arterial road from forest areas are increasingly expected to cater for heavier traffic during the periodic harvest of timber. These roads were not designed for this traffic and damage has been increased by uncontrolled axle loads. There is a need to establish safe axle load limits for these roads. The objective of this study was to establish the safe axle load for a short-haul tractor and trailer system to limit damage to peat base roads used to access forests. From the study, it has been shown that for an extraction distance of up to 8 km and a haulage distance of 30 km and above, the reduced load rigid body truck and trailer combination of 15 tonne capacity, incurs the lowest cost per tonne of timber transported. This form of haulage causes an approximately an equivalent amount of road damage, per tonne of timber transported, as a tractor and trailer system with a 10 tonne payload. A reduced load rigid body truck and trailer combination of 15 tonne capacity causes between 4 and 15 times less damage than a fully laden rigid body and trailer with a 30 tonne payload, per tonne of timber transported.

**Page**

53pp

**Location**

Forest Engineering Unit, UCD

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

Forest Engineering Unit, Department of Agricultural and Food Engineering, UCD, Earlsfort Tce., Dublin 2

---

**Number**

1674

**Author**

Owende, Philip M.;  
Ward, Shane, M.

**Title**

Effectiveness of variable tyre pressure for control of distress on forest access roads with thin asphalt surface layering and peat soil subgrade.

**Publisher**

Swedish University of Agricultural Sciences. Department of Forest Management and Products

**Place**

Uppsala

**Series**

Research Note No. 5, 2000

**Date**

2000

**Source**

Excavators and Backhoe Loaders as Base Machines in Forest Operations. Proceedings from the second meeting of a Concerted Action FAIR - CT - 3381. (Edited by Jerry Johannsson).

**Key Word**

tyre pressure  
forest roads  
forest engineering  
peat subgrade  
vehicles

**Abstract**

An experimental set-up for verifying the potential of variable tyre pressure to minimize distress on forest access roads with thin asphalt surfacing layers and peat soil subgrade is described. It includes three sets of strain transducers each implanted in a bi-axial disposition at the bottom of a 50mm asphalt pavement in the wheel path. Three pressure cells are located on top of the peat soil subgrade at 650 mm depth below the road surface and directly under the strain transducers. A fourth pressure cell is located on top of the subgrade at the centre of the 3 m wide experimental road section. The moisture status of the subgrade soil is also monitored. Trends in monitored stresses and strains are in agreement with available evidence on pavement loading during traffickiing. The set up may therefore be used to assess the efficacy of variable tyre pressures for management of distress roads with thin asphalt surfacing layers and a weak subgrade

**Page**

pp 55-66

**Location**

Forest Engineering Unit, UCD

**Notes**

includes diagrams, graphs, bibliographical references

**Address of author**

Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Tce., Dublin 2

---

**Number**

1675

**Author**

Fitzsimons, Hugh S.

**Title**

The logistics of transporting timber in Ireland using various haulage methods.

**Date**

1996

**Key Word**

forest engineering  
forest roads  
timber extraction  
harvesting  
vehicles

**Abstract**

The transportation system used by harvesting contractors in state forests in Ireland is causing considerable structural damage to roads in the vicinity of forests. The primary objective of this study was to examine the logistics of transporting timber using five different methods to compare the cost effectiveness of each method. A secondary objective is a closer examination of the most inexpensive method of timber transportation to see if alternative methods of using this vehicle, or combination of vehicles can be found. The reason for this is to find a balance between cost effective method of transporting timber and a minimisation of structural damage caused to roads. A computer model was set up in order to carry out the logistical investigation outlined above. It was found that using a rigid body truck and trailer was the most cost effective method of transporting timber in Ireland. It was also found that the present method of use of the rigid body truck and trailer was on average 30% cheaper than a proposed method. The proposed method was to operate the rigid body truck and trailer at a reduced load of 15 tonnes on the poorer quality roads in the forest proximity. This has two major advantages over the present system in that firstly, the rigid body truck was now operating under the legal limits of weight restrictions and secondly that structural damage caused to the roads is decreased due to the reduction in the weights being carried on the poorer quality roads of 50%.

**Page**

vii, 50pp

**Location**

Forest Engineering Unit, UCD

**Notes**

Thesis presented to the National University of Ireland for award of the degree of Master of Engineering Science; includes tables, graphs, ills., bibliographical references

**Thesis**

M.Sc. (Agr.) Department of Agricultural and Food Engineering, UCD, 1996

---

**Number**

1676

**Author**

Burke, Damien F.

**Title**

Transportation logistics of timber both within forests and on non-national roads.

**Date**

1995

**Key Word**

forest engineering

vehicles

forest roads

timber extraction

harvesting

**Abstract**

Large articulated vehicles used in harvesting are causing extensive damage to roads. The primary objective of this project was to prepare a design proposal for a hydraulically-independent power-driven trailer. A secondary objective was to modify the design to allow the trailer to carry 20 tonnes of timber. The design of the trailer must comply with regulations on weight and dimensions of mechanically propelled vehicles and trailers to ensure road-worthiness. The hydraulic components required to power the trailer in severe terrain and soil conditions are outlined. Design features such as incorporating a steering drawbar and using low ground pressure tyres were examined and introduced as they showed theoretical improvements in manoeuvrability and ground damage respectively. The final trailer designs showed theoretical improvements in the manoeuvrability of the unit, in the extraction rates and also improved design features. More importantly the wider low ground pressure tyres reduces forest floor damage, and the sprung bogie suspension and reduced damaging effect of an axle (related to the fourth power law) reduces pavement damage. Comparing the forwarder/articulated truck with the tractor/short-haul trailer showed the cost-effectiveness of using this design unit for haulage distances up to 24 km. It was also shown that for a large extraction distance outside the forest (>6 km) and a haulage distance up to 30 km, the tractor/short-haul trailer unit was more economical than existing systems. Increasing the load-carrying capacity of the short-haul trailer from 15 to 20 tonnes increases this haulage distance up to 60 km. Overall, it is shown that investment in the manufacturing of a short-haul trailer, whether it had a load-carrying capacity of 15 or 20 tonnes, would reduce the cost of extracting timber (up to 41%) and improve production levels over short-haul distances. Although the cost of a prototype tractor/trailer unit is equivalent to a forwarder,

this cost would decrease with mass production.

**Page**

xvi, 165pp

**Location**

Forest Engineering Unit, UCD

**Notes**

Thesis presented to the National University of Ireland for award of the degree of Master of Engineering Science; includes tables, graphs, ill., bibliographical references

**Thesis**

M. Sc. (Eng.) Department of Agricultural and Food Engineering, UCD, 1995

---

**Number**

1677

**Author**

Mennis, Michael, F.

**Title**

Computer simulation of ground pressure distributions under tracked forestry vehicles.

**Date**

1993

**Key Word**

forest engineering  
vehicles  
vehicle design  
forest machinery  
computer simulation  
information technology  
Finite Element Analysis

**Abstract**

The aim of this study was to investigate the characteristics of extraction vehicles used in Irish forests. These vehicles are called forwarders and have been responsible for damaging soils they have crossed. Field testing and computer simulation work by Finite Element Analysis were undertaken in order to evaluate some of the important vehicle characteristics when considering soil damage by vehicle running gear. A cone penetrometer was used to determine the deformation properties of the soil. These results were then used in a computer simulation of the track vehicle interaction. The tests along with some shear vane tests were conducted in the South West part of Ireland in different forests which were characterised as soft ground. A simulation method was developed using the Finite Element Method to examine the effects of the vehicles in use in Irish forests on soft soils. These models are assemblies of finite elements which represent the vehicle structure and this structure is placed on a block of elements which represent the soil. The soil is modelled as non-linear continuum. A parametric approach was used to evaluate the effect of various vehicle design parameters on the ground pressure distribution under the vehicle. This was successful. Five different vehicles were modelled and similar tests conducted on each. The effects of higher tensions, track width, climbing a slope, the application of a drawbar load and elevation of the load, a shift in the centre of gravity, and roadwheel tyre inflation pressure are described. The modelling approach was successful and could provide valuable information for the future design of a vehicle.

**Page**

xiv, 273pp [48]

**Location**

Forest Engineering Unit, UCD

**Notes**

Thesis presented to the National University of Ireland for award of the degree of Master of Engineering Science; includes tables, ill., graphs, bibliographical references

**Thesis**

M.Eng. Sc. Department of Agricultural and Food Engineering, UCD, 1993

---

**Number**

1678

**Author**

Gigler, J.K.\*;

Ward, S.M.\*\*

**Title**

A simulation model for the prediction of the ground pressure distribution under tracked vehicles.

**Publisher**

Elsevier

**Place**

Amsterdam

**Date**

1993

**Source**

Journal of Terramechanics

**Volume**

Vol. 30, No. 6

**Key Word**

forest engineering

forest roads

vehicles

tracked vehicles

ground pressure distribution

computer simulation

**Abstract**

A computer based simulation model for the prediction of the ground pressure distribution beneath tracked vehicles under static conditions has been developed. The model can differentiate between various track designs and is based on an analytical method developed and described by Garber and Wong. Simulating the model with the parameters of rubber tracked forestry vehicle, FARMI TRAC 5000 (currently in use by Coillte, the Irish Forestry Board) led to several conclusions. The road wheel arrangement has a considerable effect on the ground pressure distribution: increasing the number of road wheels; reduces the maximum ground pressure and improves the uniformity of the pressure distribution. The radius of the road wheel, the stiffness of the suspension and the stiffness of the track tensioning device have an insignificant effect on the ground pressure distribution. In contrast, the initial track tension and the width of the track have a significant effect on the ground pressure distribution; increasing the initial track tension reduces the maximum ground pressure and improves the uniformity of the pressure distribution. The same conclusions are valid for an increase of the track width. This model can be used as a tool to assist in the design of off-road vehicles, and is currently used in the design of forestry vehicles in Ireland.

**Page**

pp 461-469

**Location**

Forest Engineering Unit, UCD

**Notes**

includes graphs, ill., bibliographical references; copy of paper in Forest Engineering Unit

**Address of author**

\*Department of Agricultural Engineering and Physics, Wageningen University, Netherlands

\*\*Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Tce., Dublin 2

**Number**

1679

**Author**

Martin, A.M.;

Owende, P.M.O.;

O'Mahony, M.J.;

Ward, S.M.

**Title**

Estimation of the serviceability of forest access roads.

**Date**

1999

**Source**

Journal of Forest Engineering

**Volume**

Vol. 10, No. 2

**Key Word**

forest engineering

forest roads

pavement classification

deflection

bearing capacity

ESAL

**Abstract**

The purpose of this study was to ascribe attributes to forest access roads, to allow for estimation of their serviceability on the basis of their current condition. The approach estimates the quantity of timber that may be hauled through without critically damaging the flexible pavements. Seventy-two roads were classified on the basis of their surface conditions, subgrade material, and surface deflection as the strength parameter, for 40 and 60 t Gross Vehicle Weight. Using non-parametric statistical techniques, it was found that the surface quality of pavements was largely dependent on drainage conditions (coefficient of determination  $r^2 = 0.84$ ), and that a strong relationship ( $r^2 = 0.90$ ) also existed between drainage and the number of potholes. Pavements with peat subgrades were found to exhibit significantly higher critical deflections (5.6 mm) than pavements with mineral subgrades (1 mm), coupled with their inherent variability, it is arguable that visual classification may not be suitable for such pavements. On the basis of these results, the serviceability of individual roads, in Equivalent Standard Axle Loads (ESAL) was estimated. Potential pavement damage by a standard 6 axle timber haulage truck, of 40 t Gross Vehicle Weight, with a payload of 27 t, was evaluated to be triple that due to a standard axle (8.16 t). Increasing the payload by about 10%, increased the ESAL required to transport a unit volume of timber, hence potential pavement damage, by 20%. Consequently, a significant reduction in the serviceability of forest access roads may be incurred by small overload margins that are usually ignored.

**Page**

pp 55-61

**Location**

Forest Engineering Unit, UCD

**Notes**

copy of paper in Forest Engineering Unit. includes tables, bibliographical references

**Address of author**

Forest Engineering Unit, Department of Agricultural and Food Engineering, University College, Dublin, Earlsfort Tce., Dublin 2

---

**Number**

1680

**Author**

O'Mahony, M.J.;

Ueberschaer, A.;

Owende, P.M.O.;

Ward, S.M.

**Title**

Bearing capacity of forest access roads built on peat soils.

**Date**

1999

**Key Word**

forest engineering

forest roads

timber haulage

subgrade

Benkelman beam

peatlands

**Abstract**

Significance of the thickness of peat substratum on the bearing capacity of forest access roads laid on peat soils in Ireland is evaluated. Bearing capacity of an experimental pavement was assessed on the basis of its surface

deflection measured using a Benkelman beam. The mean deflections for winter, spring and summer seasons were 2.7, 5.1 and 5.4, respectively, and the lower value for winter was attributed to the frozen pavement and lower soil moisture conditions. Pavement response in winter was a function of the interaction term of linear components of thickness of pavement layers and the peat substratum ( $R^2=0.67$ ), while in spring ( $R^2=0.70$ ) and summer ( $R^2=0.72$ ), it also included a moderating quadratic term of thickness on the peat substratum. Deflection generally increased with thickness of pavement and the peat substratum, and effect of pavement thickness was pronounced under peat layer greater than 1000 mm which was attributed to inherent weakness of the pavements over such areas. It is suggested that thickness of the peat substratum may be a basis for developing specifications for timber haulage vehicles, or routeing of such traffic for minimal environmental impact.

**Page**

22pp

**Location**

Forest Engineering Unit, UCD

**Notes**

Paper will be published in Journal of Terramechanics in 2000. Copy of original paper in UCD; includes graphs, ill., bibliographical references

**Address of author**

Forest Engineering Unit, Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Tce., Dublin 2

---

**Number**

1681

**Author**

Martin, Audrey;

Owende, Philip;

Ward, Shane;

O'Mahoney, Michael

**Title**

A timber extraction method based on pavement serviceability and forest inventory data.

**Date**

1999

**Key Word**

forest engineering

timber extraction

pavement classification

forest roads

GIS

GPS

**Abstract**

A methodology for integrating pavement classification and forest inventory data, to determine the capability of forest access roads with weak subgrades to support timber extraction is described. GPS location data recorded in stand-alone mode was superimposed on forest and Ordnance Survey maps. Within a GIS, the acquired spatial data was manipulated and integrated with pavement attribute information and the current and projected forest inventory data. Potential pavement damage by a typical timber haulage truck with payloads of 22, 27, 30 and 35 tonnes was then assessed. It was found that by overloading the truck by three and eight tonnes (GVW of 43 t and 48 t, respectively), the volume of timber that could be conveyed without damaging the serviceable pavements reduced by an average of 16 and 44 % respectively. Rerouting of timber to avoid critical and failed sections could significantly increase the transportation costs. Rerouting was found to be impractical where forest compartments were accessible by single routes, hence, necessary repairs to facilitate the extraction are recommended in such cases. The final database could be extended to include specific costing of repair and maintenance requirements, hence, determine the economic implications of respective routeing strategies.

**Page**

32pp

**Location**

Forest Engineering Unit, UCD

**Notes**

Copy of original paper in UCD. Paper will be published in Forest Science in 2000; includes tables, graphs, map, ill., bibliographical referenes.

**Address of author**

Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Terrace, Dublin 2

---

**Number**

1682

**Author**

Martin, A.;  
O'Mahoney, M.;  
Ward, S.

**Title**

Utilisation of GPS and GIS to reclassify third class road networks.

**Publisher**

UCD. Department of Agricultural and Food Engineering.

**Place**

Dublin

**Date**

1997

**Source**

Agri-food engineering research review 2/97.

**Key Word**

GPS

GIS

forest access roads

road classification

forest engineering

**Abstract**

Ireland has the highest percentage of non-national roads per capita in Europe, only 6% of the nation's roads are classified as national roads. Currently 63% of the total traffic on Irish roads is carried on non-national routes. Haulage of large volumes of materials by heavily laden trucks has been shown to cause significant damage to road networks. In the case of third class roads such as forest access roads this problem can be compounded by the heavy volume of traffic during the harvesting period and also the nature of the road itself. There is a need for qualitative and quantitative classification of such road networks used by hauliers so that the optimum haulage strategy can be employed and thus pavement damage minimised and the life of the road extended.

**Page**

pp 141-145

**Location**

Forest Engineering Unit, UCD

**Notes**

includes maps, bibliographical references

**Address of author**

Forest Engineering Unit, Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Tce., Dublin 2

---

**Number**

1683

**Author**

Owende, P.M.O.;  
Ward, S.M.

**Title**

Integrated approach to maintaining serviceability of timber haulage routes.

**Date**

1998

**Key Word**

timber haulage

forest access roads

forest engineering  
timber extraction  
tyre pressures  
vehicles

**Abstract**

The extraction of timber from Irish forests involves haulage by heavy trucks over rural roads that are poorly suited to such traffic. This can result in significant levels of road damage, particularly in relation to the road networks leading from the main County roads to the forests. Since timber haulage is a price-sensitive operation, unilaterally reducing haulage load to ensure tolerable levels of road damage, is not a sustainable option. More economic means of optimising the use and management of the road networks for improved durability and to minimise the overall cost of their construction and maintenance needs to be investigated. Ongoing studies at the Forest Engineering Unit in University College Dublin, geared towards improving the performance of timber haulage routes, are discussed. Planning for timber extraction based on road condition and forest inventory data is being evaluated. The use of Variable Tyre Pressure (VTP) to attenuate the adverse effects of vehicular loads, hence, deterioration of roads with weak subgrades is being investigated. It is suggested that the findings in these studies will prescribe some envirogentle regimes for timber haulage in Ireland in the short term. In the long term, they may affect guidelines for restrictions in road haulage as well as the associated economics for haulage of timber, forestry and construction equipment and the transportation of farm produce through such roads.

**Page**

7pp

**Location**

Forest Engineering Unit, UCD

**Notes**

Paper presented at the Coillte Engineering Meeting, 16th-17th November 1998, Shamrock Lodge Hotel, Athlone; includes diagrams

---

**Number**

1684

**Author**

Douglas, G.C.\*

McNamara, J.\*

Thompson, D.\*\*

**Title**

A tube method for grafting small diameter scions of the hardwoods *Quercus*, *Fraxinus*, *Betula*, and *Sorbus* in summer.

**Publisher**

International Plant Propagators' Society

**Date**

1996

**Source**

Combined Proceedings International Plant Propagators' Society.

**Volume**

Vol. 46

**Key Word**

grafting

propagation

cloning

hardwoods

**Abstract**

In conventional grafting of oak and ash in February, the graft viability over 3 years was 15% and 97% respectively, with 64% of oak clones responding and 100% of ash, using scions from mature trees. Using single node scions from those grafted plants, epicormic shoots, crown shoots, and a silicone tube to hold graft unions, the authors recorded improved rates of graft viability by summer grafting. All oak and ash clones made viable grafts with efficiencies of 18% to 100%. Summer grafting of hardwoods allows several serial grafts per year and potential to rejuvenate tissues.

**Page**

pp 221 - 226

**Location**

Coillte library

**Notes**

includes graph, bibliographical records

**Address of author**

\*Teagasc, Malahide Rd. Dublin 17

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow

---

**Number**

1685

**Author**

Thompson, D.G.

**Title**

Current state-of-the-art of rooting cuttings.

**Publisher**

AFOCEL

**Place**

Nangis

**Date**

1992

**Source**

Mass Production Technology for Genetically Improved Fast Growing Forest Tree Species. Proceedings. Bordeaux 14-18 September 1992.

**Key Word**

genetics

cuttings

propagation

rooting

**Abstract**

The rooting of cuttings as a way to propagate wood plants has proven to be successful, although little is known about the physiology of the process. Variations from crop to crop currently limit its large-scale use in many species. Factors such as cuttings size, timing, handling, propagation facilities, rooting media, rooting hormones, light, CO<sub>2</sub> enrichment, temperature, water relations, and fungicide use all play a role in the process. Suggestions of future areas of potential benefit and a checklist of factors important in rooting are provided.

**Page**

pp 333-349

**Location**

Coillte library

**Notes**

includes bibliographical references

**Address of author**

Coillte Research and Technology, Newtownmountkennedy, Co. Wicklow

---

**Number**

1686

**Author**

O'Connor, D.\*

Meehan, E.\*

Wilson, G.\*

Thompson, D.\*\*

**Title**

Quantitative analysis of growth of Sitka spruce (*Picea sitchensis*) ESM in suspension culture.

**Publisher**

Nottingham University Press

**Place**

Nottingham

**Date**

1998

**Source**

Tree biotechnology: towards the millennium.

**Key Word**

Sitka spruce

embryos

*Picea sitchensis*

embryogenic composition

growth

**Abstract**

The embryonic composition of cultures of embryonal suspensor mass (ESM) can vary widely depending upon a number of factors, including the culture origin, cell genotype and the environmental conditions of culture. Embryonic cultures normally contain both proliferating stage 1 embryos as well as a cell suspension which is not organised into embryogenic structures. It is often observed that cultures of ESM can change from a having a high frequency of embryos to consisting mainly of non-embryonic material. The purpose of this study was to attempt to quantify the embryonic composition of ESM by measuring the number of embryos per ml of culture and per g fresh weight. These measurements enable a quantitative comparison of the embryonic composition between different cell lines. In addition, measurements were made of the changing embryonic composition during the batch culture growth cycle and compared with those obtained in semi-continuous culture using a bioreactor.

The significant differences in embryo frequency between different cell lines shows that cell genotype may play an important role in determining that embryogenic frequency can be influenced markedly by the changing culture environment in batch culture. These differences may reflect different rates of embryo proliferation and growth of non-embryogenic cells. The decline in frequency on a fresh weight basis toward the end of the growth cycle must reflect continued growth of the non-embryogenic cells, or relatively reduced rates of embryo proliferation. In contrast, in semi-continuous culture in which an overall constant growth rate is maintained by periodic addition of new medium, it appears that the embryogenic frequency in terms of fresh weight was approximately constant. This shows that the growth rate of the embryos and that of the non-embryogenic cells remained proportionally constant. Overall, these results suggest that the changing levels of embryo frequency in batch culture could be influenced by changing nutrient (or plant growth regulator) concentrations occurring as the culture grows. These methods of counting embryos may enable an improved understanding of the growth and development of embryogenic cultures on a quantitative basis.

**Page**

pp 129-135

**Location**

Coillte library

**ISBN**

1897676689

**Notes**

includes photos., ills., bibliographical references

**Address of author**

\*Department of Botany, University College Dublin, Belfield, Dublin 4  
Coillte Research and Development, Newtownmountkennedy, Co. Wicklow

---

**Number**

1687

**Author**

Thompson, D.G.

Pfeifer, A.R.

**Title**

IUFRO Douglas-fir Provenance Trial - 24 year Irish results.

**Publisher**

IUFRO

**Date**

1995

**Source**

Joint Meeting of the IUFRO Working Parties S2.02.05, 06, 12 and 14 (Douglas-fir, Pinus contorta, Sitka spruce and Abies). Evolution of breeding strategies for conifers from the Pacific Northwest. Limoges (France), August 1-4, 1995.

**Key Word**

Douglas fir  
Provenance  
stem form  
top height  
Pseudotsuga menziesii

**Abstract**

The Douglas-fir IUFRO trial was established in five locations in Ireland in 1971. Top height and stem form assessments were made in the spring of 1995 in three of these trials after 24 growing seasons in the field. There were slight differences in Yield Class among 15 of the coastal origins, but considerable differences in stem form. The best stem form, but poorest height growth was found in the Cascade origins. The best combination of good height growth and good stem form were found in the southern Washington and northern Oregon origins (Cathlamet and Humptulips).

**Page**

3pp

**Location**

Coillte library

**Notes**

includes bibliographical references

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow

---

**Number**

1688

**Author**

Mulqueen, J.\*  
McHale, H.\*  
Rodgers, M.\*

**Title**

Reducing windthrow losses in farm forestry.

**Publisher**

Teagasc

**Place**

Dublin

**Series**

End of Projects Reports. Project No. 4315

**Date**

1999

**Key Word**

windthrow  
farm forestry  
drainage  
information technology  
site preparation  
mole drainage  
silviculture

**Abstract**

The study comprised a field and laboratory investigation on the stability of Sitka spruce trees planted on a surface water gley. The field-testing was conducted at Ballyfarnon Forest in County Sligo in the north west of Ireland. Nine destructive monotonic pulling tests were conducted on trees selected from three different site preparations, namely, mole drained, double mouldboard ploughed and an uncultivated control. Dynamic testing, using a mechanical rocking device, was performed on a tree selected from the uncultivated control. A simple shear apparatus was used to conduct monotonic and cyclic tests on reconstituted samples of the Ballyfarnon soil. This allowed a comparison of soil behaviour under monotonic and cyclic loading. A computer software package was used to model the behaviour of groundwater for soil mole drained at two drain spacings. Results from this

mathematical modelling were compared to experimental data gathered during a previous study. Results indicate that the use of mole drainage as a site preparation technique produces more stable trees than either double mouldboard ploughing or no cultivation.

**Page**

ii, 19pp

**ISBN**

184170657

**Notes**

includes diagrams, graphs, bibliographical references

**Address of author**

\*Teagasc Research Centre, Athenry, Co. Galway

National University of Ireland, Galway

---

**Number**

1689

**Author**

O'Dowd, N.A.

Bulfin, M.

Radford, T.

Kent, T.

**Title**

Poplar for farmers.

**Publisher**

Teagasc

**Place**

Dublin

**Series**

End of Project Report. Project 4089

**Date**

1999

**Key Word**

poplar

broadleaved trees

farm forestry

land use

**Abstract**

Poplar is a fast growing broadleaf tree suitable for growing on good agricultural land. Poplar wood can be used for pulp, pallet, sawlog and veneer. New market opportunities are emerging for poplar and this project presents the economics of introducing poplar growing into Ireland as a niche forestry system. A pan-European database of poplar trials, including Ireland was created in Access 7.0. This is available to all EU poplar researchers. The land area of the Republic of Ireland suitable for poplar cultivation is estimated at 2.77 million hectares which is 40.7% of the total land area and 55.8% of agricultural land. The location of these areas is presented in map form. Economic analysis using the Bioeconomic Model developed for the Poplar for Farmers project indicated that poplar is more competitive on good land than on marginal land. Time-based studies indicate that shorter rotations are more economic. The Forest Service, based on the findings of this project, are examining the feasibility of grant-aiding poplar cultivation in Ireland.

**Page**

22pp

**ISBN**

1841700199

**Notes**

includes graphs, photos., maps, bibliographical references

**Address of author**

Teagas, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1690

**Author**

Martin, Audrey;  
Holden, Nicholas M.;  
Owende, Philip M.;  
Ward, Shane M.

**Title**

The effects of peripheral canopy on DGPS performance on forest roads.

**Date**

1999

**Key Word**

forest engineering  
forest machinery  
forest roads  
GPS  
canopy obstruction

**Abstract**

The purpose of this study was to evaluate differential GPS positional accuracy on Irish forest roads with typical peripheral canopies. The peripheral canopy obstruction at 20 forest road sites in Roundwood state forest, was determined using a hand held clinometer and magnetic compass. This simple field technique permitted quantification of the canopy obstruction using graphical means and resulted in a graphical skyplot of each site. The equipment, one Trimble PROXRS DGPS unit and two Trimble 4000SSi units permitted determination of the DGPS accuracy (average of 2.9 m) and precision (average of 2.1m) with a range of peripheral canopies. DGPS performance was quantified in terms of the average absolute error in PDOP (APDOP = 1.6). The relationship between APDOP and percentage of open sky was found to be statistically significant ( $r = 0.706$ ,  $p = 0.001$ ). Statistical analysis also indicated a strong relationship between the relative precision and APDOP ( $r = 0.796$ ,  $p = 0.000$ ). Satellite constellation in the measurement period was not the sole factor affecting DGPS useability. Three distinct classes of peripheral obstruction at road sites were defined (Class I: 100-66%; Class II: 65-33%; Class III: 32-0 % obstruction) and it was found that both DGPS accuracy (3.70 m, 3.23 m, 1.91 m, respectively) and precision (4.10 m, 2.43 m, 1.83 m, respectively) improved with decreasing peripheral obstruction. These classes may be used as a means of predicting signal attenuation which might be expected under particular forest canopy conditions elsewhere)

**Page**

13pp

**Location**

Forest Engineering Unit, UCD

**Notes**

internal Forest Engineering Unit report; includes tables, ills., bibliographical references

**Address of author**

Forest Engineering Unit, Department of Agricultural and Food Engineering, University College Dublin, Earlsfort Terrace, Dublin 2

\*Department of Geomatics, Institute of Technology, Bolton Street, Dublin 1.

**Number**

1691

**Author**

Dunne, Seamus

**Title**

Acceptable forestry mixtures.

**Publisher**

Irish Timber Growers Association

**Place**

Dublin

**Date**

1999

**Source**

Irish Timber Growers' Association forestry yearbook 1999.

**Key Word**

mixtures  
nursing effect  
silviculture

**Abstract**

The reasons for adding a second species to both conifer and broadleaf plantations are outlined. Sitka spruce can benefit from the nursing effect of Japanese larch and there are also aesthetic advantages. The factors influencing decisions on whether to plant the second species in blocks, small groups or as an intimate mixture are outlined. Most broadleaves are more easily managed in pure plantations, but cherry should be grown in small groups. However, oak and beech benefit from the nursing effect of European larch or Scots pine and the correct planting procedure for this type of mixture is outlined.

**Page**

pp 19-21

**ISBN**

0953480100

**Notes**

includes table outlining suitable mixtures

**Address of author**

Forest Service, Leeson Lane, Dublin 2

---

**Number**

1692

**Author**

Reidy, Jim

**Title**

Farm forestry and other EU schemes

**Publisher**

Irish Timber Growers Association

**Place**

Dublin

**Date**

1999

**Source**

Irish Timber Growers' Association Forestry Yearbook 1999.

**Key Word**

European Union  
grants  
incentives  
farm forestry

**Abstract**

The four main European Union schemes of interest to farmers considering becoming involved in forestry are outlined. These are: Afforestation Grant and Premium Schemes; CAP Reform Measures; Early Retirement from Farming Scheme; REPS.

**Page**

pp 24-24

**ISBN**

0953480100

---

**Number**

1693

**Author**

Thompson, David

**Title**

Does seed origin play a role in successful plantation establishment and growth?

**Publisher**

Irish Timber Growers' Association

**Place**

Dublin

**Date**

1999

**Source**

Irish Timber Growers' Association Forestry Yearbook 1999.

**Key Word**

seed origin

seeds

Provenance

plantation establishment

growth

**Abstract**

The differences between plants from different seed sources can result in not only the survival or failure of a plantation but more importantly affect the growth, productivity and quality of the stand. It is important therefore to start with the best seed source of the best species for the site. The example of lodgepole pine is taken to demonstrate the difference in volume production, stem form, basal sweep and forking possible in the same species with different seed origins. Seed origin also effects the value of a crop, as demonstrated by a series of Sitka spruce trials planted in 1975. The importance of collecting seeds from registered Irish seed stands is emphasised. Tables demonstrating the most suitable seed origins for use in Ireland are provided

**Page**

pp 27-33

**Notes**

includes tables outlining different characteristics of trees grown from seeds of different origin

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co.Wicklow.

---

**Number**

1694

**Author**

Fennessy, John

**Title**

Seed stands - a strategic resource for Irish forestry.

**Publisher**

Irish Timber Growers' Association.

**Place**

Dublin

**Date**

1999

**Source**

Irish Timber Growers' Association Forestry Yearbook 1999.

**Key Word**

seed origin

seed stands

Provenance

European Union

EU regulations

**Abstract**

The various sources of tree seed currently used in Irish forestry programmes are list and EU regulations regarding use of seeds are explained. The requirements for registering a seed stand with the Irish National Catalogue are outlined.

**Page**

pp 35-36

**ISBN**

0953480100

**Notes**

includes table

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow.

---

**Number**

1695

**Author**

Ryan, Mary

**Title**

Maintenance grant inspection and further management.

**Publisher**

Irish Timber Growers' Association

**Place**

Dublin

**Date**

1999

**Source**

Irish Timber Growers' Association Forestry Yearbook 1999.

**Key Word**

maintenance

grants

private forestry

incentives

**Abstract**

The main criteria to be assessed when determining if a plantation is to receive a maintenance grant are: stocking level; plant health and rigour; vegetation control; shaping of broadleaves; general maintenance. The plantation must be maintained to a high standard even after payment of the grant. Common problems associated with maintaining conifer plantations are outlined. The correct approach to thinning is outlined.

**Page**

pp 37-41

**ISBN**

0953480100Irish Timber Growers' Association Forestry Yearbook 1999.

---

**Number**

1696

**Author**

Philips, Henry

**Title**

Discounted cash flow: an aid to forest management.

**Publisher**

Timber Growers' Association

**Place**

Dublin

**Date**

1999

**Source**

Irish Timber Growers' Association Forestry Yearbook 1999.

**Key Word**

forest management

discounted cash flow

finance

investment

**Abstract**

The use of Discounted Cash Flow (DCF) in evaluating the potential return from investment in forestry is explained. Typically, discount rates used in forestry vary from a low of 4% to around 10%, depending on the nature of the investment and the assumption used. In calculating potential returns from investment in forestry

the inputs of timber yields and timber prices must be considered. Costs can be calculated relatively easily. The terms net present value (NPV) and internal rate of return are explained. The application of DCF is demonstrated using a worked example. The authors conclude that DCF is a useful technique in the analysis of forestry investment. It is an aid to decision making over a wide range of possible applications. These include: land valuation; species selection; rotation length; thin v no thin; crop valuation; silvicultural treatment.

**Page**

pp 47-52

**ISBN**

0953480100

---

**Number**

1697

**Author**

Bulfin, Michael

**Title**

Planting the right trees in the right place.

**Publisher**

Irish Timber Growers Association

**Place**

Dublin

**Date**

1997

**Source**

Irish Timber Growers Association Yearbook 1997

**Key Word**

species selection

soil types

elevation

recreation

**Abstract**

Different species thrive in different soil types and at different elevation. A table outlines the species most suited to most soil types at a range of elevation. The purpose of planting, commercial timber production, shelter, or amenity, is also a consideration in species selection.

**Page**

pp 19-21

**Notes**

includes table

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1698

**Author**

Curran, Eugene

**Title**

Growing quality plantations

**Publisher**

Irish Timber Growers Association

**Place**

Dublin

**Date**

1997

**Source**

Irish Timber Growers Association Yearbook 1997.

**Key Word**

planting  
silviculture  
forest management

**Abstract**

The author provides a checklist of essential actions to be taken to ensure the success of a new plantation. The list of recommendations are divided by three stages of the afforestation programme: pre-planting; planting; post planting.

**Page**

pp 22-24

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**Number**

1699

**Author**

Reidy, Jim

**Title**

Farm forestry and its impact on total receipts at farm level.

**Publisher**

Irish Timber Growers Association

**Place**

Dublin

**Date**

1997

**Source**

Irish Timber Growers Association Yearbook 1997.

**Key Word**

farm forestry

grants

farm income

premium payments

agriculture

**Abstract**

Forest grant and premium payment levels are vital to the economics of forestry at farm level. This article compares the income per hectare when the forestry premium is adjusted for costs with income per hectare from agriculture. Forestry is more attractive financially than agriculture where farmers are involved in low income systems at low levels of management efficiency. The various options available for farmers wishing to participate in EU forestry and REPS schemes are outlined.

**Page**

pp 27-29

**Notes**

includes tables

---

**Number**

1700

**Author**

Irish Timber Growers Association

**Title**

Guidelines on forestry grants and premia.

**Publisher**

Irish Timber Growers Association

**Place**

Dublin

**Date**

1997

**Source**

Irish Timber Growers Association Yearbook 1997.

**Key Word**

grants  
premium payments  
private forestry  
farm forestry

**Abstract**

The forestry grants and premia available through the various schemes under the Operational Programme for Agriculture, Rural Development and Forestry, 1994-99, are outlined. The activities supported under the Afforestation Grant Scheme and the Forest Premium Scheme are listed. The type of grant aid provided under the Forestry Development for the following activities is described: woodland improvement; amenity woodland; urban woodland; reconstitution; publicity/awareness; downstream development supports; harvesting grants; technical assistance; forest roads, research and development; and high pruning of conifers.

**Page**

pp 33-41

**Notes**

includes tables

---

**Number**

1701

**Author**

Cahalane, Gerard

**Title**

Threats from exotic forest pests and diseases.

**Publisher**

Irish Timber Growers Association

**Place**

Dublin

**Date**

1997

**Source**

Irish Timber Growers Association Yearbook 1997.

**Key Word**

forest pests  
forest health  
bark beetle

**Abstract**

The increasing movement between countries of plants and forest products increases the risk of spreading dangerous pests and diseases in Irish forests. The EU has granted Ireland a special protected zone status with regard to 11 harmful pests. Of the protected zones pests, bark beetles, *Ips typographus* and *Dendroctonus micans* are potentially the most serious. Various forest pests and diseases which occur in other parts of the worlds, especially North America, and which could pose a serious threat to EU forests are also listed.

**Page**

pp 52-54

**Address of author**

Forest Service, Leeson Lane, Dublin 2

---

**Number**

1702

**Author**

Ward, Declan  
Keane, Michael

**Title**

Disease and insect threats.

**Publisher**

Irish Timber Growers Association.

**Place**

Dublin

**Date**

1997

**Source**

Irish Timber Growers Association Yearbook 1997.

**Key Word**

forest health

diseases

forest pests

weevils

insects

**Abstract**

A number of types of pest and disease that can attack trees and cause deterioration in wood and woods are listed and described. The following diseases, mainly found in broadleaves, are briefly described: Armillaria (honey fungus); Ganoderma; Polyporus squamosus; Ustiliana deusta; Dutch elm disease. The following diseases, found mainly in conifers, are described: Fomes butt rot; Phaeolus schweinitzii; Stereum sanguinolentum. The various insect pests which attack broadleaves and conifers are described. These include: goat moth; osier weevil; pine shoot moth; giant woodwasp; pine shoot beetle; lare oine weevil; and green spruce aphid.

**Page**

pp 57-59

**Notes**

includes photo.

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow.

---

**Number**

1703

**Author**

Bulfin, Michael

Hendrick, Eugene

**Title**

Forestry in the context of rural developmetn - country report from Ireland.

**Publisher**

Danish Forest and Landscape Institute

**Place**

Horsholm

**Date**

1998

**Source**

Forestry in the Context of Rural Development. Final Report of COST Action E3. (Edited by Niels Elers Koch and Jens Nytoft Rasmussen)

**Key Word**

rural development

land use

forestry policy

economics

farm forestry

afforestation

**Abstract**

Until the 1980s most afforestation in Ireland was confined to the most marginal agricultural land. During the 1980s the Common Agricultural Policy and a growing awareness of the potential for forestry to provide employment led to a dramatic shift of emphasis in the planting programme from State to private planting. The manner in which forestry is dealt with in the major documents outlining Government policy on economic development is described. A number important evaluations of the economic value of forestry to rural development are discussed. The political and economic climate during the 1980s and 1990s was more favourable to forestry than in had been hitherto. The State's role as provider of social employment through forestry ended and forestry became a viable and profitable enterprise. The estimated contribution of the forest

industry to national production is currently estimated to be 250 million ECU per annum. The objectives of the Government's ambitious strategic plan for forestry, and its likely impact on rural areas, are outlined.

**Page**

pp 169-177

**Location**

Teagasc, Kinsealy

**ISBN**

87790301016

**Notes**

includes bibliographical references

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

COFORD, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1704

**Author**

Bulfin, Michael

**Title**

Planning for forestry: the forest soils classification and productivity study.

**Publisher**

EUROGISE

**Date**

1999

**Source**

GIS Challenges in Spatial Planning: International Conference National University of Ireland, Galway March 26th 1999.

**Key Word**

GIS

soil classification

Indicative Forest Strategy

forest management

forestry policy

**Abstract**

This paper describes the project being undertaken by Teagasc to classify soil variation right across the country. The Forest Soils Classification and Productivity Study will first develop on a national scale a soil classification and then a forest productivity ranking based on this soil classification. This will allow decisions about the location of new plantations to be made on a firm scientific basis. The project will use remote sensing and Geographic Information Systems for mapping with a major input of field verification to assess reliability. The process of developing the soil classification system is described. Elevation and vegetation will be used as important indicators of soil type. The development of an Indicative Forest Strategy by the Forest Service using the Teagasc study is explained. The purpose of the strategy is to utilise as many land use data sets as possible in determining the optimum land-use per site.

**Page**

pp 100-104

**Location**

Teagasc, Kinsealy

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1705

**Author**

O'Hanlon, R.P.

Bolger, T.

**Title**

The current status of *Arcitalitrus dorrieni* (Crustacea : Amphipoda : Talitridae) in Ireland.

**Publisher**

Irish Naturalists' Journal

**Place**

Dublin

**Date**

1994

**Source**

Irish Naturalists' Journal

**Volume**

Vol. 24, No. 11

**Key Word**

*Arcitalitrus dorrieni*

forest pests

exotic species

forest health

**Abstract**

The origins of *A. dorrieni* in Ireland are discussed. It is probable that the species was first introduced into Ireland with imported exotic species from Australia during the 19th century, usually in protective Wardian cases. During the course of 1991-1993 a number of Irish sites harbouring sizeable collections of antipodean plants were identified and visited. *A. dorrieni* was recorded in 3 of the 13 sites visited and a number of possible causes for the advance of the species are put forward.

**Page**

pp 449-444

**Location**

UCD library

**Notes**

includes table, biographical references

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1706

**Author**

Bolger, T.

**Title**

Acari of the families Macrochelidae and Veigaiidae (Mesostigmata) recorded from Ireland.

**Publisher**

Irish Biogeographical Society

**Place**

Dublin

**Date**

1990

**Source**

Bulletin of the Irish Biogeographical Society

**Volume**

Number 13

**Key Word**

forest ecosystems

woodland habitats

insects

Acari

Mesostigmata

**Abstract**

Acari of the order Mesostigmata are among the most abundant and diverse groups of arthropods in many Irish habitats. This paper lists the species which have been recorded from two families, the Viegaiidae and the Macrochelidae. Both these groups are widely distributed. The Veigaiidae are one of the most abundant groups

of microarthropod predators in the litter and soil layers of woodland. The Macrochelidae are also found in forest soils but they are particularly common in accumulations of rotting organic matter such as compost, dung and tidal debris. The records reported include all the published recordings, those for which material has been lodged in the Irish and British Museums of Natural History and a number collected by the author. They include one new Irish species and corrections and additional information about some of the previously published records.

**Page**

pp 29-43

**Location**

UCD library

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1707

**Author**

O'Hanlon, P. Rory

Bolger, Thomas

**Title**

The importance of *Arcitalitrus dorrieni* (Hunt) (Crustacea: Amphipoda: Talitridae) in coniferous litter breakdown.

**Publisher**

Elsevier

**Place**

Amsterdam

**Date**

1999

**Source**

Applied Soil Ecology

**Volume**

Vol. 11, No. 1

**Key Word**

forest health

*Arcitalitrus dorrieni*

terrestrial amphipod

landhopper

nutrient exchange

forest ecosystems

woodland habitats

mineralization

litter fall

animals

**Abstract**

*Arcitalitrus dorrieni* (Hunt) is a euterrestrial amphipod, native to Australia, which occurs in several woodland sites in Ireland and Britain. Experiments were carried out to estimate consumption, assimilation and egestion rates of *A. dorrieni* feeding on Lodgepole pine, *Pinus contorta*, litter. These figures, together with a model of weight-specific oxygen consumption, were used to estimate the annual percentage of litter fall or carbon utilized by *A. dorrieni* at a coniferous woodland site in Co. Galway, Ireland. Estimates of 25% suggest that these animals play an important role in mineralization and nutrient exchange in the habitats in which they occur.

**Page**

pp 29-33

**Location**

UCD library

**Notes**

includes bibliographical references

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1708

**Author**

O'Connell, Tadgh

Bolger, Thomas

**Title**

Intraspecific aggregation, 'probability niches' and the diversity of soil microarthropod assemblages.

**Publisher**

Elsivier

**Place**

Amsterdam

**Date**

1998

**Source**

Applied Soil Ecology

**Volume**

Vol. 9, Nos. 1-3

**Key Word**

Microarthropods

guild

diversity

forest ecosystems

woodland habitats

ecology

**Abstract**

Investigations of the structure, distribution and abundance of soil faunal communities have demonstrated three notable points. They are very diverse in numbers of species, highly spatially aggregated and appear to exhibit a low degree of food resource specialisation. In temperate regions these observations appear to be expressed to their greatest extent among the microarthropod assemblages of highly organic woodland soils. The species diversity of oribatid mites (Cryptostigmata: Acarina) in such environments can be bewildering and remains to be reconciled satisfactorily with classical Hutchinsonian niche theory. In this study the Shorrocks model is applied to a 'fungivorous guild' composed of oppiid mites. The results indicate an aggregated pattern of oribatid distribution and abundance which may contribute to understanding the extraordinary diversity of soil microarthropods in temperate woodland soils. The datasets show that independent intraspecific aggregation of competing oppiid species over patches, alone, might be sufficient to stabilise coexistence and facilitate the high species diversity in this guild.

**Page**

pp 63-67

**Location**

UCD library

**Notes**

includes graphs, bibliographical references

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1709

**Author**

Bolger, Thomas

**Title**

The rate of disappearance of Salix litter on cutaway bog and the microarthropods associated with it.

**Publisher**

VEB Gustav Fischer

**Place**

Jena

**Date**

1985

**Source**

Pedobiologia

**Volume**

Vol. 28

**Key Word**

short rotation forestry

biomass production

energy production

forest ecosystems

Microarthropods

litter decomposition

mites

forest health

**Abstract**

Short rotation forestry has a source of biomass for energy production has been suggested as possible use for cutaway reclaimed bog. This study investigated the rate of litter incorporation and the microarthropods associated with the process at one such site. It was found that the rate of litter incorporation was typical of earthworm poor sites, 70% per annum, and a succession of microarthropods, dominated initially by Collembola and finally by Cryptostigmata was identified

**Page**

pp 145-153

**Location**

UCD library

**Notes**

includes graphs, bibliographical references

**Address of author**

Department of Zoology, University College, Dublin, Belfield, Dublin 4

---

**Number**

1710

**Author**

Heneghan, Liam

**Title**

Studies of soil microarthropod communities, experimentally manipulated by chronic low-level nutrient input, and their impact on some ecological processes.

**Date**

1994

**Key Word**

Microarthropods

acid rain

pollution

rainfall

Picea abies

Norway spruce

litter

forest ecology

woodland ecosystems

biodiversity

**Abstract**

Communities of soil microarthropods (Acari and Colembola) in a stand of Picea abies (L.) Karsten which were subjected, in a randomized block design experiment, to the chemically diverse components of a simulated polluted rainfall ("acid rain"), were modified by alterations in the abundance of taxa and consequently in community structure. When introduced into field lysimeters microarthropods accelerated the decomposition of the litter. However, in a base rich forest floor, which had a previous history of low N input, the nutrients mobilized

were retained in the uppermost portions of the soil. Confining attention, therefore, to the litter layers, several communities modified by two different types of perturbation, namely: planting of exotic coniferous trees on what was originally grassland, and the applications of the components of "acid rain", were found, in laboratory-based microcosm experiments, to influence both the pattern and the quantities of nutrients leached from the litter and the evolution of CO<sub>2</sub>. It is suggested that, at the scale examined, communities of microarthropods may not be functionally redundant as subtle changes in community structure had consequences for processes in the ecosystem. The results were applied to the broader context of evaluating the potential of biodiversity studies as a unifying them for organismic-centred and ecosystem ecology.

**Location**

Dept. of Zoology, UCD

**Notes**

Thesis presented to the National University of Ireland in fulfilment of the requirement for the degree of Ph.D. Department of Zoology, UCD, includes tables, graphs, bibliographic references

**Thesis**

Ph. D., 1994

**Address of author**

Environmental Sciences Program, De Paul, University, Chicago, IL 60614-3298, USA

---

**Number**

1711

**Author**

Coll, Marian T.

**Title**

The Carabid fauna (Coleoptera: Carabidae) of Irish woodlands and adjacent habitats.

**Date**

1998

**Key Word**

Carabid

Coleoptera

Carabidae

woodland ecosystems

forest ecology

fauna

bettles

**Abstract**

The majority of forests in Ireland comprise monocultures of coniferous tree species introduced from continental Europe and North America. Along with the fact that historically Ireland was virtually deforested, this means that a unique arthropod fauna may be present in today's forests. The carabid assemblages of Irish forests were found to be dominated by a core group of species which includes *N. brevicollis*, *P. madidus*, *P. melanarius*, *C. problematicus*, *P. niger*, *C. caraboides*, *A. parallelepipedus*, *L. refescens*, *L. pilicornis* and *N. biguttatus*. Although these species are commonly found in other European woodland habitats, the carabid fauna in Irish forests is distinct from the fauna of other European forests.

Various aspects of local and regional variation between carabid assemblages, sampled from 1994 to 1996, were investigated using multivariate and univariate statistics. This analysis showed that the carabid communities of Irish forest are dominated by the aforementioned core group of woodland associates along with ubiquitous species while species found more rarely probably reflect the surrounding habitats and landscape. The age of a forest stand played the greatest role in determining its carabid assemblage, followed by soil pH. It was also determined that there were apparent differences between the carabid assemblages of open and forested sites in Ireland. During 1996, sampling was carried out to examine further the carabid faunas of both open and forest habitats as well as the effect of afforestation on the existing upland carabid fauna. Planting forests in areas of bog and grassland may lead to changes in local fauna.

The role of migration and dispersal in the maintenance of separate and distinct carabid populations in open and forest habitats was also investigated. Overall, little movement was detected between forest stands by flight or across open ground. However, the sampling suggests that hedgerows may provide a refuge for forest carabids as well as a corridor of movement from one forest to another. Thus the carabid community of coniferous woodlands appear to be resident and self replicating through reproduction rather than existing as part of larger metapopulation.

**Location**

Dept. of Zoology, UCD

**Notes**

Thesis presented to the National University of Ireland in fulfilment of the requirement for the degree of Ph.D.  
Department of Zoology, UCD; includes tables, graphs, bibliographic references

**Thesis**

Ph.D., 1998

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1712

**Author**

McInerney, Michael

**Title**

The effect of earthworm activity, silt/clay content and climatic interactions on soil organic matter dynamics in foresty systems.

**Date**

1998

**Key Word**

earthworms  
organic matter dynamics  
soil  
soil organic matter  
forest ecology  
woodland ecosystems  
micro-organisms  
fauna  
fungi  
algae  
protozoa  
biodiversity

**Abstract**

Two long term field experiments (ca. 2 years) were conducted to test the general hypothesis that earthworms can influence the timing, release and flow of carbon between various pools of soil organic matter in foresty systems. In the first experiment, litter bag treatments were used to assess the impact of burial, comminution and faunal ingestion processes on organic matter decomposition. In the second experiment, cylinders containing a surface horizon of earthworm cast or as a control soil, and a 'base' soil depleted in organic matter, were used to monitor the influence of cast production on carbon (stabilisation and/or mineralisation) associated with various fine earth fractions (silt, clay). Experiment 3 examined the extent to which earthworm ingestion, different wetting/drying cycles and temperature regimes, and varying silt/clay content affect losses of respired (CO<sub>2</sub>-C) and leached carbon (Dissolved Organic Carbon) from forest soils.

This research work indicates that moisture fluctuations are reduced in earthworm casts. It shows that organic matter in casts, once stabilised (and left undisturbed by earthworms), can maintain this stabilisation for many years irrespective of the prevailing climatic conditions, and that this stabilization is independent of placement. In surface cast, DOC losses are expected to be higher than in buried casts, since surface material is exposed to wet/drying cycles of greater intensity. In contrast, fungal immobilisation of nutrients and reduced respiration rates at higher temperatures are expected to be more important in surface than in buried casts. In addition, the pool of micro-organisms involved in the actual decomposition of surface cast organic matter may be smaller. Other studies have concluded that the shift from fungal dominated to bacterial dominated microbial populations after faunal ingestion is transitory (few weeks or months). However, results from this study indicate that this shift in population dominance may persist for a year or more in buried earthworm casts. Anaerobic periods and/or simpler, bacterial-dominated food webs may explain this increase, while biomass or activity of other microbial groups (fungi, protozoa and algae) may be reduced.

**Location**

Dept. of Zoology, UCD

**Notes**

Thesis presented to the National University of Ireland in fulfilment of the requirement for the degree of Ph.D.  
Department of Zoology, UCD; includes tables, graphs, bibliographic references

**Thesis**

Ph.D., 1998

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1713

**Author**

Dolan, Sylvia

**Title**

Effects of nutrient addition on the chemical composition of leachates from forest and grassland soils.

**Date**

1997

**Key Word**

pollution

environment

forest health

nutrients

soil

leachate

manure

fertilizer

ammonium

nitrogen

potassium

**Abstract**

A vast literature describing the response of forest soil leachate to nutrient addition from air pollution has been produced over the last 2 to 3 decades. This has arisen primarily because of concern arising from studies of forest decline and its potential association with such pollution. In this study the responses of biogeochemical cycles in soils to nutrient additions have been examined in a framework based on Berg et al (1997). In addition, nutrient additions in rainfall and throughfall were investigated at the study site.

The inputs at the site indicate that Ireland suffers less from atmospheric pollution than mainland Europe.

However, the nitrogen inputs at Clonegal appear high when compared to some other Irish sites. Throughfall analysis showed enrichment of most of the parameters measured.

In the first experiment throughfall and enhance levels of  $(\text{NH}_4)_2\text{SO}_4$  were added to a forest soil. Leachate analysis showed an increase in the concentration of sulphate and an associated loss of cations such as calcium, magnesium and potassium. The close relationship between the loss of base cations and the loss of sulphate rather than nitrate was not the result predicted by the Berg et al scenario. However, increased leaching of aluminium was observed in the treated soil indicating its mobilisation due to increased acidity.

Adding pig slurry to grassland and forest soil showed that pH and the extent to which available ammonium was nitrified determined which cation was leached. Nitrification operated efficiently in grassland soil and the loss of nitrate was balanced by the loss of base cations. However, in forest soil less of the nitrogen was lost as nitrate and the cations leached included large portions of ammonium and potassium rather than, for example, aluminium. Pig slurry contains relatively high concentrations of metals and the amount of zinc leached from an acid forest soil, to which pig slurry has been applied, were significantly higher than from the grassland soil which had received the same amount of slurry but had a higher pH. The increase was all the more remarkable given that the concentration of mobile anions was far greater in the grassland leachate than in the leachate from the grassland soil.

**Location**

Dept. of Zoology, UCD

**Notes**

Thesis presented to the National University of Ireland in fulfilment of the requirement for the degree of Master of Science, Department of Zoology, UCD; includes tables, graphs, bibliographic references

**Thesis**

M.Sc., 1997

---

**Number**

1714

**Author**

Walsh, Mary I.

**Title**

Studies of the role of diet in determining the population dynamics of Collembola in laboratory cultures.

**Date**

1989

**Key Word**

fungi

Collembola

soil

fauna

forest ecosystems

**Abstract**

There is much evidence to suggest that fungus is an important constituent in the diet of Collembola. While the role of Collembola in decomposition has not been fully determined it has been shown that grazing on fungi can stimulate fungal respiration and increase litter decomposition. In general Collembola will consume most foods offered to them but they will show preferences for particular food types. In this study laboratory food preferences tests were carried out on four species of Collembola using eight species of soil fungi. Although all species showed preferences those on *Onychiurus furcifer* and *Hypogastrura denticulata* were the most conclusive. Both of these species ranked a Sterile isolate as their favourite fungus but otherwise differed in their preferences.

Analysis of population growth on three of the fungi: Sterile 4, *Trichoderma viride* and *Oidiodendron griseum* showed that while food type did not influence growth in *H. denticulata* it did have a marked effect on *O. furcifer* with growth being greater on *T. viride*. Further observation on *O. furcifer* showed that when fed on *T. viride* animals had higher fecundity and reached greater body lengths than on the other two species. Growth and fecundity did not appear to be related to food preferences.

Experiments on competition between *O. furcifer* and *H. denticulata*. Fungal type had little influence on the three fungi revealed that in all cases *O. furcifer* grew to greater numbers than did *H. denticulata*. Fungal type had little influence on the growth rate of *H. denticulata* in competition while growth in *O. furcifer* was influenced to a certain extent.

Radio-labelled fungi were used to determine assimilation rates in each of the three fungal species. <sup>65</sup>Zn was used initially but was found to be unsuitable because most of the isotope was stored in a cuticle, which was consumed after each moult. Using <sup>32</sup>P as an alternative, assimilation rates were estimated as between 47% and 83% but there was a higher degree of variability within the same species.

**Location**

Dept. of Zoology, UCD

**Notes**

Thesis presented to the National University of Ireland in fulfilment of the requirement for the degree of Ph.D. Department of Zoology, UCD; includes tables, graphs, bibliographic references

**Thesis**

Ph.D., 1989

**Number**

1715

**Author**

O'Connell, Tadhg

**Title**

The Microarthropod fauna associated with fungal fruiting bodies in woodland - A study of the role of habitat spatial and temporal diversity in determining assemblage structure.

**Date**

1994

**Key Word**

fungi

Microarthropods  
fungal sporophores  
Coleoptera  
Diptera  
forest ecosystems  
Pinus sylvestris  
nesting

**Abstract**

Fungal sporophores (for fructifications) are often abundant in woodlands and a total production of 0.24 - 0.49 million sporophores/ha/yr (which is equivalent to 265 - 460 kg/ha/yr fresh weight) was estimated for a plantation of Pinus sylvestris in Scotland (Richardson 1970). Hitherto, study of the fauna of fungal sporophores has focused almost exclusively on assemblages of Coleoptera and Diptera and has generally ignored those of microarthropods, i.e. the Acarina and Collembola. This present work is directed wholly at assemblages of microarthropods from fungal sporophores.

A total of 64,911 microarthropods from 323 species were collected from sporophores of 38 fungus species and 13 litter samples during this study. The very diverse fauna was dominated both in abundance and richness by microphotophagous species which appeared to utilise this resource both as a source of nutrition and as sites for oviposition. Among the fungi Fomes annosus had a particularly rich fauna with 189 species and it alone accounted for 54% of the microarthropods collected in this work. In general, perennial bracket fungi contained a much more abundant and diverse fauna than did the often very ephemeral agarics. Patterns of species abundance and distribution showed no evidence of feeding specifications for particular fungi and the presence of toxic metabolites in certain sporophores appeared to pose no barrier to fungal fauna.

Species-area relationships were detected for certain species of fungi and there was a consistency in the identity of species found chiefly on larger sporophores. Multivariate analyses demonstrated that fungi generally did not have characteristic faunas and that the species of fungus was only an important determinant of the composition of microarthropod assemblages when comparing faunas of species differing greatly in size and temporal stability. Cumulative species-area analysis identified the role of habitat dividedness in facilitating the species diversity of microarthropod assemblages from fungal sporophores which were then structured in a consistently robust nested pattern. The incidence curves for individual species from a range of fungi, differing in temporal stability, suggested the importance of spatio-temporal heterogeneity and interspecific variation in immigration/extinction as determinants of this non-random structure.

**Location**

Dept. of Zoology, UCD

**Notes**

Thesis submitted to the National University of Ireland in fulfilment of the requirement for the degree of Ph.D.

**Thesis**

Ph.D., 1994

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

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**Number**

1716

**Author**

Forbairt. Timber and Furniture Department

**Title**

Bending strength properties of homegrown lodgepole pine. Final report. Phase 2.

**Publisher**

Forbairt. Timber and Furniture Department

**Place**

Dublin

**Date**

1996

**Source**

Technical support for Irish timber. Supported by the Forest Service 1996.

**Key Word**

lodgepole pine  
strength properties  
forest products

timber processing  
pinus contorta

**Abstract**

The reasons for testing lodgepole pine are given as:

1. Inventory forecasts for the next 5 years indicate that the sawlog output of lodgepole pine will be a significant amount (between 10% and 15%) of the total output and could be up to 20 and 25% of the output from certain regions;
2. A small amount of lodgepole pine is currently already been converted in the sawmills;
3. A limited amount of testing was carried out in 1969 and 1970 on small clear specimens of lodgepole pine. However, present norms for utilising any species in structural applications is to derive strength from tests carried out on structural -sized specimens.

The overall objective of this project is to determine the strength properties and set up a database for the visual and mechanical grading of home-grown lodgepole pine.

The objective for the present investigation is to add the bending strength properties of the 125X44 cross-section to the database established in phase 1.

The study's conclusions were:

1. grade out-turns for visual grading based on assessment of knots only, resulted in yields of 14% of GS and 9% of SS if grading for the two grades is done at the same time. This means that the yield for GS alone would be the sum of the two i.e. 23%. The comparable figures from phase 1 were 15.4% of GS, 14.2% of SS and 29.6% for GS on its own.
2. There was no difference in strength between the two visual grades - neither would satisfy even the lowest strength class in EN338
3. Machine stress grading provides the best returns.
4. The type of breaks tended to be 'brash' in nature. this could be attributed to grain distortion caused by the large knots and a significant occurrence of compressin wood. Special attention to this characteristic may be required when grading.

**Page**

14pp [24]

**Location**

Timber and Furniture Department, Enterprise Ireland

**Notes**

includes tables, ill.

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 7

---

**Number**

1717

**Author**

Forbairt. Timber and Furniture Department

**Title**

The National Programme for the Introduction of Eurocode 5. Report 1996.

**Publisher**

Forbairt. Timber and Furniture Department

**Place**

Dublin

**Date**

1996

**Source**

Technical support for Irish timber. Supported by the Forest Service.

**Key Word**

standards

European standards

structural timber

timber properties

forest products

**Abstract**

Eurocode 5 (ENV 1995) is the new European standard for the design of timber structures. This code had been

developed by the European Standards Body, CEN. It is set to become the principal design code for timber structures. It refers to other new standards concerning stress grading, strength classifications, test methods, loadings, terminology ect. The code will impact on the timber industry and on the design of timber structures in Ireland. The new strength classification for timber and assignments of visually graded Irish timber to these strength classes will probably lead to different common trading bands for timber in domestic and export markets.

Eurocode 5 is based on the limit state method of design. This method has been used for the past two decades for concrete and steel design. However, this is a new approach for timber. It is completely different to the permissible stress method that is currently used in BS5268 and SR11. Limit state is a more logical and flexible method of design. Thus it should improve the competitive position of timber in structural applications by permitting more efficient designs. However, the limit state is also far more sophisticated, requiring a more complicated design approach.

The code has been issued as an experimental standard for provisional application by all EU national standards organisations, including NSAI, the National Standards Authority of Ireland. It will remain as an experimental standard until the latter part of 1998, at which time it is likely to be adopted by all EU countries as a full European Standard. However, the use of Eurocode 5 in its current form, is being encouraged for timber design throughout Europe. In this way all the implications of the new code will be demonstrated prior to its full adoption.

Forbairt's objective in regard to Eurocode 5 is to:

- (i) ensure the code can be used for Irish structural timber applications;
- (ii) ensure that Irish timber is not excluded from the general construction timber applications;
- (iii) where Irish timber is an appropriate material, ensure it is the material of choice of designers, specifiers and builders.

**Page**

17pp

**Location**

Timber and Furniture Dept., Enterprise Ireland

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1718

**Author**

Enterprise Ireland. Timber and Furniture Department

**Title**

Long term investigation into durability of Irish timbers in service or ground contact 1996.

**Publisher**

Enterprise Ireland. Timber and Furniture Department

**Place**

Dublin

**Date**

1996

**Source**

Technical support for Irish timber. Supported by the Forest Service 1996.

**Key Word**

timber properties

timber durability

life expectancy

forest products

**Abstract**

Because of the importance and benefits of having reliable data on the durability and life expectancy of home-grown timber, Forbairt has undertaken a long term investigation on the durability of Irish timber in service. This long term investigation in durability and life expectancy of home grown timbers will also satisfy the latest recommendations by the technical committees in CEN which requires each country to develop its own data base in this area. The project which commenced in 1987 at a site in Glenealy Co. Wicklow. Since that time the experimental site has been maintained and the sample base enlarged by introducing different sample categories and species. The progress of timber deterioration has been recorded regularly each year and this report presents the summary of work carried out in 1996 and the test results to date. The main objectives of the project were:

1. To obtain information on durability and life expectancy of various Irish-grown timber species in above ground conditions (fence rails) and in ground contact (fence posts and stakes);
2. To assess life expectancy of treated and untreated timber;
3. To evaluate the effects of preservatives, and treatment schedules on timber durability.

**Page**

19pp

**Location**

Timber and Furniture Department, Enterprise Ireland

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9.

---

**Number**

1719

**Author**

Forbairt. Timber and Furniture Department

**Title**

Implementation of European standards on wood preservation.

**Publisher**

Forbairt. Timber and Furniture Department

**Place**

Dublin

**Date**

1996

**Source**

Technical support for Irish timber. Supported by the Forest Service 1996.

**Key Word**

wood durability

wood preservation

timber decay

European standards

**Abstract**

CEN/TC 38 - Wood durability has been monitored and information fed back to the Forest Service on a regular basis. The interpretation of the new European Standards on wood preservation coming from this group has been watched carefully in EU countries, particularly in the United Kingdom. Research work has commenced on the implications for Irish softwoods on high decay risk category situations such as roadside fencing posts. The study concludes:

1. The Working Groups of CEN/TC 38 have been re-structured and now there are five groups ahead of fourteen in the past;
2. The full range of European Standards on wood preservation is not yet in place;
3. The shift from the existing process type specification to the stricter results type is irreversible. This will have a major impact on our preservation sector in Ireland, particularly for timbers in ground contact and other high decay risk situations;
4. An implementation date for the new European Standards, ( and now, of course, Irish Standards) has not been agreed. It is expected that considerable confusion will exist during the interim period leading up to full implementation;
5. Interim results on research work on the implications for Irish softwoods used for roadside fencing posts indicates difficulties with resistant species complying with the new regulations.

**Page**

20pp

**Location**

Timber and Furniture Dept, Enterprise Ireland

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1720

**Author**

Forbairt. Timber and Furniture Department

**Title**

Development of hardwood resource properties of hardwood species.

**Publisher**

Forbairt. Timber and Furniture

**Place**

Dublin

**Date**

1996

**Source**

Technical support for Irish timber. Supported by the Forest Service 1996.

**Key Word**

hardwoods

broadleaved trees

timber properties

**Abstract**

A base line study was carried out on the basic properties of some Irish grown hardwood species. Samples of oak, ash, beech, birch, alder and Spanish chestnut were collected. A range of basic mechanical and physical tests were performed. The results of these tests indicated that the properties were broadly similar to published values for the same species grown in Great Britain.

**Page**

10pp

**Location**

Timber and Furniture Department, Forbairt

**Notes**

includes tables

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1721

**Author**

Forbairt. Timber and Furniture Department

**Title**

The relationship between the rate of shrinkage and the moisture content of Irish Sitka spruce.

**Publisher**

Forbairt. Timber and Furniture Department

**Date**

1996

**Source**

Technical support for Irish timber. Supported by the Forest Service 1996.

**Key Word**

timber properties

Sitka spruce

Picea sitchensis

moisture content

shrinkage

timber products

**Abstract**

The perception has arisen among some processors that shrinkage rates in Irish Sitka spruce is relatively more severe at lower moisture contents, although heretofore it has generally been assumed that shrinkage in all species of timber is proportional to the loss of moisture below Fibre Saturation Point (F.S.P.) The study was carried out to determine if there were any grounds for this belief that shrinkage is more severe at low moisture contents.

It was found that the shrinkage/moisture content relationship was essentially linear in both the radial and tangential direction throughout the moisture content range from fibre saturation point at approximately 25% to

zero. Shrinkage in the radial direction was from 1.5% from green to 12% moisture content and 2.8% from green to 0% (oven dry). Shrinkage in the tangential direction was 2.7% from green to 12% moisture content and 5.3 % from green to 0%. Any perceived increase in shrinkage is due solely to the greater loss of moisture and not to any increase in the rate of shrinkage, i.e., the shrinkage per 1% moisture content loss was the same throughout the range.

**Page**

13pp

**Location**

Timber and Furniture Department, Enterprise Ireland

**Notes**

includes graphs, tables

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1722

**Author**

Forbairt. Timber and Furniture Department

**Title**

Use of spruce in transmission poles.

**Publisher**

Forbairt. Timber and Furniture Department

**Place**

Dublin

**Date**

1996

**Source**

Technical support for Irish timber. Supported by the Forest Service 1996.

**Key Word**

Sitka spruce

Picea sitchensis

transmission poles

wood preservatives

timber decay

**Abstract**

A further study on Sitka spruce transmission poles, previously examined in 1988/89, was undertaken. The same methodology was applied as in the first study and the following parameters recorded: Pilodyn measurement at breast height; Hammer test; Visual appearance. No discernible damage or difference in appearance, condition or hardness was noticed as compared to the original inspection. The study concludes that the design life of forty years for the poles will be exceeded, indicating the suitability of Irish grown Sitka spruce, with an appropriate preservative treatment, for this purpose.

**Page**

10pp

**Location**

Timber and Furniture Department, Enterprise Ireland

**Notes**

includes photos., tables

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1723

**Author**

Forbairt. Timber and Furniture Department

**Title**

Draft IS 444.

**Publisher**

Forbairt. Timber and Furniture Department

**Place**

Dublin

**Date**

1996

**Source**

Technical support for Irish timber. Supported by the Forest Service 1996.

**Key Word**

European standards

standards

timber processing

**Abstract**

The implications of a new strength classification system, necessitated as a consequence of new European Standard requirements, is a major concern to the interests of Irish grown timbers. The work undertaken by Forbairt staff in facilitating the development of SR 11 to a full Irish standard status, and to facilitate a smooth transition to IS 444 is outlined. This work included an extensive programme of education and training, consultation with construction industry professionals, visits to sawmills, and site inspection.

**Page**

9pp

**Location**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

**Notes**

appendices include articles and conference notes

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1724

**Author**

Forbairt. Timber and Furniture Department

**Title**

Development of quality standards for quality processing.

**Publisher**

Forbairt. Timber and Furniture Department

**Place**

Dublin

**Date**

1996

**Source**

Technical support for Irish timber. Supported by the Froest Service, 1996.

**Key Word**

standards

timber processing

timber quality

quality systems

**Abstract**

The work of the Timber and Furniture Department in helping to develop and operate a quality system in mills based around the ISO 9002 requirements. This work included: advising companies on means of developing their quality systems to ISO 9002 quality requirements; meetings with sawmill managers; overseeing the installation of quality systems; and monitoring and inspection visits to plants.

**Page**

7pp

**Location**

Timber and Furniture Department, Enterprise Ireland

**Notes**

includes illis.

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1725

**Author**

Picardo, Valez

**Title**

New developments in timber as a structural material

**Publisher**

Institution of Engineers of Ireland

**Place**

Dublin

**Date**

1998

**Source**

Trends in Engineered Wood Structures. Thursday, 22 October 1998.

**Key Word**

timber processing

forest products

standards

quality

timber properties

timber strength

wood-based panel products

**Abstract**

This paper summarises recent developments in grading of timber, standards and timber-based products. Recent change in standards are outlined and a brief overview of the following standards is provided: ISS 444 "Use of Structural Timber in Buildings"; SRII "Structural timber for domestic construction"; BS5268; Part 2 "Code of practice for permissible stress design, materials and workmanship"; XIS ENV 1995-1-1- "Eurocode 5". An brief explanation of the various standards for timber grading and strength classes presently in use is also provided. The manner in which timber is graded by strength class is explained, and the various quality certifications are outlined. Samples of the various strength class stamps are provided. The reasons for the development of wood-based panels and recent developments in this area are outlined. The properties of the following wood-based panel products and their development are summarised: plywood; particleboards; OSB; fibreboards; and laminated veneer lumber.

**Page**

14pp

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1726

**Author**

Picardo, Valez

**Title**

Sampling strategy for physical and mechanical properties of Irish grown Sitka spruce.

**Publisher**

International Council for Building Research Studies and Documentation

**Source**

International Council for Building Research Studies and Documentation. Working Commission W18 - Timber Structures. CIB-W18/17-1712.

**Key Word**

sampling

Sitka spruce

Picea sitchensis  
strength properties  
yield class

**Abstract**

This paper summaries the work of a three year project undertaken to determine the basic physical and strength properties of Irish Sitka spruce that will be available in the future, develop a database upon which future values could be evaluated from a limited test programme, and obtain relevant data for stress testing. The sampling procedure used in study is explained and the various technical terms employed defined. The information obtained from the study will provide enough information to allow the following variations to be ascertained: variations in strength between yield classes; variations of strength between forests within a yield class; and variation of rate of rejections (due to distortion) between yield classes.

**Page**

8pp

**Location**

Timber and Furniture Department, Enterprise Ireland

**Notes**

paper presented at conference in Rapperswil, Switzerland, May 1984

**Address of author**

Timber and Furniture Department, Enterprise Ireland. Glasnevin, Dublin 9

---

**Number**

1727

**Author**

Picardo, Valez

**Title**

Effects of yield class, tree section, forest and size on strength of home grown Sitka spruce.

**Publisher**

International Council for Building Research Studies and Documentation

**Date**

1987

**Source**

International Council for Building Research Studies and Documentation. Working Commission W18A - Timber Structures. CIB-W18A/20-6-2.

**Key Word**

timber properties  
yield class  
strength properties  
Sitka spruce  
Picea sitchensis

**Abstract**

Data was collected from tests and measurements made on 1487 planks in three different sizes. The sampling strategy was described in CIB-W18 Paper 17-17-2. Twenty eight different items of data were collected which were grouped into five different groups one of which contained what was called the Classifying Variables. This group consisted of data on yield class, forest, size, tree, and section of tree. Although the primary aim of the project was to obtain estimates of the bending strength of Sitka spruce grown in Ireland, a separate analysis was carried out to examine the effects of the classifying variables on the strength properties measured. Yield class and section were found to be interrelated. From the practical view point Section had the greatest effect. Tree effects were too complicated to analyse. The size effect followed the well established pattern.

**Page**

10pp

**Location**

Timber and Furniture Department, Enterprise Ireland

**Notes**

includes tables, map; paper presented at conference in Dublin 1987

**Address of author**

Timber and Furniture Department, Enterprise Ireland, Glasnevin, Dublin 9

---

**Number**

1728

**Author**

O'Hanlon, Rory P.

**Title**

The distribution and life history *Arcitalitrus dorrieni* (Hunt) (Crustacea: Amphipoda: Talitridae), a terrestrial amphipod introduced into Ireland.

**Date**

1995

**Key Word**

amphipods

**Abstract**

Terrestrial amphipods within the family Talitridae have received comparatively little attention. This work is an attempt to gain more knowledge of the biology of this group by studying *Arcitalitrus dorrieni* (Hunt), a landhopper introduced into Ireland and Britain from Australasia. The distribution of *A. dorrieni* was mapped and it has been located at a number of new sites in the West of Ireland. Also, two new populations at Rossdohan, Co. Kerry, and Garinish Island, Co. Kerry, were discovered. It is suggested that *A. dorrieni* arrived in Ireland via Wardian cases, which were used to transport plants to Ireland and Britain in the last century.

In Kylemore, Co. Galway, *A. dorrieni* has a disjunct distribution. It occurred in areas where litter accumulated, though Sitka spruce stands did not appear to offer a favourable habitat. The animal was also found in grassland, in close proximity to a wood and numbers declined as the distance from the wooded area increased. At Tullywee Bridge, a mixed deciduous woodland dominated by *Rhododendron ponticum*, numbers over 12000 per square metre were recorded.

The species has an annual, univoltine reproductive cycle with ovigerous females found throughout the year.

Recruitment of juveniles begins in the May-June period with a peak of reproductive activity in August-September. The populations at each site show a bimodal size distribution for most of the year, with a unimodal distribution usually seen in March, April and May. Mortality occurs exponentially, and life-span is 20-22 months. Animals were mature at a smaller size in summer than in winter. A female-biased sex ratio was recorded.

Mean fecundity was 5.65 eggs per female and was dependent on female size, egg size and brood stage. A positive correlation between brood volume and fecundity was found and a negative correlation between fecundity and egg size. Brood mortality was 37.5% at Addergoole and 29.8% at Tullywee Bridge.

Field growth rates for males and females at Addergoole were 0.01375 mm per day and 0.0183 mm per day respectively. At Tullywee Bridge, growth rates were 0.0154 mm per day and 0.0217 mm per day, respectively.

Average P: B ratios of 2.49 and 2.93 were calculated for Addergoole and Tullywee Bridge, respectively.

**Location**

Dept. of Zoology, UCD

**Notes**

Thesis submitted to the National University of Ireland in fulfillment of the requirement for the degree of Ph.D.

**Thesis**

Ph.D Thesis, UCD

**Number**

1729

**Author**

Bolger, Thomas

**Title**

Multivariate analysis of nutrient concentration in leachates from soil columns.

**Publisher**

Eolas

**Place**

Dublin

**Date**

1991

**Source**

Ireland - France: Exchange of Research Personnel.

**Key Word**

soil  
soil nutrients  
leachates  
multivariate analysis  
nutrient concentration  
ordination

**Abstract**

In studies of the nutrient content of waters leached from soils it is normal that a number of parameters be measured in each sample. The data thus derived are obviously multivariate in nature. Yet, very few attempts have been made to analyse such data using multivariate techniques. The study undertaken during this exchange examined a large dataset using some multivariate techniques in an attempt to determine the major patterns of variation in time and space.

The dataset analysed consisted of the data derived from stage 1 of the CORE project, which was designed to investigate mechanisms of nutrient turnover in forest soils through the use of soil columns treated in various ways and/or transported to sites with different properties of the site of origin in the soil. The analysis of four datasets, comprising data obtained from 'control' soil columns, soil samples, and leachates from the soils at a particular site are described. The data is summarized in the form of scatter diagrams. The analyses show that this technique, called ordination, can be useful in illustrating patterns of variation in nutrient concentration in leachates. In addition, canonical correspondence analysis is shown to be useful in detecting differences between leachates from different soils and provides a method of testing the significance of such differences.

From the point of view of the datasets analysed, several interesting results have been identified using the technique. Changes, over time, in leachate composition from the 'control' site have been described and differences between the leachates from the 'control' and various other samples in the study, and between the leachates from two of the sites from which soil was taken and those from the other sites have been shown to be very significant.

**Page**

15pp

**Location**

Dept. of Zoology, UCD

**Notes**

includes graphs

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1730

**Author**

Berg, B.  
Johansson, M.B.  
Tjarve, I  
T. Gaitnieks  
Rokjanis, B.  
Beier, B.  
Rothe, A.  
Bolger, T.\*  
Gottlein, A.  
Gertsberger, P.

**Title**

Needle litterfall in a northern European spruce forest transect.

**Publisher**

Swedish University of Agricultural Sciences

**Place**

Uppsala

**Series**

Reports in Forest Ecology and Forest Soils No. 80

**Date**

1999

**Key Word**

litterfall  
Norway spruce  
Picea abies  
stand age  
site index  
basal area  
latitude

**Abstract**

Litterfall data, both for needle litter and total litter were available in all 34 plots in western Europe with mainly Norway spruce and some Sitka spruce as well as on site with Grand fir. Regressions were calculated for needle litterfall. Using all data the best simple relationship was obtained with annual average temperature ( $R^2_{adj}=0.576$ ;  $p<0.001$ ), latitude with  $R^2_{adj}=0.504$ ;  $n=34$ ;  $p<0.001$ ). Annual precipitation also gave a significant relationship. Basal area and stand age were less good predictor variables. For Norway spruce alone site index was the best single predictor ( $R^2=0.612$ ) using available data ( $n=11$ ). For all data with Norway spruce latitude gave an  $R^2$  adj of 0.416. Multiple regression relationships for needle litterfall were highly significant with annual average temperature, plus annual precipitation, plus latitude giving the best value for  $R^2_{adj}$  with 0.706 explaining about 70% of the needle litterfall. Furthermore there was a highly significant linear relationship between needle litter and 'total' litter, with  $R^2=0.909$ .

**Page**

31pp

**Location**

Dept. of Zoology, UCD

**Notes**

includes tables, graphs, map, bibliographical references

**Address of author**

\*Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1731

**Author**

Dolan, S.  
Bolger, T.

**Title**

Differences in the chemistry of leachates from forest and grassland soil associated with the addition of pig slurry - A lysimeter experiment.

**Date**

1997

**Source**

Botanical Journal of the Linnean Society

**Volume**

Vol. 97, No. 3

**Key Word**

soil  
leachate  
pig slurry  
fertiliser  
animal waste  
downward movement

**Abstract**

A lysimeter study was carried out to compare the effects on the chemical composition of the leachate of adding pig slurry to forest and grassland soil. The results suggest that the soil pH and the extent to which available ammonium was nitrified determined which cation was leached. Nitrification operated efficiently in grassland soil and the loss of nitrate was balanced by the loss of base cations. However, in forest soil less of the nitrogen was lost as nitrate and the cations leached included large proportions of ammonium and potassium rather than, for example, magnesium and aluminium. Pig slurry contains relatively high concentrations of heavy metals and the amounts of zinc leached from the acid forest soil, to which pig slurry had been applied, were significantly higher than those from the grassland soil, which had received the same amount of slurry but had a higher pH.

**Page**

pp 173-183

**Location**

Library, Trinity College Dublin

**Notes**

includes bibliographical references

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

---

**Number**

1732

**Author**

Bulfin, M.

**Title**

Farm forestry development in the Republic of Ireland.

**Publisher**

Bios Scientific Publishers

**Date**

1999

**Source**

Farm Woodland for the Future. Conference held at Cranfield University, Silsoe, 8-10 September 1999. ( Edited by P.J. Burgess, E.D.R. Brierley, J. Morris, J. Evans)

**Key Word**

farm forestry

private forestry

afforestation

agriculture

European Union

incentives

**Abstract**

Ireland has gone from 1% of its land under forestry in 1900 to 9% today. Until 1987 most of the planting was undertaken by the State. Since 1987 farmers have played a leading role in new afforestation and farmers now account for about 70% of all planting. The factors which have influenced this increase are: the crisis in agriculture, improved planting grants, a network of demonstration farms, and a pro-active advisory service. However, the most important item is the provision of annual payment for a 20 year period. This payment will be kept competitive with developments in agriculture. However, the Government's targets for the area afforested are not being met as the annual planting rate has been falling since 1995. This decline is due to a number of factors, but in particular the competition from competing European funded agricultural schemes. Farm forestry development in the Republic of Ireland.

**Page**

pp 11-22

**Location**

Teagasc, Kinsealy

**Notes**

includes graphs, bibliographical references

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1733

**Author**

van den Broek, R.

Faaij, A.

van Wijk, A.

Kent, T.

Bulfin, M.\*  
Healion, K.  
Blaney, G.

**Title**

Willow firing in retrofitted Irish peat power plants.

**Date**

1997

**Source**

Biomass and Bioenergy

**Volume**

Vol. 12, No. 2

**Key Word**

energy

biomass

biomass production

wood fuel

**Abstract**

Concerns about CO<sub>2</sub> emissions have caused renewed interest in biomass electricity in Ireland. A low-investment-cost option is the firing of locally grown short-rotation willow [*Salix*] in retrofitted Irish peat plants. Various options for such a biomass energy system were evaluated. All steps in the supply chain were integrated in a model and optimized economically. Retrofitting of existing peat plant was compared with building new biomass combustion and gasification plants. All conversion technologies considered are able to co-fire biomass and peat. The study focused on possibilities in the short term. To reflect uncertainties, all costs were presented in ranges. Neither agricultural subsidies nor possible CO<sub>2</sub> taxes were included. The lowest cost retrofit option with a proven technology was the conversion of unit 3 of the Lanesborough peat plant into a bubbling fluidized bed. The willow costs at the plant gate ranged between \$4.4 and 15/GJLHV and the kWh costs between 7.5 and 21 cents/kWh. The not-yet-proven options of gasification and the retrofit into a whole-tree energy plant showed slightly lower costs. The large ranges in the costs were mainly caused by the difference between the low and high estimation of the willow yields and the farmer's annual income. It can be concluded that in the lowest cost estimate, willow firing in retrofitted Irish peat plants has about the same cost as peat firing. (\$4.3/GJLHV and 7.4 cents/kWh) and could, therefore, be a promising option to reduce CO<sub>2</sub> emissions in Ireland.

**Page**

pp 75-90

**Location**

Trinity College library

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1734

**Author**

Wall, Sarah

**Title**

Management of private forests in Ireland.

**Date**

1997

**Source**

Agroforestry Forum

**Volume**

Vol. 8, No. 1

**Key Word**

farm forestry

forest management

private forestry

incentives

recreation

land use

agriculture

**Abstract**

A survey of private woodland owners (including farmers) in the Irish Republic indicated that the main reason for tree planting was to make use of poor land, followed by forestry being the most economic use of the land. Some 90% of the owners sampled said that production of timber for sale was an objective for their woodland, but many had other objectives as well including the production of timber for domestic use, family recreation and landscape uses. Nearly half of the owners used outside contractors for all decision making and work concerning their forests and many said that they would like to receive some form of training in forest management.

**Page**

pp 8-9

**Location**

Trinity College library

**Notes**

includes bibliographical references

**Address of author**

Department of Crop Science, Horticulture and Forestry, Agriculture Building, Belfield, Dublin 4

---

**Number**

1735

**Author**

Scott, R.C.

Smith, D.L.

**Title**

Cotyledon architecture and anatomy in the Acacieae (Leguminosae: Mimosoideae).

**Date**

1998

**Source**

Botanical Journal of the Linnean Society

**Volume**

Vol. 128, No. 1

**Key Word**

cotyledons

taxonomy

architecture

botany

genetic resources

plant anatomy

**Abstract**

A study was carried out to determine the range of cotyledon size, shape, venation pattern and anatomy in *Faidherbia albida* and 3 subgenera (*Acacia*, *Aculeiferum* and *Heterophyllum*) of *Acacia*, represented by 152 species. In addition, the extent to which cotyledon characteristics may help resolve the interrelationships of the subgenera, their status and their relationship to *Faidherbia* was assessed. The data confirm that cotyledons in Leguminosae [Fabaceae] provide a complex of characters that correlate with and reinforce taxonomic grouping, and demonstrate their potential contribution to elucidating particular taxonomic problems. In the context of the Acacieae, the cotyledons provide evidence in support of the amalgamation of the Acacieae and Ingeae, of the separation of *Faidherbia* from *Acacia*, and of the recognition of subgenera *Acacia*, *Aculeiferum* and *Heterophyllum* as separate groups, although it is considered that they do not indicate the status of these groups or provide information of use in their subdivision.

**Page**

pp 15-44

**Location**

Trinity College library

**Notes**

includes bibliographical references

**Address of author**

Department of Botany, The Queen's University, Belfast, Northern Ireland, BT7 1NN.

---

**Number**

1736

**Author**

Kelly-Quinn, M.

Tierney, D

Coyle, C.

Bracken, J.J.

**Title**

Factors affecting the susceptibility of Irish soft-water streams to forest-mediated acidification.

**Date**

1996

**Source**

Fisheries Management and Ecology

**Volume**

Vol. 3, No. 4

**Key Word**

environment

woodland ecology

afforestation

acidification

sulfates

nitrates

hydrology

fertilisers

water quality

pollution

**Abstract**

Hydrochemical sampling was carried out over 2 yr at 47 sites on upland soft-water streams in County Wicklow, eastern Ireland. The sites were on 33 rivers in catchments of <20 km<sup>2</sup>, and the waters were typical trout nursery streams. Vegetation cover ranged from open moorland to closed canopy plantation forestry (maximum 45.8%). The majority of the sites were around neutral during dry weather but became episodically acidic during heavy or prolonged rainfall. Sensitive sites were characterized by low alkalinity (<200  $\mu$ eq/litre) and low non-marine hardness (<120  $\mu$ eq/litre) values and high levels of natural acidity (DTCO). These sensitive, naturally acidic waters were shown to be susceptible to acid inputs from forestry. The high acidity levels associated with some afforested catchments were attributed to inputs of sulfates, nitrates and hydrological factors.

**Page**

pp 287-301

**Location**

Trinity College library

**Notes**

includes bibliographical references

**Address of author**

Department of Zoology, University College Dublin, Belfield, Dublin 4

**Number**

1737

**Author**

Clenaghan, C.

Giller, P.S.

O'Halloran, J.

Hernan, R.

**Title**

Stream macroinvertebrate communities in a conifer-afforested catchment in Ireland: relationships to physico-chemical and biotic factors.

**Date**

1998

**Source**

Freshwater Biology

**Volume**

Vol. 40, No. 1

**Key Word**

environment

afforestation

water quality

aquatic invertebrates

rivers

aquatic communities

**Abstract**

The influence of land use and physico-chemical factors on stream macroinvertebrates was analysed at 15 sites over a 2-year period in a single conifer-afforested catchment in Cork in the Irish Republic, in an area subject to very low levels of atmospheric pollution. Macroinvertebrate assemblages were classified using 2-way indicator species analysis into 5 major groupings that were related to distance from headwaters and land use. Trends in macroinvertebrate community composition were related to changes in physico-chemical and biotic characteristics of the river and its tributaries using canonical correspondence analysis. Local ecological factors (e.g. acid water, moss, shading or agricultural runoff), longitudinal trends in stream physico-chemistry (related to distance from headwaters, geology and land use) and season (related to life history patterns of the invertebrates) were the explanatory variables of spatio-temporal patterns in macroinvertebrate community composition in the catchment. Spatial variation in macroinvertebrate density, taxon richness, diversity and evenness was investigated in relation to environmental characteristics of the study sites using Spearman's rank correlation, principal components analysis and stepwise multiple regression. Invertebrate density and richness increased with distance from the headwater and associated increases in pH, water hardness and nutrients. Macroinvertebrate density and richness also increased with increasing moss weight. Invertebrate diversity and evenness increased with shading of the channel. The increase in macroinvertebrate density and richness and changes in community composition were particularly marked over a relatively short (1.2 km) distance in one tributary, and were concurrent with a rapid increase in stream pH of 1.7 units. Although macroinvertebrate communities at conifer-afforested sites were not impoverished in the same way as those in some other parts of Europe, they differed from the communities found above and below the plantation. This appeared to be owing to the primary importance of local ecological factors and the effect that the longitudinal position of these forest sites within the river system had on their physico-chemical and biotic nature.

**Page**

pp 175-193

**Location**

Trinity College library

**Notes**

includes bibliographical references

**Address of author**

Department of Zoology and Animal Ecology, University College Cork, Lee Maltings, Prospect Row, Cork

---

**Number**

1738

**Author**

Rice, Bernard

Bulfin, Michael

Kent, Tom

Frohlich, Andres

Lenehan, J.J.

**Title**

Potential for energy production from agricultural and forest biomass in Ireland.

**Publisher**

Teagasc

**Place**

Dublin

**Date**

1997

**Key Word**

biomass production

energy

forest residues

environment

renewable energy sources

**Abstract**

In this study the potential for energy production in Ireland from one renewable source, agricultural and forest biomass, is considered. The report examines the options for the production of liquid bio-fuels in the form of vegetable oil methyl esters or ethanal and electricity and/or heat production from energy crops or by-products. The use of waste or residue materials is the most likely way to minimise the cost of raw material procurement, the biggest cost item.

The use of wood industry residues for heat generation is likely to expand rapidly with the growth of the board processing industry. Forest residues are available in large volume, and every effort should be made to develop systems for their exploitation. The use of animal manure and arable crops to produce energy are also considered. Exploitation of these wastes would increase energy production from biomass to three times its present level, and bring it to about 2.4% of primary energy demand. This would also achieve a CO<sub>2</sub> abatement of about 1.2Mt, about two-thirds of the overall target for all renewable energies in the ALTENER programme.

Further expansion of energy production from agricultural and forest biomass will require that energy crops begin to play a role. For this to happen, the costs of energy crop production and processing will need to be substantially reduced. Changes in land use policies will also be required, to reduce competition between food and non-food enterprises, and to provide long-term stability for energy crop productions. The environmental benefits and employment potential of a biomass-energy industry will also need to be reflected in the support available for the establishment and processing of energy crops.

**Page**

32pp

**ISBN**

1901138186

**Notes**

includes photos., ills., diagrams, tables, graphs, bibliographical references

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**Number**

1739

**Author**

Thompson, D.G.

**Title**

Current status of beech (*Fagus sylvatica* L.) in Ireland.

**Publisher**

EC

**Place**

Brussels

**Date**

1993

**Source**

The Scientific Basis for the Evaluation of Forest Genetic Resources of Beech. Proceedings of a scientific workshop under the Community research programme on agriculture and agro-industry, including fisheries (AIR), held in Ahrensburg, Germany, 01-02 July, 1993. (Edited by H.J. Muhs and G. von Wuehlisch.

**Key Word**

beech

*Fagus sylvatica*

broadleaves

afforestation

agriculture

land use

investment

**Abstract**

Although beech is not native to Irish forests, it plays an important role as one of the major broadleaf species.

Broadleaves account for about 10% of the total forest land in Ireland (47,000 ha.) and beech accounts for about 12%, or over 5,700 hectares of the broadleaf forest. About 68% of the broadleaf forest is privately owned. Beech grows in most parts of the country and tolerates exposure more than most other broadleaf species. Typical rotation lengths for beech in Ireland are between 110 and 130 years. Old plantations of beech have suffered from negative selection management which have reduced the number of high quality individuals. Nursery records show that home collected seed is the most commonly used seed source. Seed has also been imported from Germany, Austria, Italy, Romania, Denmark and Czechoslovakia. Essentially no scientific provenance recommendations are available for Irish conditions. Agricultural reforms resulting from the European Community's Common Agricultural Policy agreement will release about one million hectares of marginal agricultural land, some of which will become available for forestry.

**Page**

pp 119-124

**Location**

Coillte Research and Development (copy of paper)

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow.

---

**Number**

1740

**Author**

Lefort, F.\*

Lally, M.\*\*

Thompson, D.\*\*

Douglas, G.C.\*

**Title**

Morphological traits, microsatellite fingerprinting and genetic relatedness of a stand of elite oaks (*Q. robur* L.) at Tullynally, Ireland.

**Date**

1998

**Source**

Silvae Genetica

**Volume**

Vol. 47, Nos. 5-7

**Key Word**

genetics

oak

*Quercus robur* L.

genetic origin

morphology

microsatellit fingerprinting

broadleaves

**Abstract**

A morphological and molecular characterisation of phenotypically elite oaks (*Quercus robur* L.) which were estimated as 220 years old was undertaken to test the utility of molecular tools to examine the genetic origin of the stand. The 11 trees shared many excellent characteristics in tree form. Quantitatively, DBH ranged from 104 cm to 126.5 cm and stem height from 10 m to 25.5m. The molecular analysis using microsatellites for nine genetic loci was on five trees. It concluded that the trees were not closely related. This small sample showed many polymorphisms and much heterozygosity. Loci AG16 and AG9 showed 9 and 8 different alleles respectively while loci AG1/2 and Ag15 displayed 3 and 5 alleles among the five trees. At least two trees had a three-band profile for some loci indicating potential triploidy. The historical records of the estate refers to one elite tree in 1837 and the detail of its description suggests it may correspond to one extant today. It also suggests an active silvicultural management and the practice of coppicing with standards. Such management may have resulted from in this excellent stand by conversion of a natural woodland in stages starting with coppice, leading to coppice with standards, then to high forest and ultimately to a parkland stand.

**Page**

pp 257-262

**Notes**

includes ill., bibliographical references

**Address of author**

\*Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17  
Coillte Research and Development, Newtownmountkennedy, Co. Wicklow

---

**Number**

1741

**Author**

Tree Council of Ireland

**Title**

Project Forest: an educational initiative. (resource pack).

**Publisher**

Tree Council of Ireland

**Place**

Dublin

**Date**

1999

**Key Word**

education

public awareness

environment

schools

economics

silviculture

harvesting

planting

forest ecosystems

**Abstract**

The Project Forest resource pack was produced as part of year-long project aimed at teaching young people about all aspects of trees and forestry, and their environmental and economic role in Irish life. Project Forest is structured around six 5-lesson modules that can run over the complete educational year. The project's modular breakdown is as follows: 1. Introduction; 2. The life of trees and forests; 3. Past and future of trees and Forests; 4. Wood enterprise, 5. Forests and the environment; 6. The virtual forest - involves planning and managing a virtual forest on the computer. Each module includes student activity sheets and questions for student to consider. There are a large number of illustrations and photographs and detailed descriptions of various types of silvicultural, harvesting, processing and forest planning activity. Woodland habitats and the role forests play in the environment are also dealt with in depth. The modules are also available on CD ROM. A web site has been designed as part of the project - <http://www.projectforest.com>.

**Location**

Coillte library

**Notes**

large ringbinder divided into six sections; each section contains photos., ills., maps and interactive material

**Address of author**

The Royal Hospital Kilmainham, Dublin 8.

---

**Number**

1742

**Author**

Douglas, G.C.

**Title**

Poplar (*Populus* spp.).

**Publisher**

Springer

**Place**

Berlin

**Date**

1989

**Source**

Biotechnology in Agriculture and Forestry, Vol. 5. Trees II. (edited by Y.P.S. Bajaj)

**Key Word**

Populus  
poplars  
biotechnology  
genetics  
in vitro fertilisation  
propagation  
micropropagation  
haploidy  
regeneration  
meristem culture  
mutagenesis

**Abstract**

This review seeks to illustrate important developments in tissue culture of poplars and to emphasize their applications for improvement of this important timber crop. Notes on the importance of the tree, its distribution and classification are provided. Most poplar species of economic importance have been cultured in vitro and a diverse range of techniques have been applied for their improvement. The following in vitro approaches to propagation are described: Meristem culture and micropropagation; Regeneration in explants and calli; Callus, cell and protoplast culture; Haploidy and genetic transformation; Genetic stability and mutagenesis; and Conservation and germplasm. The author concludes that in vitro techniques will be used more extensively in future for a diverse range of applications aimed at improving tree culture. Micropropagation will be used more extensively for introduction of new hybrids and propagation of high-yielding clones which present difficulties with conventional propagation. The availability of sterile plants from micropropagation has facilitated the study and synthesis of ectomycorrhizas on poplar under completely sterile conditions. The production of haploids on a routine basis should provide useful inbred lines for crossing and production of new clones with hybrid vigour. Although mutation breeding of poplar has not been used extensively, this system is particularly useful when combined with in vitro methods and poplar is particularly well suited in its application. Among deciduous trees, the genus *Populus* should prove most valuable for the application of recombinant DNA technology. Rapid growth rates and ease of vegetative propagation will greatly facilitate evaluation and dissemination of genetic transformants respectively. In addition application of recombinant DNA technology to poplars will be valuable for obtaining an understanding of gene regulation and the small size of the poplar genome will greatly facilitate this process.

**Page**

pp 300-323

**Location**

copy of paper in Teagasc, Kinsealy

**Notes**

includes tables, photos., bibliographical references

**Address of author**

Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

---

**Number**

1743

**Author**

Harrington, F.  
Douglas, G.C.  
McNamara, J.

**Title**

Production of root suckers by mature clones of *Prunus avium*: efficiency of root suckers, and crown buds for culture initiation.

**Date**

1994

**Source**

Advances in Horticultural Science

**Volume**

Vol. 8

**Key Word**

in vitro fertilisation  
micropropagation  
roots  
root suckers  
genetics  
cloning

**Abstract**

Roots were excavated from 31 elite mature trees and cuttings were cultivated in compost for the production of shoot suckers as sources of buds for in vitro establishment. Only 14 of the 31 clones gave buds/shoots in 100% of root cuttings and 8 clones failed to produce buds/shoots. Sucker production within clones was variable giving from 4 to 59 bud/shoots per 100 cm of root cutting. In addition each clone responded variably in different years and seasons. The use of buds from root suckers of mature trees was superior to using forced crown buds in terms of bud sterility, bud viability and clone viability in vitro. For culture initiation, the results obtained using buds from root suckers were similar to those from juvenile trees.

**Page**

pp 11-14

**Location**

copy, Teagasc Kinsealy

**Notes**

includes photos., bibliographical references

**Address of author**

Teagasc, Kinsealy Research Centre, Dublin 17

---

**Number**

1744

**Author**

Heslin, M.C.  
Douglas, G.G.

**Title**

Synthesis of poplar mycorrhizas.

**Date**

1986

**Source**

Transactions of the British Mycological Society

**Volume**

Vol. 86, No. 1

**Key Word**

poplars  
mycorrhizas  
in vitro fertilisation  
propagation  
hybrids  
genetics

**Abstract**

A technique for the production of ectomycorrhizas in poplar under aseptic conditions was developed. Eighteen fungi were tested in vitro with a single clone of Populus hybrid TT32, (*P. trichocarpa* X *P. tacamahaca*). Four *Paxillus involutus* isolates, one of the *Tehelphora terrestris* and one un-named fungus formed ectomycorrhizas as defined by the presence of mantle and Hartig net. Two isolates of *Hebeloma crustuliniforme* and one of the *Pisolithus tinctorius* formed a mantle without a Hartig net on the roots. Other isolates of the following species failed to show evidence of either mantle or Hartig net: *Cenococcum geophilum*, *Hebeloma crustuliniforme*, *H. sacchariolens*, *H. sinapizans*, *Leccinum roseofractum*, *Tricholoma orirubens* and *T. scalpturatum*. Sclerotial bodies were formed in cultures with *C. geophilum*, *H. sacchariolens* and *Paxillus involutus*.

**Page**

pp 117-122

**Location**

copy, Teagasc Kinsealy

**Notes**

includes photos., bibliographical references

**Address of author**

Teagasc, Kinsealy Research Station, Malahide Road, Dublin 17

---

**Number**

1745

**Author**

Rutledge, Clare B.\*

Douglas, G.G.\*\*

**Title**

Culture of meristem tips and micropropagation of 12 commercial clones of poplar in vitro.

**Date**

1988

**Source**

Physiologia Plantarum

**Volume**

Vol. 72

**Key Word**

micropropagation

propagation

cloning

poplars

in vitro fertilisation

Populus

shoot development

shoot tips

genetics

**Abstract**

Twelve commercial clones of poplar were cultured in vitro from meristem tips (0.3-0.5 mm diameter), shoot tips (4-6 mm long). Shoot-producing cultures were obtained from 4, 32 and 70% of meristem tips, shoot tips and nodal segments within 12, 6 and 4 weeks respectively. The genotype of cultures had a greater influence on development of shoot-producing cultures than medium composition. Cultivars Max/Ber and Oxford had the highest rates of establishment in culture and subsequent shoot proliferation, while *P. tacamahaca*, *P. trichocarpa* and cv. Robusta exhibited very low rates of establishment and low vigour in vitro. Shoot tip development was best on agar-solidified medium whereas liquid medium resulted in vitrification. Higher rates of axillary shoot production from established cultures were obtained with benzyladenine or zeatin than with 2-isopentenyladenine. Reducing the benzyladenine concentration from 4.4 to 1.1 micromoles, increased the production of elongated shoots suitable for rooting.

**Page**

pp 367-373

**Location**

copy of paper, Teagasc, Kinsealy

**Notes**

includes tables, graphs, photos, bibliographical references

**Address of author**

ICI Plant Protection Division, Jealott's Hill Research Station, Bracknell, Berkshire RG12 6EY, England

Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17

---

**Number**

1746

**Author**

Douglas, G.C.

**Title**

Advanced and conventional methods and vegetative propagation of selected lines in oak and cherry.

**Publisher**

Teagasc

**Place**

Dublin

**Series**

Horticulture and Farm Forestry Series No. 8

**Date**

1999

**Key Word**

oak

wild cherry

*Prunus avium*

broadleaves

propagation

micropropagation

genetics

*Quercus robur*

*Quercus petraea*

**Abstract**

Oak and wild cherry (*Prunus avium*) are important broadleaved species. In this study superior trees were identified and conserved by grafting. Methods for the large scale propagation of selected trees were evaluated using the technology of micropropagation. For oak shoot cultures could be established from mature oaks but their propagation rate was too low and difficult for practical application. With wild cherry micropropagation is a feasible option for large scale production of selected material. Genetic fingerprinting technology was developed and applied to oaks. The study shows that all material propagated vegetatively from oak was genetically similar to the original donor tree. Furthermore genetic fingerprinting was used to analyse a unique stand of elite oaks in Co. Westmeath and determined that the selected trees were not closely related to each other. The analysis of genetic fingerprints of 16 elite oaks also showed that five of them had an unusual pattern of DNA and one tree was identified as a rare triploid tree.

**Page**

22pp

**ISBN**

1841700422

**Notes**

includes tables, graphs, photos., ills., bibliographical references

**Address of author**

Teagasc, Kinsealy Research Station, Malahide Road, Dublin 17

---

**Number**

1747

**Author**

Ireland. Department of Agriculture, Food and Forestry

**Title**

Growing for the future: a strategic plan for the development of the forestry sector in Ireland.

**Publisher**

Ireland. Stationery Office

**Place**

Dublin

**Date**

1996

**Key Word**

forestry development

forestry policy

economics

afforestation

agriculture

private forestry

farm forestry

sustainable forest management  
investment  
land use  
incentives

**Abstract**

The Strategic Plan is divided into the following sections:

Irish Forestry Today. This provides an outline of the development of forestry in Ireland and its main features in the 1990s.;

Expanding the Forestry Sector. This section presents the case for further forestry development in Ireland. It outlines an economic assessment of forestry, addresses the concept of target size or "critical mass" of the forestry sector, considers the markets likely to be available over the term of the Strategic Plan and sets strategic goals for the sector;

Sub-Sectoral Elements. This part of the plan considers each of the key elements in forestry development, such as planting targets, species, forest management, the environment and the industrial sector. The important current features are set out, including identification of the key developments to date, an assessment of the present status and a commentary on the strengths and weaknesses. A section on policy considerations identifies the issues relevant to future developments of the sub-sector under consideration within the context of the overall Strategic Plan. A Policy Statement is then included and specific Strategic Actions to be undertaken are summarised.

**Page**

vi, 98pp

**ISBN**

0707624304

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**Number**

1748

**Author**

Fennessy, John

**Title**

Broadleaved tree improvement programmes in Ireland.

**Publisher**

British Hardwoods Improvement Programme

**Date**

1999

**Source**

British Hardwoods Improvement Programme. Seventh annual conference. 9 November 1999.

**Key Word**

hardwoods

broadleaves

Provenance

oak

birch

beech

tree improvement

silviculture

cherry

sycamore

**Abstract**

This paper traces the history of forestry development in Ireland and examines the role of broadleaves in that development. Research into broadleaved silviculture has been quite limited. A recently established research programme aims to identify and develop genetically superior regeneration material for tree species used in planting programmes. The process of registering seed stands, beginning in the 1970s, and subsequent oak, ash, beech and birch provenance trials are described. Current broadleaf improvement programmes, including the selection of phenotypically superior (plus trees) under the EU ECLAIR programme, and the reselection of some of these trees as part of the British Hardwoods Improvement Programme, are described.

**Page**

pp 29-33

**Location**

Coillte Research and Development

**Notes**

includes tables, bibliographical references

**Address of author**

Coillte Research and Development, Newtownmountkennedy, Co. Wicklow.

---

**Number**

1749

**Author**

Fexedulegn, Desta

MacSiurtain, Mairtin P.\*

Colber, Jim J.

**Title**

Parameter estimation of nonlinear growth models in forestry.

**Date**

1999

**Source**

Silva Fennica

**Volume**

Vol. 33, No. 4

**Key Word**

parameter estimation

growth

growth models

nonlinear model

partial derivative

**Abstract**

Partial derivatives of the negative exponential, monomolecular, Mitcherlich, Gompertz, logistic, Chapman-Richards, von Bertalanffy, Weibull and Richard's nonlinear growth models are presented. The application of these partial derivatives in estimating the model parameters is illustrated. The parameters are estimated using the Marquardt iterative method of nonlinear regression relating top height to age of Norway spruce (*Picea abies* L.) from the Bowmont Norway Spruce Thinning Experiment. Formulas that provide good initial values of the parameters are specified. Clear definitions of the parameters of the nonlinear models in the context of the system being modelled are found to be critically important in the process of parameter estimation.

**Page**

pp 327-336

**Notes**

includes tables, bibliographical references

**Address of author**

\* Department of Forestry, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1750

**Author**

Twomey, Mark

**Title**

Remarkable trees.

**Place**

Birr

**Date**

1999

**Source**

Irish Timber and Forestry

**Volume**

December/1999

**Key Word**

tree preservation  
forest health  
conservation  
environment  
woodland ecology

**Abstract**

Progress in the Tree Register of Ireland programme, which aims to compile a central database of Ireland's remarkable trees, is outlined. The 'champion trees' of each species are identified and recorded. The identification of these trees will help the process of targeting trees for Tree Preservation Orders.

**Page**

pp 12-14

**Notes**

includes photos

---

**Number**

1751

**Author**

Hogan, Joe

**Title**

Willow growing in Ireland & UK

**Place**

Birr

**Date**

199

**Source**

Irish Timber and Forestry

**Volume**

December/1999

**Key Word**

willow

Salix

basketmaking

forest products

**Abstract**

The current state of basketmaking and the condition of willow stands in Ireland are described. It is only recently that the industry has enjoyed in a small reversal in its long-term decline, but the growing of willows in Ireland is unlikely to be profitable for some time. The various harvesting methods employed in surviving willow stands is described. Sites for willow growing need to be on well drained fertile land. Instructions on planting techniques and the most suitable species of willow to use are included.

**Page**

16-18

**Notes**

includes photos

---

**Number**

1752

**Author**

Irish Timber and Forestry

**Title**

The future for farm forestry.

**Place**

Birr

**Date**

1999

**Source**

Irish Timber and Forestry

**Volume**

June/July 1999

**Key Word**

land use

forestry policy

European Union

agriculture

incentives

afforestation

grants

economics

**Abstract**

This article compares: (i) family farm income per hectare from agricultural enterprises with that from a forest enterprise; (ii) total EU direct transfer payments per hectare for various agricultural enterprises with forestry premium payments over time; and (iii) the benefits of afforestation on small farms with large farms. A number of examples of farms of varying sizes are presented and the economic advantage which their owners would enjoy by afforesting part of their land is outlined. A number of factors are examined, including the amount accruing to the farmers from EU direct transfer payments. It will be difficult to resolve the demand for land needed to benefit from direct EU payments, and that required to achieve the planting targets as set out in the Government's strategic plan for forestry. It is not clear how this 'land use dilemma' can be resolved.

**Page**

pp 10-12

**Notes**

includes tables

---

**Number**

1753

**Author**

Irish Timber and Forestry

**Title**

Bringing back the birch.

**Place**

Birr

**Date**

1999

**Source**

Irish Timber and Forestry

**Volume**

March /1999

**Key Word**

birch

broadleaves

Betula

native species

afforestation

**Abstract**

A project aimed at improving the form of Irish birch, leading to the production of source of quality seed, is described. The ultimate aim of the project is to identify populations and families which are genotypically superior, to identify environmental factors influencing birch form and growth rate, to develop silvicultural protocol and to establish a birch timber industry in Ireland. The various stages involved in this programme are outlined as follows: defining the desired characteristics of quality Irish birch; locate areas, stands and individuals with these desired traits; the creation of an indoor seed orchard; the setting up of field trials to determine which are the most suitable genotypes for quality timber production.

**Page**

pp 10-12

**Notes**

includes photos

---

**Number**

1754

**Author**

Fitzgibbon, Eleanor

**Title**

Butt rot disease: ecology &amp; control.

**Place**

Birr

**Date**

1999

**Source**

Irish Timber and Forestry

**Volume**

March/1999

**Key Word**

fomes

forest health

fungicide

diseases

fungi

**Abstract**

As result of rigorous control measures, and good forest management, the proportion of forest area affected by Fomes decay is lower in Ireland than in countries, <5% of the forested area. The most common form of infection is through stumps. The spread of the disease through ectotrophic growth is described. Control of the fungus can be achieved through sound silvicultural practices, correct site selection or biological control by using a competing, but non-pathogenic, fungus called *Phlebiopsis gigantea*. The development and current application of chemical controls are outlined, urea being the most common chemical used. Rotations of resistant species, especially deciduous tree species, is quite effective at minimising the spread of the fungus.

**Page**

pp 20-21

**Notes**

includes photo.

---

**Number**

1755

**Author**

Fitzgibbon, Eleanor

**Title**

Aspects of fungi in forest ecocsystems.

**Place**

Birr

**Date**

1999

**Source**

Irish Timber and Forestry

**Volume**

March/1999

**Key Word**

mycorrhizae

fungi

heart rot

diseases

fomes

forest health

nutrient cycling  
nutrient exchange  
nutrients  
forest health  
forest ecosystems

**Abstract**

Fungi play a hugely important role within all ecosystems particularly in nutrient recycling and in the decomposition of dead organic matter. Cellulase, the enzyme needed to breakdown cellulose, is found only in fungi and other microbes. Fungi are also vital to the survival of soil animals, such as mites and springtails which feed on the litter and break it into smaller pieces. Mycorrhizae fungi live in association with the tree roots and act as nutrient capture agencies for trees. The main types of wood-rotting fungi are outlined. These are: white rots; brown rots; and, soft rots. Heart rots, such as fomes, are the primary cause of decay in mature forests and use a number of different routes to attack trees. The most effective counter to heart rot infection, apart from rotation of different species, is the application of a urea solution to freshly cut stumps.

**Page**

pp 22-23

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**Number**

1756

**Author**

Monaghan, Ray  
Coxall, Malcolm

**Title**

Pro Silva - forestry and nature in partnership.

**Place**

Birr

**Date**

1999

**Source**

Irish Timber and Forestry

**Volume**

March/1999

**Key Word**

forest ecosystems  
environment  
forest health  
recreation  
silviculture

**Abstract**

This article describes the Pro Silva approach to forestry, which favours management strategies which optimise the conservation and utilisation of natural forest ecosystems so that the ecological function is sustainable and production is economically viable. There are four principal benefits associated with this approach: 1. The conservation of ecosystems; 2. The protection of soil and climate; 3. The production of timber and other products; 4. The values of recreation, amenity and culture.

**Page**

pp 8-9

---

**Number**

1757

**Author**

Wall, Sarah

**Title**

Forests & soils.

**Place**

Birr

**Date**

1998

**Source**

Irish Timber and Forestry

**Volume**

August/1998

**Key Word**

soil

soil classification

soil nutrients

soil organic matter

acidification

afforestation

forest ecology

forest ecosystems

forest health

**Abstract**

Forests can exert both both direct and indirect influences on the soils in which they are planted. One direct influence is the drastic change in the amount of soil water available. While trees hold nutrients longer than agricultural produces, the nutrients the soil receives via tree litter may exceed the immobilised nutrients. While forests act as natural filters for the atmosphere and clean of pollutants, they can also increase the acidity of soil and streams by concentrating pollutants. The physical characteristics of soil which must be considered prior to afforestation include: moisture content, soil texture, soil depth, nutrient content, and pH status. The main soil types used in Irish forestry are listed and their characteristics briefly outlined. These are: brown earths, brown podzolics, grey brown podzols, podzols,gleys, and peats.

**Page**

pp 12-13

**Address of author**

Department of Forestry, Agriculture Building, University College Dublin, Belfield, Dublin 4.

---

**Number**

1758

**Author**

Jones, Dawn

Higgins, Debra

Harmey, A.

**Title**

Pine wood nematode and European forestry.

**Place**

Birr

**Date**

1998

**Source**

Irish Timber and Forestry

**Volume**

July/1998

**Key Word**

Bursaphelenchus xylophilus

pine wood nematode

forest pathogens

forest pests

forest health

beetles

genetics

breeding

drying

**Abstract**

The pine wood nematode (*Bursaphelenchus xylophilus*) is a virulent forest pest and has caused damage to pine

forests in several parts of the world. It is introduced to trees by the Long Horn beetle and the presence of this species is an important indicator for those working to quarantine the nematode. Kiln drying is the only really effective way of ensuring that a consignment of timber is free of the pest. Different strains of the species have different levels of pathogenicity and, as part of an EU sponsored programme, the authors are using molecular biology techniques to identify genes that confer virulence or pathogenicity on the nematode. The long term aim is the development of strains in which these genes were suppressed, and to breed trees which would be resistant to the nematode.

**Page**

pp 10-11

**Notes**

includes photos

**Address of author**

Department of Botany, University College Dublin, Belfield, Dublin 4

---

**Number**

1759

**Author**

Wall, Sarah

**Title**

Tree mixtures in farm forestry.

**Place**

Birr

**Date**

1998

**Source**

Irish Timber and Forestry

**Key Word**

farm forestry

private forestry

tree mixtures

biodiversity

environment

forest ecosystems

woodland habitats

forest management

forest health

**Abstract**

With the increase in awareness of the fragility of the environment, there is greater demand that forests be managed in an environmentally sensitive manner. Increasing the level of species mixture in forest is a very effective way of promoting biodiversity. Trees can be mixed horizontally or vertically, the later allowing, for example, the growth of shade-bearing species beneath the canopy of the main species. It is important to consider the site on which a mixed stand is planned and to try to choose species that grow well together. Mixtures have also been proven to be more productive because of their greater use of space and increased resistance to pest attack. Hedges and plantation edges offer excellent opportunities to introduce mixtures on a small scale. The diverse ecosystem that is encouraged by planting a mixture of species increases the stability of the forest and actually facilitates effective forest management. However, the complexity of mixed stands can make productivity predictions difficult as Yield models are designed for use in monoculture forestry.

**Page**

pp 14-15

**Notes**

includes photos.

**Address of author**

Department of Forestry, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1760

**Author**

Harmey, Matthew A.

**Title**

Clonal propagation of oaks.

**Place**

Birr

**Date**

1998

**Source**

Irish Timber and Forestry

**Volume**

March/April 1998

**Key Word**

propagation

cloning

genetics

oak

growth

**Abstract**

The author describes a study of the patterns of gene expression in juvenile and adult oak in a project aimed at identifying the genes responsible for the change from juvenile to adult phase in Irish oak. Clonal propagation of oak in the adult phase is virtually impossible. It is necessary to identify those genes which are expressed in both the juvenile and adult phases of development. The study accumulated a small collection of genes which were expressed selectively in adult or juvenile tissue. Using cloned DNA probes to test shoots from tissue cultured oak explants, it was found that the only tissue on the adults that showed juvenile properties was the root collar. The authors conclude that the most efficient way to clonally propagate oak from elite stocks is to fell and use the stump shoots as a source of propagation material.

**Page**

pp 8-9

**Notes**

includes photos.

**Address of author**

Department of Botany, University College Dublin, Belfield, Dublin 4

---

**Number**

1761

**Author**

Wall, Sarah

**Title**

Forest thinning.

**Place**

Birr

**Date**

1998

**Source**

Irish Timber and Forestry

**Volume**

February 1998

**Key Word**

thinning

forest management

broadleaves

thinning intensity

**Abstract**

Thinning intensity, the rate of removal of timber volume from the forest, will be determined by the condition of the crop, its rate of growth and the species in question. In broadleaved forests thinning is aimed primarily at improving the quality of the stand, with volume production a subsequent concern. Because of this thinning

intensity is not as important an issue as in conifers. Various methods of thinning broadleaves are outlined. The most effective approaches to thinning larch, Sitka spruce and oaks are outlined. Guidelines on the frequency of thinning most suited to the age of the stand are provided.

**Page**

pp 12-15

**Address of author**

Department of Forestry, Agriculture Building, University College Dublin, Belfield, Dublin 4

---

**Number**

1762

**Author**

Dawson, W.M.\*

McCracken, A.R.\*\*

**Title**

Clonal interactions in the use of large scale mixtures for disease control in short rotation coppice willow.

**Publisher**

New York Centre for Forestry Research and Development

**Place**

Syracuse

**Date**

1998

**Source**

Enhancing the Productivity and Sustainability of Short-Rotation Salicaceae. Proceedings of a conference Jointly sponsored by the International Energy Agency, International Union of Forest Research Organisations and SUNY College of Environmental Science and Forestry August 5-8, 1998 Syracuse, New York, USA. (Compiled by T.A. Volk; H.B. Shaw & C.M. Westfall)

**Key Word**

clones

forest health

disease

short rotation coppice

mixtures

rust

fungal diseases

willow

Salix

breeding

**Abstract**

A trial was established in Castlearchdale, County Fermanagh as part of a programme to select clonal mixtures aimed at reducing the impact of *Melampsora epitea* var. *epitea* on short rotation willow coppice grown for energy production. Twenty clones were selected for the trial and records kept at 14 day intervals, from establishment, of rust infection and development throughout the growing season and also of survival and clonal vigour. These records demonstrated that there was a reduction in disease levels for medium/high levels of rust when when the affected clone was included in a mixture. The effects of mixtures on yield was also recorded and when 5 or 10 clones were included in a mixture there was a positive yield response.

**Page**

pp 28-32

**Location**

DANI Plant Breeding Station, Loughgall

**Notes**

includes graphs, tables, bibliographical references

**Address of author**

Northern Ireland Horticultural and Plant Breeding Station, Department of Agriculture for Northern Ireland, Loughgall, N. Ireland BT61 8JA, UK

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, N. Ireland BT5PX, UK

---

**Number**

1763

**Author**

McCracken, A.R.\*

Dawson, W.M.\*\*

Royle, D.J.

**Title**

Disease management in *Salix* grown as a renewable energy source.

**Publisher**

British Society of Plant Pathology

Society of Irish Plant Pathologists

**Place**

Belfast

**Date**

1992

**Source**

Disease Management in Relation to Changing Agricultural Practice. Newforge Lane DANI/Queen's University Belfast 7-9 April 1992.

**Key Word**

willow

*Salix*

rust

*Melampsora*

forest health

disease

fungal diseases

short rotation coppice

**Abstract**

Willow (*Salix* spp.) has considerable potential as a short rotation coppice crop, particularly as a source of renewable energy. Diseases, especially rusts, are a major limitation to the growth of several clones. Two species of rust have been identified. *Melampsora epitea* var. *epitea* and *M. caprearum*. *Melampsora epitea* var. *epitea* is the most common with up to eight pathovars being present in the rust population. Rust has a large effect on the growth and yield of susceptible clones. While the disease can be controlled using chemicals, this approach is unacceptable. Alternative methods of control include growing willows in poly-clonal stands to reduce the build-up of the the pathogen during the growing season. A hyperparasitic anatonist has been found associated with rust pustules on some clones.

**Page**

pp 118- 123

**Location**

Dani Plant Breeding Station, Loughgall

**Notes**

includes tables, photos., bibliographical references

**Address of author**

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Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, N. Ireland BT5PX, UK

---

**Number**

1764

**Author**

Dawson, M.

**Title**

A small scale gasifier-based combined heat and power station.

**Publisher**

Harwell Laboratory

**Place**

Oxfordshire

**Date**

1993

**Source**

Wood fuel: a new business opportunity. (Edited by G.E. Richards)

**Key Word**

energy

willow

short rotation coppice

fuel

**Abstract**

Research work on short rotation willow coppice began at the Northern Ireland Horticultural and Plant Breeding Station in 1974 and as a normal development of this work the first of three large scale semi-commercial plots were established in 1987. A total of 10.0 ha was planted in three consecutive years at the Department of Agriculture's Grassland Experimental Centre at Castle Archdale, County Fermanagh. This area was established under contract to the then Department of Energy's Energy Technology Support Unit. Each site was a minimum of 3.0 ha and harvesting was scheduled on a three year cycle and from previous work it was estimated that a minimum of 72 tonnes of dry matter would be harvested annually from 1990 onwards.

In the situation where these large scale plots were being grown it was a high priority that some practical end use should be found for the product. From the beginning of the programme this area of utilisation had been considered a priority area for investigation and various options had been investigated including direct combustion. Since experience with direct combustion had been obtained and prohibitive capital costs were reported of its application in small scale combined heat and power systems gasification allied to electricity generation was identified as a potential conversion technology. A 100kW (e) downdraught gasifier system linked to a dual fuel gas/diesel engine and induction generator is described. Firstly wood chip quality produced a materials flow problem leading to erratic operation and uneven gasflow. This problem has been analysed and solutions proposed. Secondly an increasing pressure drop across the combustion zone resulted in reduced gas flow and lower reaction temperatures. This has necessitated a re-design of the aspirating fan for the gasifier and data is presented indicating a successful resolution of this problem.

**Page**

pp 137-142

**Location**

DANI, Loughgall

**ISBN**

0705816899

**Notes**

includes ill.

**Address of author**

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, N. Ireland BT5PX, UK

---

**Number**

1765

**Author**

Rice, B.\*

Bulfin, M.\*\*

Frohlich, A.\*

Kent, T.\*\*

Lenehan, J.J.\*\*\*

**Title**

Biomass-energy systems in Ireland: opportunities and experience to date.

**Publisher**

Teagasc

**Place**

Dublin

**Date**

1996

**Source**

Proceedings of the Workshop on Energy from Biomass and Wastes. Dublin Castle, Ireland, 5-7 December, 1995. (Edited by J.I. Burke, B. Rice)

**Key Word**

biomass

energy

short rotation forestry

fuel

**Abstract**

A number of potential systems for the conversion of agricultural crops, by-products or wastes to fuel in the form of liquid, solid or gas, or electricity are examined. Conventional forestry, saw-milling residues and short-rotation forestry could be burned to meet local heating needs, to generate electricity, or in CHP plants to supply both heat and electricity. Miscanthus may be attractive for this purpose given its high dry matter yields, but little is known to date about its moisture at harvest or the problems of storing/drying to meet a year-round demand.

**Page**

pp 11-32

**Address of author**

\*Teagasc, Oak Park Research Centre, Carlow, Ireland

\*\*Teagasc, Kinsealy Research Centre, Malahide Rd., Dublin 17

\*\*\*Teagasc, Grange Research Centre, Co. Meath

---

**Number**

1766

**Author**

Dawson, W.M.

**Title**

The potential of small scale biomass electricity systems.

**Publisher**

Teagasc

**Place**

Dublin

**Date**

1996

**Source**

Proceedings of the Workshop on Energy from Biomass and Wastes. Dublin Castle, Ireland, 5-7 December, 1995. (Edited by J.I. Burke, B. Rice)

**Key Word**

willow

short rotation coppice

energy

biomass

fuel

**Abstract**

The background to the establishment, in the early 1970s, of production oriented research into short willow coppice as a potential renewable energy crop is described. A number of factors, including the small average farm size in Northern Ireland, influenced the decision that commercial development of short rotation coppice would be directed towards small scale dispersed generation for local community use rather than larger units aimed at base load, national grid integration. The process of gasification and the system of gasification installed as part of this project are described. Problems encountered, including fuel flow, are outlined. Three further areas of development are identified: refractory lining of the gasifier hearth to improve efficiency; the conversion of the plant to a continuously fed system; and, elimination of engine knock.

**Page**

pp 176-184

**Notes**

includes ill.

**Address of author**

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, N. Ireland BT5PX, UK

---

**Number**

1767

**Author**

Dawson, Malcolm.

**Title**

Short rotation coppice willow - R & D in Northern Ireland.

**Publisher**

Forestry Commission

**Place**

Edinburg

**Date**

2000

**Source**

Short Rotation Coppice and Wood Fuel Symposium: From Research to Renewable Energy. (Edited by Alan Armstrong, Jenny Claridge)

**Key Word**

biomass

energy crops

short rotation coppice

willow

Salix

fuel

**Abstract**

The background to the establishment of a research programme investigated in the production of energy from short rotation willow coppice biomass is described. The various stages are listed and described as follows: land preparation; species selection; varietal selection and planting density evaluation; and, harvesting interval evaluation. Present research and development comprises the the following issues: varietal selection and evaluation; diseases of willow, particularly foliar rust; fertilisation and nutrient cycling; and utilisation. A number of developments associated with environmental issues, on which future research will be focused, are identified. These are: varietal selection; pests and diseases of willow; fertilisation and nutrient cycling; bioremediation; and, utilisation.

**Page**

pp 85-88

**Location**

DANI, Loughgall

**ISBN**

0855384131

**Address of author**

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, N. Ireland BT5PX, UK

---

**Number**

1768

**Author**

Western Region Energy Agency and Network

**Title**

Bio-energy in the rural economy of the border areas. Energy Challenge feasibility study report.

**Publisher**

Western Region Energy Agency and Network

**Place**

Belfast

**Date**

1996

**Key Word**

energy crops

willow

Salix

short rotation coppice

electricity production

agriculture

land use

European Union

farm forestry

**Abstract**

The study's objective was to investigate the complementary contribution that the production and conversion of short rotation coppice willow, as renewable energy source, has to offer agriculture and the small community based factory unit of the two contributing companies. Short rotation coppice exploits the ability of some native deciduous wood species, which have vigorous juvenile growth to resprout from harvested stumps. 10-12 dry tonnes of wood can be produced annually from a well managed coppice system, harvested on a three year cycle. On-going research within the Department of Agriculture for Northern Ireland is addressing a range of topics including nutrition, clonal selection, disease control and end product utilisation. Short rotation coppice offers the greatest potential source of renewable energy and as a carbon dioxide neutral fuel, addresses the major issue of reducing the atmospheric loading of greenhouse gases. There are a number of routes which can be considered for the conversion of short rotation willow coppice wood chip into useable heat and electrical energy. This study focuses on small scale downdraft gasification for combined heat and power systems. The purpose was to identify the financial benefits a 100kW (e) heat and power system would confer on the various energy use profiles across the range of sites. A wide range of factors will influence the productivity of short rotation coppice in the study area, but set-aside offers the most immediate opportunity for economic success for this crop. When establishment and production costs were computed and the capital and running costs included, generation costs ranging from 9.48 p/kW to 10.86 p/kW emerged from the model. Significant reductions in electrical unit costs can be achieved with extended operating hours.

**Page**

85pp

**Location**

DANI, Loughgall

**Notes**

includes tables, graphs, maps

---

**Number**

1769

**Author**

Dumbleton, F.J.

**Title**

A study of the costs of electricity generation from willow coppice. Final Report Contract No. RYSE 18856002.

**Publisher**

Department of Agriculture Northern Ireland

**Place**

Belfast

**Date**

1996

**Key Word**

short rotation coppice

willow

Salix

energy crops

agriculture

electricity production

**Abstract**

This report for the Department of Agriculture Northern Ireland provides estimates of the costs of generating electricity from short rotation willow coppice using the RECAP computer model. Wood fuelled gasifier

technology at four scales of operation, 100kWe, 1 MWe, 5 MWe and 10 MWe, were chosen by DANI for this study, as were 8 and 15% rates of return on capital for the power generation projects. The cost estimates are broken down to give capital costs and costs per kWhr for major cost items. Equipment running hours and annual fuel consumptions are also given. A discount rate of 8% is used for all agricultural equipment and buildings. The results from this project show that improvements in technologies for fuel production and conversion to electricity will produce significant reductions in the cost of electricity generated from willow coppice in the near future.

**Page**

25pp

**Location**

DANI, Loughgall

**Notes**

includes tables; Report to the Department of Agriculture for Northern Ireland

---

**Number**

1770

**Author**

Dawson, W.M.

**Title**

Short rotation coppice willow: the Northern Ireland experience.

**Publisher**

Institute of Chartered Foresters

**Place**

Edinburg

**Date**

1991

**Source**

Wood for Energy: the Implications for Harvesting, Utilisation and Marketing. Proceedings - 1991 Discussion Meeting Heriot-Watt University, Edinburgh 5-7 April 1991.

**Key Word**

short rotation coppice

willow

salix burjatica

rust

Melampsora

cloning

disease

forest health

forest pathogens

**Abstract**

The background to a short rotation willow coppice system is described where annual yields of 14.6 t per ha. dry matter were obtained from *Salix burjatica* planted at a density of 20,000 per ha. and harvested on a three year cycle. Problems with a foliar rust disease (*Melampsora* sp.) were encountered and alternative disease control strategies are being developed. These depend on the evaluation of a wide range of clonal material selecting among other parameters for disease susceptibility thereby broadening the genetic base tested and found suitable for coppice production. In addition, selected clones will be used in mixed clonal plantings to reduce selection pressure on the disease. Initial investigations have given promising results with mixed clonal stands producing 12.6 t per ha. dry matter annually compared with a mean of 7.75 t per ha. dry matter for the clones grown as monoclonal stands. From the outset it has been recognised that end-product utilisation studies are basic to realising the land use opportunity presented by short rotation coppice. Combustion and fractionation alternatives are discussed.

**Page**

pp 235-247Ap

**Location**

DANI, Loughgall

**ISBN**

0907284140

**Notes**

includes tables, bibliographical references

**Address of author**

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, N. Ireland BT5PX, UK

---

**Number**

1771

**Author**

Dawson, W.M.

**Title**

The social, environmental and economics value of short rotation coppice willow (*Salix*) as an energy crop.

**Publisher**

Bios Scientific Publishers

**Place**

Oxford

**Date**

1999

**Source**

Farm Woodlands for the Future. Papers presented at the conference 'Farm Woodlands for the Future', Cranfield University, Silsoe, Bedfordshire, UK 8-10 September 1999.

**Key Word**

short rotation coppice

energy crops

economics

willow

*Salix*

environment

**Abstract**

The production and use of energy from short rotation coppice willow is described in the context of small farms with a declining farm income and where conventional production is largely from dairying, beef and sheep production. The appropriate technology for the conversion of the willow crop is small-scale (100-250 kW of electricity capacity) downdraft gasification. The development of dispersed generation facilities, as combined heat and power units, is particularly appropriate in Northern Ireland.

Costs are presented from the establishment of coppice plantations and for the production of energy at farm level.

The energy generation costs emphasise the importance of maximising generation time. Even where these parameters are optimised, costs for generated power are only marginally economic and there is a need to consider dual uses for established coppice to offset production costs. In this context the use of the coppice in the bioremediation of municipal waste water from water treatment works or in the management of leachate from a landfill site is examined. Here the production of energy is secondary to the primary aim of treating waste water with high concentrations of nitrates and phosphates and potentially containing heavy metals.

**Page**

pp 151-160

**Location**

DANI, Loughgall

**ISBN**

1859961339

**Notes**

includes tables, bibliographical references

**Address of author**

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, N. Ireland BT5PX, UK

---

**Number**

1772

**Author**

Dawson, W.M.

**Title**

The potential of small-scale biomass electricity systems.

**Publisher**

Association of Applied Biologists

**Series**

Aspects of Applied Biology 49, 1997

**Date**

1997

**Source**

Biomass and Energy Crops. 7-8 April 1997 Royal Agricultural College, Cirencester.

**Key Word**

short rotation coppice

willow

Salix

energy crops

agriculture

gasification

**Abstract**

Short rotation coppice willow as a renewable source of energy offers a viable alternative crop on land no longer required for food production within the EU and as a carbon dioxide neutral energy source also addresses the global issue of stabilising CO<sub>2</sub> emissions. The development of a small scale combined heat and power plant using downdraft gasification and its deployment is described from installation through to commercialiation. Future opportunities within a rurally based manufacturing industry in Northern Ireland are also addressed.

**Page**

pp 423-435

**Location**

DANI, Loughgall

**Notes**

includes diagrams, bibliographical references

**Address of author**

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, N. Ireland BT5PX, UK

---

**Number**

1773

**Author**

McCracken, A.R.\*

Dawson, M.\*\*

**Title**

The effect of *Melampsora* sp. rust on the growth and development of *Salix* in Northern Ireland.

**Publisher**

Instituut voor Bosbouw en Wildbeheer

**Place**

Geraardsberge, BL

**Date**

1990

**Source**

Joint Meeting of the I.E.A. - Task 5 Activity Groups on Exchange of Genetic Material Joint Trials of *Alnus*, *Populus* and *Salix* Pest/Disease Management September 11-14 1990 Poplar Research Center, Geraardsbergen, Belgium.

**Key Word**

*Melampsora*

rust

fungal diseases

short rotation coppice

willow

*Salix*

forest health  
forest pathogens

**Abstract**

This paper describes an attempt to quantify the effect of rust on coppiced willow in Northern Ireland and to compare its activity on a range of clones currently being grown in the region. A number of fungicide treatment trials are described. The results of the experiment showed that effectiveness of the chemicals used in reducing rust depended to a large extent on weather. The various methods used to detect the amount of rust are described. In the second experiment differences in the appearance and behaviours of the pathogen on different clones were examined.

The effect of rust on growth, yield and development of willow is difficult to quantify. For instance, with some clones leaf loss is indicative of damage caused by the disease, while other clones recover fully from leaf loss and suffer no long-term effects. Some clones endure heavy leaf loss with light infections, while others suffer minimal leaf loss.

Assessment of rust levels also causes difficulties as the rust load on an individual shoot can change drastically in a short time.

**Page**

pp 15-26

**Location**

DANI, Loughgall

**Notes**

includes graphs, tables, bibliographical references

**Address of author**

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---

**Number**

1774

**Author**

Dawson, W.M.

**Title**

Plantation design in short rotation coppice.

**Publisher**

United Kingdom. Department of Trade & Industry

**Date**

1994

**Source**

Wood Fuel - the Green Debate. 18/19 October 1994. The Old Palace, Hatfield

**Key Word**

short rotation coppice

willow

Salix

plantation design

farm forestry

European Union

landscape

environment

forest health

forest pathogens

**Abstract**

Environmental considerations and the reluctance to allow large areas of land to be taken out of agricultural production will have a significant impact on the development of short rotation willow coppice as a major farm crop. The design of new plantations needs to consider its relation to topography, enclosure patterns and existing land use, the location of the coppice within the farm structure, and technical considerations such as access, mixtures and the application of fertilisers. Short rotation coppice has more similarities with arable cropping than with conventional forestry and will therefore have a less drastic impact on the landscape. Access is an important consideration, and areas of significant flora and fauna should not be planted. Excessive use of

fertiliser should be avoided. The major design considerations at the individual plantation level are density of planting, headlands/rides, and the use of mixture to lessen vulnerability to pest and disease attack.

**Page**

5pp

**Location**

DANI, Loughgall

**Address of author**

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---

**Number**

1775

**Author**

McCracken, A.R.\*

Dawson, W.M.\*\*

**Title**

Short rotation coppice willow in Northern Ireland since 1973: development of the use of mixtures in the control of foliar rust (*Melampsora* spp.)

**Date**

1998

**Source**

European Journal of Forest Pathology

**Volume**

Vol. 28

**Key Word**

short rotation coppice

willow

fungal diseases

forest pathogens

forest health

*Melampsora*

rust

mixtures

**Abstract**

A review is given of the use of clonal mixtures in the development of disease control strategies in short rotation coppice willow in Northern Ireland. *Salix burjatica* 'Korso' had been grown successfully for over 10 years when, in 1985, *Melampsora epitea* var. *epitea* caused serious problems. Although fungicides were effective, their use was not practical for environmental and economic reasons. Therefore in 1987 large scale field experiments were initiated to investigate the use of clonal mixtures as a disease control strategy. Increased yields were consistently recorded from mixed stands when compared to either the mean yield of component clones or the individual yields of any of the component clones grown in monoculture. Part of this increased yield was due to a reduction in the impact of rust disease. Investigations are currently being conducted on the effect of number of clones within a mixture, the best clones to use and the optimum planting density. It is essential that there is a range of susceptibilities to *M. epitea* var. *epitea* pathotypes within the components of the mixture.

**Page**

pp 241-350

**Notes**

includes tables, graphs, bibliographical references

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---

**Number**

1776

**Author**

Dawson, Malcolm

**Title**

Some aspects of the development of short-rotation coppice willow for biomass in Northern Ireland.

**Publisher**

Royal Society of Edinburgh

**Place**

Edinburgh

**Date**

1992

**Source**

Proceedings of the Royal Society of Edinburgh

**Volume**

Vol. 99B

**Key Word**

short rotation coppice

willow

Salix

energy crops

forest health

forest pathogens

rust

fungal diseases

biomass production

gasification

**Abstract**

Work on short-rotation coppice as an alternative and renewable energy source began in Northern Ireland in the mid-1970s, prompted by the massive rise in oils prices during the period. Although in the short run oil prices have dropped in real terms, interest in short rotation coppice willow has been sustained because of the potential role it has in the development of agriculture, particularly in marginal areas. This is particularly relevant in the current situation of over production of a wide range of agricultural commodities within the European Community and the moves to reduce Government support in the form of farm and export subsidies. Although Salix cultivars have yielded in excess of 30 tonnes dry matter per ha. annually under experimental conditions, it is considered that 10-12 tonnes dry matter per ha. is a sustainable commercial yield. Melampsora spp. rust has emerged as one of the most important factors limiting the development of fungicide for rust control is not a possibility. Consequently, other disease control strategies have to be established. The main focus of this work is in the selection, for suitability for coppice application, of the widening range of genetic material becoming available from breeding programmes in Canada, Sweden and Finland with a view to their incorporation into mixed stands.

End product utilisation is considered a priority area for investigation if short-rotation-coppice is to make a contribution to land use and the development of agriculture in marginal areas. Currently two potential end uses are being investigated: firstly fractionation - to produce cellulose for paper manufacture, hemi-cellulose for the production of molasses and lignin for further processing in other industrial chemicals, and secondly the simultaneous generation of heat and power using gasification - 'combined heat and power.'

**Page**

pp 193-205

**Location**

DANI, Loughall (copy of paper)

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast, N. Ireland BT5PX, UK

---

**Number**

1777

**Author**

Dawson, Malcolm

**Title**

The operation of downdraught gasifier using short rotation coppice willow.

**Publisher**

Royal Agricultural Society of England

**Date**

1995

**Source**

Proceedings from Coppice - Looking Beyond Setaside. 25th October 1994 at the Conference Hall, National Agricultural Centre, Stoneleigh Park, Warwickshire.

**Key Word**

gasifier

biomass production

short rotation coppice

willow

energy crops

**Abstract**

This paper provides an overview of the workings of the Lovain-Martin downdraught gasifier based combined heat and power plant at Enniskillen. The process of gasification is explained the Lovain-Martin gasifier described. An account is provided of the installation and use of the gasifier and the type of problems encountered, those associated with the fuel and its characteristics and those associated with the operation of the plant.

**Page**

5pp

**Location**

DANI, Loughgall

**Notes**

includes diagram

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---

**Number**

1778

**Author**

Dawon, W.M.\*

McCracken, A.

**Title**

The effects of planting polyclonal stands on growth and disease development in the production of energy from short rotation willow coppice.

**Date**

1993

**Source**

International Energy Agency Task VIII Workshop 15-19 September 1992 Eniskillen, Northern Ireland. (Edited by W.M. Dawson & A.R. McCracken)

**Key Word**

biomass production

coppice

willow

short rotation coppice

short rotation coppice

land use

**Abstract**

Growing willow in mixed or polyclonal stands can result in significant increases in growth and dry matter yield. One of the factors contributing to these increases is the effect of reducing the onset, build up and impact of disease. The purpose of the experiments described here was to quantify the effect of polyclonal plantings on growth, yield and disease in large scale willow coppice plantings on two sites. The results of the experiments showed that all clones increased growth and dry matter yield when grown in polyclonal plots. In polyclonal

plots disease was recorded later than in monoclonal plots. Disease build up, as measured by % leaf infection, was more rapid in monocultural plots in the early parts of the season, at which stage, leaf fall produced an apparent reduction in disease levels.

**Page**

pp 1-5

**Location**

DANI, Loughgall

**Notes**

includes tables, graphs, bibliographical references

**Address of author**

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---

**Number**

1779

**Author**

Dawson, W.M.\*

McCracken, A.R.\*\*

**Title**

The performance of polyclonal stands in short rotation coppice willow for energy production.

**Publisher**

Elsevier

**Date**

1995

**Source**

Biomass and Bioenergy

**Volume**

Vol. 8, No. 1

**Key Word**

polyclonal stands

mixtures

short rotation coppice

energy crops

willow

biomass production

yield

**Abstract**

The benefits of growing *Salix* spp. as a short rotation coppice in polyclonal (mixed) stands as compared to monoclonal stands are described. Increased yields are obtained from the polyclonal stands when compared to either the mean yield of component clones or the individual yields of any of the component clones grown in monoculture. Different component clones contribute different degrees to the increased yield. *Salix viminalis* Bowles Hybrid and *S. Burjatica* Germany showed the greatest positive response. In contrast, *S. dasyclados* performed poorly in polyclonal stands, both in stool survival and in growth of individual shoots. Some of the reasons for the improved growth in polyclonal plots and their practical benefits are discussed and recommendations made.

**Page**

pp 1-5

**Location**

DANI, Loughgall (copy of paper)

**Notes**

includes photo., graphs, bibliographical references

**Address of author**

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---

**Number**

1780

**Author**

McCracken, Alistair R.\*

Dawson, Malcolm\*\*

**Title**

Clonal mixtures of Salix - a control measure for rust.

**Date**

1996

**Source**

BIOENERGY '96 - The Seventh National Bioenergy Conference: Partnerships to Develop and Apply Biomass Technologies, September 15-20, 1996.

**Key Word**

short rotation coppice

**Abstract**

Willow grown in short rotation coppice can be used as a renewable energy source. However, disease caused by *Melampsora epitea* var. *epitea* can be a severely limiting factor on its productivity. Populations of this pathogen in N. Ireland have been shown to be composed of at least fourteen pathogens. Pathotype composition was influenced by time, age and clone. Fungicides were unacceptable to control disease, therefore the use of clonal mixtures was employed as an alternative strategy. When grown in mixtures the onset of disease was delayed, its build up slowed and final levels reduced. This was reflected in increased yield. Current work investigating the effect of planting density and increasing mixture density indicates that neither have a major impact on disease.

**Page**

pp 530-537

**Location**

DANI, Loughgall (copy of paper)

**Notes**

includes graphs, tables, bibliographical references

**Address of author**

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**Number**

1781

**Author**

McCracken, A.R.\*

Dawson, W.M.

**Title**Interaction of Willow (*Salix*) clones growing in mixtures**Publisher**

Association of Applied Biologists

**Date**

1998

**Source**Tests of Agrochemicals and Cultivars, No. 19 (edited by R. Kennedy). A supplement of *Annals of Applied Biology* Vol.132**Key Word**

short rotation coppice

**Abstract**

Many willow clones now been grown in short rotation coppice are susceptible to a disease caused by *Melampsora epitea* var. *epitea*. This paper describes an assessment of a disease control strategy using clonal mixtures. The results of the experiment show that, along with greater resistance to disease, mixing clones also

has a significant impact on vigour.

**Page**

pp 54-55

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**Number**

1782

**Author**

Coillte Research & Development

**Title**

Effect of plant size on field performance of Douglas fir, Japanese larch and ash.

**Publisher**

Coillte Research & Development

**Place**

Newtownmountkennedy

**Series**

Research Update No. 2

**Date**

1999

**Source**

Making Headway with Forest Research

**Key Word**

plant size

nursery practice

Douglas fir

Japanese larch

ash

silviculture

growth

**Abstract**

The objective of this study was to identify the correct size of planting stock for Japanese larch, Douglas fir and ash to maximise growth and survival in the forest. The plants chosen for the study were all grown at the Coillte nursery in Ballintemple and planted in typical afforestation sites. The overall conclusion from these trials is that when plants are graded into size classes from within the normal range of plants produced by nurseries, there is little difference in growth and survival in the field for the various size classes for all the species tested.

**Page**

4pp

**Notes**

includes tables

**Address of author**

Coillte Research & Development, Newtownmountkennedy, Co. Wicklow

---

**Number**

1783

**Author**

Coillte Research & Development

**Title**

Sitka spruce planting stock: does size make a difference?

**Publisher**

Coillte Research & Development

**Place**

Newtownmountkennedy

**Series**

Research Update No. 1

**Date**

1999

**Source**

Making Headway with Forest Research

**Key Word**

Sitka spruce

Picea sitchensis

plant size

growth

nursery practice

silviculture

**Abstract**

This study was designed to test the growth and survival on three typical afforestation sites of Sitka graded into a number of size classes. The study also examined survival and growth of the various classes 'hot planted' in early January after cold storage planted in May. The study concluded that the size of Sitka spruce has little effect on the survival or growth of plants in the field. The exception is on harsh sites where plants over 60 cm tall and those 20-30 cm tall have poorer survival.

**Page**

2pp

**Notes**

includes tables, graph

**Address of author**

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---

**Number**

1784

**Author**

Coillte Research & Development

**Title**

Forest health study: tree crown damage will below European average.

**Publisher**

Coillte Research & Development

**Place**

Newtownmountkennedy

**Series**

Information Note No. 19

**Date**

1999

**Source**

Making Headway with Forest Research

**Key Word**

forest health

forest pathogens

disease

crown condition

defoliation

discolouration

Sitka spruce

Picea sitchensis

Norway spruce

Picea abies

lodgepole pine

pinus contorta

**Abstract**

Crown condition is measured in this survey in terms of the level of defoliation and discolouration observed in

the crowns of 441 trees distributed throughout 22 plots in Ireland. Mean percent defoliation and discolouration in the 1998 survey was 15.4% and 5.0% respectively. This represents a disimprovement of greater than two percent points for both defoliation and discolouration, between the 1997 and 1998 surveys. For the three species represented in the survey (Sitka spruce, Norway spruce and lodgepole pine), Norway spruce had the greatest defoliant levels, while discolouration was greatest in Sitka spruce. Exposure was the greatest single cause of damage, which is consistent with observations made in most years of the survey. There was a considerable increase in instances of observed aphid damage in the 1998 survey, up from 1% of trees affected in the 1997 survey, to greater than 14% in the 1998 survey. Damage due to air pollution was not recorded on any tree in the survey. A discussion of results between 1989 and 1998 is also presented in this information note. Defoliation and discolouration scores in the 1998 survey were lower than in the 10-year average between 1989 and 1998.

**Page**

4pp

**Location**

Coillte library

**Notes**

includes maps, graphs

**Address of author**

Coillte Research & Technology, Newtownmountkennedy, Co. Wicklow

---

**Number**

1785

**Author**

Smith, Elaine

**Title**

The selection of dyes capable of bonding with the fresh wood of Sitka spruce to provide verification of stump treatment with Urea against *Heterobasidion annosum* (Fr.) Bref.

**Date**

1998

**Key Word**

Sitka spruce

*Picea sitchensis*

stump treatment

fungicides

silviculture

fungus

*Heterobasidion annosum* (Fr.)

dye

treatment detection

fungal diseases

**Abstract**

The objective of this study was to find a suitable replacement dye for Rhodamine Red, which has been used to check whether stumps have been treated with urea. Ten potentially suitable candidate dyes were selected for testing at four concentrations ranging from 0.01% to 1%. These ten dyes belonged to two groups of dyes, five acid dyes and five basic dyes. The first set of tests, carried out in the laboratory on malt agar, established that none of the dyes, at any of the concentrations tested, interfered with the inhibitions of 20% urea upon the growth of *H. annosum*. Field durability trials determined that basic dyes were highly visible at both high (1%) and low (0.01%) concentrations, while acid dyes were only visible at high concentrations. The basic dyes remained visible on stumps for at least thirty days after application. The durability of dyes under wet conditions was determined from simulated rainfall trials. In these trials, Sitka spruce (*Picea sitchensis* (Bong.) Carr.) discs were treated with a 20% solution of urea and dye. Under the first simulated showering test the tree discs were painted before being exposed to heavy simulated rainfall. In the second test, the discs were painted during showering. Only dye/concentration combinations which were visible following the field durability tests were included in these trials. The findings of these trials were that only four dyes were visible following the second of these showering trials. These four dyes were all basic dyes and are recommended for use in stump treatment, at 0.01% concentration. Acid dyes may remain visible at higher concentrations and under less stringent testing conditions. The use of acid dyes may be favoured in the future should a problem arise over the use of basic dyes.

**Page**

x, 158pp

**Location**

Department of Forestry, UCD

**Notes**

available; thesis submitted to National University of Ireland for award of degree of Master of Science (Agriculture); includes tables, photos

**Thesis**

M. Ag. Sc., University College Dublin, 1999

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**Number**

1786

**Author**

Thompson, D.G.

Pfeifer, A.R.

**Title**

Sitka spruce IUFRO Provenance Trial - 19 year Irish results.

**Publisher**

IUFRO

**Date**

1995

**Source**

Joint Meeting of the IUFRO Working Parties S2.02.05, 06, 12 and 14 (Douglas-fir, Pinus contorta, Sitka spruce and Abies). Evolution of breeding strategies for conifers from the Pacific Northwest. Limoges (France), August 1-4, 1995.

**Key Word**

Sitka spruce

Provenance

stem form

top height

Picea sitchensis

**Abstract**

In 1975 a series of Sitka spruce provenance trials including 67 provenances covering the entire species distribution was established throughout Ireland. In the winter of 1993-94 selected provenances in 6 of the trials were measured. The results demonstrate that more southerly provenances of southern Washington and northern Oregon are the most productive for use under Irish conditions. Southern Oregon provenances are even more productive, but further testing on a larger-scale is necessary before recommendations can be made on the use of this material. These results substantiate the conclusions drawn from measurements made when these trials were 9 years old. The use of southern Washington and northern Oregon provenances produce at least 15% greater volume than the widely used QCI provenance.

**Page**

6pp

**Location**

Coillte library

**Notes**

includes bibliographical references

**Address of author**

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