

In our Contemporaries

N.Z. Tree Grower

TIMBER PRODUCTION FROM SHELTERBELTS — GETTING STARTED TWO DESIGN AND MANAGEMENT OPTIONS

Jeff Tombleson, Forest Research
Institute, Vol. 6 No. 3 1985

This article describes two suggested shelter patterns and management regimes designed to combine efficient shelter with profitable timber production. Both involve the use of widely spaced single row *P. radiata* (preferably from cuttings) with a second shelter row of an alternative species (preferably an alternative genus). Mechanical trimming, fan pruning and internode pruning are discussed and sample budgets are given. The author concludes that management for shelter need not compromise timber quality and returns.

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NEW HYBRID CYPRESSES EVALUATED

J.W. Sturrock, P.W. Smail and R. Vickers
Vol. 7 No. 4 1986

Six clones of Leyland cypress (x *Cupressocyparis leylandii*) and clones from two other hybrid cypresses (x *C. ovensii* and x *C. notabilis*) were planted in replicated trials on eight sites in the South Island in 1983, as part of a programme to evaluate promising tree species for shelter. This paper summarizes the early results and discusses the aims of and expectations from future monitoring of the trials.

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N.Z. Journal of Ecology

POPULATIONS OF *BEILSCHMIEDIA TAWA* IN LOGGED AND VIRGIN STANDS AT PUREORA FOREST

C.J. West
DSIR, Botany Division, Vol. 9 1986

The response of residual tawa following logging at different intensities is shown in relation to the growth of tawa within a virgin

stand of forest. Factors influencing growth rates of tawa are investigated and an age-size relationship for tawa is discussed. Demography of tawa at Pureora Forest is also outlined and the "strategy" of tawa is discussed. Finally, the suitability of tawa for sustained-yield management is discussed.

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RIMU - UBIQUITOUS PODOCARP OF NEW ZEALAND'S LOWLAND FOREST. ASPECTS OF ITS EVOLUTIONARY HISTORY AND CONSEQUENT PHYSIOLOGY AND ECOLOGY

W.M. McEwen
Biological Resources Centre, DSIR,
Vol. 9, 1986

Rimu or its morphologically similar ancestor has grown in what is now New Zealand for many millions of years. During that time the country has undergone many changes in size, configuration and climate. In post Pleistocene pollen assemblages abundant rimu pollen is used as an indicator of warmer climatic periods. The 15 other species of the genus which are closely related to rimu all have present-day distributions in tropical or sub-tropical climates.

Rimu survived the Pleistocene ice ages in refugia, presumably in the north of the country, but has evolved some degree of cold tolerance and today is the most widespread of all indigenous tall forest trees. It occurs throughout the country in lowland areas from latitude 34°S to 46°S and grows in a large number of different forest types, being dominant in many of them.

In this paper some aspects of the physiology of rimu seedling growth are discussed in relation to the evolutionary history and present-day ecology of the species.

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DRY MATTER AND NUTRIENT RELATIONSHIP IN STANDS OF *PINUS RADIATA*

H.I.A. Madgwick
Forest Research Institute, Vol. 9 1986

Published and unpublished data on the

weights and nutrient content of the trees and litterfall in stands of *P. radiata* will be summarized. The 102 observations of tree weight data cover a wide range of silvicultural treatments. The 42 observations of litterfall cover a wider range of stand age and most of these data sets include nutrient data.

Needle mass can attain 15 t/ha in stands four to eight years old but then drops to about 10 t/ha in older stands. Total branch mass is related to stand height in unmanaged stands. Stem mass can be readily estimated from conventional stand measurements. Needle litterfall averaged 3.2 t/ha/yr and total litterfall, 4.0 t/ha/yr.

Total nutrient mass in the various ecosystem components was more variable than nutrient concentrations.

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MOUNTAINLAND MANAGEMENT

A. Cunningham
Mountainland Consultant, Vol. 9 1986

Life in the mountainlands is harsh for plants and animals alike. Storms are common and plant growth rates are slow. Ecosystems in New Zealand mountains are more fragile than they at first appear, and are vulnerable to the influence of man and to introduced animals. The mountains are being used, with increasing intensity, by hunters, trappers, tourists, campers, rafters, canoeists, fishermen, and a variety of commercial interests. Our mountains are also hosts to introduced animals, birds, and fish which are in competition with the indigenous flora and fauna. Not all mountainland is owned by the State. Some is Maori land and much is leased by runholders. Each group of people tends to see only their own interest in the mountains. The mountainland manager on the other hand must have a sound knowledge of all the ecological processes occurring in his territory. While giving first priority to the protection of ecosystems he must try, unobtrusively, to accommodate the various needs of mountainland users. To offset the impact of man and of introduced animals, quite stringent measures may sometimes be necessary to ensure the preservation of indigenous mountainland flora and fauna. Public participation is an important part of such management.

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OF THE WAPITI AREA OF FIORDLAND (1969-1984)

G. Nugent.
Forest Research Institute, Vol. 9 1986,
Christchurch.

Three pellet surveys conducted in 1969, 1975 and 1984 showed an estimated 85% decline in deer density since the advent of aerial hunting. Use of the open tops above the forest zone have declined to near zero, while within the forest deer densities have dropped by 70%. Highest deer densities remain in areas with the smallest proportion of open tops.

Within the forest the reduction has been greatest in the upper forest, and secondly, in the valley bottom. The initially least-used mid-forest zone has had the least reduction. Of the major forest types, the seral associations are most preferred by deer. As deer numbers have been reduced, deer usage appears to have become more concentrated in these forest types. A comparison of high and low deer density areas in 1984 also showed this greater concentration of use in favoured sites. The reduction in deer density has thus been least marked in the areas most critical in forest succession.

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N.Z. Journal of Ecology

WIND DAMAGE AS AN ECOLOGICAL PROCESS IN MOUNTAIN BEECH FORESTS OF CANTERBURY NEW ZEALAND

G.T. Jane
New Zealand Forest Service,
P.O. Box 25022, Christchurch

Summary: Sites in four areas of Canterbury, New Zealand were examined to determine the principal factors influencing wind damage, and study sites at two areas were used to investigate forest age-class structure and stand dynamics. At all sites large-scale topographic features funnelled storm winds to produce recurrent damage, and smaller-scale topographic features determined precise points affected by wind damage.

Lee slopes provide shelter to susceptible sites during normal weather conditions and therefore permit better stand growth, but stand damage increases in storms. Stands on exposed windward slopes form a wind-shaped canopy which is constrained by stem breakage during minor storms.

Damage occurs in stands over a critical height of about 18m and where stem dia-

meter is large. Wind-damaged forests have restricted age distribution compared with those of partially damaged and vulnerable forests. Wind damage is little cause for concern, as it must be viewed in a framework of short-term forest stability. Periodic mortality in mountain beech forests can be seen as a regeneration strategy of a light-demanding species, since it produces ideal conditions for forest perpetuation. Forest collapse, followed by rapid massed regeneration, is thus an effective competitive mechanism against a more shade-tolerant canopy species.

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N.Z. Journal of Forestry Science

ECONOMIC ANALYSIS OF SELECTED SPECIAL- PURPOSE SPECIES REGIMES

Cavana, R.Y.; Glass, B.P. New Zealand
Journal of Forestry Science 15(2): 180-94

The economics of growing radiata pine in a small woodlot were compared with cypresses, eucalypts, Australian blackwood, and black walnut. The analysis indicated that the following real rates of return could be expected: radiata pine 4.0-9.9%; cypresses 4.0-8.0%; eucalypts 3.1-7.5%; blackwood 5.3-8.0%; black walnut 3.8-5.6%.

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RECOVERY OF CLEAR LENGTHS FROM PRUNED *PINUS RADIATA* SAWLOGS

Park, J.C. New Zealand Journal of
Forestry Science 15(2): 207-22 (1985)

Defecting produce sawn from pruned logs to make clear lengths is proposed as an alternative and complement to traditional timber grades. Results from 165 logs representing the "transition crop" demonstrate advantages in recovering specific clear lengths, quantify crosscuts and docking waste, and show that log outturn from this option is predictable.

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CAUSES OF JUVENILE INSTABILITY OF *PINUS* *RADIATA* IN NEW ZEALAND

Mason, E.G. New Zealand Journal of
Forestry Science 15(3): 263-80 (1985)

Straight-grained taproots and sinker roots

reduced the likelihood of toppling. Cultivation varied in its effect on toppling frequency because of differences in tree size, soil strength, and vertical root development.

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PERFORMANCE OF *PINUS* *RADIATA* SEEDLINGS AND CUTTINGS TO AGE 15 YEARS

Klomp, B.K.; Hong, S.O.
New Zealand Journal of Forestry Science
15(3): 281-97 (1985)

Rooted cuttings appear to have some silvicultural advantages over seedlings, such as lower stockings required at planting because of less malformation, smaller branch size, shorter pruning times, and greater uniformity of size.

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EXOTIC TREES IN THE CANTERBURY HIGH COUNTRY

Ledgard, N.J.; Belton, M.C.
New Zealand Journal of Forestry Science
15(3): 298-323 (1985)

Less than 0.1% of the 1.8 million ha region is occupied by exotic trees, the major species being Corsican pine, ponderosa pine, radiata pine, European larch, and Douglas fir. A strong rainfall gradient was found to be the major determinant of growth and, on average, could account for over 75% of the variability in wood production.

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GROWTH AND MORPHOLOGY OF SEEDLINGS AND JUVENILE CUTTINGS IN SIX POPULATIONS OF *PINUS* *RADIATA*

Burdon, R.D.; Bannister, M.H.
New Zealand Journal of Forestry Science
15(2): 123-34 (1985)

In four natural populations and two New Zealand populations of *Pinus radiata* cuttings were taken from 50-60 cm above the root collars, and compared with seedlings until nine years from planting. In all populations the cuttings showed slight but definite maturation but no impairment of growth compared with the seedlings.

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DRY MATTER CONTENT AND PRODUCTION OF CLOSE-SPACED *PINUS* *RADIATA*

Madgwick, H.A.I.; Oliver, G.R.
New Zealand Journal of Forestry Science
15(2): 135-41 (1985)

Weight and production of above-ground components were estimated between ages five and 13 years. Initial stocking was 6900 stems/ha. Maximum mean annual increment was 21 tonnes/ha/annum and current production 36 t/ha/annum. From age eight, allocation of increment shifted to stemwood production at the expense of crown and stem bark.

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DRY MATTER, ENERGY, AND NUTRIENT CONTENTS OF EIGHT-YEAR-OLD STANDS OF *EUCALYPTUS* *REGNANS*, *ACACIA* *DEALBATA*, AND *PINUS* *RADIATA* IN NEW ZEALAND

Frederick, D.J.; Madgwick, H.A.I.;
Jurgensen, M.F.; Oliver, G.R.
New Zealand Journal of Forestry Science
15(2): 142-57 (1985)

Acacia and eucalypts growing on a productive site contained about 70% more dry matter than an adjacent pine stand. The most striking difference among stands was their nitrogen economy. Compared with the pine ecosystem, the eucalypt and acacia ecosystems had accumulated about 80 and 280 kg N/ha/annum.

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DRY MATTER CONTENT AND NUTRIENT DISTRIBUTION IN AN AGE SERIES OF *EUCALYPTUS* *REGNANS* PLANTATIONS IN NEW ZEALAND

Frederick, D.J.; Madgwick, H.A.I.;
Jurgensen, M.F.; Oliver, G.R.
New Zealand Journal of Forestry Science
15(2): 158-79 (1985)

Dry matter and nutrient content were determined for the above-ground vegetation, forest floor, litterfall, and mineral soil in plantations ranging from four to 17 years old. Mean annual increment of trees ranged from 17 to 32 tonnes/ha/annum.

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INSTITUTE NEWS

A REPORT FROM OTAGO/ SOUTHLAND SECTION



A warm and sunny day in October saw a group of some 20 or so members/family/friends leave from Pearl Harbour, Lake Manapouri, a few by foot, but most by boat, heading for a day's field trip to Hope Arm. The trip had two objectives:

- to locate and view the supposed finest Kahikatea (White Pine) stands in New Zealand.
- to climb The Monument for panoramic views of Lake Manapouri and surrounding areas.

After a 40 minute boat trip and a brew, the group set off on a 30 minute walk up the Gernock Burn to view the stands of Kahikatea. The stands are claimed to be the densest and best of Kahikatea in New Zealand today. However, although a few fine specimens were viewed, heavily stocked areas were difficult to find! While most walked back to Hope Arm, Dennys Guild continued to put the pressure on the trip organizer to locate the supposed stands. After some anxious moments, the stands were finally located and all agreed that they

must rate as most possibly the finest stand of Kahikatea in New Zealand.

Barbecue lunch was had on the shores of the lake and a few good stories exchanged. Once the food and liquid had settled the party then climbed The Monument. A climb of some 1000 feet saw the group on a rocky summit which offered a superb view of the lake and surrounds. All of the party then returned by boats to Pearl Harbour, the return being well timed as the weather was deteriorating and the lake getting rough.

All in all, an excellent day was had by all and thanks must go to Lou Sanson for the organization, and John van Tunzelman for the boat support and his time.

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On Monday night, November 10, Paul Mahoney, a historian with the NZ Forest Service, gave a very enjoyable and enlightening talk at Tuatapere on the early logging history of the Nelson/West Coast/Southland areas. About 50 people were present and our thanks to Paul for providing a very good evening's entertainment.

