
It was suggested that a possible increase of soil moisture after cutting of native vegetation on the Westland and Nelson Province lands commonly known as “pakihi” was a cause of difficulty in subsequent development of these lands. Soil moisture contents were determined at four sites in both wet and dry periods in the soil type, Okarito fine sandy loam. Mechanical analyses, ignition losses, and some pF/moisture points are presented for this soil type. No difference was found between soils from forest and those from cleared land for moisture contents (on a weight or volume basis). During normal (wet) weather conditions for the district, both topsoil and subsoil are probably saturated. No evidence was found for any marked physical changes after cutting.


In conjunction with the clearing, burning, and grassing of four acres of gorse and manuka on Taita Experimental Station, some chemical and biological changes in the soil were studied over a period of ten months.

Extensive initial changes were followed by a gradual return to conditions not unlike those prevailing before the fire.


Further observations have been made of ground ice forms and soil temperatures in depleted high country tussock grassland at Molesworth Station, Marlborough.

Three inches of snow cover were sufficient to protect the underlying soil from overnight freezing and needle ice formation. Snow also protects underlying frozen ground from extremely low temperatures. Needle ice was commoner on sunny than on shady aspects in mid-winter. On the shady faces, this type of ice was seen only in the form of short needles present for a day or two when the soil re-froze.
following a spell of warm weather and a general ground thaw.

Needle ice was observed to tear grass roots on the uphill side of turf remnants. This form of ice also frequently heaved small rosette plants of less than 1½ in. diameter.

Diurnal ranges of temperature at 1 in. depth in unfrozen soil were approximately halved where the soil was covered or shaded by tussock. This insulation apparently accounts for the absence of needle ice from ground so protected.


The chemical nature of the heartwood extractives of New Zealand grown Larix decidua and Larix leptolepis has been investigated. The flavanones, aromadendrin, and and taxifolin, have been quantitatively isolated from both species. A new flavanoid compound has been obtained.


Analyses showed that the resin content of a tree decreased from the heartwood to the sapwood, and also decreased with the height of the sector. The total resin in the sector was a function of the diameter and the height of a particular sector.

POLLENS OF NOTHOFAGUS. VARIATIONS IN SIZE AND NUMBER OF APERTURES FROM FLOWER TO FLOWER ON THE SAME TREE. By W. F. Harris. Vol. 37. No. 6, 1956.

Pollens from a single tree of Nothofagus solandri showed from flower to flower and from anther to anther a significant variability in size but not in number of apertures.


Areas listed as critical from the conservation aspect by several government departments are described and mapped for comparison with the distribution and density of two introduced mammals, the red deer (Cervus elaphus) and brush-tailed possum (Trichosurus vulpecula). It is shown that, although government financed control efforts have been mainly directed at areas containing the highest densities of these animals, this does not necessarily result in maximum relief to problems of conservation. This comparison demonstrates the need clearly to define cause-effect relations (problems) between
introduced animals and areas regarded as critical. Priorities for control efforts should be based on the degree to which an area is critical to the conservation interests of New Zealand rather than on its ability to sustain high densities of animals.


1. Tussock grassland is considered as an inseparable part of a larger category, the ecosystem. Since the results of tussock grassland studies increasingly involve more than one component of the ecosystem, the need for synthesis of data from several components of the ecosystem becomes increasingly apparent.

2. Since differences in land use practices can result in great differences in balance among the various components in an ecosystem, it is suggested that a clear understanding of intended land use can facilitate the planning of research on a synthesising basis and thus shorten the time-lag between research findings and their application.

3. The theoretical basis for one type of synthesising approach may require the gathering of data from several components of the ecosystem in such a way that resulting sets of data may be compared.

4. This approach was applied to the formation of a research plan for a South Island catchment. Description and analysis of the ecosystem were directed at three aspects: (1) occurrence; (2) utilisation; (3) response, and data were gathered from both the animal and their environmental components using the same sampling technique to facilitate comparison of data and develop a system of cross checks.

5. Results illustrated differences in the relationships of several species of browsing and grazing animals to tussock grasslands. These lead to the inference that research should be directed towards the entire ecosystem rather than to the tussock grasslands alone. Results further indicated the need to define the problem and problem areas in relation to an ecological situation including human interests, and to include such objectives early in research planning.

TRANSACTIONS OF THE ROYAL SOCIETY OF NEW ZEALAND


A general account of the vegetation and a list of the native plant species found on Pirongia mountain.
Combined taper and volume tables are presented for New Zealand grown *Pinus ponderosa* and *Pinus nigra* var. *calabrica* in the Southland Conservancy. Each set includes tables showing cumulative volumes in cubic feet and diameter (inside bark) at stated heights above ground, total stem volumes, and merchantable volumes to stated top diameters (inside bark) for defined single inch diameter breast height and 10 ft. total height classes. A general introduction describes the layout, purpose, preparation, and testing of the tables. The number and extent of the basic data and the results of the statistical accuracy tests are shown on the total stem volume tables. The results of the accuracy tests of each total stem volume table are summarised and briefly discussed.

Natural round posts of Corsican Pine (*Pinus nigra* var. *calabrica*, Schneid) were cut and stacked in the several seasons of the year to study rates of drying in the open and under a roof. Drying was generally unsatisfactory except in roofed stacks erected in the winter, spring, and autumn at Hanmer Springs, and in the spring and summer at Waipa State Sawmill, Degrade, due to the fungi *Peniophora gigantea*, *Stereum sanguinolentum*, and *Schizophyllum commune*, is rapid in Corsican Pine posts seasoned in unroofed stacks: a reduction in toughness strength of up to 44 per cent. can be expected in posts during seasoning in such stacks.

Provisional yield tables are presented for New Zealand grown fully stocked stands of Douglas fir (*Pseudotsuga taxifolia*), Corsican pine (*Pinus nigra* var. *calabrica*), and ponderosa pine (*Pinus ponderosa*). As well as the usual information on the growth of height, basal area, and volume, stand and stock tables are included and the relationship between total stem and merchantable volumes is shown. The number of stems, mean d.b.h., basal area and volumes are shown separately for 6 x 6 ft. and 8 x 8 ft. planting distances. For greater flexibility in use the tables are arranged differently from conventional yield tables in
that the detailed estimation of present or future yield is based directly on mean top height. The only variable directly related to age is mean top height; this relationship is shown in an alignment chart for each species. Derived yield tables of the conventional type are included for general purposes. The preparation of the tables, accuracy tests, and application under different conditions are described.

ESTIMATION OF VOLUME OF FORKED TREES IN EXOTIC CONIFEROUS STANDS IN NEW ZEALAND. By G. Duff. No. 6, 1956.

A method is described and a table presented for estimating the cubic volume of forked trees for all New Zealand grown exotic conifers from the volume of normal trees of the same species and dimensions and the mean stand height. The table shows forked-tree volumes as percentages of normal-tree volumes for total stem volume and merchantable stem volume to 4 and 6 in. tops inside bark for 10 ft. mean stand height classes from 20 to 150 ft. The percentages are the same for all species. The only extra field work to that required in estimating volume in normal trees is the separate recording of forked trees by d.b.h. The preparation, accuracy, and use of the table are described and discussed, as well as other methods tried and considered less efficient.

FOREST RESEARCH INSTITUTE TECHNICAL PAPERS

A FORM CLASS VOLUME TABLE FOR EXOTIC CONIFEROUS SPECIES IN NEW ZEALAND. By E. R. Lewis. No. 7, 1955.

This report describes the preparation of a form class volume table for all exotic species and localities in New Zealand. Total stem and merchantable volume are related, in a basic volume table and two alignment charts, to diameter at breast height, total height, half height form quotient, and breast height diameter ratio. Form quotient is defined as the proportion of the diameter at half total height to the diameter at breast height, both outside bark; breast height diameter ratio is defined as the proportion of diameter inside bark to diameter outside bark at breast height. The table proved generally accurate for all species and localities: the greatest error was about 4 per cent. for total stem volume and about 5 per cent. for practical purposes, for merchantable volume. The preparation of the table, the accuracy tests, and method of application are described.


1. The equilibrium moisture contents of some New Zealand grown timbers deviate considerably from the generalised equilibrium moisture content graph presented in overseas publications. Of the timbers
studied, rimu sapwood and heartwood have the highest and lowest equilibrium respectively.

2. A method is presented for calculating from known meteorological conditions the equilibrium moisture content of six species, including the heartwood and sapwood for two.

3. By applying the general method of determining equilibrium moisture content to data from some ninety-five weather stations throughout New Zealand, maps have been drawn showing the mean general equilibrium moisture contents for January and July, and the yearly average. In areas of low humidity it has been necessary to develop a formula to adjust the 9 a.m. humidity reading to a more accurate daily mean.

4. Areas of low equilibrium moisture content are found during the summer months in central Hawke’s Bay, Wairarapa, Wairau Valley, central Canterbury, and Central Otago. Areas of highest equilibrium moisture content are found during the winter in Northland, central North Island, West Coast of South Island, and parts of Southland. Of the principal towns, Alexandra has a general equilibrium moisture content figure of 10 per cent. in January; Hokitika a general equilibrium moisture content of over 21 per cent. in July.

5. From the wood moisture isopleths drawn on the maps the equilibrium moisture content for various species in any district in New Zealand can be determined.

6. The moisture repellent effectiveness of paint coats and their effect on equilibrium moisture content is examined. A good priming coat is almost as effective as three-coat work in preventing moisture movement, but only for the first three to four weeks after application.

7. The equilibrium moisture content for inside living conditions in New Zealand is compared with the known outside conditions. In a typical house the bedroom has the highest general equilibrium moisture content, 20.4 per cent. in winter; the kitchen with a 14.0 per cent. general equilibrium moisture content in summer, has the lowest equilibrium moisture content. Centrally heated offices have general equilibrium moisture contents as low as 10 per cent. in winter.

8. The degree of response is determined for various species, sap rimu being the most sensitive of the species examined.

9. The effect on equilibrium moisture content of density, thickness, weathering, and heating of timber is discussed.

NEW ZEALAND TIMBER JOURNAL


Describes the forest types seen during a recent tour through the northern part of India, discusses factors that might aid or hinder the acclimatisation of Indian species in New Zealand and lists—with comments—the species that are considered worthy of trial.
NEW ZEALAND JOURNAL OF AGRICULTURE


