

Trials on a larger scale were initiated with Pabco-Thermogen paper mulch as a weed-reducer. Results were, on the whole, unsatisfactory—in most cases the efficacy of the mulch in smothering weeds was lost by the impossibility of fixing the paper so as to adhere closely to the ground. The effect of the mulch on plant-growth varied—in one case seedlings touching the paper appeared to be “burnt,” while better plant-growth was observed in some lines treated with mulch. Generally speaking, however, no great difference in growth was found. Soil analysis made showed that no “souring” of the soil was produced by the application of the mulch in the lines.

The use of sawdust as a cover on seed-beds was again demonstrated as effective against weed-growth, but this method is only economically possible where a local supply of suitable material is available.

*Nursery-line Method of Propagation.*

Building on the experimental work of past years, all nursery stations adopted the line method for propagation of the following species : *Pinus radiata*, *P. muricata*, *P. ponderosa*, and *P. laricio*. Seed-sowing, weeding, and cultivating by power-driven implements was carried out at Hanmer Springs Nursery with such satisfactory results that these implements will be introduced into the other State nurseries during the current year. Wrenching—one of the most important factors in successful tree-propagation—has received particular attention with reference to the frequency, season, and age at which the best results may be obtained from this operation.

*Nursery Growth and Season of Sowing Trials.*

Standardized trials for the purpose of collecting data relating to the best time for sowing seed of various species have been carried out at five nurseries under different climatic conditions. Seeds of sixteen species were sown at periods of either two or four weeks throughout the year, and valuable indications were obtained from these trials, which will be repeated to obtain corroborative data. Indications from the extreme north and to the south of the Dominion point to better results being obtained from many species by earlier sowing. Germination and plant-production trials were incorporated with these seasonal experiments for the purpose of obtaining data for formation of future plantations in newly acquired areas.

*Experiments against Grass-grub.*

Damage by the grass-grub has again occurred in South Island nurseries, and the Service has endeavoured to prevent attacks and protect tree crops from the ravages of this grub. Experiments were carried out with the aim of arresting the flights of beetles in the vicinity of seedling crops and thus preventing egg-deposition on the area. Screens of plain calico provided with a drowning-trough along the base and of calico covered with an adhesive mixture were placed as barricades to the prevailing direction of flight from adjoining badly affected grass-land. Negative results, however, were obtained.

*Establishment of Plantations by Direct Seeding.*

Extensive experiments in direct-seeding methods have been carried out at Waipoua, Kaingaroa Plains, Hanmer Springs, Blue Mountains, and Westland Experiment Station. Spot sowings, using two or three seeds on prepared and unprepared areas, were made at month intervals on the Canterbury-Otago plantations for the purpose of collecting information concerning the influence of weather and soil conditions upon this method of tree-propagation. Sowing on prepared spots has from present indications been a failure, the seed having been either eaten by birds and mice, or, where germination has taken place, been nipped off by birds, hares, and rabbits, which are attracted by the disturbance of the soil. Seed scattered on unprepared land has given best results, but germination has been low all through. The following table discloses the percentage germination of certain species experimented with :—

Species.	Sown.	Balmoral.		Hanmer.		Blue Mountains.	
		Prepared Spots.	Unprepared Spots.	Prepared Spots.	Unprepared Spots.	Prepared Spots.	Unprepared Spots.
		Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
<i>P. radiata</i>	.. 1925	0	4	0	24	41	21
<i>P. laricio</i>	.. 1925	0	4	0	8	0	33
<i>P. ponderosa</i>	.. 1925	0	5	0	4	0	13

*Forest Demonstration Plots.*

Trial plots, aggregating 9 acres, of insignis pine, maritime pine, Douglas fir, and white stringy-bark (*Eucalyptus eugenioides*) were established on gum land at Waipoua, North Auckland. With the exception of Douglas fir, excellent results, as shown by the low mortality per cent. (insignis pine 6 per cent., maritime pine 3·4 per cent. white stringy-bark 7 per cent.) were obtained.

Mr. Arthur McKee, of Tasman, Nelson, generously donated an area of 5 acres of freehold land to be utilized by the Forest Service as a forest demonstration plot. Eleven species were embraced in the planting programme, and mortality percentages of the young trees were : *Pinus ponderosa*, 23·7 per cent. ; *P. laricio*, 13·2 per cent. ; *P. Banksiana*, 10·5 per cent. ; *P. pinaster*, 8 per cent. ; *P. rigida*,