*Nursery Growth and Season of Sowing Trials.*

The standardized trials started last year with the object of building up average data on this subject for various species were continued during the year under review, and will be carried on over a series of years.

*Artificial-manuring Trials.*

(1) Experiments in seed-beds were carried out on three equal plots of land which had been cropped with blue lupin previously treated in August, as follows: No. 1, dressed with superphosphate at the rate of 2½ cwt. per acre; No. 2, dressed with basic slag at the rate of 2½ cwt. per acre; No. 3, dressed with kainit at the rate of 2½ cwt. per acre. In September these areas were sown down with *P. radiata* in beds. To date the only apparent difference is in plot No. 2, where stock treated with basic slag showed a greater prevalence of damping-off fungus.

(2) Virgin land which had been cultivated the previous season and had lain fallow till August, when it was dressed with superphosphate at the rate of 2 cwt. per acre, was divided into seeding blocks which were top-dressed, prior to sowing in October, as follows: Nos. 1 and 2, superphosphate at 2 cwt. per acre; No. 3, kainit at 2 cwt. per acre; No. 4, basic slag at 2 cwt. per acre. One season's results gave very good growth with superphosphate and kainit, but poor growth on basic-slag areas.

*Experiments in Storage of Redwood-seed.*

Two series of samples of tested redwood-seed were placed in glass containers in store—(1) under ordinary room-temperature, in the dark; (2) in cold storage, in the dark. Samples were tested at the end of three, six, nine, and fifteen months. The trial is still uncompleted, but it will be carried on with tests made at longer intervals during the coming year.

*Grass-grub Control.*

Further attempts were made during the past sowing season to control the ravages of grass-grub (*Odontria zealandica*) at Tapanui Nursery. The smoke-screening of the sown areas by means of braziers of sulphur was tried. The braziers were placed between the adjoining tussock paddocks and the sown nursery areas, and were lit towards evening, when the beetle flights take place. Although flights were prevalent, practically no damage was manifested in the protected crops. This method will be given further trials next season.

*Establishment of Plantations by Direct Formation.*

Large-scale trials of direct-sowing methods were made during the year at Riverhead (Auckland region) and on the Kaingaroa Plains (Rotorua region).

On the clay soil at Riverhead spot-sowing was carried out by first breaking up the surface layer and sowing seed (approximately twelve seeds per spot, according to germinative capacity) in the fine earth thus produced, covering each spot with a manuka branch for shelter from drying up, as operations were carried out late in the season. The results of the trial in this difficult type of land are shown below:—

| Species. | Date Sown. | Percentage of Successful Spots at April, 1927. | Average Height in Inches at Six Months. | Average Number of Plants in Successful Spots. |
|---|---|---|---|---|
| Pinus canariensis .. .. | Early Oct., 1926 | 23 | 1½ | 1·5 |
| P. radiata .. .. .. | ,, | 28 | 1½ | 2·6 |
| P. pinaster .. .. .. | ,, | 48 | 2½ | 2·2 |
| Cupressus macrocarpa .. .. | ,, | 34 | ¾ | 4·3 |

Seeding at Kaingaroa was carried out with a Duncan seeder drawn by a tractor, the disk feed of the drill being adjusted to sow in spots at 8 ft. distance. This sowing, using 2 oz. *P. radiata* seed per acre, has proved too light, and quantities will be increased in further trials.

*Experimental Treatment of Fire-breaks.*

At the suggestion of the Cawthron Institute, 3 acres of grassed fire-break in Whakarewarewa Plantation were top-dressed with varieties of phosphatic manures—basic superphosphate, superphosphate, and Nauru phosphate—with the object of producing a superior grazing-growth with consequent close cropping by the stock running on plantation roads, and reduction of labour in fire-break upkeep. The dressings evidently attracted the stock to the treated area, but no noticeable closeness in grazing has been observed on any of the treatments. The experiment put in hand last year on Kaingaroa Plains, of removing the top soil with the grader for a width of about 6 ft. on fire-breaks, thus leaving the unweathered pumice exposed, has proved a success in eliminating cultivating operations on the breaks, and will be carried out on a more extensive scale this year, with improved traction.

*Trials and Experiments under Way.*

These comprise investigations into season of collection and age of parent trees for redwood-seed collected in New Zealand. Storage-tests of redwood-seed; investigations into season and frequency of wrenching of nursery stock; the use of shelter in North Auckland for raising species of nursery stock; soil-cropping trials and manurial experiments in nurseries; correlation of germination tests with pot tests and nursery production; seasonal tests of direct seeding of plantations; season-of-planting trials; scrub-cutting experiments; trials in pruning of young plantations.