

(c) *Source of Origin of Seed Experiments.*—In collaboration with the Mycologist, Entomologist, and Agronomist, eight trials have been sown down with the same line of seeds. The trials are distributed over different soil and climatic types, and each year the seed will be brought to a central station to be tested against seed grown at the central station. The object of the trial is to determine what districts least favour the spread of virus disease and produce the most vigorous seed.

(d) *Effect of Control of Corticium-disease on Yield.*—A new line of potatoes was treated under direction of the Mycologist, and is being tested against untreated seed. The line selected was a good one except for a fairly bad Corticium infection. The crop is not yet dug.

(5) *Swede and Turnip Manuring.*

Twenty-four experiments were carried to a successful conclusion in the South Island. In Canterbury superphosphate caused its characteristic germination injury; in Southland it did not have a marked effect in this respect. Mixing equal parts of super and carbonate of lime eliminated the injury to germination, and this practice can be safely recommended to farmers. In the trial it usually gave a considerable increase in yield over super. Mixing can be done from several weeks to a day before sowing, and, providing weather conditions are suitable for growth, good germination is assured.

In 1929–30 trials, of which twenty-nine were sown, suffered badly on account of heavy rains after sowing, and a number will be useless as a result. The programme includes the trial of (1) super and super + lime in varying quantities; (2) super + a rock phosphate; (3) top-dressing with nitrogen.

(6) *Mangel-manuring.*

One experiment was conducted at Gore Experimental Farm. The effect of manures on germination as well as on yield was studied. It appears that mangel-seed is susceptible to injury, although to a lesser extent than cruciferous seeds. The same quantity of super applied in two different ways gave yields differing by $3\frac{1}{2}$ tons per acre.

(7) *Peas (Disease-control).*

One trial was sown on behalf of the Mycologist to test the effect of Ceresan on control of disease and yield. The trial is in process of being harvested.

(8) *Rape-manuring.*

Four experiments were conducted. As a result of adverse weather conditions the yield was poor. Germination of rape is affected by super but not to the same extent as turnips and swedes. Where manuring at more than 1 cwt. per acre is practised it is advantageous to use a mixture of super + lime or super + a slow acting phosphate. Nitrate of soda applied about 4–6 weeks after sowing will increase the yield by 15 cwt. to 1 ton.

ENTOMOLOGY.

Diamond-backed Moth (Plutella maculipennis).

A good deal of investigation has been carried out during the past year relating to this pest, and shortly it is hoped to publish a full account dealing with the moth in its various stages, its life-history and seasonal history, its habits and injury, its economic importance in New Zealand and in other parts of the world, the present biological control aspect in New Zealand, and a short annotated list of its parasites and predators occurring in other countries.

Owing to the small degree of control exercised by the parasite already here, it is proposed to introduce other parasites from abroad which in their country of origin exercise a far greater degree of control than the species we already have present. To this end £50 has been granted to the Imperial Bureau of Entomology for the collection and despatch of two specified parasites—namely, *Angitia plutellae* and *Angitia fenestralis*. The Imperial Bureau hope to commence sending shipments of these parasites during the coming spring.

Pear-midge (Perrisia pyri) Parasite Work.

The pear-midge parasite (*Mysocuclops marchali*) introduced from Europe for the control of the pear-midge has not come up to expectations, and it has been recommended that a further £150 be expended for the importation of further parasites of a different species.

Field-cricket (Gryllus servillei).

This insect has been the cause of occasional serious attacks on pastures on the Hauraki Plains and in parts of Northern Wairoa. During the past season, however, the crickets were not in sufficient abundance as to constitute a pest. A broad outline of their life-history has, nevertheless, been obtained. The very wet conditions during mid-season, coupled with the scarcity of the crickets, rendered it impossible to carry out the poisoning control methods as planned.