

Potatoes.—It has been possible to increase a number of varieties imported from United States of America, England, Scotland, and Germany; to make a number of crosses; and to test out some hybrids that were already available. It is proposed to extend this work to include resistance to blight, virus disease, frost, and drought, as well as improving yield and quality.

Linon Flax.—Selection is being carried on with the rust-resistant varieties R1, R2, and R3, aimed at the production of rust-immune strains with improved fibre yield. The possible effects of minor elements, boron, molybdenum, manganese, and zinc on the yield and quality of fibre are being investigated. Drought was unfortunately the cause of last year's trials being unreliable.

Linseed.—Rust has proved so devastating that no variety is safe to grow unless it is at least highly resistant to this disease. It is unfortunate that some varieties resistant to rusts in North America have proved to be susceptible to the rusts found in New Zealand, but some are proving satisfactory. In co-operation with the Plant Diseases Division it is hoped shortly to have material available that will be not only resistant to rust, but will also give satisfactory yield and percentage of oil in the seed.

Vegetable Research. The vegetable research section is engaged in testing a wide range of varieties and strains of vegetables as a preliminary to breeding and seed-production. Special attention is being paid to outdoor tomatoes, broccoli, savoy cabbage, spring cabbage, and onion. Overhead irrigation has made it possible to carry out these tests in a district with very limited rainfall, and has proved without doubt the vast increase and the improvement in quality that can be anticipated under irrigation. It is hoped to extend these investigations to several parts of New Zealand.

GENERAL

Weed Control.—Trials at this Division have revealed certain information as follows:—

- (a) Pre-emergence sprays are too much affected by weather conditions to give reliable results, and are therefore not recommended.
- (b) Low-volume spraying both with D.N.O.C. and with hormone sprays gives as good results as high-volume spraying, and at a much lower cost of application. Great care must be taken, however, that the correct amount is applied per acre.
- (c) Time of application may be critically important in the spraying of linen-flax crops. The present indications are that the fibre is less likely to be damaged if the crop is sprayed when 2 in. high than at any later stage.

New materials are constantly coming to hand. Some have given promising results in preliminary trials, and these are being continued.

GRASSLANDS DIVISION SUBSTATION

The Grasslands Division Substation is carrying out trials, mainly with the grazing animal, to test under Canterbury conditions various strains of pasture species bred or selected at the Grassland Division's headquarters in Palmerston North. Digestibility trials are undertaken in co-operation with the Agronomy Division to compare winter green feeds. Some work is being done on seed-production problems, and the turf advisory service to aerodromes in the South Island is being continued.

PLANT CHEMISTRY

A branch laboratory of the Plant Chemistry Laboratory, Palmerston North, has been established here to undertake chemical investigations likely to be of assistance in evaluating fodder crops, and breeding material developed by this Division.