

Field Peas.—The main interest in field peas at present is the development of an improved Partridge type, and 260 selections derived from a cross between Partridge and Black Eyed Susan were grown for further observation and selection.

The selection of a blue pea with a higher yield than Blue Prussian but with a smaller seed than Mammoth Blue has been commenced.

Rape.—A nucleus area of a club-root-resistant strain developed by the Plant Diseases Division, Auckland, gave a high seed yield. Further trials are planned.

Kale.—The nucleus areas of Giant and Medium-stemmed chou moellier had to be discarded due to severe damage by frost.

Small increase areas of the hybrid lines chou moellier × thousand-headed kale, chou moellier × winter cabbage, and chou moellier × spring cabbage were similarly affected and had to be resown.

Swedes.—An increase area of Dryland swede (Grandmaster × Sensation) was grown in Central Otago, and further trials were carried out both at the Division and by the Department of Agriculture. It is still considered a suitable type for Canterbury conditions.

Additional crosses were made between Dryland and Superlative.

Lucerne.—Sixty-two introduced strains grown for comparison with Marlborough and Strain B, a pedigree strain developed at the Division, revealed that under the conditions of the trial none is as good as the pedigree strain, which will be distributed as certified New Zealand lucerne.

Potatoes.—Breeding-work is being maintained, although nothing of an economic importance has yet been isolated, apart from one line, a cross between Katahdin and *S. andigenum* which appears to have some degree of resistance to the mosaic viruses.

Linen Flax.—Nucleus seed of Liral Crown (half an acre) and Stormont Gossamer (1 acre) was grown for the Linen Flax Corporation.

Twenty-eight reselected lines of Stormont Cirrus were grown, and the best are being tested for fibre content and quality at the Linen Flax Research Section, Washdyke.

Pure lines of three Russian varieties that have proved immune to rust are being multiplied as rapidly as possible, and varieties from America and one from West Australia are under observation in this connection.

Linseed.—Special attention is being given to rust-resistant varieties. Golden Viking and Rio, which performed well in field trials last year, are in process of reselection. Certain varieties from Tasmania are also very highly resistant or immune to rust, and these will undergo reselection and increase for trials.

Lupins.—Sweet lupins, which in grazing trials have given better fattening results than rape, have proved disappointing in yield of green feed per acre on farms under Canterbury conditions. The reasons for this are being investigated. Present indications are that sweet blues are not inherently less productive than bitter blues, but that their relative yield is greatly reduced by damage due to hares, birds, and thrips. Thrips, in addition to direct damage, are suspected of spreading pea-mosaic in the crop, and this disease is more lethal to lupins than to peas.

Four selections of *L. angustifolius* and two of *L. luteus*, obtained from Germany recently, are under trial.

An area of Sweet White flowering lupin, a selection from Sweet Blue, was grown to provide seed for extended field trials.

Maize.—Thirty-six double hybrids, mainly from Wisconsin, Illinois, and Iowa, were grown in a replicated yield trial near Gisborne in 1945–46. Results showed that the later varieties were superior to the earlier ones in yield, though growth was much slower than in America.

HERBAGE SPECIES

Seed-production.—Nucleus seed of the following grass and clover species was increased on behalf of the Grasslands Division: perennial, Italian and short-rotation rye-grass, and Montgomery red, broad red, and white clover.

Grasslands Section.—This substation of the Grasslands Division serves to determine the behaviour of various grasses and clovers under Canterbury conditions.