

## AGRONOMY DIVISION, LINCOLN

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Pure-seed production of agricultural crops has again been the main divisional activity, but in addition a certain amount of breeding and investigational work has been maintained. Approximately 63 acres have been under crop during the past season.

*Wheat*.—To provide nucleus seed for certification purposes, 9½ acres of the following varieties were grown: Cross 7, College Hunters, Fife-Tuscan, Solid-straw Tuscan, Jumbuck, Holdfast, and Marquis. Rust and bird damage were more severe than normally, but nevertheless satisfactory seed yields were obtained.

*Oats*.—The testing of reselected lines of Gartons Abundance and Algerian is being continued for the purpose of developing improved nucleus stock for possible future certification. Seventy selections from the sixth-generation cross between the two high yielding varieties Resistance and Onward were grown for observation; the best of these will again be placed under trial. Increased areas of Victoria Cross and S.17 were grown. Victoria Cross—an introduction from Canada—is very highly resistant to leaf and stem rust and gives a high yield of good-quality Algerian-type grain. Favourable reports on its behaviour have been received from the North Island, where some large-scale trials were carried out, and arrangements have been made to have further tests conducted this coming year. S.17, a selection from a cross between Gartons Abundance and Ruakura, is an early, high-yielding, white oat which produces only fair-quality grain but which gives good green-feed yields.

*Barley*.—Ten varieties of high-yielding malting barleys introduced by this Division were grown by the Canterbury Seed Co. with a view to large-scale malting tests. Golden Archer, which shows excellent malting quality in England, is regarded as particularly promising. Selection work is being carried on with the best of these. Further satisfactory results have been obtained from Newal, a quick-growing, smooth-awned, six-row feed barley obtained from Canada, and an increased area of 1 acre was grown.

*Garden Peas*.—Reselected stocks of the following varieties were again grown on contract for merchants: Greenfeast, William Massey, Stratagem, Little Marvel, Onward, Harrisons Glory. The new hybrid type 8/13/2/3, developed from a cross between Greenfeast and Greaterop, has now been named "Greenerop," and an acre block was grown for increase; this is to be multiplied again before being offered for distribution.

*Field Peas*.—Forty-eight acres of the new blue field pea, 5/7/1/6, which has now been named "Mammoth Blue," were grown by Canterbury Agricultural College, and 30 acres of the new white field pea, 3/42/3, now called "White Prolific," were grown by farmers on contract to the Fields Division, Department of Agriculture, which is to arrange the distribution of the produce from these areas. Two acres were grown of another new white pea which has been developed from a cross between Victoria and Stratagem and which on account of its large attractive seed will probably be named "Mammoth White."

*Rape*.—The yields from the nucleus areas of Giant and Broad Leaf Essex rape were disappointing owing to damage by aphides and birds.

*Kale*.—Selection work is being continued with the tall stemmy type and with two medium leafy types of marrow-stem kale and also with thousand-headed kale. Nucleus seed-supplies of these have been raised for distribution. Crosses between marrow-stem kale and thousand-headed kale, cabbage, and kohlrabi are also being studied.

*Sweet Lupins*.—Excellent reports have been received on the value of sweet lupins for stock feed. The sweet blue in particular shows great possibilities for lamb-fattening, particularly as they are not subject to any of the insect or fungous pests that attack rape and turnips. The behaviour of the yellow type in earlier trials was disappointing, but for the past two seasons areas, when sown about the middle of October, have grown particularly well and it would appear as though this type warrants further trial. Seed areas of both types were grown during the past year, and single plant selections from each are being tested with a view to increasing their productivity.

*Linen Flax*.—Nucleus stocks of Liral Crown, Liral Prince, Stormont Cirrus, Stormont Gossamer, and Concurrent are being maintained in order to have pure seed available for the industry. Single plant selections have been made from these and also from Hercules and Blenda. Variety trials made good growth this season. Of the ten varieties under test, Stormont Cirrus looks the most promising, with Liral Prince and Stormont Gossamer not far behind. An American strain of Stormont Cirrus compared very unfavourably with a strain obtained originally from Ireland. Breeding-work is continuing with a view to combining disease resistance with good yield of fibre. Further crosses have been made using Rio as the disease-resistant parent, also back-crosses of F.3 material to the best fibre varieties.

Preliminary experiments have been carried out on the problem of mite infestation of flax-seed in store. Experiments in progress appear to corroborate the English finding that mites cannot attack undamaged flax-seed. They also show that a dressing of approximately 4 oz. of Ceresan per bushel gives good protection against mites.

Fibre determinations were made on samples from all the trials conducted by the Fields Division, and similar work is being undertaken with commercial crops in order to devise methods to increase the amount of fibre extracted from different types of straw. Much loss is due to unevenness of stand. When the straw is variable, even retting is impossible and an excessive proportion of tow is produced. Special attention is being devoted to methods for overcoming this difficulty. In co-operation with the Plant Diseases Division and with the Dominion Physical Laboratory work is being carried out at flax-factories on temperature distribution within tanks during retting and also on losses caused by imperfect handling of the crop from pulling to scutching. Some at least of this loss is