

REPORT OF THE PLANT RESEARCH STATION.

A. H. COCKAYNE, Director.

A great volume of work has been performed by the Plant Research Station (Palmerston North) during the past year, and a brief account is appended of the main research activities of the various sections into which the station is divided.

AGRONOMY SECTION.

The work of this section falls into three closely associated divisions :—

1. The production, by selection, of pure and superior strains of farm seeds other than herbage-plant seeds :
2. The multiplication and distribution of these and of imported seeds by the Department or in co-operation with farmers :
3. The certification of the produce of farm crops conforming to certain standards of purity and freedom from disease.

1. Plant-selection Work.

Wheat.—This work is undertaken in co-operation with the Wheat Research Institute, and embraces the production of pure and smut-free lines of the standard commercial varieties. The following varieties are under selection : Solid-straw Tuscan, Solid-straw Velvet, Major, Pearl, Marquis, Velvet, Dreadnought, Hunter's, Sensation, White-straw Tuscan. Selection of the following varieties has reached the stage where selected seed is available for distribution : Velvet, Solid-straw Velvet, Dreadnought, Major.

Potatoes.—Potato-selection has as its objective varietal purity and freedom from disease with particular reference to virus disease. The search for virus-free tubers became so difficult that a number of varieties have been imported from Scotland and Ireland. These proved far superior to anything obtainable in this country. Of the material imported during 1928–29 we planted some 450 tuber units and thirty increase blocks in 1929–30. This work is likely to render available this season and next lines of seed potatoes superior to anything that is available at the present time. Constant roguing for disease and efficient isolation to prevent reinfection are the main difficulties that have to be overcome.

Barley.—As a result of work commenced in 1926–27 we have four smut-free selections of each of the standard malting varieties—Plumage, Archer-Spratt, Plumage-Archer, Chevalier, Goldthorpe-Spratt—and selections are being made of “Gisborne.”

Peas.—A large number of very promising strains are under trial.

2. Multiplication and Distribution of Selected and Imported Lines of Seed.

The stage has now been reached when it becomes necessary to organize the most important aspect of the work. Several lines were distributed last year, and further lots of wheat and potatoes will be available again this season. Several areas have been sown with Montgomery red clover, and further supplies of this and also a quantity of Kentish wild white clover are being imported for next season's sowing.

3. Certification.

During the past season we have undertaken certification in connection with potatoes, wheat, perennial rye-grass, white clover, and brown-top.

Potato-certification.—This is the third year of operation, and there has been an increase from 180 crops last season to 420 for this season. The necessary field inspections and sample trials have entailed a great deal of work for the officers of the Fields Division.

We consider that “cropping-power” is a far more reliable guide in determining relative values at this stage of our work than would be a statement as to the percentage of virus disease present, and accordingly great stress is laid on cropping-power in determining certification.

Wheat-certification.—Wheat-certification is undertaken in close co-operation with the Wheat Research Institute. During the past season over 14,000 bushels of certified wheat-seed has been sold to merchants. Some 2,000 bushels of smut-free Solid-straw Tuscan seed grown under departmental supervision has been made available.

Perennial Rye-grass Certification.—This has been confined almost entirely to Hawke's Bay and Poverty Bay Districts. A total area of 2,447 acres has been inspected and passed in the field. The economic value of the persistent strains of rye is of great importance, and certification affords a means of controlling with a considerable degree of accuracy the distribution and production of these strains.

White Clover.—The certification of old-pasture white-clover seed has been extended considerably, and a very desirable feature has been the inclusion of a fair quantity of seed from Hawke's Bay. The standard adopted so far has been one of age, and all certified seed is the produce of pastures five years old or over. A small amount of seed was accepted last season, and under trial has given sufficiently encouraging results to warrant continuation of this standard till a better technique has been evolved by the Agrostologist.

Brown-top.—Very extensive areas are being harvested under certification for export. Our certification amounts to a statement that the seed is free from red-top, which is an undesirable species for lawns and golf-courses.