

*Brassica Crosses.*—Inter-specific crosses were made originally to study hybridization between the various *Brassicæ* in view of the interest being taken in seed-production.

The majority of the roots died, but some of the hybrids produced F2 seed. Back crosses have been made, and some of the material may possibly be of economic interest.

*Garden Peas.*—The production of pure lines of the more important varieties of garden peas continues to be an important activity of the Pure Seed Station, to which about 10 acres is devoted each year. These selected lines are purchased by merchants to replace existing stocks and build up from them their lines for export.

Most of the selected lines were grown this season in comparison with stocks obtained from merchants, and in almost every case the selected lines were more vigorous and productive, and all were decidedly more uniform.

A study of the tare leaves and other variants in peas has been continued. The problem is of great economic importance, but one that is proving very difficult to solve.

Little actual breeding-work has been undertaken, but crosses between Great Crop and Lincoln have now reached F4, and some segregates are promising.

*Field Peas.*—Several new varieties of field peas have been placed under trial and a few are showing promise.

An extensive programme of breeding has been undertaken and F4 seed has been harvested. Field peas form an important crop in New Zealand and warrant considerable research in the development of a smooth, yellow pea, with a colourless seed-coat that is better than those generally grown. These types are used in the manufacture of split peas. Improvement could also be effected in Partridge by producing an earlier ripening strain for North Island conditions. Some promising material is available.

Problems relating to the genetic analyses of certain seed characters have been concluded, and the results are to appear in the *Journal of Agricultural Science*.

*Onions.*—After several years' work, what appears to be a very desirable type of onion has been selected. Sufficient bulbs have been raised this past season to produce a quantity of seed next season.

A yield trial designed to compare the selection with a number of standard varieties failed on account of dry weather.

*Mangels.*—A collection has been made of all varieties available in New Zealand. These are now growing and it is proposed to describe the varieties, and the Analytical Chemist intends to determine the dry-matter content of each.

*Tomatoes.*—A number of standard varieties were crossed in 1933-34 and the hybrid seed grown this past season with a view to determining hybrid vigour. Increased vigour was very evident in vegetative growth, but an increase over both parents in fruit-production occurred in only one cross.

#### SEED CERTIFICATION.

The Agronomy Section has been responsible for the organization of the seed-certification activities of the Fields Division. The scheme has been extended in the past season to include the certification of Italian rye-grass seed.

*Standards.*—Purity standards in regard to machine-dressed seed, which had previously applied to perennial rye-grass seed only, have in the 1934-35 season been adopted for all certified grass and clover seeds. The standards set vary for each kind of seed, and are such that only the definitely inferior lines are rejected for purity.

*Perennial Rye-grass.*—A further reduction of 10 per cent. has been recorded in the acreage entered for certification during the season 1934-35. An alteration to the scheme has involved the deletion of the clause permitting the entrance of areas on an age basis only. All areas now to be eligible must either have been sown with certified mother seed, or have had a satisfactory trial report on seed previously harvested from the area.

On the other hand the scope of the scheme has been extended to include a class designated "Certified Commercial Perennial Rye-grass Seed." Seed to be eligible in this class must have been placed under test by means of ultra-violet light and reported upon as suitable for certification in the relative class. The method obviates the necessity of field inspection and paddock sealing, but on the other hand is an indication of perenniality only and not of type.

*Cocksfoot.*—While all entries of cocksfoot-seed are not yet to hand, indications point to an increase in the acreage entered for the 1934-35 season. By far the greater proportion of the seed being harvested is eligible for certification in the mother-seed class.

*White Clover.*—Due mainly to the entry of a considerable number of areas which have been sown down with mother seed, the acreage of white clover entered for certification is at least twice that entered in the 1933-34 season. The yields obtained from those areas harvested to date appear to be quite satisfactory.

*Red Clover.*—There is an increase in the acreage of Montgomery red clover entered for certification in the 1934-35 season. Most of the areas are located in the South Canterbury and North Otago districts, and, in general, have been sown down with seed certified under the Department's supervision.

*Brown-top.*—No returns are yet available in connection with the acreage of brown-top entered in the 1934-35 season. An increase was recorded in this figure for the 1933-34 season, but indications are that this total will not be exceeded in the present season.

*Potatoes.*—An alteration was made in connection with the classification of the produce of crops certified in the 1933-34 season. In addition to the group classification adopted in the previous season, two major classes were made—namely, certified mother seed and certified commercial seed.

Growers purchasing certified seed for sowing in the 1934-35 season were permitted to enter their crops only provided they obtained certified mother seed. Thus, while larger quantities of good certified seed were available, only areas sown with the very best of this seed could obtain re-entry into certification. This has in no way limited the number of entries received for the 1934-35 season. On the contrary, the number of entries received constitutes a fresh record, while the general standard of the crops entered would appear also to be very satisfactory.

*Wheat.*—Wheat acreages entered for certification in the 1934-35 season are rather lower than those returned for the previous season. Owing to adverse conditions, the general standard of crops also appears to be lower. A feature of this year's returns is the entry of a considerable acreage of the new variety "Cross 7."

*Italian Rye-grass.*—A number of areas of Italian rye-grass sown with approved lines of imported seed were accepted for certification in the 1934-35 season.

*General.*—Practically no entries of swedes and turnips were received for certification in the 1934-35 season. Two small areas of rape-seed were entered. These areas had been sown with seed from plants selected by this Section.