

During the year inquiries relative to the station's testing methods have been received from seed-testing stations and merchants in Europe, Great Britain, United States of America, and Canada, and in every case reference was made to disputes consequent to this station's method of estimating purity. A number of New Zealand merchants have also been communicated with by overseas buyers on the same lines.

Up to the end of December, 1930, 119 certificates of analysis were issued for officially drawn samples of certified rye-grass, 83 of certified white clover, and 70 of brown-top—a total of 272 samples. The germination of the rye-grass was comparatively low, and many lines represented very poor value at the high prices paid. This season (1931) certified rye-grass, with the exception of certain southern-grown seed, is of excellent quality. A most unfavourable rye-grass season was experienced in Southland this year, and once-grown certified seed has failed to produce in certain cases a marketable crop owing to its low germination.

Last year's certified brown-top was of excellent quality, and all stocks were cleared. Certified white clover was of good quality, but there is a carry-over into this year.

Chewings fescue experienced an abnormal season, and one of the poorest crops for some years resulted. As was anticipated, the seed did not ship well, and a number of complaints have been received from foreign buyers as to quality, fears being expressed as to the return of the fescue trouble of some years back. It is considered, however, that 1930 must be regarded as an off-season, and that given normal climatic conditions and reasonable care in production, this seed will ship as satisfactorily as it did for some years prior to 1930.

An investigation into the factors causing hard-seededness in legumes was commenced this year, the material for the preliminary studies being provided by crops of different lines of *Lupinus pilosus* at the Plant Research Station area. The work is planned to cover (a) physiological studies as to nature and causes, (b) influence of harvesting procedure, (c) influence of storage conditions, (d) seed-treatment.

Mr. E. O. Hyde has continued his research into danthonia, and special attention has been devoted to the study of morphological variation in floral parts, and it has been shown how these characters may be used for the purpose of identification of varieties so far as the seed trade is concerned.

A large amount of statistical matter has been prepared and tabulated for issue to the seed trade and to overseas institutions, and it is found that this feature of the station's work is appreciated and highly valued not only in New Zealand but in other countries.

FARM ECONOMICS SECTION.

E. J. FAWCETT, Farm Economist.

The following projects undertaken during the past year are completed or are now under way:—

Statistical and Graphical Presentation of Rural Industries.—At the request of His Excellency the Governor-General, this work was undertaken to provide him with a full but compact reference to the position of all branches of the primary industries of New Zealand.

Economic Survey of Production and Capital in the Dairy Industry.—This survey was undertaken to establish the position of the industry as a whole, under varying standards of price for butterfat. The data from some 1,654 farms were used, the salient points standing out in the survey being—

- (1) The average per-acre production of butterfat is 80 lb.
- (2) The total area of land devoted to dairying approximates 4,000,000 acres.
- (3) High per-acre production is definitely associated with small farms, heavy production per cow, and high intensity of stocking, but the number of effective cows milked per given area has the greatest effect on per-acre production.
- (4) Labour efficiency varies directly with production. Whereas farms averaging 80 lb. per acre have a labour efficiency of 4,000 lb. per unit, farms producing 190 lb. per acre have a labour efficiency of 5,800 lb. per unit.
- (5) Maintenance costs per pound of butterfat increase by 100 per cent. between farms producing 190 lb. and 50 lb. per acre, whereas labour costs (assuming a uniform annual return per unit irrespective of production) increase by 67 per cent. for the same groups of farms.
- (6) Of the total area of 4,000,000 acres devoted to dairying, approximately 2,800,000 acres are producing between 40 lb. and 120 lb. of fat per acre.
- (7) On the basis of maintenance costs incurred in normal price years, and allowing £100 per year per male unit of labour, the dairy industry earns 6 per cent. interest on £170,218,654 at 17d. per pound for butterfat, on £59,148,284 at 12d. per pound for butterfat, on £36,934,501 at 11d. per pound for butterfat, on £14,715,274 at 10d. per pound for butterfat.
- (8) Every extra penny per pound, whether as payout or by exploitation of subsidiary industries such as pigs, represents interest at 6 per cent. on an additional £22,200,000.
- (9) Raising the average per-acre production from 80 lb. to 100 lb. of butterfat represents interest at 6 per cent. on an additional £35,661,372 capital on the basis of 12d. per pound for butterfat.

Incidence of Disease in Dairy Herds.—During the year two groups of data have been under analysis to establish the scope of statistical treatment in narrowing down the factors surrounding irregularity in calving experienced in dairy herds. In the first group, cows which have been milked through, calving twice in three seasons, have been studied, whereas in the other group the data from some 2,500 farms are under analysis. From the progress to date it is apparent that trends in breeding irregularities will be established which will be of great assistance in clarifying the position. It is intended that this subject be dealt with for publication in the near future.

Fruit Industry.—The collection of statistical data relative to fruit-farms has been continued. Some five hundred farm records pertaining to last season's production are in course of analysis, and will form the basis of district averages for crop forecasting work next season. Important points, such as yield of different varieties in different districts and rate of maturity of different varieties in different districts are also being studied.

Descriptive Article on Dairy Industry.—At the request of the Empire Marketing Board, a descriptive article dealing with the dairy industry has been compiled. This will be published by the Empire Marketing Board.