

OTHER WORK.

During the year determinations of the oil content of nineteen samples of linseed grown by the Agronomist were made.

Samples were collected and analytical work is in progress in connection with rapes and kales which are being investigated by the Agronomist.

FARM ECONOMICS SECTION.

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The following projects have been completed or undertaken during the year under review:—

1. INCIDENCE OF DISEASE AND REPLACEMENT IN DAIRY HERDS.

The records of some 2,500 herds have been analysed to determine the incidence of disease and replacement, and to establish the conditions surrounding variation in disease incidence. The herds under review were all tested, and therefore probably represent management above the average in efficiency. For the season to which records apply (1929-30) the replacement figure for the whole of the Dominion was lower than usual, and this affects the records to some extent.

Outstanding features of the analyses are—

- (a) Total eliminations of milking-cows amounted to 10.7 per cent. of the total cows in herds.
- (b) Of the total cows eliminated, old age accounted for 10.5 per cent., low production 49.0 per cent., accidents 5.7 per cent., mastitis 13.7 per cent., breeding troubles 11.5 per cent., tuberculosis 1.9 per cent., and 7.7 per cent. for other reasons of a disease nature.
- (c) The provision for replacement amounted to 17 per cent., which covers elimination plus herd increase.
- (d) Breeding troubles in dairy herds tend to increase as the size of the herd increases and as density of cows becomes more intense.
It is indicated that disease is more prevalent on highly phosphated farms, and that the ratio of lime to phosphate application may be associated with its incidence.
- (e) It appears that intensification in management, no matter what form such intensification takes, has a decided effect on the incidence of breeding-difficulties.
- (f) Breeding-difficulties are particularly prevalent amongst young heifers forming replacement stock.

This investigation is being continued, and the analyses of 1930-31 figures will shortly be available for corroborative evidence or otherwise.

2. THE ORGANIZATION OF APPLE ORCHARDS.

A preliminary analysis of some 230 records has been made in an endeavour to devise methods of production forecasting. Before this can be done it is necessary to continue the study of crop records for several years to standardize methods. This initial survey shows—

- (a) That there is a very wide range of average production per tree and per acre in different districts, Hawke's Bay giving the highest records and Waitemata the lowest for the season reviewed:
- (b) That the same variety has a wide range of production within districts, and between different districts
- (c) That different varieties have varying rates of maturity in production:
- (d) Owing to the rate of maturing, the prevalence of young non-bearing trees, either new plantings or reworkings, and the prevalence of different varieties represented, must be taken into consideration when computing probable yields for future seasons.

Between seven hundred and eight hundred orchard records for the season 1930-31 are now under study.

3. THE RELATIONSHIP OF MILK TEST TO THE STANDARD OF PER-ACRE PRODUCTION OF BUTTERFAT.

In previous studies of the factors influencing per-acre production, direct agencies such as carrying-capacity and per-cow production have been taken as the basic features. It has been realized that, in determining the effect of pasture management and herd organization, there are underlying influences at work. In the present investigation one of these influences—namely, milk test—has been studied in some detail. The analysis of production data from 967 farms shows quite conclusively that test, and the conditions surrounding its variation, exert a direct influence on carrying-capacity, herd average, and per-acre production.

The features of outstanding importance as disclosed by the analysis are—

- (a) When farms are reasonably comparable in every respect, test variation results in a per-acre production variation of from 88 lb. to 131 lb. of butterfat per acre.
- (b) If the test for all the herds dealt with was moved from its present average of 4.57 per cent. to a uniform level of 5.2 per cent. the total butterfat produced would be increased by over 17 per cent.
- (c) If the accepted average of 4.1 per cent. for all New Zealand herds is correct, total production for the Dominion could be increased by 35 per cent. simply by a breeding policy aiming at a general herd average of 5.2, without in any way improving the standard of management at present existing.
- (d) High-test herds give a better per-acre return to the farmer, even under a materially lower differential payout on butterfat content of milk of different test standards.

The work done on test relationship has brought out the necessity for further research into cow types and the correlation of body weight with milk production and butterfat content, with the object of establishing simple standards which may be used in culling and in choosing cows from which replacement stock should be drawn.

4. STATISTICS OF NEW ZEALAND AGRICULTURE.

During the year a comprehensive compilation of all the statistics pertinent to New Zealand agriculture has been issued in mimeograph form. This set of tables covers a period of years on a comparable basis, and has been in considerable demand.

5. VALUES OF AGRICULTURAL AND PASTORAL PRODUCTS—LOCAL, EXPORT, AND TOTAL.

Comparative figures on the above lines for the seasons 1929-30 and 1930-31, and estimates for 1931-32 up to 30th September each year, have been prepared for the use of the various economic committees.

It is shown that local consumption accounts for 34, 37, and 33 per cent. for the respective seasons, and that if all wool is disposed of this season, the total value of exports will approximate that of 1930-31. This is due to carry-over of wool and additional killings of capital stock. It is calculated that the latter movement will result in a further decrease of sheep flocks this year, and a consequent lowering of the ewe flock also.