

(g) Investigations into Effect of Pasture on Feed Flavour.

A survey of the incidence of feed flavours in the Morrinsville district confirmed previous findings that clover-dominant fields when grazed often give rise to relatively high intensities of feed flavour as compared with rye-grass-dominant fields. Co-operative field trials during the past season investigated the possibility of manuring with nitrogenous fertilizers or heavy dressings of phosphates as a means of increasing the rye-grass content of grassland. It is now recognized, however, that management of pasture may have as much bearing on the desired changes of sward as manuring and that complete control of grazing management is necessary in such experiments; consequently this work is now being conducted at Ruakura Experimental Farm, where an area is being subdivided for purposes of the investigation. Close touch, however, is still being maintained with certain areas in the Morrinsville district which were treated experimentally last season.

*(2) CEREAL CROPS.**(a) Manuring of Cereals.*

Fourteen experiments were conducted on the manuring of wheat, oats, or barley, and these chiefly investigated the use of sulphate of ammonia on stubble-sown crops. As in previous seasons, the responses from nitrogen varied considerably even on stubble-sown wheat crops. It is difficult to determine just what factors govern the profitable use of sulphate of ammonia. Further evidence was available indicating that the optimum quantity of superphosphate to use with the wheat crop in Canterbury is from $\frac{3}{4}$ cwt. to 1 cwt. per acre.

(b) Wheat-variety Trials.

Close collaboration was maintained with the Wheat Research Institute in carrying out twelve trials with wheat varieties in various districts. In Canterbury Cross 7 again proved itself capable of yielding as much as Solid-straw Tuscan, while the Portugese variety, Tainui, once more showed its value as a suitable wheat for spring sowing. Trials of lines of Cross 31, another crossbred wheat from the Institute, indicated that the best lines were likely to outyield Tuscan. Other varieties tried out were Beneubbin, Lin Calcl, and Jumbuck. Tainui and Taiaroa were included in small-scale trials in the North Island in comparison with Jumbuck, and the results suggested that field trials with Tainui in the Manawatu district would be warranted during the coming season.

(c) Oat-variety Trials.

Several oat-variety trials were laid down, and outstanding results were obtained from the variety known as "Resistance." This variety is rapidly finding favour in the South Island, but owing to its susceptibility to rust it does not appear suitable for North Island conditions.

(3) POTATO MANURING.

The results from sixteen trials in the South Island investigating the effect of phosphate, nitrogen, and potash are not yet to hand.

(4) TURNIP MANURING.

Four experiments were carried out with turnip fertilizers in Canterbury. The treatments included a mixture of equal parts super and carbonate of lime, super plus blood and bone, reverted super, and a proprietary turnip fertilizer. Germination counts indicated that the three last-mentioned fertilizers affected germination adversely as compared with super plus carbonate of lime.

(5) CONTROL OF BROWN-HEART IN SWEDES.

Much work is being carried out on the use of borax as a controllant of brown-heart in swedes in view of the encouraging results in the previous season. Unfortunately, however, the present season's trials have indicated that under some conditions damage to seedlings may become serious from the use of even small quantities of borax when applied with seed and fertilizer. Consequently the use of borax as an admixture with fertilizer is open to some risk. The most favourable method of applying borax appears to be as a top-dressing prior to sowing.

(6) SUGAR-BEET EXPERIMENTS.

At the request of the Bureau of Industries a series of sugar-beet trials was carried out to investigate the districts most suitable for growing the crop, the probable yields, and the working-costs likely to be involved under field conditions. Satisfactory yields were obtained in most trials, especially in Hawke's Bay and South Canterbury, but results in Otago and Southland were adversely affected by flood conditions.

MISCELLANEOUS.

Pampas-grass.—Several experimental areas and numerous farmers' crops of pampas-grass have been kept under observation. Plantations established from root cuttings show poor strikes, and although seedling establishments have been good, farmers have not as a rule properly fenced the areas to keep stock out. It is possible, however, that in the near future accurate information on the feed obtained from pampas-grass plantations will be available from the experimental areas.

Ragwort-eradication.—A considerable volume of work has been put in hand in connection with ragwort-control, and at Ruakura Experimental Farm a systematic study of all phases of ragwort-growth is being carried out. Several thousand plants have been set out for chemical treatment next season.

Pig-feeding Experiments.—At Ruakura Experimental Farm several pig-feeding experiments are being carried out. The growing of crops suitable for pig-feeding is under investigation and dried grass as a supplement to dairy by-products is being tried out.

Other Trials.—Experiments which have not been classified above include trials with onion varieties, soya beans, varieties of maize, dry-dusting of grass-seed, experiment on pasture establishment, and lucerne manuring trials.

GENERAL.

The large increase in the number of co-operative experiments during the last two years has necessitated a good deal of extra work being carried out by field officers of the Division, and such work, often requiring long working-hours, has been ably performed. I wish also to acknowledge the clerical assistance put at my disposal, particularly the willing and efficient help of Misses M. Pirie and N. Crawley in dealing with the large volume of statistical work.