

Trials conducted at the Rukuhia Soil Fertility Research Station, Hamilton, are not included in this summary, but research work is in process at the Winchmore Irrigation Research Station, Ashburton, at the Marton Experimental Area, and at demonstration farms at Dargaville, Stratford, Waimate West, and Winton. There is a definite need for more research stations, particularly to serve those areas where important farming problems exist. The most important of these problems would seem to lie in the various classes of hill country of the North Island and in the tussock and depleted country of the South Island. It is in these directions that research work for the farmer must extend in future.

Nevertheless, it is clear that a determined effort is being made to meet the demands of the farming community for research work, and the expansion of such work is proceeding as rapidly as trained staff and materials will allow. Perhaps the most pressing shortage at present is one of adequate numbers of trained field staff, but it is hoped that this shortage will gradually be overcome.

(1) *Pasture Trials*

(a) *Pasture-production Measurement Trials*.—At the Marton Experimental Area 12 trials are now in progress. These include 3 technique trials which examine the differential responses of the clover and grass species of the sward to different phosphatic and lime dressings. Three trials compare various species and strains of pasture plants, 2 being essentially comparisons of perennial rye-grass strains and 1 of timothy strains. In the perennial rye-grass series the pedigree strains bred in New Zealand have shown to advantage over some comparable strains bred in England, and the New Zealand short-rotation rye-grass in particular is giving very encouraging results, particularly in winter and early-spring production. Of the fertilizer trials, 2 compare various forms of phosphates, in particular some concentrated products that would probably have certain advantages in back-country districts where freight charges are heavy and possibly also in fertilizer distribution from aeroplanes. One trial has now been under measurement for seventeen years, for the last nine of which no fertilizer or lime has been applied. Significant lime responses are still being recorded on this trial. One trial examines the effects of different fertilizer and lime placements when sowing to grass, 1 the effect of different methods of preparing the land for grass, and a comprehensive experiment on the effect on weed-control and pasture-production of some types of hormone weed-killers and of fertilizers has recently been started.

At the Dargaville Demonstration Farm 3 fertilizer trials to examine the effect on pasture-production and composition of various forms of phosphatic fertilizers, of potash, of lime, and of various "minor elements" on two of the soil types found in that district are in progress. Work is also being continued in 2 trials on the "ironstone" soil near Kerikeri, and it is hoped to expand this research in the near future to investigate means of bringing this apparently useless land into production. A trial of different forms and rates of phosphatic fertilizers and of lime and potash has recently been started on a pumice-soil type near Rotorua.

Changes in seasonal pasture growth rates are being recorded at a trial at the Waimate West Demonstration Farm. Of the mowing trials laid down at the Winchmore Irrigation Research Station, 1 is under measurement, and this has shown very marked responses to phosphatic fertilizers and the value of applying these materials adjacent to the newly-establishing seedling to obtain the most rapid early growth. At the Winton Demonstration Farm a critical trial comparing serpentine-superphosphate and reverted superphosphate as top-dressings on grassland has so far not shown any significant differences between these two materials.

(b) *Observational Top-dressing Trials*.—These trials continue as an important section of the experimental work of the Division, as they have been since shortly after the inception of the co-operative experimental scheme. Although simple in field layout,