

The Marton Experimental Area continues to provide useful information in respect of grassland strains, management, and top-dressing. An area has been ploughed for an extensive programme of cropping trials and also pasture-production trials which are being laid down this autumn. Cropping trials will embrace work on varieties, manuring and feeding value of feed barleys, various brassica crops, lupins and various root crops, and two wheat variety trials. The pasture trials involve fertilizer and lime placement studies, examination of various forms of phosphatic top-dressings, trials of timothy strains, and a cultivation trial where the "surface-working" technique, which has received wide publicity overseas, will be compared with usual cultivation practice.

Much work with pastures and crops is being carried out on the various demonstration farms, and it is hoped to further expand this in the future. Such areas are suited to more detailed work than can be carried out in farmers' co-operative trials. However, there is an urgent need for further experimental farms in Canterbury and Otago-Southland. These experimental centres are necessary adjuncts to the farmers' co-operative trial scheme, both from the point of view of the type of trial that can be carried out only on such areas, as well as serving as a link in the chain between fundamental research and farming practice.

DESCRIPTION AND PROGRESS OF FIELD EXPERIMENTS

(1) *Grassland Trials*

(a) *Mowing Trials*.—At the Marton Experimental Area four mowing trials are still being continued. These are (i) trial I, which has been laid down for fourteen years, during the last six of which no top-dressing or liming has been carried out. Lime responses are still showing, however, and smaller responses to phosphates (superphosphate, basic slag, ground rock phosphate) are also in evidence. It is intended to keep records of this trial as long as possible, for it provides the only reliable trial on the length of time phosphatic and lime applications remain effective; (ii) trial S, where serpentine-superphosphate is compared with superphosphate and superphosphate plus lime; (iii) trials R and V, where various strains of grasses and clovers are being tested.

Rate-of-growth Trials: The trial at Stratford is being continued, although that at Wairoa will shortly be finalized. It is hoped to commence trials of this nature at Dargaville, Hamilton, Tauranga, East Coast, North Island, Nelson, Canterbury, and Otago. A trial at Kirwee, Canterbury, is being carried on with the co-operation of the Canterbury Agricultural College, Lincoln. Here the production of the new short-rotation rye-grass is being compared with that of perennial rye-grass. Trials carried out at the Winton Demonstration Farm are a comparison of fields sown with a simple and with a complex pasture mixture, and of fields top-dressed with serpentine-superphosphate and reverted superphosphate respectively. A more elaborate trial with the two last-mentioned fertilizers will be commenced this year.

Technique investigations constitute an important phase of this work, and an extensive series of trials is planned for the coming season with the co-operation of the Soil Fertility Research Station, Hamilton. The work of this institution and the Crop Experimentalist's Section are being very closely linked.

(b) *Observational Top-dressing Experiments*.—The survey investigating the merits of serpentine-superphosphate in pasture top-dressing constitutes the bulk of these trials, although the "response survey" (which, it is hoped, will eventually provide reliable information concerning the top-dressing of every major soil type in the Dominion) is being continued in conjunction with this survey. A considerable expansion in this work is expected in the coming year. Work with other phosphatic fertilizers in particularly concentrated forms, such as "double superphosphate," will form an important part of future work. This investigation has particular interest in connection with hill-country top-dressing and also top-dressing from aeroplanes. The latter development is being closely watched and a programme of work in connection with it is being commenced this autumn. In all, 78 pasture top-dressing trials are now open, 63 of these including serpentine-superphosphate plots.