

(1) *Grassland Trials*

(a) *Mowing Trials*.—At the Marton Experimental Area nine pasture mowing trials are in progress. These include four continued from last year—namely, (1) trial I, which has now been in progress fifteen years. For the last seven years this top-dressing trial has not received fertilizer, and the residual effects of the previous eight years' applications are still showing. The lime response is marked, and there are also definite responses still showing to the forms of phosphate applied (superphosphate, basic slag, and ground rock phosphate); (ii) trial S, where serpentine-superphosphate is compared with superphosphate and superphosphate plus lime; (iii) trial T; and (iv) trial V, where various strains of grasses and clovers are being compared. The experiments laid down during the year at Marton are (v) trial A, where the placement of superphosphate and of lime when sowing down a pasture is being investigated; (vi) trials B1 and B2, which are essentially technique trials, the responses to various phosphates and lime being measured on one section on a pure white-clover sward derived from a single plant, and on a similar section on a standard mixed pasture, both sections being under a modified "mowing and grazing" technique; (vii) trial C, where types of timothy are compared with and without perennial rye-grass; (viii) trial D, where pasture establishment and growth following surface working-in only of a green-manure crop of barley are compared with the establishment and growth of pasture after a similar crop of barley was ploughed in and worked to a seed-bed in the usual manner; and (ix) trial E, where new types of phosphatic fertilizers from the United States and England are being examined against standard types of these manures. An additional pasture mowing trial with a new "long-rotation" type of rye-grass bred by the Grasslands Division, Department of Scientific and Industrial Research, is to be laid down shortly.

At the Stratford and Waimate West Demonstration Farms "rate of growth" trials are in progress on both a standard perennial rye-grass and white-clover sward and on one sown with a fifty-fifty mixture of "short-rotation" and perennial rye-grass, together with white clover. At the Winton Demonstration Farm a large-scale pasture mowing trial comparing the merits of serpentine-superphosphate and reverted superphosphate has been commenced. The pasture-production data from this trial will be supplemented with animal-production records, a policy which it is hoped to extend to many additional trials in the near future.

(b) *Observational Top-dressing Experiments*.—The major object with these trials is to complete the survey of every major soil type in the Dominion with respect to their fertilizer and lime requirements for maximum pasture-production of high-quality stock-food. This entails close co-operation with the Soil Bureau, Department of Scientific and Industrial Research, and ensures the fullest use and widest application of the trial results. A great deal of work requires to be done with regard to the summarizing of the numerous trials carried out in the past and in carrying out further experiments on the many soil types which have not been thoroughly examined from this point of view.

The other section of this work concerns the examining of the suitability of various types of phosphatic fertilizer—in particular, serpentine-superphosphate and reverted superphosphate—for particular soils and climates. The problems of hill-country top-dressing are not being forgotten, and in particular the practicability of more concentrated fertilizers is being investigated. The use of such fertilizers would reduce transport charges substantially, and they have also to be considered in connection with the possibility of top-dressing from aeroplanes. The soils of the trial areas are in all cases subjected to