THE MANURING OF NELSON PASTURES.

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INTRODUCTION:

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Grassland farming does not occur in the Nelson district on the same intensive scale as practised in Taranaki and the Waikato. A-somewhat low rainfall and the occurrence of droughts militates against optimum results in pasture production. Certain areas, however, at Wakapuaka, Richmond, Appleby, and Riwaka are noted for their good pastures and in the past have been associated with very good results under dairying.

With a view to secure information concerning the manurial treatment of some of these important pasture areas, mowing trials have been carried out by the Institute on several soil types covering a period of some years. The se have shown that the yield of pasture may vary considerably from season to season but that seasonal variation may be modified somewhat by manurial treatment.

In the present paper a general survey of the results obtained to date is given, each of the possible 'treatments, phosphat ic, nitrogenous and complete, being considered in order to bring out the individual effects of these types of fertilizer when used either alone or in conjunction with one or more of the others,, Most of the trials were carried out at the Marsden Research Farm of the Institute, at Stoke near Nelson, on the alternate mowing and grazing system devised by A. W. Hudson.

SUMMARY.

- 1. On most of the soil types of the Waimea County, Nelson, of which the, Stoke loam may be considered typical, sat isfact ory pastures cannot be developed unt il their deficiencies of lime and phosphate are made good.
- 2. For the best results both lime and superphosphate are necessary, but on some soil types considerable improvement in yield follows the use of superphosphate, only. On the Marsden Research Farm for example an increase in yield of nearly 600 pounds of dry matter per acre 'has been obtained following an application of superphosphate at the rate of 1½ cwt. per acre to a previously unlimed pasture.
- Increasing the superphosphate dressing from $1\frac{1}{2}$ cwt, to 3 cwt. per acre increased the yield on the Marsden area by about 200 pounds of dry matter per acre.

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Dividing a 3 cwt. application of superphosphate into two equal dressings in July and and in December did not significantly increase the yield as compared with application of the whole quantity in July.

- 4. Sulphate of ammonia at the rate of 1½ cwt. per acre, when used in conjunction with superphosphate, gives an increase in yield, compared with the superphosphate plots, in the spring period of about 200 pounds of dry matter per acre. Other nitrogenous fertilizers have given corresponding yields,
- 5. The distribution of pasture production throughout the season when sulphate of ammonia. is used is different, from that where superphosphate is used.
- 6. Compared with superphosphate as standard, sulphate of ammonia does not give such good yields in the later portions of the growing season. Superphosphate alone may in some seasons outyield superphosphate plus sulphate of ammonia, This effect becomes more marked season by season on areas topdressed annually with nitrogen.
- 7. Sulphate of potash, used in conjunction with phosphate and nitrogen, at the rate of ½ cwt. per acre has increased the yield of dry matter on the Marsden area, and has definitely tended to bring the distribution of pasture production throughout the season more into line with that given by superphosphate alone,
- 8. The use of a complete fertilizer has in all trials produced the best pasture and given the most satisfactory yields. Increases in yield over the untreated pasture amounting to as much as 2600 pounds of dry matter per have resulted from the use of complete fertilizers.
- 9. Under present day condit ions It does not appear to be profitable to increase the phosphate dressing on Nelson soils beyond a rate of 1½ owt, per acre; an addition of 1½ owt, sulphate of ammonia per acre will give an increased growth in the early spring but later in the season the yield may not be so good as when superphosphate alone has been used, Except on the Waimea stony loam (peaty phase), there is not sufficient evidence to warrant a general recommendation in regard to potash fertilization.