

## FIELD EXPERIMENTS SECTION.

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## CLASSIFICATION OF EXPERIMENTS.

- A. Research into fundamental grassland problems being carried out at—
  - (1) Experimental Farm, Marton.
  - (2) Farm of Instruction, Ruakura.
- B. Grassland investigations and demonstrations carried out by field officers of the Fields Division.
- C. Experiments on annual crops carried out by field officers.

## A. FUNDAMENTAL GRASSLAND PROBLEMS.

## (1) MARTON EXPERIMENTAL FARM.

## (a) MEASUREMENT OF PASTURE PRODUCTION THROUGHOUT THE YEAR BY MOWING WITH A LAWN-MOWER.

The six lines of investigation previously reported on have been continued.

The technique has been fully described in Part I of Bulletin No. 31 of the Department of Scientific and Industrial Research and in the *New Zealand Journal of Agriculture*, August, 1931.

(i) *Trial of Effect of applying Super and Slag as Winter, Spring, Summer, and Autumn Applications respectively.*—A full report on this investigation, covering a period of three years, has been published as Part II of Bulletin No. 31 of the Department of Scientific and Industrial Research, and a slightly abridged report appeared in the *Journal of Agriculture* for November, 1932. This experiment has been continued during 1931, but will be completed at the end of the fourth year.

(ii) *Trial to determine Effect of applying Superphosphate in Heavy Dressings at Infrequent Intervals against Lighter Dressings at Frequent Intervals.*—Biennial, annual, and twice-annual and thrice-annual dressings, each supplying 4 cwt. of super per acre per annum are being used.

A report covering the first two years has been published as Part III of Bulletin No. 31 of the Department of Scientific and Industrial Research.

(iii) *A Comparison of the Newer Concentrated Fertilizers with Equivalent Mixtures of Simple Fertilizers.*—Leunaphos is being compared with an equivalent mixture of superphosphate plus sulphate of ammonia. Nitrophoska is being compared with an equivalent mixture of super plus sulphate of ammonia plus potash. This trial has been in progress for over two years and a half, and a report will be published shortly as Part IV of Bulletin No. 31 of the Department of Scientific and Industrial Research. A brief summary appears in the *Journal of Agriculture* for July, 1932.

(iv) *A Determination of the Effect of applying Sulphate of Ammonia at Different Times of the Year.*—All treatments receive a complete dressing of minerals, and different plots receive an annual dressing of 2 cwt. of sulphate of ammonia at intervals of two months.

(v) *A Determination of the Effect on Production of utilizing Herbage at (a) the 2 in. to 3 in. Stage of Growth and (b) the 4 in. to 6 in. Stage of Growth.*—Dressings of phosphate plus potash are being compared with dressings of phosphate plus potash plus nitrogen under each of (a) and (b).

(vi) *A Determination of the Effect of using Sulphate of Ammonia mixed with Carbonate of Lime versus Sulphate of Ammonia alone.*—The object is to determine whether any loss of efficiency of sulphate of ammonia results when it is mixed with sufficient carbonate of lime to correct its acidifying effect.

*Chemical Analysis of Herbage.*—Dry-matter determinations are being made on all grass cut and soil-analyses are being carried out on some of the trials to determine the effect on the phosphate penetration of the soil of repeated applications of phosphate over a number of years. This work is being done by Mr. Doak, Analytical Chemist attached to this Station.

## (b) SHEEP-GRAZING TRIAL.

This trial, which has been described in previous reports, has been continued.

## (c) TRIALS TO OBSERVE THE EFFECTS OF DIFFERENT FORMS OF NITROGEN.

This trial is being maintained. The chief feature is the inferiority of sulphate of ammonia on unlimed ground.

## (2) MEASUREMENT OF PASTURE PRODUCTION THROUGHOUT THE YEAR BY MOWING WITH A LAWN-MOWER, RUAKURA FARM OF INSTRUCTION (AUCKLAND).

This trial is an extension of (1) above. Its object is to determine the effect of winter, spring, summer, and autumn applications of superphosphate. Applications of nitrogen in autumn and winter are also included.

## B. GRASSLAND INVESTIGATIONS AND DEMONSTRATIONS CARRIED OUT BY FIELD OFFICERS OF THE FIELDS DIVISION.

## (1) GRAZING TRIALS ON DAIRY-FARMS TO DETERMINE THE EFFECTS OF NITROGEN.

During the 1931–32 season these trials have been reduced to fourteen. Of these, eleven are in the North Island and three are in the Southland District.

In the third season the results were in very close agreement with those of the first two seasons as regards increase per hundredweight of nitrogenous fertilizer applied. The previous indications that the use of nitrogen was most effective on the pastures of highest production were, however, not confirmed.

## (2) GRAZING TRIALS TO DETERMINE THE RELATIVE MERITS OF HAWKE'S BAY PERENNIAL RYE-GRASS AND SO-CALLED PERENNIAL RYE-GRASS FROM CANTERBURY.

These trials are being maintained, and in the main the management has been satisfactory. All suffered to a great extent from the extremely dry conditions during the past summer, but in the majority of trials the Hawke's Bay recovered much more quickly than did the Canterbury rye-grass. Up to date the production from the Hawke's Bay rye-grass shows an average increase in six trials of 30 per cent. over that from Canterbury rye-grass.