Field Research

During the past year the trials designed to compare techniques of measuring pasture-production have been carried on and have given some interesting data. As part of this series a section was devoted to the " white clover " technique, in which the whole of the plots under comparison was planted with cuttings from one parent plant, thus eliminating variation in the material under trial. The whole area established well and promises to be valuable as providing a technique to be used in certain circumstances. The trial has not yet been running sufficiently long to give any reliable indications of the relative merits of the techniques under comparison.

The preliminary stages of the work on the possibility of using wethers kept at a constant weight to measure pasture-production on a fixed area have now been completed with promising results. A paper summarizing the results of the findings to date is being prepared. With certain modifications and safeguards, the method appears to hold promise of being of value for comparing fertilizer treatments on relatively large areas, but suffers from the drawbacks of the large expenditure of both money and time necessary to conduct trials on a comprehensive basis. During the coming year it is hoped to re-establish this trial, introducing various fertilizer treatments on the newly acquired area at Rukuhia.

Already progress is being made in connection with the development of peat soils. The nitrogen responses reported last year have given disappointing results on further observation. Though the initial effect is very large, it is not prolonged, and with present high costs of nitrogen it cannot be recommended for general use. There may be a sphere of use for artificial nitrogen in carrying on newly established grass until clovers develop sufficiently.

If results from the use of artificial nitrogen have proved disappointing, results from the use of lime, phosphate, and potash have given great encouragement. Some striking clover responses have been obtained, but chiefly where all these materials have been applied in combination ; results from any one of these in the absence of the others may be very disappointing. Work is proceeding to throw light on necessary minimum rates of applications and the frequency with which applications require to be made to maintain a satisfactory rate of pasture growth.

Though the use of artificial nitrogen has proved discouraging, the nitrogen balance of the peat soils is of utmost importance and must be approached through the growing of clovers. Extensive trials are being carried out to determine the precise conditions under which clovers can be made to thrive on raw peat.

Additional trials under way on the peat deal with the placement of fertilizer and also with the use of albino subterranean clover in comparison with the Mount Barker and Tallarook strains.

Irrigation and Soil-moisture Studies

Spray Irrigation Trials.—The irrigation trials referred to in last year's report have been continued. Since the start of the trials in January, 1947, the irrigated plots have received twenty-one irrigations.

Grass-production on the two unirrigated and the four irrigated plots has been measured throughout this period by weighing the grass cut on strips in each plot. The number of sheep-grazing hours on each plot has also been recorded. Throughout the year from January, 1947, to January, 1948, the plots receiving 1 in. of water at each irrigation carried 55 per cent. more stock and gave 42 per cent. more grass cut by the mower than the unirrigated plots. The plots receiving $\frac{1}{2}$ in. at each irrigation carried 36 per cent. more stock and gave 28 per cent. more grass cut by the mower than the unirrigated plots.