

SUBTERRANEAN CLOVER.

Strain Testing.—Good progress has been made with a study of strains of subterranean clover. Thirty-three lots were planted last May as spaced plants in blocks, and then the plants were allowed to spread and join up to form the equivalent of a broadcast plot. Regular notes and weighings have been taken, and important strain-differences have been noted. The different strains fall into one or other of four groups if dates of flowering and seasonal growth are both considered :—

Group I is early-growing, early-flowering, and relatively low-producing: Group II is early-growing mid-season-flowering, and high-producing. Group III is later-growing, mid-season-flowering, and only fairly good-producing. Group IV is very late to commence growth, late in flowering, and very heavy-producing in the late spring.

The strains which come within Group II would appear to be the best for New Zealand conditions since they are able to yield well in the early spring and in the early autumn. This autumn a further twenty-four lots have been planted out for study, but only six of them are strains which have not been grown at the Station previously.

Seed-production.—Following on the results of strain testing, nineteen blocks of single plants of the different strains have been planted in order to give increased supplies of seed for field trials and for later distribution commercially. The blocks are approximately 1/100th acre in size.

LOTUS MAJOR.

The tiller-row trial has been continued, and late in the spring a selection of eight plants was put out in an isolated corner. The plants recovered very slowly after transplanting, and as a result did not flower this season. The selection is being kept for seeding this coming summer and the seed obtained will be increase-grown.

Two hundred and fifty L1 plants obtained by selfing three original plants have been planted out but no selections were made from these this season.

ECOLOGY.

FIELD TRIALS.

A comprehensive series of strain trials has been arranged for the purpose of species, strains, and seed-mixtures trials on various soil types and conditions. Thirty-two trials have been made up during the year, and these have been laid down by the Fields Division and regular reports have been received. There is now a total of ninety-one trials in progress.

PASTURE ANALYSES.

The pasture analytical work has increased greatly during the year and further technique work has been carried out with the following methods: (1) Eye-determination; (2) point analysis; (3) dissection analysis of cut or plucked herbage.

The greater amount of this work has been in connection with the pasture trials at Marton, the feed-flavour investigation at the Dairy Research Institute, Palmerston North, and in conjunction with seed-mixture trials.

Much more of this exact work should be done in conjunction with plot and field trials.

PASTURE SURVEY WORK.

This has for its objective the mapping of pasture types in such a way as to indicate the following three phases of pasture progress: (1) The vegetation that each soil and climatic type will support in its natural or unimproved condition; (2) the modifications that have taken place to date in general; and (3) the potential type of sward that such soils or climatic type will support when fully improved. The pasture survey commenced in the Hawke's Bay County in January of the year under review, and up to the 31st March approximately 150 square miles had been mapped. This later will be correlated up with farm-management and soil-type, which surveys are proceeding hand-in-hand with the pasture survey.

FEED-FLAVOUR IN CREAM INVESTIGATION.

This has been continued in the Waikato and further extended at Palmerston North in close collaboration with the Dairy Research Institute and the Fields Division of the Department of Agriculture. An extensive programme of work was undertaken and the work in the Waikato enlarged to include work at Frankton and Te Awamutu as well as at Morrinsville. Forty farms at each centre were botanically surveyed and the cream-supply from these farms was subject to critical grading on the 0 to 10 basis for feed-flavour intensity. The major points determined in the previous year's work were confirmed. These may be again summarized as follows :—

- (1) Grass-dominant farms yield a cream low in feed-flavour intensity:
- (2) Clover-dominant farms yield a cream high in feed-flavour intensity:
- (3) The lower per-acre producing pasture types, consisting mainly of suckling clover, subterranean clover, and sweet vernal, produce the highest feed-flavour intensity, but the high feed-flavour intensity period is of comparatively short duration.
- (4) Dominant white clover farms with some rye-grass sub-dominant are high in feed flavour, and these extended well through the season:
- (5) Dominant rye-grass farms with white clover sub-dominant produced the best quality creams, these possessing a relatively low feed-flavour intensity throughout the season:
- (6) The evening cream gave a consistently higher feed flavour than the morning cream and this is evidently associated with the time prior to milking that the feed is consumed.

Control of feed flavour would appear to lie along the lines of pasture improvement and some experimental work was initiated to see how best pasture could be translated from clover-dominant to grass-dominant. Some 200 acres on ten farms were experimentally treated with nitrogenous manures, and paddocks so treated were compared with other paddocks on the farm. Owing, however, to the lateness of the spring growth little could be done to ration the herd on these nitrogen-treated fields owing to the fact that the areas treated were constantly in use by the herd because of a general feed shortage.

It is intended to continue the investigation and in addition to compare heavily phosphated fields with fields treated with nitrogenous fertilizers.

At Palmerston North the work involved the preparation, sowing down, and fencing of special pure and mixed pastures for field grazing, and the provision of pure feeds that were cut and fed indoors to stall-fed cows.