

SUGAR-BEET RESEARCH SECTION

Research Officer: Dr. O. H. FRANKEL

Sugar-beet Crop, 1942-43.—Growth on the new experimental area at Tai Tapu, 2½ acres in size, was very satisfactory. The average weight of roots tested was 1,108 grams, against 809 grams in 1942, and the estimated yield of topped beets was about 20 tons per acre, against 12 tons to 13 tons in the preceding year. Mean sugar percentage was about the same in both years—17·5 per cent. The total number of sugar tests made was 24,183, involving over 35,000 beets.

Of the thirty-four progenies of selected beets under test, six were significantly superior in sugar yield to the level of 105 per cent. of Kleinwanzleben B. In a variety trial of eleven varieties, including American and Canadian lines, the standard (Klein B) and Schreiber S.S. were significantly better than all other varieties. The American lines are specifically selected for resistance to leaf-spot or virus, neither of which is a major factor in New Zealand. New-Zealand-grown commercial seed, which was included in the trial, showed signs of natural hybridization with silver and spinach beets.

Seed Beets.—Of the 2,000 beets selected for further breeding, nearly all produced satisfactory seed in 1944. They were planted out in ten locally-isolated groups. About 500 beets, selected to produce commercial seed for feed beets, yielded about 140 lb. for multiplication.

Sugar-beet Crop, 1943-44.—The same area as in the preceding year was used. Four trials were sown containing progenies of our own selections and a number of German and American varieties.

Polyploidy.—Work on the production of polyploid beets by colchicine treatment of seeds as well as of growing points has been continued.

SOIL SURVEY

Soil survey investigations are undertaken by the Soil Survey Division (Dr. L. I. Grange, Director) and by the Cawthron Institute (Sir Theodore Rigg, Director).

Soil Survey Advisory Committee.—Sir Theodore Rigg (Chairman), Mr. J. Bell, Mr. F. R. Callaghan, Mr. P. Smallfield, Mr. A. H. Cockayne, Dr. L. I. Grange (Secretary).

The above Committee was set up during the year by the Council of Scientific and Industrial Research to facilitate co-operation and co-ordination of the work of the Soil Survey Division with that of other Divisions and Departments and to suggest avenues along which soil research could be directed.

SOIL SURVEY DIVISION

General Survey, North Island.—The soil map of the North Island is being corrected and prepared for printing.

During the year the staff compiled from the soil data a fertility map of the North Island on a scale of 4 miles to an inch. The classes identified are as follows:—

Class I.—Level or undulating land, not too elevated, with deep soils and favourable moisture conditions, and which are, or can be, converted into high-quality farming-land:

Class II.—Ploughable land which can be converted into only fair- or medium-quality farming-land on account of some limiting factor to productivity—

Group (a): Soils in which moisture is a limiting factor;

Group (b): Soils in which some other factor such as texture, structure, drainage, elevation, or depth of soil is a limiting factor.

Class III.—Ploughable land which has severe limitations to productivity and requires further investigation before development is attempted:

Class IV.—Hilly or steep land which will maintain grass pasture with little or no top-dressing. Both topsoil and subsoil are of high fertility and erosion is not a serious problem:

Class V.—Hilly or steep land of moderate to low fertility. Light top-dressing is required to maintain a cover of grass, and careful management is necessary to prevent serious erosion:

Class VI.—Hilly or steep land which has severe limitations to utilization, such as low fertility or erodibility. This class is probably more suited to forest than to grass.

From this table it can be seen that there are three classes of fertility on the easy land and three on the hilly and steep land. The easy land amounts to 30 per cent. of the total area of the North Island. The map provides valuable data to those responsible for the development of farming-land and in land-utilization problems generally. One of the broad matters the fertility map raises is that the problem soils of Class VI occupy about half the area of the Island. Being so widespread, it is obvious that investigations should soon be commenced to ascertain what use should be made of this class of land.

General Survey, South Island.—A soil map on a scale of 4 miles to an inch has been constructed of the district lying between the Conway and Rakaia rivers in Canterbury, of the district between the Wither Hills (Blenheim) and the Awatere River, and of the greater part of Southland.

Linen-flax Surveys.—Mapping of soils in the Timaru-Geraldine area is well advanced, and the field officer was able to co-operate with the Fields Division of the Department of Agriculture in the selection of paddocks for the growing of linen flax during last season. Further mapping has been done in the linen-flax areas in the Leeston and Rangiora districts.