

YELLOW-LEAF IN NEW ZEALAND FLAX

In co-operation with the Botany and Plant Diseases Divisions, an investigation has been commenced on boron and its relation to the incidence of yellow-leaf. So far as the investigation has gone, there does not appear to be a clear correlation between boron in the plant and the health of plant. It is noted, however, that the boron level is high in New Zealand flax for a monocotylous plant and therefore it might react to a sub-optimum supply of boron in the soil.

Glasshouse Soils.—Work on a problem at the Hutt, where severe chlorosis had been encountered in tomatoes, has been suspended this season for want of suitable material. A hypothesis of an induced magnesium deficiency has been followed up, and analyses to date have shown the general low level of magnesium in chlorotic leaves, the pattern of magnesium on any one leaf, and the distribution of magnesium in leaves from different parts of the plant. The magnesium level in the soil is not nearly as low as that associated with sandrown in tobacco or premature defoliation of apples.

Kerikeri Moisture Survey.—A short paper has been prepared in collaboration with the Horticulture Division on the relation between lemon-tree performance and soil moisture in a dry season.

Pacific and Nearby Islands.—Analyses have been made on soils sent from Raoul and Aitutaki Islands. The soil from Raoul Island, derived from andesitic ash, is similar to that found in Taranaki, but is much younger. It is well supplied with lime, magnesia, potash, and soda, but the phosphate figures are variable.

The Aitutaki soil was of good fertility in the top 3 in., but decreased to low levels in both bases and phosphates in the subsoils.

Techniques.—Particular attention has been paid to shortening base-exchange procedure by faster leaching of soils and by the use of semi-micro methods. The North Auckland clays have been more difficult to handle this way, and work is in progress on the discrepancies found between the new and the standard methods.

A chemical examination has been made of samples taken from the dung and urine plots of the Grasslands Division at Lincoln and from a field at Southbridge. The data suggest that about 20 acres are necessary to make a sample, the analyses of which would be as reproducible as the chemical accuracy would allow.

SOIL PHYSICS

Soil Mechanics.—The bulk of the work has been concerned with subsurface surveys of sites for large buildings for Government Departments and local bodies.

Building-site Surveys.—Locations which have been reported upon as to anticipated buildings, settlements, or stability of foundations included hospital, post-office, freezing-works, and bank building sites.

Aerodromes.—An officer of the Soil Bureau has been co-operating with the Public Works Department, Auckland, in an investigation of soil conditions under the existing concrete runways at Whenuapai Air Base to obtain data applicable to the design of the runways for heavier aircraft.

A survey was made of the two major R.N.Z.A.F. stations in Fiji. The soils were evaluated in accordance with possible requirements for a class B international airport.

Earth Dams.—Material of glacial origin has been tested with a view to the construction of an earth embankment for raising the level of Lake Pukaki.

A site survey and laboratory tests have been made for the construction of a small earth dam for the Marton Borough Council.

Investigational Work.—Ground conditions in the South Dunedin area, where excessive settlement of structures has occurred, have been examined. Indications are that plastic movement of the soil has also taken place.

Observations have been made on the presence of buried beds of peaty soils in the northern part of the Christchurch City area.

A retaining-wall failure was investigated by soil-mechanics methods. The seepage of water into a poorly compacted backfill was primarily responsible for the trouble.

Calculations have been made of the passive earth resistance of anchor blocks for cableways.