POT CULTURE TESTS

A start has been made in the organization of pot culture tests with different indicator plants for minor element deficiencies on two selected Nelson soils. Reagents to be used in nutrient solutions have been examined for contamination with different minor elements. Quartz sand and the two selected Nelson soils have been examined for minerals, including content of manganese, iron, zinc, and copper. The town supply has been selected as the best available for the watering of the pots. This water is very low in copper, zinc, manganese and iron—all elements that will be investigated in the pot culture tests—and it contains relatively large amounts of calcium and magnesium. After purification by passing through a demineralizing unit, a satisfactory reduction in both calcium and magnesium was obtained, and the contents of copper, zinc, and iron were lowered to 0·007 p.p.m., 0·057 p.p.m. and 0·090 p.p.m. respectively.

SOIL INVESTIGATIONS

TOBACCO SOIL

Tobacco Soil Surveys.—The soil survey of the Stanley Brook Valley has been completed, and tobacco soil maps of this area and the Tapawera locality have been prepared and made available to the Tobacco Board and interested organizations. Base maps have been secured of a small area covering the Baton and Dove River locality, and it is hoped to finish field-work on this area at an early date. This will complete the survey of all alluvial soils in the Waimea County climatically suited to flue-cured tobacco.

In view of marked differences in chemical chracteristics of alluvial soils resulting from the nature of the parent material from which the soils have been derived, it has been found desirable to show on the tobacco soil maps not only textural differences, but also origin of the parent material.

A summary of the acreages of potential tobacco land in different categories has been prepared and estimates made concerning the further development of the flue-cured-tobacco industry in the Waimea County.

Chemical Analyses of Tobacco Soils.—Chemical data have been completed for fifty-nine samples of soil collected from fields actually used for tobacco. The soils are representative of five major soil groups in the Waimea County, and show marked differences in base status and content of available plant-food.

In general, the analyses show that all tobacco soils are high to very high in available phosphate. This is particularly marked in the Motueka-Riwaka district and in the lower Motueka valley. The potash contents of the tobacco soils, on the other hand, show medium to rather low figures. This is in keeping with the good results that have been obtained at the Tobacco Research Station from the use of potassic manures for flue-cured tobacco on sandy soils.

The soils show wide variation in acidity. The base saturation of individual samples of tobacco soil varies widely from 17 per cent. to 93 per cent., but the majority have a base saturation of 50 per cent. to 60 per cent.

There are marked differences in the content of exchangeable magnesia in different soils. Low figures are associated with all soils derived mainly from granite at Umukuri, Sandy Bay, Pangatotara, Baton, Graham, Pearce, and Stanley Brook valleys. Dune sands, too, are low in this base, but high figures are associated with tobacco soils at Tapawera.

Considerable variation was found in the nitrogen content of tobacco soils. A great number of sands and sandy loams ranged from 0·08 per cent. to 0·12 per cent. total nitrogen, but there were several samples of sandy loams and light phase silt loams which contained up to 0·25 per cent. nitrogen.

(See also " Tobacco Research " on p. 60.)