

in gardens at Rakau and Motupiko. The occurrence of "die-back" in raspberries this season has interfered with the conduct of the main fertilizer trials in one garden, but in the other the complete manure and complete plus extra potash gave very good results. It is interesting to note that raspberries are susceptible to chlorine injury and this season considerable "leaf-scorch" occurred from the use of muriate of potash.

Besides the good results obtained with borax, copper has given improved growth of foliage. Manganese appeared to give some improvement in the general condition of the raspberry-bushes, but zinc seemed to be detrimental. Further treatments with copper sulphate have been arranged.

Plant-food Status of Permanent Manurial Blocks at the Appleby Research Orchard.—An attempt has been made to secure more information concerning penetration of phosphate in the soil by extraction with strong hydrochloric acid, and considerable increase in the content of phosphoric acid in the 0-6 in. depth and the 6-12 in. depth of soil was shown. There was little, if any, recovery of added phosphate below the 0-12 in. depth. In two treatments containing superphosphate, the amount of phosphoric acid (P_2O_5) increased 0.07 per cent. in the 0-6 in. depth and 0.014 per cent. in the 6-12 in. depth as a result of fourteen years' treatment.

Characteristic Symptoms of Plant-food Deficiencies in Dougherty Apples.—Trees receiving P + N treatment for twenty years show pronounced "die-back." The leaves are small and are light green in colour. Little if any "scorch" of the leaves was seen this season, which was rather dry. In addition to pronounced "die-back" of the trees, the most noticeable feature of potash deficiency is the small size of the fruit and its poor colour. Trees which received K + N treatment show "die-back," but not so pronounced as with P + N treatment. The leaves are dark green with a purple tinge and with a red pigmentation of the leaf stalk. The fruit is of good size and colour. Trees with K + P treatment show very little "die-back," but growth is very short or absent. The leaves turn yellow much earlier than with the complete treatment. Fruit ripens early and is of fair size and highly coloured. Trees with complete treatment still make good growth. The leaves are bright green and of good size. Fruit tends to be later and lacks the high colour of the K + P treatment. Trees with complete treatment are now outstanding both in growth and yield of fruit.

Apple Stock Experiments at Annesbrook Orchard.—Tests of Double Vigour (French Crab vegetatively propagated) for the Statesman variety continue to show to advantage over Northern Spy stock. The total yield for the last five years shows 1,058 lb. per tree for Double Vigour, and 835 lb. per tree for Northern Spy.

A vegetatively propagated stock derived from Epps' seedling has given much greater growth with Cox's Orange and Jonathan varieties than has Northern Spy Stock.

"Die-back" of Apples in the Tasman District.—Work is being continued on the fungi associated with fireblight cankers. Further information on the wide distribution of "white heart-rot" fungus (*Polystictus versicolor*) has been obtained.

*Control of Black-spot of Pears (*Venturia pirina*).*—In a spray test carried out on the susceptible Glou Morceau variety, the advancement by ten days of the first Bordeaux spray to coincide with the time of maturation of ascospores appears to have given improved control of black-spot.

Raspberry Diseases.—A survey of diseases affecting raspberries in the Tapawera and Riwaka districts has been made. Detailed examinations are being continued in three gardens where unusual disease symptoms were found.

(See also "Fruit Research Station" on page 33.)