

In a demonstration plot to show how mosaic is spread by handling, the results of previous seasons were confirmed. In the control plot the percentage of infection was 1.4, while in an adjacent plot where 1 per cent. of infected material was handled, the infection was 93 per cent.

Verticillium Wilt

A small area of heavily infected land was treated with chloropicrin at 4 c.c. per square foot. This gave complete control of the disease. On an adjacent area treated with D-D the amount of disease was greatly reduced but not eliminated. A number of lines, including some *Nicotiana* species, were grown on infected land to determine whether any possessed resistance to the disease. Two varieties, T. 448A and Ky. 34, while not immune, appeared to be relatively resistant.

Black Root-rot (Thielariopsis)

A survey of tobacco seedling beds of growers in different parts of the Waimea County showed only light infection with black root-rot.

Resistance of Cover-crops to Black Root-rot.—Several varieties of lupins, oats, barley, ryecorn, clovers, and vetch were grown in soil infected with black root-rot, and at a certain stage of growth the roots of the plants were examined for black root-rot. Algerian and Garton oats, barley, white clover, and vetch showed no infection, while ryecorn and red clover had less than 1 per cent. infection.

Lupins, however, differed widely in their susceptibility to black root-rot. Sweet Blue and Sweet White lupins showed 34 per cent. and 29 per cent. infection respectively. Pink Bitter lupins, with 48 per cent. infection, proved the least resistant, and Sweet Yellow lupins, with 3 per cent. infection, the most resistant to the fungus. New Zealand Blue lupins gave a figure of 18 per cent. infection. In all cases, infection with black root-rot must be regarded as in the "slight" category, and did not affect the growth of the crops. At a later examination an increase in infection was noted with New Zealand Blue lupins (54 per cent.) and with Pink Bitter lupins (69 per cent.).

Resistance of Tobacco Varieties to Black Root-rot.—Several varieties of tobacco were tested under seedling-bed conditions for resistance to black root-rot. The variety, Delcrest, showed the greatest resistance to the fungus, some 49 per cent. of the plants giving only slight to no infection. Vesta (all strains), H. Sp. 215, H. Sp. 218, Special 400, and Special 402 all showed very general infection of roots with black root-rot.

Sources of Black Root-rot Infection.—In view of the identification of black root-rot fungus in soil used by tobacco-growers for top-dressing seedling beds, further examinations have been made of soil normally collected by transport companies. Two locations were found to be infected with black root-rot, and a warning was issued to growers concerning the use of soil from these locations in the preparation of seedling beds.

Collar-rot (Sclerotinia)

Experiments have been continued with a view to the control of collar-rot in tobacco-seedling beds. This year Fermate and Shirilan were tested on infected soil. Neither chemical gave a satisfactory control, although a considerable reduction in infection of the tobacco seedlings occurred. Fermate was the more effective of the two fungicides.

TESTS OF VARIETIES

Once again Harrison's Special 215 maintained its reputation of high yield combined with good quality. Special 400 also yielded well, but it produces a thinner type of leaf, and the plant laterals freely, which is a serious consideration when labour is limited. Three new Oxford varieties bred for disease resistance produced only moderate yields.