

while the ghost-spot phase infected in some instances 10 per cent. of the fruit. A collar-rot condition affecting up to 10 per cent. of plants was associated with *Botrytis cinerea* where tomatoes had been mulched with pea-straw. Foot-rot (*Phytophthora cryptogea*) occurred in two houses. There were no severe infections of mosaic or spotted wilt under glass, but spotted wilt was found in outside crops up to 12 per cent. Tomato-streak virus was recorded at 1 per cent. in several houses.

Leaf-mottling of Tomatoes. A widely-occurring condition was characterized by yellow inter-venal discoloration and eventual leaf necrosis in affected parts. Crop records indicated growing incidence of this condition with heavy artificial manuring involving lime and/or potash. Magnesium or manganese deficiencies were believed to be a factor.

Wheat

The results of the Canterbury survey of powdery mildew (*Erysiphe graminis*) and of the studies on biological strain specialization of this fungus are to be given in a later report. Of other diseases, *Cercospora*, eyespot, had been found over a wider area; leaf rust (*Puccinia elymi*) was very severe in parts of North Canterbury, while an infestation of loose smut in a crop of Dreadnought variety was recorded as 14 per cent.

Potato Diseases

A review on potato diseases and their control, based on published research papers covering 1,200 titles, was made by a research student.

Speckled-leaf Blotch: Wheat

The fungus *Septoria tritici* was under investigation, and pathogenicity was established by spore suspension inoculations.

Efficiency Standards in Wheat Seed Disinfection

The washing procedure for determining fungicidal dust load on commercial grain samples was tested by the Dominion Laboratory, and indications showed that it was reliable and satisfactory.

Soil Actinomycetes

Morphological descriptions and physiological studies were made on eleven isolates of *Actinomyces*. Antibiotic activity was demonstrated, especially with *Actinomyces dermatonomus* from lumpy wool. Isolates were studied under controlled conditions involving aeration, temperature, and moisture.

Work Completed

The research projects completed were: wheat diseases and insect pests; wheat-seed testing with reference to the disease factor and efficient fungicidal dust coverage; a statistical study of peas emergence trials; studies on a fungus (*Septoria pisi*) causing a foliage disease of peas; and a study on soil actinomycetes.

Bacteriology

The two investigations—pathogenic bacteria in farm milk and lysis of acid-fast bacteria by wax moth haemolymph fractions—were continued. A machine was constructed to extract haemolymph from the larvæ by puncturing the heart with a high-speed drill and extracting the haemolymph with a suction needle. The larvæ survive at least two-weekly bleedings.