### Ear-rot of Maize (*Fusarium moniliforme*).

Experiments have shown that seed infected with this disease may be disinfected by dipping for ten minutes in water held at 137° F., that this treatment reduces the amount of seedling mortality caused by the disease, but that there is no connection between seed infection and the incidence of the disease in the ears, the latter being due to air-borne infection.

## III. POTATO DISEASES.

### Corticium Disease.

It has been demonstrated that four years in grass is sufficient to eliminate corticium disease from the soil.

### Verticillium Wilt.

It has been found that there is no correlation between the presence of stem-end discoloration and verticillium infection in potato tubers.

## IV. DISEASES OF PEAS, BEANS, LUPINS, Etc.

### Virus Diseases.

It has been shown that sore-shin disease of blue lupins is caused by the virus of pea-mosaic, and that it is transmitted by *Aphis rumicis*. Experiments indicate that it is not seed-borne.

The host range of pea-mosaic (previously known to attack peas, broad beans, and red clover) has been extended to include blue lupins, sweet peas, alsike, and subterranean clover. The disease has a very marked effect on time of maturity and yield of garden peas. Two varieties have been found that, up to the present, are immune to the disease.

A mechanically transmissible mosaic disease has, for the first time, been demonstrated to occur in French beans. Preliminary experiments indicate that it may be transmissible by aphides.

### Bacterial-wilt of Beans.

A field experiment has demonstrated the possibility of cleaning up a lightly infected line of French beans by early and persistent rogueing of infected plants.

## V. MANGEL DISEASES.

Field experiments with various organic-mercury dust treatments for mangel-seed yielded no results. No disease developed in the plants from either the treated or the untreated seed.

## VI. FRUIT DISEASES.

### Mouldy-core of Delicious Apples.

Investigations are in progress to determine the fungi responsible for the rot associated with this condition and the factors responsible for its occurrence.

### Damping-off of Tomato Seedlings.

This trouble has been shown to be due to either of two fungi, *Corticium vagum* or *Phytophthora* spp. The best control was obtained by soil disinfection with steam or with Formalin.

### Leaf-mould of Tomatoes.

It was shown that the best measure of control of this disease was obtained with lime-sulphur, sulphur dust, and Shirlan Ag.

### Virus Disease of Tomatoes.

It has been shown that the virus disease of tomatoes in the Hutt Valley formerly called "black stripe" is in reality a "spotted wilt," and that it is prevalent also in other parts of the Dominion.

### Strawberry Virus Disease.

This has been shown to occur in the nurseries which supply the plants for Auckland commercial growers. Transmission of the disease has been obtained up to 100 per cent. by means of the strawberry aphis.

### Woodiness of Passion-fruit.

This is under investigation to determine the cause.

## VII. TOBACCO DISEASES.

### Tobacco Mosaic.

This virus disease has been shown to be spread mainly by human agency during the operation of pinching the laterals. It may also be carried in a very small percentage of the seed from infected plants and in the seed of tomatoes and the weed *Solanum nigrum*. All attempts at insect transmission have failed.

## VIII. DISEASES OF ORNAMENTALS.

A disease of roses, apparently due to a virus, and the rust diseases of pelargoniums, chrysanthemums, hollyhocks, and anemonies, have been the subject of experiments with a view to finding means of control.

## IX. MOULD FUNGI OF FOODSTUFFS.

Investigations into the fungi responsible for mould deterioration in meat, butter, cheese, bacon, &c., have been carried out both in Great Britain and in conjunction with the Dairy Research Institute at Palmerston North. Much knowledge has been gained on the conditions which determine mould attack, especially on chilled meat and on butter-boxes, thus enabling effective measures to be taken for its prevention.