

POLLEN FOR MEDICAL INSTITUTES

This service has been continued and 462 grams of pollen were supplied during the year.

METEOROLOGICAL STATION

The equipment of this station is now complete and climatological data is recorded daily.

PLANT DISEASES DIVISION

Director: Dr. G. H. CUNNINGHAM

I. PLANT DISEASES INVESTIGATIONS

(a) *Turnip-mosaic*.—Further investigations on resistance of swede varieties have confirmed the high resistance of Sensation and shown that the new variety, Dryland, produced by the Agronomy Division, is almost equally resistant.

(b) *Aphid Survey*.—A survey of potato crops in Manawatu, Rangitikei, and Hawke's Bay districts was carried out for the Department of Agriculture. Its purpose was to ascertain if any region suitable for production of seed tubers was free from aphides which carry virus diseases.

(c) *Pea-mosaic*.—Work of breeding garden-pea varieties immune to this virus has been continued in collaboration with Agronomy Division. Of eighteen crosses tested, one only proved susceptible.

(d) *Cucumber-mosaic*.—Work is being carried out to ascertain if any cucurbits grown in New Zealand are resistant to this virus. All commercially grown varieties proved susceptible. Varieties of pumpkin, marrow, and squash are also being tested.

(e) *Tree-tomato Mosaic*.—A virus disease has been demonstrated on this host. It has been found to be transmitted by aphides. The identity of the virus is being investigated.

(f) *Spotted-wilt*.—The natural host range of this virus has been extended to include calla lily at Auckland and garden pea at Christchurch.

(g) *Tomato Viruses*.—During the year an additional two virus diseases have been discovered on tomato. Their identity is being investigated.

(h) *Leaf-mould-resistant Tomato*.—Work is being continued on breeding a dwarf tomato resistant to the fungus *Cladosporium fulvum*. Several crosses have been produced which are of good quality and yield well but have not yet been tested for resistance to leaf-mould.

(i) *Yellow-leaf*.—A comprehensive investigation has been commenced into cause and possible control of this disease of *Phormium tenax*. Yellowing follows death of roots and rhizomes. Over nine hundred isolations from diseased material have been made which yielded various fungi and bacteria. Inoculations have been made with these, but results are not yet available. The symptoms have been produced under artificial conditions without use of any pathogen, suggesting the disease may be of physiological origin.

(j) *Head-smut of Maize*.—Investigations have shown the fungus is both soil and seed carried.

II. THERAPEUTANTS

(See also Fruit Research Report, p. 20.)

A. Improvements in Disease Control

(a) *Anthraxnose of Beans*.—Further work has been carried out to ascertain effects of Bordeaux mixture and Cuprox sprays on control of the fungus *Colletotrichum lindemuthianum* attacking dwarf beans. Results are not yet available.

(b) *Halo-blight of Beans*.—Similar investigations into control of this bacterial disease have been continued. Results were affected by the abnormally dry season. Copper sprays reduced infection to a low percentage. One copper product caused appreciable leaf injury.