

III. Plant Diseases Investigations

Codling-moth.—Work on the seasonal cycle is being continued in Hawke's Bay. Results to date show that one main generation is produced extending from late October to the end of January, with a partial second generation in February.

Various modifications of the current spray programme are being tested with a view to improving control of this pest, trials being made with D.D.T. at different stages of development of blossoms and fruits and at different dosages.

Bacterial-spot of Plums.—Of three sprays used in a field-scale experiment, Bordeaux mixture (1-2-50) alone gave adequate control, lime sulphur (1-80) and Fermate (5-100) proving almost worthless.

Apple-mosaic.—Experiments have demonstrated that this widespread disease is caused by a bud-transmitted virus.

Shell-bark of Lemons.—Prevalent in many Tauranga orchards, this disease has been found to be caused by *Diaporthe citri*, hitherto secured only from stem-end rot of fruits. Work is being carried out on its control.

IV. Tests of New Therapeutants

Black-spot of Apple.—Dithane, Fermate, and Phygon, each at three dosage rates, have been compared with the current spray programme for control. Though experiments are not completed, results to date indicate that Phygon has given a high degree of control, Dithane is more effective than, and Fermate comparable with, the current programme.

Ripe-spot of Apples.—Comparative trials are being made at Appleby Research Orchard with Dithane, Phygon, and the standard spray of Bordeaux mixture for improvement in control of ripe-spot.

Woolly-aphis.—Gammexane at several dosages gave almost complete control of this pest in the research orchards at Appleby, Oratia, and Owairaka.

Red-mite.—The proprietary Selocide and Dynone were tested on apple-trees for control of this pest. The former gave almost complete control of both European and clover red-mite, while the latter was less effective.

Gammexane at the high dosage rate of $\frac{1}{2}$ lb. to 100 gallons also gave control of both species.

Brown-rot of Peaches.—Control trials were made at Oratia on the variety Paragon with the proprietary Phygon. Results were inconclusive, since only slight infection developed owing to the dry season experienced. After six days in store, however, fruits from treated plots showed considerably less infection than fruits from check plots.

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Magnesium-deficiency Investigations.—Further analyses of individual leaves from apple shoots have been made to determine their magnesium and potassium contents. The results have confirmed the data reported in previous years. This work is now being prepared for publication. It is clear, moreover, that much more information on the seasonal variation in magnesium and potassium contents is required before a complete picture of the changes in concentration of these elements in the leaves will be available.

Long-term Manurial Experiments at Annesbrook Orchard.—Dougherty trees treated with different fertilizers for many years now show outstanding differences as a result of the omission of particular plant foods. The trees with complete fertilizer (nitrogen, phosphate, and potash) are outstanding in growth and yield characteristics. Those treated with phosphate and potash only come next in order of merit. Trees with phosphate and nitrogen only are now showing severe "die-back," resulting in the complete failure of some trees. Untreated trees, as noted in earlier reports, showed severe "die-back" symptoms several years ago.