

(2) *Feijoa*: A study of some seventy seedlings of *Feijoa sellowiana* revealed great variability in fruit type and indicated that for commercial culture only grafted trees the scions of which have been taken from trees bearing fruit of good type should be planted. Attempts to propagate the feijoa from cuttings in the open were not successful. Conditions were unfavourable, however, owing to the prolonged drought.

(3) *Avocado*: Seed of various types of avocado received from the Department of Agriculture, Fiji, is being grown to provide rootstocks for named varieties.

(4) *Guava*. The yellow guava (*Psidium guajava*), grown from seed supplied by the Citrus Experiment Station at Riverside, California, is making poor growth and is probably insufficiently hardy for this climate.

(5) *Other Sub-tropicals*: A range of other sub-tropicals is being raised from seed forwarded by the Bureau of Plant Industry, United States of America. Germination has been good, and the plants will in due course be set out to test their suitability for local conditions.

(c) *Plant Hormones*.—Indolyl-butyric acid (15 parts per million) considerably increased callus formation in softwood cuttings of sweet cherry, but failed to induce rooting. Tests of a commercial preparation for the prevention of pre-harvest fruit-drop gave negative results with the Jonathan apple. Work is being continued.

(d) *New Zealand Fruitgrowers' Federation Nursery*.—Further supplies of rootstocks were sent to the federation nursery at Levin during the year. Technical advice has been given on development of the nursery and on tree propagation. The work of district Bud-selection Committees has been closely supervised. Trees of some fifty varieties of apple, pear, peach, plum, cherry, and apricot have been certified for the provision of buds for the nursery.

II. Plant Diseases Investigations

(a) *Disease Control*.—(i) *Codling-moth of Apple*: Studies are being continued on the seasonal cycle and biology of this pest in the research orchard at Hawke's Bay. In the 1945-46 season two generations developed, the second during the month of February.

(ii) *Crown-gall*: In 1941, peach-trees were inoculated with the bacterium to ascertain if the disease was of economic importance in the Dominion, and the experiment has now been concluded. All inoculated trees showed typical galls, whereas adjacent check trees were free. Infected trees were stunted, made poor growth, and averaged two-thirds the weight of the checks.

(iii) *Citrus-canker*: The bacterium was recently isolated from two citronelle trees growing in waste land in the vicinity of Kerikeri. Fortunately, infection was confined to an old abandoned plantation not in the commercial area. The disease has also been found in two small non-commercial orchards in Gate Pa district, Tauranga.

(iv) *Verticillium-wilt of Apricot*: The causal fungus (*V. dahliae*) has been isolated from apricot wood taken from wilted trees in various orchard areas in Central Otago, trees in all cases growing in land previously planted in tomatoes, one of the hosts of this organism.

(v) *Green-crinkle of Apple*: The condition, not uncommon in apples and pears, closely resembles "false sting," recorded from Canada as being of virus origin. In New Zealand it has been shown to be carried in scion wood, but as yet no evidence has been secured to indicate that it is caused by a virus. Further work is in progress.

(vi) *Bitter-rot*: The causal fungus (*Glomerella cingulata*) has been isolated from fruits of the hedge plant *Acmaena floribunda*, commonly used as a shelter hedge in Auckland Province. The record suggests the inadvisability of using the plant for shelter-belts around orchards containing apples and pears.

(vii) *Bacterial-spot of Plum*: Further trials were carried out on the varieties Doris and George Wilson with Bordeaux 3-6-100, lime sulphur 1-80, and Fermate 3-100. Fruit infection at picking was as follows: bordeaux, 5.3 per cent.; lime sulphur, 30 per cent.; Fermate, 28 per cent.; and checks, 32 per cent. Bordeaux again caused appreciable foliage damage.