

SMALL FRUITS.

STRAWBERRY.

Yellow-edge.—A survey made of commercial strawberry areas during the year by the Plant Diseases Division indicated that this virus was present in all crops. As the symptoms varied with several varieties, attempts are being made to ascertain if more than one virus is present in the Dominion.

Isolated plots of stock plants of a number of varieties have been established in the State Forest Service plantations at Riverhead. It is hoped that by rigorous selection virus-free lines will be secured and maintained.

Work is also being carried out on the popular variety, Marguerite, with a view to producing strains that will be free from disease.

Variety Trials.—Yield trials of the varieties Captain Cook and Marguerite, the two commercially grown in the Auckland District, did not give any significant difference in favour of either variety. Yield of Marguerite was, however, impaired by the presence of yellow-edge virus, upwards of 70 per cent. of plants being infected with the disease. Several other varieties imported from overseas or raised within the Dominion were included in the trial, but proved much inferior in cropping power to the two mentioned.

Root-rot.—Plants of Captain Cook and Marguerite infected with root-rot typical of the disease as it appears in commercial areas throughout the Dominion were secured from the Owairaka area. From many of these a species of *Ramularia* was isolated, and this will be used in the glasshouse or inoculation experiments, for which purpose seedling plants are now being grown.

RASPBERRY.

Cane-wilt.—Observations made during the survey of berry crops indicated that this disease, caused by the fungus *Leptosphaeria coniothyrium*, is the most serious raspberry disease in New Zealand. Although it can be effectually combated by three applications of Bordeaux mixture, few growers had applied sprays to their crops.

Crown-gall.—During the survey this disease, *Phytophthora tumefaciens*, was collected in most localities where raspberries are grown commercially. The casual bacterium has been isolated, and inoculation tests have shown that it will also produce typical cankers on blackberry and tomato. Work is being carried out to ascertain the effects and the economic significance of crown-gall on these three plants.

Silver-leaf.—The fungus causing silver-leaf disease of fruit-trees was found attacking raspberry plants at Kumeroa.

CITRUS.

At the end of the year under report, the lease of the Mount Albert rootstock and variety test area was terminated, and the whole work on citrus is now concentrated at the Plant Diseases Division at Owairaka. The Mount Albert area was laid down and controlled by a special committee of the Auckland District Council of the Royal New Zealand Institute of Horticulture, and a contribution towards maintenance was made by the Department. The trials at the area had served a very useful function for demonstrational purposes, but for critical comparison of stocks and varieties they were proving inadequate in scale in view of the amount of work that had been attempted.

ROOTSTOCK EXPERIMENTS.

Some hundreds of stocks have been budded with a variety of sweet orange, and will be ready for selection and planting out in the winter of 1942. Material being grown includes double-worked trees in addition to simple combinations of stock and scion.

VARIETAL INVESTIGATIONS.

Sweet-orange stocks have been budded with thirty-eight varieties of sweet-orange, fourteen of mandarin, five of grapefruit, and three of tangelo. The scion varieties include many secured from Mr. Hayward Wright, of Avondale, who has an extensive collection imported from the United States of America, Palestine, India, China, Japan, Australia, and the Pacific islands. Several were imported direct from the Bureau of Plant Industry, United States Department of Agriculture.

ENTOMOLOGICAL STUDIES.

Dicky-rice Weevil.—Grease-banding has given adequate control of this pest in Auckland, the crop from treated blocks being quite free from blemish. Trials have shown that the sticky banding material may be placed directly upon the bark, without the use of an intermediate protecting band of grease-proof paper, provided the trunk is shaded from the direct rays of the sun. Banding material prepared from a petroleum source seriously injured the bark of test trees.

As the commercial banding materials are somewhat costly, attempts have been made to prepare a cheaper substitute, but so far without success.

A soil dressing of naphthalene failed to control the pest. The quantity applied was 3 lb. per tree, and this was spread over an area of 16 square yards round the tree and worked into the soil.

Hard Wax-scale (Ceroplastes sinensis).—A May application of 3 per cent. summer oil gave complete control of this scale. Results of other work suggest that the concentration of the oil could be reduced to 1½ per cent. and still give control.