

(c) *Passion-fruit Diseases*.—Further experiments have been carried out in control of grease-spot (*Phytophthora passifloræ*) and brown-spot (*Alternaria passifloræ*). Four applications of Bordeaux 3-4-50 at monthly intervals during the winter gave almost complete control of both diseases, though owing to the dry season brown-spot infection was slight.

(d) *Mealy-bug of Grape*.—Preliminary investigations have been made into effects of D.D.T. and Gammexane on control of this pest of grapes grown under glass. Promising results were secured with D.D.T., and work is being continued.

(e) *Bean-weevil*.—Work on use of various powders for control of weevil in stored beans has been continued. Materials used were the inert hydrated lime, kaolin (New Zealand clay), copper compounds, copper carbonate, and Cuprox, and insecticides D.D.T. and Gammexane. Most effectual control was secured with Gammexane, which at a concentration of 0.001 per cent. gave almost complete control. Even three months after treatment excellent control was secured when weevils were added to treated seed. Fair to good control was secured with the other products, save hydrated lime, which was of indifferent value at a concentration of 4 per cent. W/W.

(f) *Cabbage-pests: Control Experiments with D.D.T. and Gammexane*.—Comparative trials between these new insecticides used in the form of dusts were made for control of white butterfly and diamond-back moth. Results show that D.D.T. is of outstanding value for control of both. Virtually complete control was secured with a dust containing approximately 0.75 per cent. D.D.T. applied at from 7½ lb. increasing to 18 lb. per acre. A dust containing 0.29 per cent. Gammexane gave only slightly less control than the D.D.T., but was superior to derris dust containing 0.5 per cent. rotenone.

(g) *Carrot-aphis*.—Gammexane proved superior to D.D.T. at equivalent dosages in control of this pest. Nicotine sulphate (40 per cent.) at 1 gallon in 600 gallons of water gave control equal to that secured with Gammexane.

(h) *Comparative Tests of Dithane, Cuprox, and Bordeaux for Control of Late-blight of Potatoes and Tomatoes*.—On potatoes results with Dithane were disappointing, late-blight infection being appreciably higher than on plants sprayed with copper compounds. On tomatoes the disease did not develop owing to the dry season; it was shown, however, that foliage damage was appreciably greater in plots sprayed with Dithane.

B. Soil-disinfection Studies

(a) *Damping-off*.—Work has been continued on investigations into control of *Verticillium* by soil disinfection with various chemicals. Formalin gave good control at concentrations of 1-50 to 1-80; paraformaldehyde at 1-25 and 1-50. Chloropicrin gave good control; D.D. was satisfactory, whereas other materials tested gave poor results.

(b) *Eelworm*.—Similar trials were made for control of eelworm in the soil. Good results were secured with D.D., satisfactory results with Dithane, and—when used at three times the concentration of the above—carbon disulphide, D.D.T., and Gammexane gave poor results.

(c) *Grass-grub*.—Satisfactory control of grass-grub in lawns was secured with chloropicrin, D.D., and carbon disulphide. Inconclusive results were secured with D.D.T. and Gammexane.

C. Therapeutant Testing

Methods are being developed for bio-assay of insecticides by establishment of a *Drosophila* fly technique, and by semi-field trials.

III. POMOLOGY INVESTIGATIONS

(See Fruit Research report, p. 22.)

IV. TIMBER PRESERVATION INVESTIGATIONS

(See Building Research report, p. 8.)