Dieldrin for Thrips

control of citrus thrips is possible but further studies are needed

W. H. Ewart and H. S. Elmer

Dieldrin has shown outstanding promise in the control of citrus thrips on oranges, grapefruit, and lemons during three years of experiments.

Experimental work completed so far reveals that control can be achieved by two pounds of 25% dieldrin wettable powder—or one pound 50% wettable powder—in 100 to 200 gallons of water. The amount of water depends on the desired rates of application per acre. In any case one-half pound of actual dieldrin per application should be applied.

Good control was also achieved with one-third gallon of 15% dieldrin emulsifiable concentrate in 100 to 200 gallons of water.

Applications were made at the rate of 100 to 200 gallons per acre per application, with equipment capable of applying low-volume sprays uniformly to the outside parts of the trees, including the tops.

Not more than 200 gallons per acre should be applied until more information is available.

To prevent fruit scarring of oranges or grapefruit, a single application was made as near as possible to the end of the petal fall period. On lemons, two treatments during the summer were sometimes necessary to prevent injury to new growth. The first treatment was applied when thrips began to damage new growth in May or June, the second treatment in late July or early August.

Treatments of dieldrin should not be made within 30 days of harvest to avoid excessive fruit residues. Detailed studies of harvest residues indicated that applications at rates and times listed above did not leave detectable amounts of dieldrin in the juice and pulp of the fruit, and only slight amounts in the peel.

Dieldrin appeared to be compatible with standard commercial formulations of zinc oxide and zinc sulfate plus soda ash. Other materials commonly sprayed on citrus trees, including miticides, other insecticides, and other nutritional supplements should not be added to dieldrin sprays until further tests are made on the use of such mixtures.

More tests are also needed on the effect of dieldrin on beneficial insects, and possible hazard to humans and livestock.

On the basis of studies so far completed, there is evidence that dieldrin, applied for the control of citrus thrips, does not seriously reduce the population of the ladybird, vedalia, which controls cottony-cushion scale. This beneficial insect suffers when DDT is applied.

There is also evidence that treatments of dieldrin do not result in heavy populations of soft brown scale such as occasionally occur following applications of parathion.

There is little or no information available on the effect of dieldrin treatments on parasites and predators of other citrus pests, including several species of mites and aphids that occur on citrus.

Studies are under way on the effect of dieldrin on honeybees. Until the evaluations are completed, applications of dieldrin for prevention of fruit scarring should be made as near the end of the flowering period as practical. If groves must be treated before the end of the petal fall period—because of irrigation schedules or for other reasons—beekeepers having bees within the area should be informed at least 48 hours before applications so the bees can be removed.

Dieldrin—like most insecticides—is a poisonous material. Protective clothing should be worn at all times while handling or spraying dieldrin.

Studies are not completed on the effect of dieldrin sprays on livestock or poultry which may come in contact with the spray or its residues. Until more information is available, dieldrin should not be applied where there is a danger of the spray drifting into livestock and poultry shelters or feeding areas.

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CONDITIONERS

Continued from page 12

with air-dry soil, the mixture moistened, and the moisture equivalents run without preliminary air-drying of the treated soil. Addition of the chemical compound produced no distinct changes in moisture equivalents or permanent wilting percentages and hence no increase in available water. In fact, where the loam was wetted and dried three times before the determination, moisture equivalent and available water were decreased.

The water-retention characteristics of CRD-186 treated soils of four other soil series were investigated, using apparatus which permitted determination of the amount of water held under a number of pressures, including one-third and fifteen-atmospheres. The soils were air-dried after incorporating the synthetic conditioner. The one-third atmosphere percentage—approximate field capacity—of the conditioned soils tended to be lower, particularly with the Sweeney clay loam. The fifteen-atmosphere percentage—approximate permanent wilting percentage—was little affected. These measurements indicate that the addition of 0.1% CRD-186 does not increase the available water but may diminish it somewhat by reducing the amount of water held after drainage.

In more detailed studies, CRD-186 and CRD-189 were added to five soils at various rates. Use of as little as 0.02% conditioner by weight caused some decreases in moisture equivalent. Additions of as much as 0.4% CRD-189 gave small increases in moisture equivalent. It is doubtful, however, if the slight variations observed are of practical importance.

Although CRD-186 and CRD-189 do not directly increase the available water held by a given quantity of soil, such conditioners in some soils may indirectly enlarge the supply of water available to the plants. If their use aids the infiltration of water into the soil or encourages deeper and more extensive plant root systems, plants could extract water from a greater volume of soil. This would permit less frequent irrigation and more efficient water use. However, under the conditions of the Glenn County plots, use of CRD-189 did not improve infiltration rates and so did not permit the storage of additional moisture.

Studies in progress at the University of California on how synthetic soil conditioners may affect plant growth have not been completed.

The use of CRD-186 and CRD-189 to reduce soil crusting and improve seedling emergence is under investigation by several departments including Agronomy, Vegetable Crops, Soils, and Floriculture and Ornamental Horticulture. To date no conclusive results have been obtained.

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