Parathion Tested on Fig Pests

insecticide studied as control spray for scale and Pacific mites on figs

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Control of fig scale by parathion was first tested on a single tree on March 31, 1947.

The timing of that first test was not the best as hatching of the scale eggs had barely started. The spray should have been applied after hatching was well under way but before any of the young—which are easiest to kill—had grown up. Usually the earliest of the first generation of scales mature about mid-May.

Although the timing was too early, the results were pretty good. In August—five months after the spray was applied—an examination of the figs from the treated tree showed that about 75% had less than four scale marks on them and would pass inspection as canning figs. None of the figs from a nearby unsprayed tree would have passed such a test.

In 1948 parathion was applied to Kadota fig trees at Merced on May 25th. None of the new scales had reached maturity by that date.

Two dosages were used, 10 and 20 ounces of 25% parathion wettable powder per 100 gallons of water. This is equivalent to one and two pounds of 15% wettable powder. In each of these sprays one quart of light summer oil was included as a sticker.

The addition of the oil to the parathion sprays was a mistake, at least for Kadota figs. Dark spots appeared on the leaves, especially those most exposed to the sun. Fortunately, however, this was the extent of the visible damage. Workers on other crops have found oil and parathion to be more toxic to plants than parathion alone.

Picked fruit from the sprayed trees was examined twice weekly from August 31st through October 8th. The control was excellent. Over 99% of the fruit from sprayed trees was free of scale while nearly 10% of the fruit from unsprayed trees was culled out of the canning grade.

The lower parathion dosage appeared to give as good control as the higher one. The parathion for this spray—one pound 15% wettable powder—will cost about $1.50 per 100 gallons of spray. A dormant oil spray will cost from $1.15 to $1.40 depending on how much and what kind of oil is used. It is recommended that four gallons of tank-mix oil, or four gallons of dormant emulsive oil—97%–98% actual oil—or five gallons of dormant oil emulsion—about 80% oil—per 100 gallons of water be used.

In comparing costs for a dormant oil spray with a spring parathion spray, the grower should remember that by mid-May there is considerable foliage on the trees which means more spray per tree and consequently higher costs for labor and materials.

In January 1948, parathion alone and with oil was tested for control of fig scale. It appeared that at least two gallons of oil per 100 gallons of water must be added to make parathion effective. Considering the counts of live and dead scales, one pound of 15% parathion plus two gallons of dormant oil emulsion per 100 gallons of water was better than 5% dormant oil emulsion—94.4% kill compared to a 91.6% kill—but it was not as effective as a 6% dormant oil emulsion—98.5% kill. In June, a count on the leaves showed fewer scales on oil-sprayed trees than on the trees sprayed with parathion and oil. Preliminary results of sprays applied in February 1949, showed increased effectiveness from the use of one pound of 15% parathion as compared to a 5% dormant oil emulsion spray.

The action of parathion on the fig scale was slow. When applied in the winter, it caused a delay or reduction in egg-laying the following spring. A spring application killed many eggs. The young scales appeared to be easiest to kill.

In view of the high cost of parathion, the treatment would be more practical if more than one pest were controlled with a single spray application. It was hoped that the May parathion sprays would control Pacific mites as well as fig scale.

The sprays did not control the mites, or at least not long enough to protect the fruit.

Just where the Pacific mites hibernate during the winter and just when they are all out of hibernation in the spring or early summer has not been determined for figs. Some mites must have come out of hibernation after the parathion residue from the sprays applied in May had largely dissipated. Perhaps a later application of parathion might have been somewhat less successful in controlling fig scale but more effective in controlling Pacific mite.

A spray of 1.5 pounds of parathion 25% wettable powder per 100 gallons of water applied at Ivanhoe, Tulare County, in late June was reported to have reduced the percentage of scaly fruit from 22 to 4.5. At Exeter, a spray of one pound per 100 gallons of water applied in early July reduced the percentage of scaly fruit from 38.6 to 7.5. Both orchards were Kadota figs and both had been sprayed with oil in the dormant season. The mites were controlled by the parathion application in the Ivanhoe orchard. In the Exeter orchard mites were not a problem. The cost of the 25% parathion was $2.00 per pound.

Tests to see if lower dosages of parathion will give satisfactory control of both fig scale and Pacific mite are now under way.

Caution Necessary

To human, domestic and laboratory animals parathion is a strong poison. The hazard appears to be greatest to those handling the material—the manufacturers and spray operator. Spray deposits break down fairly rapidly in hot weather and the toxic residue hazard appears to be of lesser importance. Parathion should not be applied later than 30 days before harvest.

The Report of the 23d Western Cooperative Spray Project Conference, held at Portland, Oregon, January 26–28, 1949, includes these three statements concerning the use of parathion for mite control:

1. Parathion is highly toxic to man and animals and every precaution should be used in handling this material.

2. Wettable powders present the least hazard of any form in which parathion may be used.

3. Parathion in oil has the highest toxicity to man and animals and should not be used.

It is suggested that growers do not use a parathion-dormant oil spray until a reasonable increase in effectiveness from such a spray combination has been demonstrated and until more is known about its hazards to man.

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