

# Peach Tree Borer on Apricots

trunk treatments for the control of major pest of apricots, prunes, plums, and peaches in the coastal growing districts

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**Two insecticides**—Thiodan and endrin—gave excellent control of the peach tree borer in studies made during the 1957 and 1958 seasons in an attempt to find a more effective insecticide than DDT, and one with a longer residual life.

Soil fumigation, directed against the overwintering larvae of the peach tree borer is one standard control treatment, but it involves a great deal of hand labor, and gives only partial control.

A second standard treatment is a heavy dosage of DDT as a trunk spray during the foliage season. Trunk treatments generally do not kill larvae already established in the tree, but prevent reinfestation by either killing moths attempting to deposit eggs on the trees, or killing young larvae as they hatch from the eggs. Applications must be made at monthly intervals and—like soil fumigation—have resulted in only partial control.

## Studies Started in 1957

As part of the search for an insecticide more effective than DDT, a test plot was established during the 1957 season in a Blenheim apricot orchard near Brentwood, which had a history of severe peach tree borer attack. DDT was tried at monthly and bimonthly intervals, with and without a sticker to see if the residual value could be improved. In addition, Thiodan and endrin were used at monthly intervals in another series of plots. Because of reports that whitewash was an effective way to prevent borer attack, as it repelled adults, that method was included in the trials.

## Treatments

Each plot consisted of four trees, with three replications, in a randomized block design. The sprays were applied with a conventional high pressure rig with orchard spray guns, and the pressure was reduced to 200 p.s.i.—pounds per square inch—to prevent excessive splashing. Before application, the weeds were removed from around each test tree. Treatments were applied to the trunks of the trees, from the main crotch to the soil line. The first treatments were made in May, when the presence of pupal cases and cocoons indicated adult emergence. Subsequent sprays were applied at approximately



Peach tree borer strike on tree trunk.

monthly or bimonthly intervals. An average of 1.5 gallons of spray was applied to each tree, and the trunks were wet to the point of runoff.

One of the major difficulties associated with peach tree borer work is the evaluation of results. Since it is not possible

to count borers within the bark, some other method must be devised.

At first, each individual tree was caged to capture emerging moths, but this method was very tedious, and the cages interfered with orchard disking and irrigation. In addition, it was difficult to avoid breakage, and to prevent weeds from growing within the cages. It was later discovered that pupal cases and larval cocoons remained on the surface of the ground or were sticking out of the tree after moths had emerged. It was possible to count these cocoons and pupal cases at intervals and thus determine how many moths had emerged from each tree. In either case, it was necessary to evaluate the results of one year's plots the following season, therefore two years were required to obtain data from one season's trials.

## Frass Areas

It was noticed that peach tree borer attack was characterized by areas of frass, sometimes with gum present, on the trunks of the trees, and the areas were most apparent during late summer or early fall. The frass areas were individ-

Mature larva of the peach tree borer.



ually distributed and seemed to suggest the work of a single borer. The frass spots—referred to as strikes—were counted on the test trees during September of 1957. To check the validity of this method of evaluation, the trees were examined during the 1958 season for the presence of cocoons and pupal cases. The materials used in the 1957 trials, dosages, time of application, strike counts, and emergence counts are summarized in the upper table.

In all cases, the emergence records correlated with the fall counts, but the total adult emergence was always less than had been recorded during the fall. This can be explained by larval mortality during the winter, and by the probability that some cocoons and pupal cases are

lost during periods of irrigation in the orchard. The method of counting strikes in the fall seemed feasible enough to use as a way to evaluate spray treatments and permit obtaining data the same season as treatments were applied.

The 1957 data showed that both Thiodan and endrin were very promising for peach tree borer control. There was little difference between the various DDT plots, as all gave what could be considered commercial control, but were not as good as either the Thiodan or the endrin plots. Whitewash did not seem to be an effective means of preventing borer attack.

### Studies Continued

Trunk spray trials were continued during 1958, to evaluate Thiodan, endrin, and, in addition, Guthion as monthly and as bimonthly treatments. DDT at monthly intervals was used as a standard treatment, and check rows were left between treated rows of trees. It had been reported that a single spray of a heavy dosage of dieldrin, applied during June, would kill larvae present in the tree and prevent further attack. A plot using this method of control was included in the 1958 trials.

It had been observed that trees which showed evidence of a prior heavy borer attack were more susceptible to reinfestation. Therefore, the trees used in the tests were selected on basis of having at least four areas of frass and gum per tree. Twelve trees were used for each treatment, and were selected and marked.

The treatments were applied in the same way as in the 1957 plots. The first

sprays were applied on May 15, as a count of pupal cases and cocoons from untreated trees showed that emergence of adults began in early May. In the 1958 season, adults continued to emerge until late August, with peaks of activity in June and July.

In early September, counts were taken of the peach tree borer strikes on each tree. The materials used, dosages, application dates and the borer counts are summarized in the lower table.

### Borer Controlled

Thiodan and endrin at both monthly and bimonthly intervals gave excellent control of the peach tree borer. Guthion was effective when applied at monthly intervals, but less so at bimonthly intervals. The DDT treatments resulted in an average of one borer per tree, which can be considered commercial control. The single spray of dieldrin, although reducing the number of borers below that of the check, does not seem to be a feasible method of control.

These tests indicate that Thiodan and endrin can be used as trunk sprays against peach tree borer with but two treatments per year. Next season—1959—studies will be made on reduced concentrations of these compounds, as the present dosages may be higher than necessary.

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Summary of 1957 Peach Tree Borer Plots  
Apricots, Brentwood

Materials	Dosage /100 gallons	Application date	Strikes /12 trees Sept. 1957	Adult emergence 1958
Check	No spray	....	44	35
DDT 50% WP	8 lbs.	May 29 June 28 Aug. 2	10	7
DDT 50% WP	8 lbs. + 1 qt. National sticker	May 29 Aug. 2	12	8
DDT 50% WP	8 lbs.	May 29 Aug. 2	7	5
Endrin 1.6 miscible	2 qts.	May 29 June 28 Aug. 2	0	0
Thiodan 25% WP	8 lbs.	May 29 June 28 Aug. 2	0	0
Whitewash	....	May 29	17	14
Check	No spray	....	32	28

Summary of 1958 Peach Tree Borer Plots  
Apricots, Brentwood

Materials	Dosage /100 gallons	Application date	Total strikes /12 trees	Av. No. Strikes per tree
Thiodan 2.0 miscible	1 gal.	May 15 June 18 July 25 Aug. 18	0	0.0
Thiodan 2.0 miscible	1 gal.	May 15 July 25	1	0.1
Check	....	....	79	6.5
Endrin 1.6 miscible	2 qts.	May 15 June 18 July 25 Aug. 18	0	0.0
Endrin 1.6 miscible	2 qts.	May 15 July 25	0	0.0
Check	....	....	82	6.8
Guthion 25% WP	8 lbs.	May 15 June 18 July 25 Aug. 18	1	0.1
Guthion 25% WP	8 lbs.	May 15 July 25	12	1.0
DDT 50% WP	8 lbs.	May 15 June 18 July 25 Aug. 18	14	1.1
Dieldrin 1.5 miscible	1 gal.	June 18	25	2.0

Frass and gum on trunk. Partially opened to show larva.

