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Controlling Peach Tree Borers With Paradichlorobenzene

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One of the serious insect pests of peach trees in Missouri is the peach tree borer. The damage is caused by the white worm, or larva, that tunnels through the outer bark and feeds on the growing layers of the tree. The larger per cent of larvae enter the tree near the ground level, and tunnel down and around, sometimes entirely girdling the tree in one or more seasons. The borers are often found from 3 to 5 inches below ground level.

Fig. 1.—Peach tree borers at work in base of tree.

The presence of the peach tree borer in the orchard can be detected easily by masses of gum containing fine particles of sawdust-like materials exuding from the trunk of the tree near the ground level. During the winter the larvae are more or less dormant in the tunnels within the tree. In early spring they begin active feeding and continue their activity until they are full-grown in early summer. When the larvae reach maturity they make cocoons of particles of bark and soil bound together with

gum and silken thread. In from two to five days after the cocoons are made the larvae pupate, and in about 21 days the adult wasp-like moths emerge between July 10 and September 20. The moths soon begin to deposit eggs on the peach tree near the ground level. The eggs hatch in about 10 days and the small larvae begin to bore into the peach tree, feeding there until the following summer.

USE OF PARADICHLOROBENZENE

For the past two years the Missouri Agricultural Experiment Station has been testing the control of the peach tree borer with paradichlorobenzene, a white crystalline solid, which is insoluble in water and vaporizes slowly at soil temperature. Paradichlorobenzene is the only known chemical that has proven satisfactory in controlling the peach tree borer. It is non-poisonous to man, unless taken internally, but is very deadly to insects exposed to its gases for a long period. Paradichlorobenzene gas will injure tender roots and growing tissues of most plants and trees. However, on the older peach trees the outer bark is of such a nature that it serves as a protection for the tender growing layers underneath. *Under no conditions should it be used on apple trees.*

COST

Paradichlorobenzene is sold under different trade names, and may be secured from the larger chemical companies and several spray companies. Some companies are placing on the market compounds containing a small per cent of paradichlorobenzene. Some of these compounds are giving good control but require larger dosage. If the orchardist purchases one of these compounds he should be sure to learn the per cent of paradichlorobenzene present. The price of paradichlorobenzene ranges from 18 to 35 cents a pound in 25- to 100-pound lots. Six-year-old peach trees may be treated, at a cost of from 3 to 5 cents per tree.

AGE OF TREES

The use of paradichlorobenzene is recommended by this Station on all varieties of peach trees 5 years old or older; but not on trees younger than 5 years. A dosage of ½ ounce per tree on 3-year-old trees has given good control without injury to the trees *where the remaining crystals were removed in* 10 *or* 12 *days.* A few co-workers report *injury and even death of treated trees under* 5 *years of age.* If 3- to 5-year-old trees are treated the remaining paradichlorobenzene crystals should be removed from about the trees in 10 to 12 days.

Soil temperature and moisture seem to have some effect on the amount of injury, due no doubt to the fact that soil temperature and moisture influence the rate at which the gas is liberated. The time required to kill the borers also depends on these two factors. With a soil temperature of 70° Fahrenheit, from 10 to 14 days are required for the gas to kill 92 per cent or more of the borers.

Soil should not be mounded up at the base of the tree, to force the borers to enter higher up on the trunk for this makes treatment with paradichlorobenzene more difficult.

DOSAGE

On trees 6 to 10 years of age dosages of ¾ ounce per tree have been found to control 92 to 100 per cent of the borers and to produce little or no injury. In most cases with trees of this age the paradichlorobenzene may be left in place until completely evaporated. Trees 12 years of age or older will require 1 ounce per tree, with crystals left in place until completely evaporated.

METHOD OF APPLICATION

Prepare the tree for treatment by removing all grass, rubbish, stones and sticks, from about its base. Leave the soil about the tree as smooth as possible and do not dig or loosen up the surface soil any more than necessary. Apply the paradichlorobenzene crystals at a point level with the surrounding soil. If the borers have entered above the ground level, mound up around the trees on a level with the borers and pack down the mounded soil with the back of a spade or hoe.

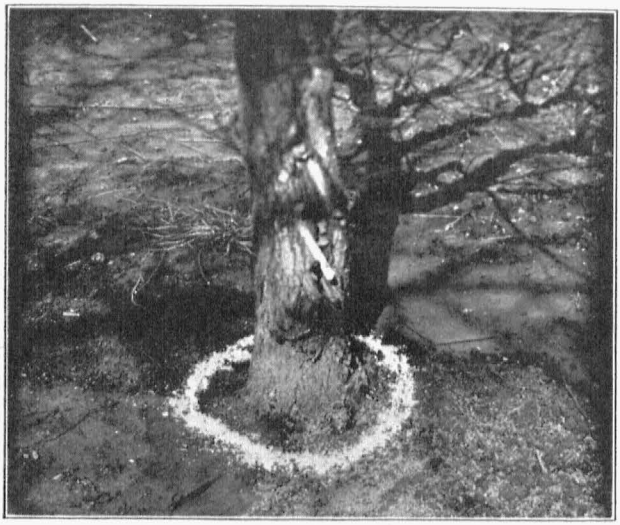

Fig. 2.—Paradichlorobenzene correctly applied; crystals in continuous ring approximately 2 inches from the base of tree.

When the trees are ready for the application, measure out the correct amount of crystals in a previously tested container. Distribute in an even continuous circular band or ring about 2 inches from the base of the tree (Fig. 2.) Do not place crystals against the trunk as serious injury may occur. Crystals placed 4 to 6 inches from the base of tree do not give as good results as when placed 2 inches from the base of the tree.

After the crystals are applied in a ring about the tree cover them with 2 to 3 inches of soil free from grass, sticks, or other trash, and compact it with

the back of a shovel. Be careful and do not move the paradichlorobenzene crystals from their position while placing on the soil.

TIME OF APPLICATION

Results of experiments with paradichlorobenzene show that the best time for treatment is in the fall after all the eggs have hatched. For a normal season the Station recommends for that part of the State north of the Missouri River, September 20 to October 5, and south of the Missouri River, September 25 to October 10, as the best time to treat trees. At that time the larvae are small and easy to kill, the soil is less moist, and the larvae are in the outer layers of the trunks and roots.

A spring application can be made in May. This application will kill the larvae in the trees at that time but will not affect those entering later. In other words to control the larvae entering later it will be necessary to make a second application in the fall. The fall application will control from 92 to 100 per cent of the borers, so a spring application to get the small per cent that escaped the fall treatments is usually unnecessary.

CONCLUSIONS

Paradichlorobenzene is the only known chemical that will control 92 to 100 per cent of the peach tree borers.

Applications should be made in the fall, September 20 to October 10.

Dosage should range from ¾ ounce to 1 ounce depending on age of trees.

Paradichlorobenzene costs from 18 to 35 cents a pound. The total cost of application including labor will vary from 3 to 5 cents a tree.

The use of paradichlorobenzene is recommended only for peach trees 5 years of age or older. Application on peach trees under 5 years of age is made at the orchardist's own risk.

The soil about the tree should first be prepared by removing all trash or grass. The crystals should then be placed in a continuous ring about 2 inches from the base of the tree and covered with 2 or 3 inches of soil firmly compacted.

Under no conditions should it be used on apple trees.