

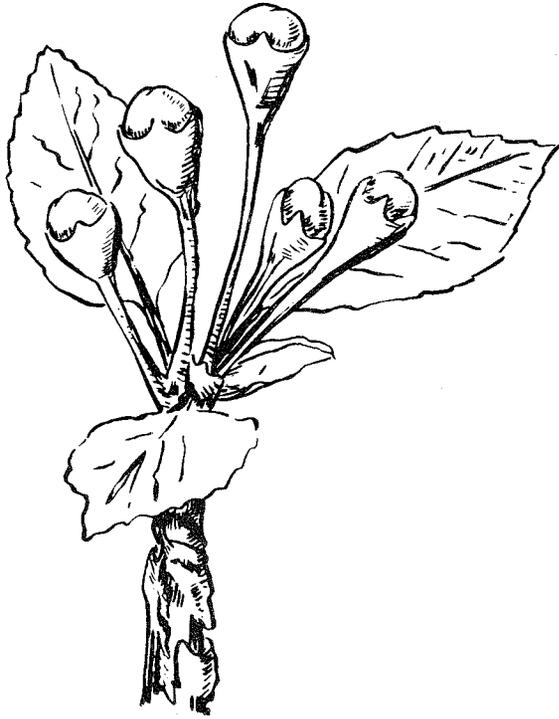


# Fruit Insect Control Hints

*1951*

**Circular 148**

Agricultural Extension Service  
University of Arizona, Tucson



"Pink" stage of blooms. (Just prior to opening)

### IMPORTANT

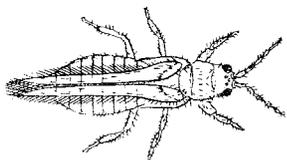
Do not apply insecticides to any fruit trees when they are in full bloom, as you may kill pollinating insects, thus preventing the set of the fruit.

# FRUIT INSECT CONTROL HINTS

By J. N. Roney  
Extension Entomologist

## Thrips

Thrips (several species) may cause serious injury to apple, pear, peach, plum, and apricot blooms during 1951 in many parts of Arizona. The injury to blooms may occur in the higher elevations just before the blooms are ready to open. There, injury may mean complete loss of a crop by failure of blooms to open for pollination.



Thrip  
(greatly enlarged)

Control measures should be applied before the blooms start to open. Watch buds in the pink stage very closely to determine if the thrips are causing any injury. If they are causing injury you may use one of the following spray materials.

(1.) 2 pints of Black Leaf 40 to 4 pounds of sugar in 100 gallons of water. Two to three sprays may be necessary at four to five day intervals if controls are secured.

Application should start when the thrips are first seen on the swelling buds.

(2.) 7 pounds of Black Leaf 155 to 4 pounds of sugar in 100 gallons of water. Two or three applications may be necessary with this solution if controls are secured. Applications to start same as for no. (1.)

(3.) 6 to 8 pounds of 50% wettable DDT in 100 gallons of water. One to two applications five to seven days apart may be necessary. The first application is to be applied if thrips are present on buds just opening.

Sometimes peaches, plums, and apricots receive serious scarring from these thrips, especially when about the size of a pea. If this happens, you may use 4 to 6 pounds of 50% wettable DDT per 100 gallons of water.

## **Red Spiders or Spider Mites**

Red spiders, or spider mites, have continued to increase in the State. Wherever DDT has been used for control of the codling moth, mites have become a problem. There are more of the two-spotted mite than the clover or the almond mite. Those growers who spray their orchards with a dormant-spray strength of lime-sulphur have lowered the infestation of all mites, and very seldom do they have any trouble with the clover or almond mite.

Use two applications of the lime-sulphur spray (dormant strength) during the winter months. During 1950, growers used EPN-300-parathion, Hexaethyl tetrasphosphate and tetraethyl pyrophosphate. None of these materials except EPN-300 gave any residual control of the mites.

Several new miticides were tested and some look very good. The 88-R and R-242 have great promise. More tests will be conducted during 1951.

Use either one of the above materials until more information is available.

## **Pear Blister Mite**

This pesky little insect has been found in certain parts of the State and you may have to start control measures in 1951. Use the same dormant spray as for the red spider mite.

# Codling Moth

(Bait Traps)

In some apple growing regions of the nation, bait traps have been used in codling moth control. The bait is a fermented liquid of one yeast cake in one part of molasses (not corn syrup) and ten parts of water. This mixture is placed in shallow pans and then suspended near the tops of trees. The bait serves to help determine the abundance of moths for the purpose of properly timing the sprays, and to destroy some adult moths that are trapped in the sticky mixture.

This procedure prevents many female moths from laying their many eggs that would hatch into worms. The eggs are laid principally when dusk temperature is well above sixty degrees (60°) F. for several days.

Note: Use one gallon of molasses and ten gallons of water to one yeast cake.

In some areas, infected cull apples are placed in screen cages in the fall in orchards. The first spray is then applied when moths start emerging from the culls. This method works out exceedingly well in determining when first spray application is needed.

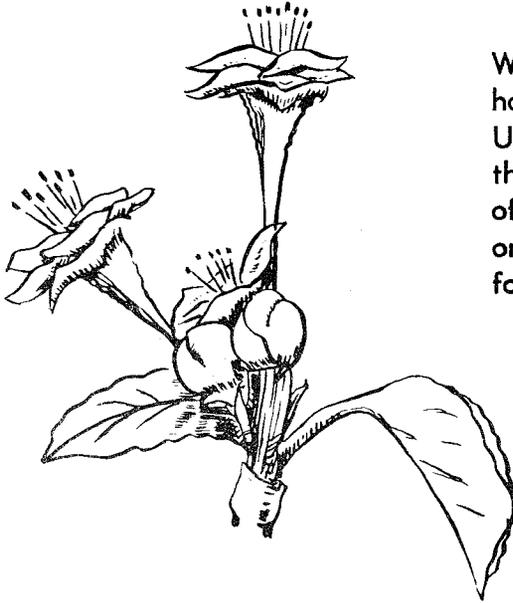
(Spray Schedule)

DDT continues to be the best insecticide for control of codling moth. In some orchards where DDT is used, mites do more damage than the moths and some growers are using arsenate of lead. In many areas, a combination of lead arsenate, DDT and nicotine is being used. However, this sometimes increases the cost.

In many areas, the calyx sprays have been discontinued and only three or four cover sprays are used. It is now very evident that calyx sprays are not nearly as important as the growers used to think. Very few growers use calyx sprays when using DDT as the control.

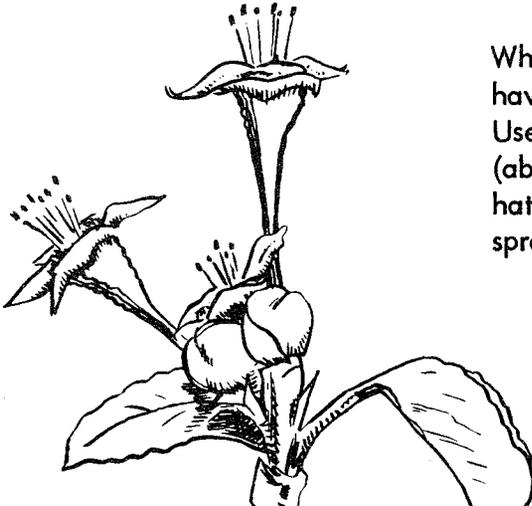
Below are some suggested schedules with and without a calyx spray.

### 1. First Calyx Spray -



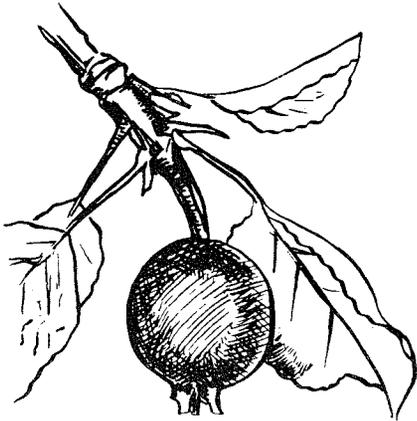
When 40% of the petals have fallen (see drawing). Use standard lead arsenate, three pounds to 100 gallons of water. A good spreader or sticker should be added for best results.

### 2. Second Calyx Spray -



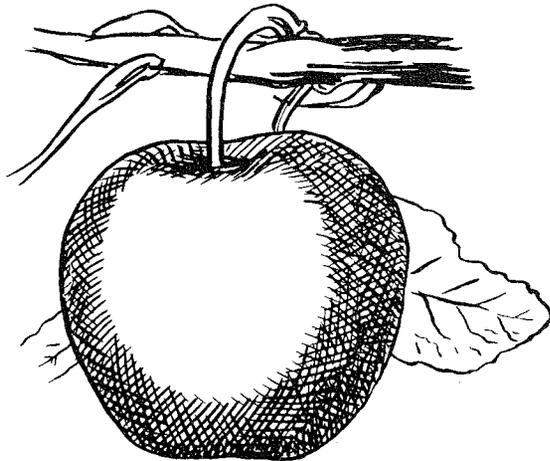
When 75% of the petals have fallen (see drawing). Use same spray as in No. 1 (above). If mites have hatched, you may wish to spray them at this time.

3. First Cover Spray - Seventen to ten days after No. 2, or when apples are about 1/2 to 3/4 inches in diameter.



Lead arsenate spray as above, or 2 pounds 50% wettable DDT in 100 gallons of water. Black Leaf 155 spray may also be used in place of the lead arsenate. Use DDT according to directions.

4. Second Cover Spray - Ten days to two weeks later. Same formula as No. 3.



5. Third Cover Spray - Two weeks after No. 4.

6. Fourth Cover Spray - Two weeks after No. 5.

7. Fifth and Sixth Cover Sprays may be needed.

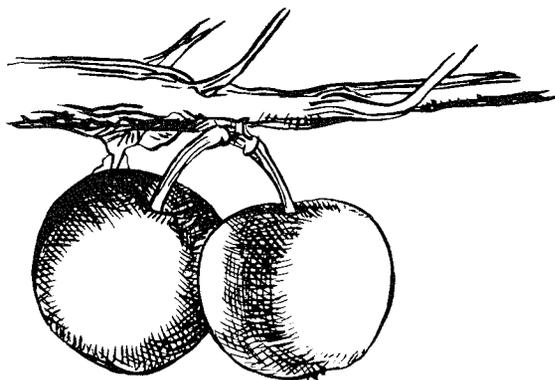
## DDT SPRAY SCHEDULE

1. After all petals have fallen, and when first moths appear in the field. Two pounds of 50% wettable DDT in 100 gallons of water.
2. Fifteen to eighteen days after No. 1.
3. Fifteen to eighteen days after No. 2.
4. Fifteen to eighteen days after No. 3.

In many areas only three sprays are applied.

Note: All trees must be thoroughly sprayed to secure results. Observations the past two years show that late summer applications are absolutely necessary. If you do not apply them, many fruits may become infested with worms late in the season.

Orchards should be kept free of all drop apples and culls. Do not leave any mummies on the tree in the winter time, as they may be a winter home for the moths. It is wise to thin fruit and eliminate doubles as they allow a place for worms to enter fruit on a clean untreated spot. Always use clean boxes and keep your packing shed free of rotten apples.



Doubles

## San Jose Scale

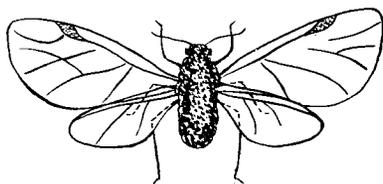
During 1947, the San Jose Scale appeared in harmful numbers in several apple and peach orchards of Oak Creek. These infestations need attention, and some growers have secured results.

San Jose Scale may be controlled with dormant lime-sulphur sprays and in some instances an oil emulsion spray may be needed. This spray will also help reduce red spiders and mildew.

If the scale is not controlled, it may kill its host plants. If oils are used, be certain to follow directions of the manufacturer.

## Wooly Apple Aphis

The wooly apple aphis lives on the roots, trunk, branches, and leaves of the apple tree. The aerial form which lives on the trunk, branches and leaves is easily detected, as it is usually covered with a white "wooly" secretion resembling cotton.



Wooly Aphis, Aerial Form  
(greatly enlarged)

The insect itself is of a purplish color, as you will note when you remove the white secretion. You will find both wingless and winged forms. These aerial forms will kill young branches and small twigs if they are not controlled.

The root forms, which you find on large as well as small roots, form small galls wherever they feed. They appear as a grayish mask of insects when first noticed. Their injury then shows up in the form of the small galls wherever they have worked. The root form does the greatest damage, as its injury quite often is not seen until the damage is done.

A nicotine solution of 1 1/2 pints of a 40% nicotine sulphate or Black Leaf 40, and one gallon of an oil similar to orchard Volk oil, to 100 gallons of water may be applied at the rate of 5 to 8 gallons per tree. It may be applied in two different ways.

(1) A basin is prepared around the base of the tree, thereby exposing the larger roots of the tree. Then the 5 or 8 gallons of mixture is applied directly to the roots and the basin filled up with the soil that had been removed.

(2) A second method of applying the mixture is to use a power sprayer capable of producing a pressure of 500 to 800 pounds. Attach a rod-type nozzle on the end of the hose. Have this rod-type nozzle controlled by a good quick cut-off valve. The rod-type nozzle has several holes in the point end that let out the spray material. Insert the rod in the ground from the edge of the spread to the base of the tree. The pressure forces the liquid to all the roots and seems to help reduce the infestation.

The aerial form on the tree trunk, branches and leaves has been most successfully controlled with small wasp parasites. This small parasite was introduced into the State several years ago in an orchard in the Oak Creek Canyon area. Since that time, the parasite has been introduced to other apple areas of the State.

It works fine on the aerial forms. However, it does not do too good a job on the root forms. Parathion and EPN-300 have given control of the aerial form when spraying for the mites or red spiders.

Always follow directions when using any of the phosphates as sprays or dusts!

## **Powdery Mildew**

In some orchards of Arizona, powdery mildew is very injurious to certain varieties of apples. It can be controlled with a little effort by using

An application of a dormant spray of lime-sulphur will do more good than most anything. Some growers use wettable sulphur, 8 to 10 pounds per 100 gallons of water, with good results when two applications are made. If lime-sulphur is used, use either the liquid or dry form in the sprays. Usually a dormant strength of about 10 gallons of 32° baume in dormancy will give good results. If the dry lime-sulphur is used, follow directions on the container.

During the season when the apples have set and the tree is full of leaves, you may have to make an application of either a 325 mesh-conditioned sulphur dust or a spray application of 4 to 6 pounds wettable sulphur per 100 gallons of water.

If a sulphur dust is used, it should be applied with a power duster for best results. The lime-sulphur may be used with arsenate of lead. However, you should use one pound of hydrated lime to each 100 gallons of water if the lime-sulphur is used.

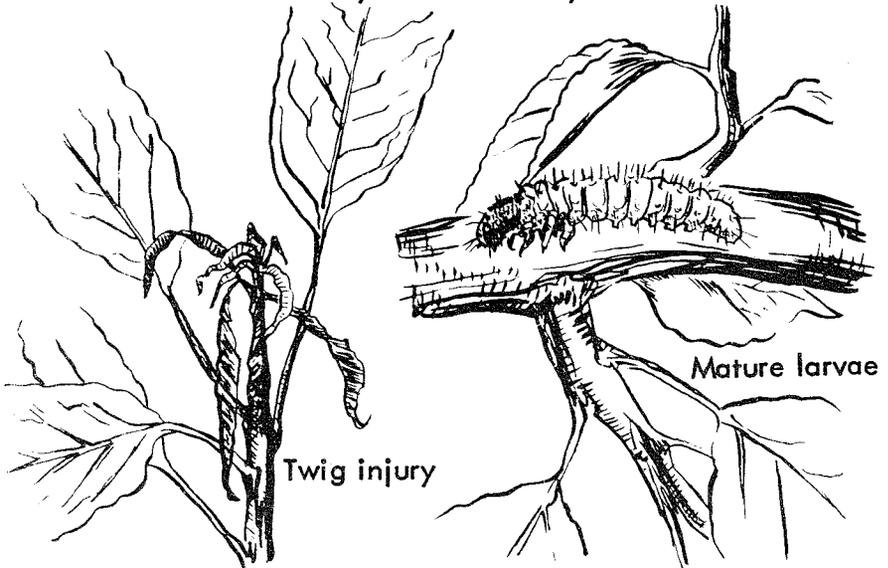
When using wettable sulphur make a paste of the sulphur, then add to the spray tank, keeping the material well agitated until it is thoroughly mixed. If this is done, you will not have any caking in the bottom of the spray tank.

## **Fire Blight**

Research workers have found that a spray of 1 pound of copper sulphate and 1 pound of lime to 100 gallons of water is an excellent spray to stop the spread of the fire blight of pears and apples. The spray should be applied when the trees are in full bloom. It does not have any harmful effect upon insects or pollination of the blossoms.

## Peach Twig Borer

The peach twig borer is the small worm that infests peaches and apricots in Arizona. The first brood of this insect is found in the small twigs and causes the injury as shown in the drawing. The second brood is found infesting the fruit. The small larvae deposits its eggs near the fruit and immediately burrows into the fruit and develops into a worm that may cause the fruit to rot. In most cases, it causes many cull fruits.



The peach twig borer can be controlled easily by one spray application of arsenate of lead (basic) 2 to 3 pounds per 100 gallons of water, or 2 to 4 pounds of 50% wettable DDT in 100 gallons of water. This spray should be applied when the blooms are in the pink stage or just prior to opening of the blooms. (See picture inside cover page.)

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