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FRUIT INSECT CONTROL HINTS



Agricultural Extension Service
University of Arizona, Tucson

Circular 148



The "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. However, the bordeaux spray for fire blight will not harm insects or pollination.

University of Arizona
College of Agriculture, Agricultural Extension Service
Chas. U. Pickrell, Director

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Fruit Insect Control Hints

By J. N. Roney
Extension Entomologist

Thrips

Several species of thrips may cause serious injury to the blooms of pear, peach, plum, and apricot in many parts of Arizona. The injury to blooms usually occurs just before the blooms are ready to open.

Such injury may mean complete loss of a crop by failure of blooms to open for pollination. The damage in the higher elevations looks similar to frost injury.

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, use one of the following spray materials.

(1.) 2 pints of blackleaf 40 to 4 pounds of sugar in 100 gallons of water. Two to three sprays may be necessary at four to five day intervals for control.

Start application when the thrips are first seen on the swelling buds.



Thrips
(Greatly enlarged)

(2.) 7 pounds of blackleaf 155 to 4 pounds of sugar in 100 gallons of water. Two or three applications may be necessary with this solution if control is secured. Start applications same as for (1.) above.

(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, use 4 to 6 pounds of 50 percent wettable DDT per 100 gallons of water.

Red Spider or Spider Mite

Red Spiders or spider mites still cause injury to apples in many parts of Arizona. The mites seem to cause the greatest injury where DDT sprays are used, and where no winter dormant lime-sulphur sprays have been used.

There are two mites involved. One is a **two-spotted mite** and the other is a **clover mite**.

The growers who spray their trees and cover crops with two dormant strengths of lime-sulphur do not develop an infestation of the clover mite until late in the summer. In some cases no infestation ever develops. These same trees will not show an infestation of the two-spotted mite nearly as soon as non-sprayed trees.

Parathion spray has been an almost total failure. Evidently the

mites are developing a resistance as has occurred in other states. Very few growers have used any of the phosphates.

Recommended for use at the present time is a spray made from the emulsifiable aramite material. Some growers may use the wettable powder, but the emulsifiable material looks best. Use 2 to 3 pounds of actual material per acre for best results.

Some of the other materials like sulphenone and ovotron might prove effective as research work is completed.

Don't spray for mites unless they are causing damage. Any later information will be available from your County Agricultural Agent.

Pear Blister Mite

The pear blister mite is a different shaped mite than the spider mites mentioned previously. The pear blister mite disfigures the leaves of pears and apples and causes them to turn brown in mid-season. Badly infested leaves turn somewhat yellow and may fall.

The adult blister mites pass the winter in the buds beneath the second and third scales. With the bursting of the buds in the spring, the mites migrate to the leaves, burrow through the upper surface, and deposit their eggs.

The mites that soon hatch from these eggs then feed on the tender tissues of the leaf, causing the formation of a swelling or blister. When the mites are mature they leave the infested leaf and go to other leaves.

These mites have been seen in the Fredonia area on apples and pears.

If you are using the dormant lime-sulphur spray as recommended for mites, you also will control the blister 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 1 part of molasses (not corn syrup) and 10 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 prin-

cipally when dusk temperature is well above 60 degrees (60°) F. for several days.

Use one gallon of molasses and ten gallons of water to one yeast cake to make the mixture.

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 Schedules

DDT continues to be the best insecticide for control of codling

moths. In orchards where DDT is used, mites may 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 several orchards where arsenate of lead is being used, mites are still present.

Growers in some areas are using blackleaf 155 according to direc-

tions. Some users report smaller mite population with this spray.

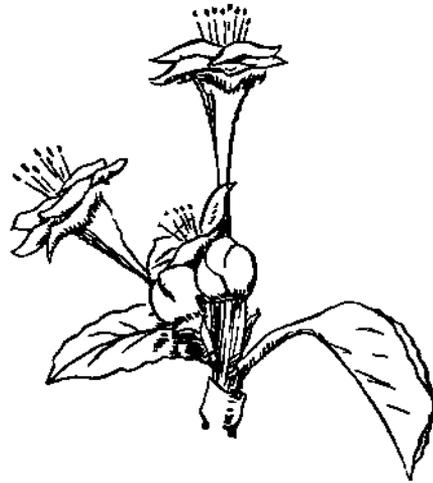
In many areas, the calyx sprays have been discontinued and only three or four cover sprays are used. It is now very evident that calyx sprays are not nearly as important as growers used to think. Very few growers use calyx sprays when using DDT as the control.

Some suggested schedules with and without a calyx spray are as follows:

1. First Calyx Spray

Apply when 40 percent of the petals have fallen. (See drawing at right.)

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

Apply when 75 percent of the petals have fallen. (See drawing at right.)

Use same spray as in No. 1 (above). If mites have hatched, you may wish to spray them at this time.

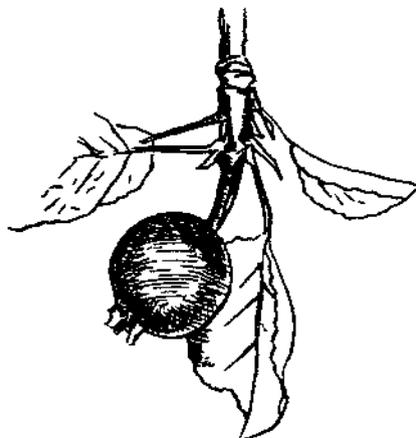


3. First Cover Spray

Apply 7 to 10 days after No. 2, or when apples are about $\frac{1}{2}$ to $\frac{3}{4}$ inches in diameter. (See drawing at right.)

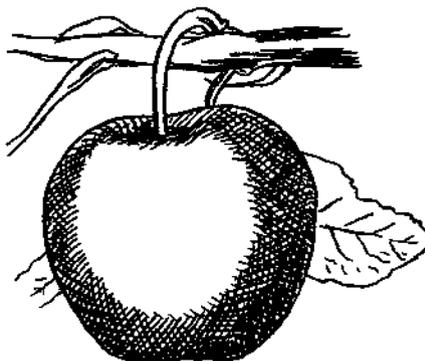
Use lead arsenate spray as above, or 2 pounds 50 percent wettable DDT in 100 gallons of water.

Blackleaf 155 spray may also be used in place of the lead arsenate. Use DDT according to directions.



4. Second Cover Spray

Apply ten days to two weeks later. Use same formula as No. 3. Spraying is needed when fruit is large. (See drawing at right.)



5. Third Cover Spray

Two weeks after No. 4.

6. Fourth Cover Spray

Two weeks after No. 5.

7. 5th & 6th Cover Sprays

Use if they are needed.

DDT Spray Schedule

1. Apply after all petals have fallen, and when first moths appear in the field. Use 2 pounds of 50 percent wettable DDT in 100 gallons of water.

2. Apply 15 to 18 days after No. 1.

3. Apply 15 to 18 days after No. 2.

4. Apply 15 to 18 days after No. 3.

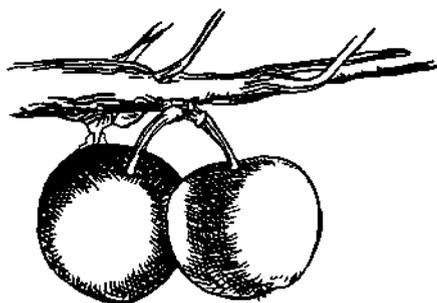
In many areas only three sprays are applied.

All trees must be thoroughly sprayed to secure results. 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. (See drawing below.) 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

The San Jose Scale has appeared in harmful numbers in several apple and peach orchards of Oak Creek. These infestations need attention, and some growers have secured results. Some San Jose Scale is still present where growers are not attempting controls.

San Jose Scale may be controlled

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

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

Woolly Apple Aphis

The woolly 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 "woolly" secretion resembling cotton.

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 are on large as well as small roots, make 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 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 1½ pints of a 40 percent nicotine sulphate or blackleaf 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, as follows:

(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 quick cut-off valve. The rod-type nozzle has several holes in the point end that lets 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 Arizona. It works well on the aerial forms. However, it does not do too good a job on the root forms.



Woolly Aphis
(Aerial form, greatly enlarged)

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 either sprays or dust.

An application of a dormant spray of lime-sulphur is good. Some growers use wettable sulphur, 8 to 10 pounds per 100 gallons of water, with good results when two applications are made.

With lime-sulphur 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

Fire blight continues to cause injury to pears and apples in the fruit-growing areas of Arizona. Many growers continue to control it with pruning during the dormant season. When pruning, disinfect pruning shears with a bichloride of mercury solution.

Research workers have found that 1 pound of copper sulphate

and 1 pound of lime to 100 gallons of water is very effective in preventing the spread of the disease.

The disease is spread by pollinating insects, such as bees. The above spray, if applied when trees are in bloom, will kill the disease but not harm the pollinating insects.

Peach Twig Borer

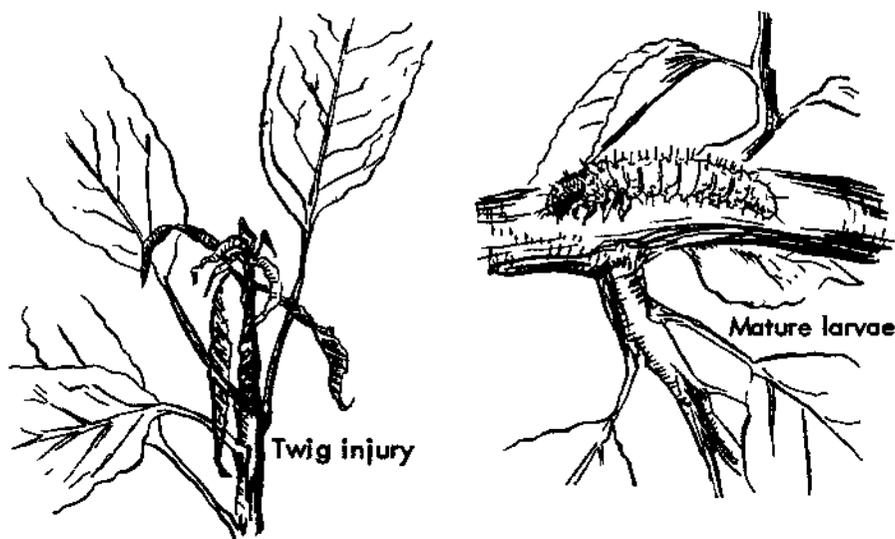
The peach twig borer is the small worm that infests peaches and apricots in Arizona. The first brood of this insect is found in the small twigs and causes the injury as shown in the drawing below.

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.

In 1952 many commercial growers lost or had serious damage to

their peaches and other stone fruits from not spraying as directed below.

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, use 2 to 4 pounds of 50 percent wettable DDT in 100 gallons of water. The spray should be applied when the blooms are in the pink stage or just prior to opening of the blooms. (See drawing inside cover page.)



Peach twig borer injury and mature larvae.