

MANAGING

**PESTS AND DISEASES**

IN THE HOME ORCHARD

IN EL DORADO COUNTY

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*PESTICIDE RESIDUES*

*These suggestions for pest control are based on the best information currently available for each pesticide listed. If followed carefully, the suggestions should result in satisfactory control and should not leave residue that will exceed the tolerance established for any particular chemical. To avoid excessive residues on the harvested crop, carefully follow suggestions about dosage levels, number of applications, and minimum intervals between application and harvest.*

*THE GROWER IS RESPONSIBLE for residues on his crops as well as for problems caused by drift from his property to other properties or crops.*

This information has been prepared for foothill home orchards by Dick Bethell, Farm Advisor in El Dorado County, in cooperation with Garth Veerkamp, Farm advisor in Placer-Nevada Counties.

Recommendations are based on local experience and University of California, Division of Agricultural Sciences publications.

*To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products which are not mentioned.*

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# **A PEST CONTROL PROGRAM FOR YOUR HOME ORCHARD**

It is difficult for home orchardists to regularly produce perfect, unblemished crops. The recommendations listed in this publication are designed to prevent major crop losses. Some insects and diseases that are important to commercial fruit growers are not discussed, either because they are of minor importance or practical control procedures are not available under home orchard conditions.

Most insect and mite pests of fruit trees are controlled naturally by many beneficial species of insects and mites found in the orchard. Do not spray pests unless you are certain they are present in damaging numbers or this publication suggests you do so. Unnecessary sprays reduce control provided by beneficial species and may result in added damage from pests freed from their natural controls.

For large, engine-powered sprayers, dosage rates are calculated for 100 gallons of water. For small, hand-operated sprayers, dosages are calculated for one gallon of water. The dosages for small sprayers are listed for liquids in fluid ounces and in ounces for dry materials. (The equivalent of 1 fluid ounce is 2 tablespoons.) For larger amounts use an 8-ounce measuring cup. The weights of solid materials vary greatly with the product. You can use ordinary postal scales to weigh these dry materials since teaspoons or tablespoons are not always accurate measures. If you do not have accurate scales, you can assume that 4 level tablespoons of dry materials are equal to about 1 ounce.

## **ESSENTIALS OF A PEST CONTROL PROGRAM**

### **TIMING**

For satisfactory results, closely follow the timing schedule (see pages 4 - 11). The recommended times for spraying and dusting are based on both pest control and on tree safety.

### **COVERAGE**

When spraying, thoroughly and completely wet the limbs, twigs, fruit, and foliage for good control of insects, mites, and diseases. Stir or agitate spray mixtures frequently, especially those containing chemicals that tend to settle rapidly.

### **EQUIPMENT**

Compressed air sprayer tanks, trombone type sprayers and hose-end sprayers are satisfactory for spraying. However, you must also have an adjustable nozzle that allows you to spray the tops of the trees. For dusting, use the ready-made equipment in which many of the dusts are sold, or any other type of duster that is adequate for the job. Apply dusts uniformly but lightly, heavy visible deposits are unnecessary, expensive, and may injure some plants.

### **KEEP TREES HEALTHY AND PRODUCTIVE**

Vigorous, healthy trees can sustain larger pest populations and more damage than poorly cared for trees. Fertilize, prune, irrigate and thin as needed every year. Weeds can severely compete with trees, especially young trees. Weeds also encourage the buildup of thrips and plant bugs that later attack the fruit. Control undesirable vegetation by either cultivation, frequent mowing or application of herbicides.

### **CLEANUP**

Prune and burn all dead wood from fruit trees. Do not place firewood of any kind near fruit trees since bark beetles and wood borers will emerge from the dead wood and may later attack the fruit trees. Pick up and destroy fruit that matures and drops early since insects develop in such fruit and may attack the ripening crop.

### **YOUNG TREES**

Do not spray young trees for pests that attack the crop until after they start bearing. Two insect pests frequently attack young trees, but pesticides are seldom desirable for their control...they are the Red humped caterpillar and the Pacific flatheaded borer.

Red-humped Caterpillar: The female moth lays her eggs in clusters and the newly hatched larvae feed together stripping leaves of green tissue on infested shoots. When the yellow-colored larvae are found feeding, simply remove infested leaves and destroy the larvae. Since there are several generations a season and infestations are seldom heavy at any one time, preventive sprays are not recommended.

Pacific Flatheaded Borer: One of the worst pests of newly planted trees is the Pacific flatheaded borer, *Chrysobothris mali* Horn. The borer attacks trees while they are in nurseries and after they have been planted in the orchard. These borers are distributed over most of California but are usually more abundant in orchards located near wooded areas that may provide a source of beetles. The borer infests a wide variety of plants including many native and introduced trees and shrubs.

If trees lose vigor or become sunburned they are likely to be seriously damaged by the Pacific flatheaded borer. Young transplanted trees are particularly subject to attack since there is a period during their establishment when their condition is somewhat weakened. The severity of attack can also depend on the number of beetles present in one area.

The larvae of this insect cause damage by mining in the cambium layer. The shallow, winding mines in the inner bark may extend into the wood of xylem layer. A symptom of injury is the flow of sap in the affected area which appears as a wet spot on the bark. These areas may later crack and expose the borings.

The feeding larvae sometimes cause a portion of the bark to die or, if the infestation is extensive, the tree can be girdled and killed. The beetles will attack any portion of the tree, but are found most often in the main trunk of young trees.

CONTROL: Since the Pacific flatheaded borer rarely injures strong, healthy trees, an important means of controlling it is to use cultural methods that keep trees vigorous and free of sunburn, such as proper cultivating, fertilizing, spraying, pruning and watering. Insecticide use to repel the beetles or to kill the larvae in their burrows has not given consistently good results in all areas and is not recommended.

An interior, white water-based paint applied to the trunk to one inch below ground level on young trees will prevent sunburn and subsequent borer infestations. Do not apply after buds begin to crack. The paint may be applied by brushing or by spraying. An equal amount of water can be added to most water based paints without appreciably reducing their reflectance and persistence.

You can greatly reduce egg laying by wrapping the trunks of newly transplanted trees from the ground to the lower limbs. Newspaper, cardboard, or burlap make satisfactory wrappings. Wind these either spirally or vertically and hold them in place with string. This procedure is not necessary and is mentioned only as an alternative where wrapping is done anyway to protect against rodent damage.

Infested limbs or wood left in or near the orchards will provide a source of beetles that may attack orchard trees. Burn or shred infected wood, including the wood from native trees or shrubs.

## **DEER**

Fencing is the surest method of preventing deer damage. A seven foot high upright perimeter fence is recommended. Trees may also be individually fenced.

Thiram 42-S is an effective taste repellent, but must be applied every week or so to keep new growth protected. Mix 1 part Thiram 42-S with 7 parts water. Spray lightly on new terminal foliage.

### **MEADOW MICE**

Meadow mice feed on bark of young trees in early spring, especially when snow covers the ground.

Mice populations can be prevented from increasing by making the habitat unfavorable for their survival. Remove weeds from around tree trunks for at least several feet. Burn prunings and eliminate debris and other sources of protective cover. Watch for their runways and holes. Treat with poison grain available for purchase at the County Department of Agriculture. Other methods of control, including trapping, may be found in the University of California Cooperative Extension Publication #21385 "Wildlife Pest Control Around Gardens and Homes", available for \$8.00 at your county's U.C. Cooperative Extension Office.

### **GOPHERS**

Gophers will feed on the roots and underground portion of the trunk of most fruit trees. Gophers should be destroyed as soon as their presence is detected in the orchard to prevent multiplication of the population. Trap or poison as prescribed in the University of California publication "Wildlife Pest Control Around Gardens and Homes". Poison bait can be purchased from the County Department of Agriculture.

### **OTHER VERTEBRATE PESTS**

Rabbits, ground squirrels and porcupines sometimes attack young fruit trees. Rabbits feed on the bark of the trunk when other food is scarce. Porcupines feed on the tender new leaves of shoots and often cause breakage of shoots and small limbs. Ground squirrels also climb trees to feed on new foliage. Poison baits and other control methods may be obtained from the County Department of Agriculture for these pests.

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Abbreviations used on the following charts:

gal. = gallon(s)  
tsp. = teaspoon(s)  
tbsp. = tablespoon(s)  
lq.oz. = liquid ounce(s)  
oz. = ounce(s)  
pt. = pint(s)  
qt. = quart(s)  
w.p. = wettable powder

Measurements:

3 teaspoons = 1 tablespoon  
1 liquid ounce = 2 tablespoons  
1 ounce (dry weight - 4 tablespoons (approx.)