

Insect control for stone fruits in the home orchard

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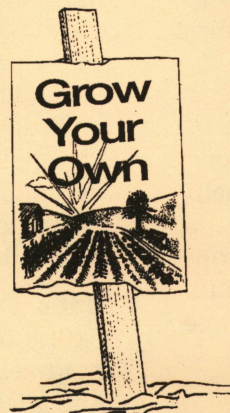
Home gardeners grow their own fruit for several reasons. They may wish to have varieties not available commercially, or they may enjoy fresh fruit. Others just enjoy the challenge of growing their own fruit. Whatever their reason, home gardeners must realize responsibility goes with owning fruit trees. Home gardeners probably will not save money by producing their own fruit, as the cost of chemicals—including pesticides, fertilizers, and equipment—can be high. Also, to properly manage a few trees often requires more time than most home gardeners expect.

Home gardeners must avoid planting more trees than they can care for. All fruit trees require care and management; otherwise, trees become a breeding ground for insect pests and a source of irritation for neighbors. Plant only the number of trees you can manage. If you have purchased land planted with fruit trees, or have inherited a small planting, keep the trees you can manage, and remove the rest. If trees have not been sprayed and pruned, do not expect to control all pests the first year. It may take 2 to 3 years to reduce pests to acceptable levels. This is especially true with insect pests of peaches, apricots, nectarines, and plums. This publication is intended to help you understand life cycles of insect pests and effective ways to control them.

Pests

Peach twig borer

Peach twig borer is the major worm pest of peaches, apricots, nectarines, and plums. The tiny brown larva burrows into tender shoot terminals in early spring, stunting growth and killing twigs. In summer, a second generation of larvae feeds in the fruit. Small third generation larvae overwinter in twigs. A dormant spray can control them the following spring before blossoms and leaves emerge.



If your fruit or your neighbors' fruit was seriously injured during the past season, apply both a pre-bloom and a petal-fall spray of permethrin or spinosad. If insects persist, spray again in early June.

Pest control products containing *Bacillus thuringiensis kurstaki* also help control peach twig borer, but they must be applied every 7 to 10 days. Regardless of the choice of pesticide, use thorough spray coverage of every tree for good pest control.

Oriental fruit moth

The oriental fruit moth damages all stone fruit trees but is most serious in peaches and nectarines. Young larvae feed on tender new shoots or twigs just after bloom in a manner similar to those of the peach twig borer. Another generation of larvae feeds on developing fruit. The oriental fruit moth larva is pinkish with a black head, easily distinguished from the brownish peach twig borer larva.

Pesticides such as permethrin and spinosad are effective. *Bacillus thuringiensis kurstaki* products also help control the larval stage of this pest. Thorough spray coverage is important.

Aphids

Several species of aphids attack stone fruits. The aphids feed on new growth, causing the shoots and leaves to curl, which can weaken the tree. Aphids overwinter as eggs on twigs and limbs. Once the aphid population increases to a high level, it moves to another host in late spring.

Chemical control usually is not necessary because parasites and predators control aphids most years. Scout trees before buds break to determine the extent of the aphid population. Control measures are most effective when trees are dormant, as aphids are in the egg stage.

Apply a thorough dormant spray of Superior type oil. Later, if the aphid population is high, apply malathion at petal fall, before leaves curl from aphid feeding.

Alternative products include insecticidal soaps, azadirachtin (neem oil) and products

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containing *Beauveria bassiana*. If you have a few trees, you can sometimes control aphids by washing them off with a stream from the garden hose.

Scale insects

Several species of scale insects attack stone fruits. Their feeding kills branches and twigs, spots the fruit, and weakens the trees. Weakened trees become more susceptible to other insect attacks, disease, and winter injury. Ladybugs and parasitic wasps are natural predators of scale.

Dormant or prebloom sprays of Superior type oil are essential to control scale. If no dormant application was made, and you find scale insects on the trees, spray with azadirachtin (neem oil) when the crawlers (immatures) are present. The crawlers usually are active from late May to mid July, depending on the species of scale. Thorough spray coverage of the entire tree is necessary.

Peach tree borer

While the peach tree borer is most damaging to peaches, nectarines, and apricots, it seriously damages other stone fruits, including ornamental varieties. Injury occurs chiefly to the trunk near ground level and to the roots. The larvae tunnel beneath the surface of the bark and feed on the inner layers. The first visible symptoms of borer infestation are large masses of gum mixed with sawdust-like frass and soil at the base of the trunk.

Larval girdling can kill young trees. Older trees can be so severely weakened by girdling that they become susceptible to other pest problems. Eggs are laid on the trunk in June and July. After hatching, larvae crawl down the trunk and enter the tree just below the soil where the bark is soft and moist.

Direct control efforts at preventing borer entry by applying protective sprays to the main trunk, crotch, and base of the tree. Applying sprays to foliage and fruit is ineffective for this pest.

Beginning in early July and August home gardeners can spray carbaryl insecticide on the main trunk and crotch, down to ground level to kill larvae. As moths lay eggs from early July into August trees must be protected for this entire time. Carbaryl may be needed on a weekly basis. Other pesticide choices include malathion and permethrin sprays. Be sure to follow the label for frequency of application during this period.

Few alternative control methods exist for peach tree borer. One option is to apply a tight metal or plastic barrier around the base of the trunk to help prevent borers from entering the tree. It is sometimes possible to control larvae in the tree by probing with a wire into the entrance hole on the trunk to kill the larvae. Be careful not to damage the tree further. This method is not practical if you have many trees or if trees are heavily infested.

Cherry fruit fly

The cherry fruit fly is a common pest of cherries in

ripening cherries. The larva begins feeding near the pit. As a result, the pit separates easily from the pulp and decay begins. Later, the fully developed larva makes a small hole in the skin to exit. The cherry then shrivels on one side and pulp appears decayed. The completely developed larva drops to the ground, pupates in the soil, and overwinters to emerge as an adult fly the following year. Adult flies appear about May 20 and stay until August.

Adults must be killed before they lay eggs on ripening cherries. Malathion or spinosad sprays should be applied at 7- to 10-day intervals from May 20 though harvest. Reapply after rains heavy enough to wash spray from the leaves. Thorough spraying of the entire tree is necessary to eliminate adult flies. If you live near commercially grown cherries, you may be legally required to control cherry fruit fly. Some counties have ordinances requiring owners of cherry trees to control this pest.

European earwig

The European earwig may enter split pit fruits such as apricots, peaches, and nectarines. These insects hide during the day and feed at night. When you remove trash and debris such as tall grass, weeds, and lumber from around trees, the earwig usually is not a problem. Begin spray programs about the time the fruit starts to ripen. Spraying the trunk and the soil around the base of the tree with carbaryl usually controls earwigs.

An alternative control method is applying an adhesive product (Tanglefoot®) to the tree trunk. The sticky substance prevents earwigs from climbing the tree and reaching ripe fruit.

If you have just a few trees, you can trap earwigs in short tin cans nestled into the soil below the fruit trees. Bait the cans using fish or vegetable oil to attract the insects. Daily trapping can eventually reduce earwig populations to manageable levels.

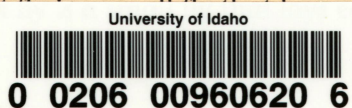
Leafrollers

Leafrollers pose an occasional problem of stone fruits. If small, active larvae are rolling the leaves, control measures may be necessary. Prebloom and petal-fall applications of permethrin, azadirachtin (neem oil), or spinosad can be effective. Summer sprays you applied to control peach twig borer also will help control leafrollers.

An alternative for control of leafroller larvae is application of a *Bacillus thuringiensis Kurstaki* product. Apply any of these products when the larvae are small and before the leaves are tightly rolled. Thorough coverage of the leaves is necessary to control the small larvae.

Mites

Mites can become a problem on home garden fruit trees. Trees located near dusty roads or other mite infested plants may develop problems. Mite damage begins as leaf mottling and stippling. A later symptom is a dusty webbing on the under sur-



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face of the leaf. Finally, the leaf turns brown and papery. Healthy, fertilized and watered trees can better tolerate heavier spider mite populations.

Few pesticide products are effective on mites. Applications of insecticidal soap and products containing *Beauveria bassiana* can offer some control. An alternative is to wash the foliage frequently through the summer with a strong water stream from the time symptoms first appear.

Pheromone traps

A pheromone is a chemical substance unmated female insects produce to attract male insects. Some chemicals made artificially are available in traps to help determine the timing of insect activity. The pheromone is placed upon a sticky surface that captures the insect. Only male insects are captured, indicating future moth activity. For many insect species, the males emerge first. Mating takes place when the females emerge; a few days later the females lay eggs. In 3 to 5 days the eggs hatch into tiny larvae that begin feeding and damaging fruit trees. The suggested timing for insect sprays is after the eggs are laid but before the larvae hatch, usually about 1 week after the first moth capture. Usually 1 to 3 weeks occur between trap catches and fruit damage, depending on temperature.

If many unsprayed trees are present in the neighborhood, moth catches will occur the entire season. In this situation, the traps indicate a need to protect fruit throughout the season. Traps are available for many of the stone fruit pest insects. You can obtain them from farm chemical dealers or Integrated Pest Management suppliers. Using multiple traps in a small orchard as the only means of control has not been successful and is not recommended.

Spraying fruit trees

Effective control results from proper application of an appropriate pesticide at the correct time. No single chemical will adequately control all pests of stone fruits. Control of susceptible growth stages of pests requires correct timing of treatments based on pest development. Skips and misses in spray application result in insects and mites damaging fruit. This is particularly true for the peach twig borer.

Proper timing of application and thorough coverage of twigs, branches, leaves, and fruit are as important as the chemical used. Spray both leaf sides until spray begins to drip. An average size stone fruit tree will need 4 or 5 gallons of dilute spray to thoroughly wet all the foliage. Dwarf trees will need less spray. Young trees and nonbearing trees also need protection from insects to attain optimum growth during the nonproducing years. If these suggested treatments do not work, have the trees sprayed by a commercial application company.

Spray timing

Dormant (February-April)

"Dormant oil" is a special weight oil that suffocates eggs and scale insects. The oil spray may be mixed with some insecticides if the label permits. Apply during late winter or early spring when trees are dormant. This spray controls aphids, mites, and scales and is necessary every year on badly infested trees. Do not apply when temperatures are below 45°F or when freezing temperatures are expected within 24 hours. Do not apply after the trees have begun to leaf out or you will damage the leaves.

Prepink

Prepink sprays consist of an appropriate insecticide (no dormant oil included) applied just before the buds reach the pink stage before bursting. This spray is useful for controlling aphids, scales, and some caterpillar pests. It is usually applied from mid to late April. Usually, this spray is unnecessary if a dormant spray has been applied correctly. If pest problems continue, use a prepink spray. To prevent killing honey bees and other pollinators, DO NOT use pesticides during the bloom period.

Petal fall

Petal fall sprays are applied just after blossoms have fallen from the trees.

Postbloom or summer

Postbloom or summer sprays are usually applied about 21 days after full bloom, generally in late May for the first spray. Use insecticides appropriate for the pest. When multiple pest problems occur, you may mix and apply appropriate insecticides as one spray or purchase as mixed sprays. These sprays are necessary for controlling the fruit boring worms and for summer populations of aphids.

Pesticide formulation

Insecticides may be purchased as wettable powders (WP) or as liquid or emulsifiable concentrates (EC). Either kind must be diluted before being applied as a spray. Sprays made from EC's require less agitation but may burn tender foliage, especially during the heat of the day. General purpose insecticide mixtures, including recommended chemicals also can be purchased. Be certain the fruit types you intend to spray are listed on the label before you buy the product.

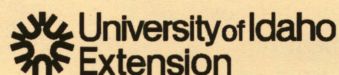
Spray guide: Home orchard stone fruits

| Time of application | Target pest | Insecticide material | Comments |
|---------------------|--|---|---|
| Dormant | Scale, Peach twig borer, mites, aphids | Superior type oil | Thorough coverage of limbs and twigs is needed |
| Prebloom | Peach twig borer | permethrin spinosad <i>Bacillus thuringiensis</i> | Synthetic pyrethroid insecticide Bacterial extract insecticide For caterpillar or larvae control |
| | Leafrollers | permethrin azadirachtin spinosad <i>Bacillus thuringiensis</i> | Synthetic pyrethroid insecticide Botanical extract insecticide Bacterial extract insecticide Microbial (bacterial) insecticide |
| Petal fall | Aphids | malathion insecticidal soap azadirachtin <i>Beauveria bassiana</i> | Organophosphate insecticide Potassium salt insecticide Botanical extract insecticide Microbial (fungus) insecticide |
| | Peach twig borer | permethrin spinosad <i>Bacillus thuringiensis</i> | Toxic to bees Bacterial extract insecticide Microbial (bacterial) insecticide |
| | Leafrollers | permethrin azadirachtin spinosad <i>Bacillus thuringiensis</i> | Toxic to bees Botanical extract insecticide Bacterial extract insecticide Microbial (bacterial) insecticide |
| | Oriental fruit moth | spinosad permethrin <i>Bacillus thuringiensis</i> | Bacterial extract insecticide Toxic to bees Microbial (bacterial) insecticide |
| Summer | Cherry Fruit Fly | malathion spinosad | Minimum time to harvest 3 days Bacterial extract insecticide |
| | Oriental fruit moth | spinosad permethrin | Bacterial extract insecticide Synthetic pyrethroid insecticide |
| | Scale crawlers | azadirachtin | Apply to cherries in May |
| | Peach tree borer | carbaryl malathion permethrin | Spray on main trunk Spray on main trunk Spray on main trunk |
| | European earwigs | carbaryl | Spray on main trunk |
| | Mites | <i>Beauveria bassiana</i> insecticidal soap | Microbial (fungus) insecticide Potassium salt insecticide |

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ALWAYS read and follow the instructions printed on the pesticide label. The pesticide recommendations in this UI publication do not substitute for instructions on the label. Due to constantly changing pesticide laws and labels, some pesticides may have been cancelled or had certain uses prohibited. Use pesticides with care. Do not use a pesticide unless both the pest and the plant, animal, or other application site are specifically listed on the label. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock. Trade names are used to simplify the information; no endorsement or discrimination is intended.



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