Peach Insect Pests

Numerous insects are pests on peach trees in South Carolina. They cause damage to the peach flowers, fruit, twigs, limbs and trunk. Some of the most common of these are plum curculio, Oriental fruit moth, peachtree borer, lesser peachtree borer, shothole borer, catfacing insects, scale, Japanese beetle and the green June beetle.

As a result of the need to control some serious insect pests as well as disease organisms, individuals who grow peaches in their backyard for home use often discover that obtaining acceptable quality fruit requires more specialized care than they can give. It should be noted that without the application of well-timed pesticides, it is common for insect pests and disease to ruin the entire crop as well as damage the tree(s).

Several all-purpose fruit sprays are on the market for homeowner use. These materials contain insecticides and a fungicide, which will control most insects and diseases seen in a home orchard fruit tree situation. See Table 1 for examples of brands and products. As with any pesticide, read and follow all label directions and precautions.

Aside from pesticides, homeowners can follow such cultural practices as proper sanitation to reduce insect pests significantly. Sanitation includes quickly removing and destroying dead, diseased and damaged wood and fruit. The leaves, wood and fruit often provide pests with places to complete their development or to survive the winter.

Although adequate insect control on peaches usually requires spraying trees, these sprays need to be timed accurately to be effective. Knowledge of the insect pests and their life cycles aids in identification as well as the early diagnosis of a developing pest problem.

Plum Curculio

The adult plum curculio (Conotrachelus nenuphar) beetle is a mottled brown with a rough and warty body surface. It is about ¼-inch long and has a long, curved snout. Its immature stage is a grub (larva). A fully mature grub is legless, smooth-bodied and up to ½ inch in length. It is yellowish to grayish in color and slightly curved with a brown head.

Both adults and grubs cause damage to peaches, as well as plums and other stone fruits, apples and occasionally pears. The primary injury is caused by the adult female when she makes a crescent-shaped cut in the skin of the fruit to lay her eggs. This results in D-shaped scars on the fruit surface. Grubs that hatch from the eggs feed in the fruit making it worthless. Later in the season both males and females damage the fruit by making round feeding punctures.
Plum curculio adults overwinter (survive the winter) under leaves, brush and in other protected places near the orchard. Wild plum thickets within ¼ mile of an orchard can provide a source of adults. The adults become active when average temperatures reach 50-60 ºF for three to four days, or when the maximum temperature reaches 75 ºF for two or more days. This is usually about the time peach trees bloom. The first activity will be noticed on outside rows.

Adult plum curculio (Conotrachelus nenuphar) feeding on immature peach fruit. The crescent-shaped injury is from egg laying.

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They feed on developing fruit and leaves and lay their eggs in the young fruit. Carefully inspect fruit on these outside rows for egg-laying and feeding scars. Fruit infested shortly after bloom by the first generation drop to the ground. The larvae hatch and feed in the fruit. They leave the fruit, burrow into the ground and pupate (transform into the non-feeding stage where the larva changes into an adult). From mid-June through July the first generation adults emerge, move into the trees, and begin laying eggs. Fruit infected by the second generation remain on the tree until harvest. Again the larvae feed for a while, drop to the ground and pupate. The second generation adults emerge in the fall, move to the hibernation areas and overwinter.

When disturbed, the adult plum curculio tends to fold its legs against its body and fall to the ground where it remains motionless for several minutes. This behavior can be used when trying to detect its presence. Place a light colored drop cloth on the ground under the tree and shake some branches. If present, the plum curculio will drop to the ground and be readily visible.

**Control:** Homeowners can achieve at least partial control by practicing good sanitation methods. These include picking up and destroying fruit on a weekly basis that drops early, as well as removing or cleaning up overwintering sites.

Chemical controls should be applied immediately after the flower petals fall to control the first generation. Three sprays, the first in mid-June and the second at the end of June and the third in early July will control the second generation adults.

Homeowners can use carbaryl or malathion. These insecticides may be used individually, or can be found in premixed home orchard spray products. See Table 1 for examples of brands and products. When using carbaryl or malathion, wait 3 or 7 days, respectively, between spray application and harvest. Permethrin or lambda cyhalothrin may also be used to control plum curculio, but do not apply these products within 14 days of harvest. Repeated use of carbaryl, permethrin, or lambda cyhalothrin may increase problems later in the season with scale or spider mite outbreaks. A mixture of neem oil and pyrethrins is labeled for plum curculio control and may give some control. As with all pesticides, read and follow all label directions and precautions.

Though products are available at gardening stores for homeowners, many gardeners are not inclined to use pesticide applications for home fruit production. Instead, hobbyist gardeners may use bags to protect fruit from pests and diseases. Clemson University has tested and is promoting the use of specialty bags that, if used properly, allow for production of high quality fruit with very little pesticide input. The bags are recommended for use in a three step fashion: (i) properly take care of your trees to minimize tree stress; (ii) protect your fruit from pests and insects between bloom and the day of bagging; and (iii) enclose nail-sized, green fruit (typically 3 weeks after bloom) with a specialty bag to be removed at harvest. For purchase information and use instructions please see: Clemson Fruit Bags
Oriental Fruit Moth

The Oriental fruit moth (Grapholita molesta) is grayish-brown and has a wingspan of about ½ inch. It is active at night. When first hatched, its caterpillar (larva) is about 1/16-inch long and white with a black head. The mature caterpillar is about ½-inch long, has six distinct legs and is pinkish with a brown head. The caterpillar is a pest of peaches and other stone fruits as well as apples, pears, and some ornamentals in the rose family.

In South Carolina, there are six or more generations of Oriental fruit moth per year. This pest overwinters as mature larvae inside cocoons, which are located in protected areas on the tree or in debris near the base of the tree. In early spring, the larvae pupate (transform into the non-feeding stage where the larva changes into an adult) and adults begin to emerge at about the time of bloom. The adults lay eggs from which larvae hatch.

Control: The presence of moths can be detected with the use of traps containing pheromones (synthetic insect attractants). Permethrin, lambda cyhalothrin, or malathion sprays should be applied.
if an average of more than 10 moths per trap occurs. Do not apply products containing malathion within 7 days of harvest, or apply permethrin or lambda cyhalothrin within 14 days of harvest. Also, do not apply more than 8 applications of permethrin per season for all insect pests.

**Peach Borer**

The peachtree borer (*Synanthedon exitiosa*), the lesser peachtree borer (*Synanthedon pictipes*), and the shothole borer (*Scolytus rugulosus*) are pests of peaches. Of these, the peachtree borer and lesser peachtree borer are the more serious pests. They are found on most cultivated and wild stone fruits, including some ornamental shrubs such as flowering peach, cherry, and plum. It is the larvae of these insects that damage peach trees.

**Peachtree Borer:** The peachtree borer adults are clearwing moths, and are often mistaken for wasps due to their appearance and behavior. The adult female peachtree borer is a metallic blue-black color except for a red-orange band on the abdomen. The male is black with yellow stripes along the back at the base of each wing and narrow yellow stripes on the abdomen. The larva (immature stage) is about 1 to 1¼ inches long when fully grown. It is creamy white with a brown head.

Peach tree damage at the base of a young peach tree. H C Ellis, Department of Entomology, University of Georgia

The larva of the peachtree borer attacks the tree at the base and may be found feeding from the main roots to about 10 inches up onto the trunk. Masses of gum mixed with frass (a sawdust-like insect waste) are the primary symptoms of attack. Young trees can be killed by a very small number of larvae. Older trees can tolerate more larvae.

The peachtree borer overwinters (survives the winter) as larvae. It has one generation per year. Some adults begin emerging in late May although peak emergence is in mid- to late August. Wounds and rough bark are favorite sites for egg laying. About two weeks after the eggs are laid at the base of the tree, the small larvae hatch and burrow into the bark where they begin to feed. They stop feeding when cold weather comes and resume feeding the following spring.

Control: Since the peachtree borer causes its most severe damage to young trees, special care must be taken during planting to avoid damaging the bark. A pre-plant dip in an insecticide solution is strongly recommended. In light soils the wind may make the tree move enough to make a gap between the trunk and the soil or abrade the bark. This is an excellent entry site for the larvae. Annual trunk sprays during August will generally keep the peachtree borer under control. Be sure to apply sufficient spray from the scaffold limbs to ground level so the bark is saturated and a small puddle forms at the base of each tree.

Homeowners can use permethrin sprays at the base of the trees for peachtree borer control. Do not apply these products within 14 days of harvest. See Table 1 for examples of brands and products. As with all pesticides, read and follow all label directions and precautions.
**Lesser Peachtree Borer:** The adults of the lesser peachtree borer are also clearwing moths. Both the male and female adult lesser peachtree borers resemble the male peachtree borer, except that they are somewhat smaller. The larva of the lesser peachtree borer is very similar to the larva of the peachtree borer, but smaller.

The lesser peachtree borer attacks the trunk and main limbs. Again the symptoms are oozing gum that contains frass. Heavy infestations can kill individual limbs or an entire tree.

Like the peachtree borer, the lesser peachtree borer overwinters as larvae. It, however, has two generations per season and occasionally, a third. Emergence of adults peaks in late April to mid-May and late July to mid-August. Cytospora cankers (a fungal disease), wounds, and previously infested areas are favorite sites for egg laying.

**Control:** The best control for the lesser peachtree borer is to keep the trees in a vigorous, healthy growing condition and to prevent mechanical injury. Prune out split or broken limbs and limbs with signs of borer damage where feasible. Destroy pruned wood before adults emerge in April by shredding or burning. Avoid spreading bacterial canker while pruning by dipping the pruning tool after each cut into a solution of one part household bleach to nine parts water.

As with the peachtree borer, annual trunk and limb sprays in August will help control the lesser peachtree borer. However, since there are two or more generations per year it is difficult to get good control with insecticides since the first generation emerges while there is fruit on the tree. Homeowners can use permethrin for lesser peachtree borer control (see limitations listed for peachtree borer control). Permethrin will last longer on trunks than most other insecticides. See Table 1 for examples of brands and products. Do not apply these products within 14 days of harvest. As with all pesticides, read and follow all label directions and precautions.

**Shothole Borer:** Shothole borers are small, cylindrical beetles. They attack many fruit trees and ornamental trees and shrubs. Plants under stress are highly susceptible to shothole borer attack. Shothole borers attack the trunk and limbs. The entry holes look like the tree has been hit with fine bird shot. The adult beetle bores into the bark and then carves out chambers below the bark in which to lay eggs. The larvae feed on the bark. Occasionally, shothole borers may attempt to enter the twigs at the base of flower buds. This activity can destroy the buds.

The shothole borer overwinters as larvae. It has several generations per year. The adults emerge from the infested trees in April and May and move to new trees, especially those under stress from drought, disease or other reasons.

**Control:** The best control for shothole borer is to keep the trees in a vigorous, healthy growing condition and to prevent mechanical injury. Prune out split or broken limbs and limbs with signs of borer damage where feasible. Destroy pruned wood before adults emerge in April by shredding or
burning. Avoid spreading bacterial canker while pruning by dipping the pruning tool after each cut into a solution of one part household bleach to nine parts water.

Permethrin sprays that are necessary for other borers provide adequate control of adults (see limitations listed for peach tree borer control). Do not apply these products within 14 days of harvest. See Table 1 for examples of brands and products. As with all pesticides, read and follow all label directions and precautions. With more than one generation per year it is difficult to get good control with insecticides since the first generation emerges while there is fruit on the tree. There is no effective control for insects already in the tree.

**Catfacing Insects**

Catfacing insects include the tarnished plant bug (*Lygus lineolaris*) and various stink bugs. The tarnished plant bug is oval and has a white triangle on its back in the "shoulder" area. It is brown and about ¼-inch long.

The tarnished plant bug and the stink bugs have needlelike mouthparts that they use for piercing and sucking. They distort fruit by their feeding. The damage that they cause appears as deep dimples in the fruit. The damage is cosmetic and the fruit is still edible.

The catfacing insects overwinter as adults in protected areas in or near the orchard. Winter annual weeds that begin to bloom in late winter are a major attractant for these insects.

**Control:** Removing weeds and debris in the area will greatly enhance control of these insects. For chemical control, permethrin or lambda cyhalothrin are available in homeowner size packaging. Do not apply these products within 14 days of harvest. See Table 1 for examples of brands and products. As with all pesticides, read and follow all label directions and precautions.

**Scale**

Various scale insects attack peaches. The most commonly seen are the white peach scale (*Pseudaulacaspis pentagona*) and the San Jose scale (*Quadraspidiotus perniciosus*). These immobile insects can rapidly decrease the vigor of peach trees, kill limbs and ultimately kill the trees.

Scales are unusual insects in appearance. The adults are small and immobile, with no visible legs. Scales vary in appearance depending on age, sex and species. The adult females typically produce a waxy covering that protects them from many insecticides. They feed on sap by piercing the leaf or stem with their mouthparts and sucking.
White peach scale (*Pseudaulacaspis pentagona*) covering a peach branch.
Eric R. Day, Entomology Department, VPI&SU

The adult female white peach scale is $\frac{1}{16}$- to $\frac{1}{8}$-inch in diameter. It is circular in shape and yellowish to grayish white with a yellow or reddish spot. It will infest the bark, fruit and leaves of peach trees. An infestation by white peach scale can result in stunting, leaf drop, death of branches and even entire trees.

The white peach scale survives the winter as an adult female. The adult male is mobile and lives about one day. After mating, the female starts laying eggs in early April. The eggs hatch into nymphs (immature stage that looks similar to adult only smaller). Nymphs, or crawlers, as they are also called, crawl around for a few days before settling and beginning to feed. There are three generations per year.

The San Jose scale survives the winter as partially developed male and female adults. Development continues when the sap flow begins in the spring, and they become fully developed about the time the peach trees are in bloom. This species does not lay eggs but gives birth to crawlers that immediately disperse over the tree. There are four to six generations per year.

The San Jose scale on peach tree bark.
US National Collection of Scale Insects, USDA – ARS.

If the scale problem is serious, fall applications applied during the first cool spell after full leaf drop should be considered. These oil sprays applied during the dormant season will also help control spider mite infestations, as they survive the winter on the bark.

Chemical control of only the crawlers only can be achieved with malathion, carbaryl, permethrin or lambda cyhalothrin, which are available in homeowner size packaging. Although peach trees are quite tolerant of spider mites, carbaryl sprays may cause a flare up of spider mite numbers. If spider mites become a problem, a $\frac{1}{2}$% horticultural oil spray will suppress them. Do not apply a horticultural oil spray within 2 weeks of a captan (fungicide) spray). See limitations and pesticide comments listed for peach tree borer control. Table 1 has examples of insecticide brands and products.

**Control:** The adult female scales are difficult to control with insecticides because of their hard, waxy covering. Horticultural oil can be applied before budbreak when the temperature is above 40 °F. The oil sprays work by smothering the overwintering adult females, and they offer the best control when applied during the dormant season. Spray the trunk and limbs with a 2 or 3% oil solution to the point of run-off. Two sprays are best at 3 weeks and 1 week before bud swell. To make a 2% horticultural oil spray, add 5 tablespoons of oil per gallon of water.
Additionally, sprays for controlling scale should be applied about April 9, June 25, August 25, and October 8 in the Savannah Valley and Pee Dee regions, and about May 1, July 1, and September 1 in the Piedmont. Do not spray insecticides during bloom. Do not apply malathion within 7 days of harvest, carbaryl within 3 days of harvest, and permethrin or lambda cyhalothrin within 14 days of harvest. As with all pesticides, read and follow all label directions and precautions.

Table 1. Insecticides for Peach Insect Pests.

<table>
<thead>
<tr>
<th>Pesticide Active Ingredient</th>
<th>Examples of Brands &amp; Products</th>
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<tbody>
<tr>
<td>Carbaryl</td>
<td>Bayer Advanced Complete Insect Killer for Gardens RTU</td>
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<tr>
<td>Horticultural Oil</td>
<td>Bonide All Seasons Horticultural Oil Concentrate; &amp; RTU</td>
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<td></td>
<td>Ferti-lome Horticultural Oil Spray Concentrate; &amp; RTS</td>
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<tr>
<td></td>
<td>Monterey Horticultural Oil Concentrate OMRI</td>
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<td></td>
<td>Southern Ag Parafine Horticultural Oil</td>
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<td></td>
<td>Summit Year Round Horticultural Oil Concentrate; &amp; RTU</td>
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<tr>
<td>Lambda Cyhalothrin</td>
<td>Spectracide Triazicide Insect Killer for Lawns &amp; Landscapes Concentrate; &amp; RTS</td>
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<td></td>
<td>Bonide Fruit Tree &amp; Plant Guard (also w/ Boscalid &amp; Pyraclostrobin – which are fungicides)</td>
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<tr>
<td>Malathion</td>
<td>Bonide Malathion Insect Control Concentrate</td>
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<td></td>
<td>Hi-Yield 55% Malathion Insect Spray</td>
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<td></td>
<td>Ortho Max Malathion Insect Spray Concentrate</td>
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<td></td>
<td>Spectracide Malathion Insect Spray Concentrate 50%</td>
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<td></td>
<td>Southern Ag Malathion 50% EC</td>
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<tr>
<td>Neem Oil &amp; Pyrethrins</td>
<td>Ferti-lome Fruit Tree Spray with Neem Py Concentrate</td>
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<tr>
<td></td>
<td>Ferti-lome Triple Action Insecticide, Fungicide, &amp; Miticide Conc.; RTS; &amp; RTU</td>
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<tr>
<td></td>
<td>Ortho Tree &amp; Shrub Fruit Tree Spray Concentrate</td>
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<tr>
<td>Permethrin</td>
<td>Bonide Eight Insect Control Vegetable Fruit &amp; Flower Concentrate</td>
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<td></td>
<td>Bonide Eight Insect Control Yard &amp; Garden RTS</td>
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<td></td>
<td>Hi-Yield Indoor/Outdoor Broad Use Insecticide Concentrate</td>
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<td></td>
<td>Martin’s Vegetable Plus Concentrate</td>
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<tr>
<td>Malathion, Carbaryl &amp; Captan</td>
<td>Gordon’s Liquid Fruit Tree Spray Concentrate</td>
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<td></td>
<td>Tiger Brand Fruit Tree Spray Concentrate</td>
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<td></td>
<td>Martin’s Rescue One Spray Protection Concentrate</td>
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RTS = Ready to Spray (a hose-end spray bottle)  
RTU = Ready to Use (a small pre-mixed spray bottle)  
Notes: Captan is a general purpose fruit tree fungicide. The Bonide Fruit Tree & Plant Guard can only be applied twice per growing season because of the specific fungicides in the product. To protect pollinating insects, do NOT spray any insecticides during bloom. For a general fruit tree spray schedule, please see IC 119 Insect & Disease Management for Home Grown Fruits & Nuts. For more information on peach diseases and control, please see HGIC 2209, Peach Diseases.