

Plant Pathology Fact Sheet

Peach Fruit Diseases

by John Hartman

Peaches are grown in many Kentucky orchards for local fresh market sales. Fruit diseases, often resulting in decayed peaches, are a serious problem, especially during warm, humid, rainy weather conditions.

BROWN ROT

Brown rot reduces yields primarily by decaying the fruits on the tree and after harvest. All stone fruits are highly susceptible to this disease.

Symptoms

Brown rot causes a soft, brown decay of stone fruits. Decay begins as a small circular brown spot which rapidly expands to destroy the entire fruit (FIGURE 1). As the fruit softens during the ripening process, it becomes more susceptible to brown rot. Rotted fruits may fall from the tree or remain on the tree as mummies. The brown rot fungus also causes blossom blight and twig blight (FIGURE 2) in the spring.

Cause and Disease Cycle

The brown rot fungus, *Monilinia fructicola*, overwinters in mummies and blighted twigs from the previous season. Spores released



FIGURE 1. BROWN ROT ON PEACH FRUIT

In the spring are carried by wind, rain and splashing water to susceptible tissues, such as blossoms and young fruit. Additional conidia are produced throughout the growing season during periods of warm, wet or humid weather. Fruit susceptibility increases with maturity; infections can also occur after harvest and in storage.

Disease Management

- USE SANITATION to reduce sources of inoculum. Mummies and small fruit left over



FIGURE 2. TWIG BLIGHT PHASE OF BROWN ROT

from earlier thinning operations, as well as those simply lying on the ground, can be sources of inoculum. Blighted twigs should also be removed after the final harvest.

- **AVOID FRUIT INJURY.** Insect damage to the fruits can open up wounds that allow entry by the brown rot fungus. Take care to avoid fruit injuries during harvest.

- **IMPROVE ORCHARD DRYING CONDITIONS.** Densely planted orchards or those partially shaded or surrounded by woods could have problems with reduced air movement. Poor air circulation can result in slow drying, thus leading to greater brown rot outbreaks.

- **APPLY FUNGICIDES** to prevent brown rot. Effective brown rot fungicides such as Elite (tebuconazole), Indar (fenbuconazole), or Orbit (propiconazole), often referred to as DMI fungicides, can be alternated with Topsin-M (thiophanate-methyl), Captan or Ziram to manage DMI fungicide resistance. Wettable sulfur is fairly effective for brown rot management if applied at frequent intervals and if disease pressure is not too high. Consult a current copy of the UK *Commercial Tree Fruit Spray Guide* (ID-92) for amounts and application timing details.

PEACH SCAB

This disease is a common problem in Kentucky orchards, especially where an early protective fungicide agenda was not strictly maintained. The scab fungus mainly causes an unsightly spotting of the fruit skin. Consumers who purchase fruit with only a few lesions should not notice much difference in the taste or nutritional value of the fruit. However, consumers who preserve peaches will find that the skins of scab-infected fruit do not slip off easily when dipped in hot water prior to canning or freezing. For this reason, only scab-free fruits should be selected for preserving.

Symptoms

Scab first appears as small, round, green to black spots on the fruit about six or seven weeks after petal fall. These circular spots later become black and velvety (FIGURE 3), primarily on the stem end of half-grown to mature fruit. When the disease is severe, the lesions often run together, resulting in fruit cracking or abnormal fruit development.



FIGURE 3. PEACH SCAB

Although the most conspicuous symptoms of peach scab occur on the fruit, the disease can also affect twigs and leaves. Shoot and twig infections result in circular to oval lesions with brown centers and slightly raised purple margins.

Cause and Disease Cycle

The scab fungus, *Cladosporium carpophilum*, overwinters in twig lesions. This fungus becomes active during shuck-split (just after petal fall) and during the subsequent weeks. Conidia are produced in large numbers under high humidity. Low levels of infection generally do not reduce crop yields.

The time from infection to the appearance of visible symptoms may take about a month. Fruit of early maturing cultivars infected during rainy periods at shuck split may not show symptoms until just before harvest. Infections occurring a month before harvest will not appear until fruits are marketed. By the time growers begin to notice scab symptoms, it is much too late to attempt disease prevention.

Disease Management

- **PRUNE TREES** to increase air circulation and facilitate the drying of fruit and foliage. Pruning also opens up the canopy and increases the possibility of good spray penetration into the trees.

- **APPLY PROTECTANT FUNGICIDES** diligently. Peach scab outbreaks can usually be traced to a failure to apply a fungicide in the early season spray program due to rainy weather or sprayer malfunction. Peach scab can be controlled using fungicides such as Captan, sulfur, Benlate, Bravo, Topsin-M, Pristine, and Ziram applied according to label directions. Spray applications begun at shuck split and again at shuck-off are critically important in covering the newly exposed fruit surface. Sprays just before harvest to protect against scab are unnecessary.

ANTHRACNOSE

Anthracnose, sometimes referred to as crater rot, was first noticed here on a few peach trees in a western Kentucky orchard a few years ago and it is now appearing in other orchards

as well. Anthracnose appears to affect nearly all peach cultivars and may appear continuously from June through August.

Symptoms

Anthracnose begins as small chlorotic spots on the fruit surface. The spots gradually enlarge and become noticeable as circular, sunken, tan lesions on ripening fruit. The sunken lesions (FIGURE 4) have a glistening or slimy surface, unlike brown rot disease with which it could be confused. The decay continues to enlarge to an inch or two inches in diameter by which time the fruit is significantly decayed. Decay can be quite extensive in fruits on the tree, with the rot



FIGURE 4. PEACH ANTHRACNOSE

continuing after harvest. When the decay becomes quite advanced, the fruit surface eventually takes on a grayish black color. Leaf and twig symptoms are generally not seen with this disease.

Cause and Disease Development

This fruit rot disease can be caused by two related fungi, *Colletotrichum gloeosporioides* and *C. acutatum*. The fungus that we have isolated from infected fruit appears to produce spores which more closely resemble *C. gloeosporioides*; however, these fungi are sometimes difficult to tell apart. Similar *Colletotrichum* fungi also cause bitter rot of apple and anthracnose of strawberry.

The fungus overwinters in mummified fruit, as well as in twig and bark cracks and crevices. *Colletotrichum* has a wide host range, including herbaceous annuals and perennials, woody plants and other fruit crops. Because of this wide host range, the disease can become easily established in the orchard. Fungal spores are spread through splashing rain and infections are favored by warm, moist weather. Although symptoms are found primarily on ripe or ripening fruit, infections could occur during bloom with the fungus remaining latent in the developing fruit. Outbreaks of the disease in Kentucky are believed to be related to wet spring and summer weather.

Disease Management

- **SANITATION** should be useful in reducing this disease. Eliminate mummies and rotted fruit from trees, as well as from the orchard floor. The removal of wild *Prunus* species growing near the orchard should also be helpful.

- **FUNGICIDES** need to be applied season long from bloom to harvest. Managing anthracnose with fungicides can be difficult because many of the widely used brown rot fungicides, such as sulfur, are not very effective against this disease. However, Captan, a fungicide registered for peaches, has activity against anthracnose and should suppress the disease. A combination of Elite (tebuconazole) and a strobilurin-containing fungicide (e.g. Pristine) are both registered for peaches and may help manage this disease. This fungicide combination could be alternated with captan.

BACTERIAL SPOT

Bacterial spot is a sporadic, but potentially devastating disease. It is not only a problem on certain peach cultivars, but also on other stone fruits in Kentucky. Entire crops can be lost in years with warm, stormy, wet weather.

Symptoms

Leaf lesions begin as small, gray, water-soaked spots on the underside of leaves, especially along the leaf mid-vein, tip or margins. Lesions become brown to black and generally angular in outline (FIGURE 5). Often the centers of spots fall out giving the leaf a “shot-hole” appearance. Lesion margins have a reddish coloration. Severely infected leaves turn yellow and drop prematurely.



FIGURE 5. BACTERIAL SPOT FOLIAR SYMPTOMS



FIGURE 6. BACTERIAL SPOT FRUIT SYMPTOMS

Infected fruit develop brown to black lesions. Fruit lesions may coalesce and cause the fruit to become pitted (FIGURE 6) and cracked. Elliptical cankers can develop on current-year or 1-year-old twigs and branches.

Cause and Disease Development

The bacterial spot pathogen, *Xanthomonas arboricola* (*X. campestris* pv *pruni*), overwinters on twigs (sometimes with canker symptoms, sometimes not) and in buds. In the spring, bacterial populations multiply and cause primary infections during wet conditions. Water congestion (water

soaking of leaf intercellular spaces due to rain being driven into the stomata) of plant tissue is important for disease development, so outbreaks are especially severe following storms with wind-driven rain. Abrasion by wind-borne sand can injure tissue, leading to additional infections. Warm, rainy weather throughout the season is conducive to secondary infections.

Disease Management

Diseases caused by bacteria are nearly impossible to manage when conditions favor bacterial growth and bacterial spot of stone fruits is no exception. The following are important to disease management.

- **PLANT VARIETIES THAT ARE RESISTANT OR TOLERANT** to bacterial spot and avoid those that are highly susceptible.

Resistant varieties: Candor, Cresthaven, Earliglo, Encore, Harbelle, Harbinger, Harken, Jerseydawn, Norman, Pekin, Ranger, Redkist, Redskin.

Tolerant varieties: Biscoe, Earlirio, Garnet Beauty, Glohaven, Jerseyqueen, Loring, Rio-Oso-Gem, Sentinel, Springgold, Summerglo, Sunqueen, Sunshine, Surecrop, Topaz.

Least resistant varieties: Autumn glo, Blake, Harmony (Canadian), Jerseyland, Redcrest, Redhaven, Sweet Sue, Suncrest, Sunhigh, Triogem, Tyler, Velvet, Washington.

- **CHEMICAL CONTROLS**, while sometimes unreliable, may help. Applying a dormant application of fixed copper may reduce early bacterial populations. The antibiotic, oxytetracycline (Myco Shield Agricultural

Terramycin 17 percent SP), can provide some control when used as the label directs. If the disease has been a problem for growers in the past, they will want to undertake a complete spray program the next year beginning at shuck split and continuing at 7 day intervals until 3 weeks before harvest.

- **FERTILIZE TREES ADEQUATELY, BUT NOT EXCESSIVELY.** Succulent tissues are very susceptible to bacterial spot.

- **MINIMIZE SAND ABRASION** to leaf tissues with cover crops and windbreaks.

ADDITIONAL RESOURCES

Information on peach fruit diseases, including fungicide suggestions and timing, are found in the following University of Kentucky publications, also available at county Extension offices.

- Commercial Tree Fruit Spray Guide, ID-92
http://www.hort.purdue.edu/fruitveg/ID168_2006.pdf

- Midwest Tree Fruit Pest Management Handbook, ID-93
<http://www.ca.uky.edu/agc/pubs/id/id93/id93.htm>

- Disease and Insect Control Programs for Homegrown Fruit in Kentucky, Including Organic Alternatives, ID-21
<http://www.ca.uky.edu/agc/pubs/id/id21/id21.pdf>

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