



Brown Rot of Peach

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IMPORTANCE

Brown rot is the most devastating disease of peach in Kentucky. The disease affects both commercial and backyard orchards. Crop losses occur primarily as a result of fruit decay; however, blossom blight is also part of the disease cycle. All stone fruit (peach, nectarine, plum, and cherry) are susceptible to brown rot.

SYMPTOMS & SIGNS

Blossom blight

Infected blossoms wilt and turn brown (FIGURE 1) while remaining attached to twigs; oozing sap is often associated with the dead blossoms. Blossom infections move into peduncles (blossom attachments to branches) and then into branches, causing cankers (FIGURE 1); these may initially go unnoticed. The cankers girdle (encircle) branches; twig blight and shoot death occur as a result. Gummosis (oozing of sap) is common in affected twigs.



Fruit rot

Decay begins as small circular brown spots, which rapidly expand to destroy entire fruit (FIGURE 2). Light-colored tan-to-brown spores (conidia) cover infected fruit tissue (FIGURE 3). Rotted fruit drop to the ground or remain attached to trees and become hard and wrinkled (mummies) (FIGURE 4). Infected fruit (not yet showing symptoms) can rot in storage.



FIGURE 1. BLOSSOM BLIGHT PHASE OCCURS WHEN THE BROWN ROT FUNGUS INFECTS FLOWERS. THIS INITIATES OTHER PHASES OF THE DISEASE. A CANKER (ARROW) DEVELOPS WHEN BLOSSOM INFECTIONS MOVE INTO BRANCHES. **FIGURE 2.** FRUIT INFECTIONS EXPAND RAPIDLY AND CAUSE FRUIT ROT. BROWNISH, FLUFFY FUNGAL GROWTH IS A DIAGNOSTIC CHARACTERISTIC OF BROWN ROT.

FIGURE 3. ADVANCED FRUIT ROT SYMPTOMS INCLUDE COMPLETELY ROTTED FRUIT THAT MAY REMAIN ATTACHED TO TREES. **FIGURE 4.** INFECTED FRUIT SHRIVEL (A) AND HARDEN (B) TO BECOME MUMMIES. NOTE SPORULATION. **FIGURE 5.** IN SPRING, CUP-SHAPED APOTHECIA MAY DEVELOP ON FALLEN FRUIT ON THE ORCHARD FLOOR. ASCOSPORES ARE DISCHARGED FROM THESE FRUITING STRUCTURES.



CAUSE & DISEASE DEVELOPMENT

The brown rot fungus, *Monilinia fructicola*, overwinters in tree mummies, on fallen fruit, and in twig and branch cankers.

In spring, fallen fruit can produce small cup-shaped fruiting structures (apothecia) (FIGURE 5) under favorable environmental conditions. Apothecia forcibly discharge infective spores (ascospores) into tree canopies.

Other spore types (conidia) are produced in overwintering sites such as cankers and mummies; this is the primary means for initial infections. Both ascospores and conidia are carried to susceptible tissues by wind, rain splash, and insects. Conidia are produced throughout the growing season during periods of warm, wet or humid weather.

Fruit rot infections result from conidia produced in early spring on affected blossoms and cankers. Healthy, young fruit are usually somewhat resistant to brown rot, but wounds (e.g. from insects, birds, or hail) can allow the fungus to penetrate. Early infections often remain latent (inactive) until fruit matures. As fruit softens and sugar content increases (2 to 3 weeks before harvest), fruit become increasingly susceptible.

Infection periods are highly dependent upon moisture and temperature. Rainy weather and temperatures ranging from 60°F to 70°F are most favorable for disease development. For example, at 50°F, tissues must remain wet for 18 hours for infection to occur, while only 5 hours of wetness are needed at 77°F. Windy conditions and wind-driven rain allow for long distance spread.

Fruit infected in the field can develop symptoms in storage and shorten shelf-life.

DISEASE MANAGEMENT

Brown rot is best managed using a combination of sanitation and well-timed fungicide applications.

Sanitation practices are critical for eliminating overwintering sources of the pathogen. It reduces the amount of inoculum available and decreases infection risk.

- Remove fruit mummies, branch cankers, and blighted blossoms during pruning.
- Allow for good air circulation in the canopy (e.g. site selection, proper winter and summer pruning, and avoidance of over-fertilization).
- Remove infected or damaged fruit throughout the growing season.
- Establish proper orchard floor management, including removal of fallen fruit.

Protect fruit from injury by insects and birds, as well as mechanical injuries that can occur during normal orchard operations and harvest.

Apply fungicides at full bloom and petal fall, and continue sprays through the growing season. Fungicides will not cure disease, but they protect susceptible blossoms and fruit. The most important applications are the ones before harvest (as fruit ripen). Consult a local county Extension office for the latest fungicide recommendations. More information can also be found in the fruit management publications listed in *Additional Resources*.

Harvest mature fruit promptly (still hard to the touch but with no green color around the stem end) into clean containers, using care not to injure fruit. Pick at 3- to 4-day intervals. Cool-down harvested fruit immediately.

ADDITIONAL RESOURCES

- Disease and Insect Control Programs for Homegrown Fruit in Kentucky, Including Organic Alternatives (for home orchards) (ID-21)
<http://www.ca.uky.edu/agc/pubs/id/id21/id21.pdf>
- Midwest Fruit Pest Management Guide (for commercial orchards) (ID-232)
<https://plantpathology.ca.uky.edu/files/id-232.pdf>
- Midwest Tree Fruit Pest Management Handbook (ID-93)
<http://www2.ca.uky.edu/agcomm/pubs/id/id93/id93.htm>
- IPM Scouting Guide for Common Problems of Peach (ID-260)
<http://www2.ca.uky.edu/agcomm/pubs/ID/ID260/ID260.pdf>
- Scouting Guide Problems of Peach (Peach Scout) for mobile devices
<https://peachscout.ca.uky.edu>

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