

Brown Rot of Stone Fruits

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Brown rot is a common and destructive disease of peach and other stone fruits (plum, nectarine, apricot, and cherry). The brown rot fungus may attack blossoms, fruit, spurs (flower and fruit bearing twigs), and small branches. The disease is most important on fruits just before ripening, during and after harvest. Under favorable conditions for disease development, the entire crop can be completely rotted on the tree. Peaches not kept in cool storage may be rotted in two to three days by the fungus.

Symptoms

The symptoms of brown rot are very similar on all stone fruit. Symptoms first appear in the spring as the blossoms open. Diseased flowers wilt, turn brown, and may become covered with masses of brownish-gray spores. The diseased flowers usually remain attached into the summer.



Figure 1. Brown rot on peach fruit. Note that the fungus has invaded the twig causing a twig blight as well.



Figure 2. Brown rot producing spores on the surface of an infected peach fruit. These spores can infect other fruit.

Young fruits are normally resistant, but may become infected through wounds. As fruits mature they become more susceptible to attack, even in the absence of wounds. Fruit infections appear as soft brown spots which rapidly expand and produce a tan powdery mass of conidia. The entire fruit rots rapidly, then dries and shrinks into a wrinkled “mummy.” Rotted fruit and mummies may remain on the tree or fall to the ground. Fruit infection may spread rapidly, especially if environmental conditions are favorable and fruits are touching one another.

The fungus may move from diseased blossoms or fruit into the spurs. The fungus may then invade and cause diseased areas (cankers) on the twigs below. Succulent shoots are sometimes infected by direct penetration near their tip. A canker may form encircling the twig, causing death of the twig beyond the canker (twig blight).



Figure 3. Brown rot on cherry fruit. Note the tufts of fungus on the surface of rotted fruit.



Figure 4. Brown rot mummy from an infected peach.

Causal Organism

Brown rot is caused by the fungus, *Monilinia fructicola*. The brown rot fungus survives the winter in mummified fruits (either on the ground or still on the tree) and in twig and branch cankers produced the preceding year. Both sources may produce spores that can infect blossoms and young shoots. At about blossom time, a mummified fruit that has fallen on the ground produces up to 20 or more small, tan, cup-like structures on slender stalks that are called apothecia. As an apothecium matures, it becomes thicker and the cup opens to a bowl-like disc 1/8 to 1/2 inch in diameter across the top. The inner surface of each bowl is lined with thousands of spore-containing

sacs (asci). At this stage, the slightest disturbance of air movement will cause an apothecium to forcibly discharge millions of spores.

These spores (ascospores) are carried by wind to the open or unopened blossoms and young shoots. If a film of water (either from dew or rain) is present for 5 hours or longer, the spores can germinate and penetrate the plant. Infected blossoms soon wilt and tan-gray tufts, composed of masses of another type of spore (conidia), develop on the outside of the flower shuck. If the infected blossom does not drop off, the fungus soon grows through the pedicel to the twig and forms a canker.

Masses of conidia are soon produced on the newly cankered twig surface during moist periods throughout May and June. These summer spores are easily detached, and, like the ascospores, are mainly wind-borne. They are also splashed by rain or carried by insects to the growing fruit. Brown rot conidia can germinate and infect at temperatures of 32 to 90 degrees F. Wet weather and temperatures ranging from 60 to 70 degrees F are most favorable for disease development.

Following spring and summer rainy periods, mummified fruit still hanging in the tree become covered with masses of conidia that may result in blossom blight or fruit rot. Mummies hanging in the tree do not produce ascospores. Although the flesh of young fruit is very susceptible to brown rot infection, the fruit has such a tough skin that the germ tubes of the summer spores do not normally penetrate. For this reason, young uninjured fruits are fairly safe from infection.

However, any type of injury to the fruit will provide entry points for brown rot spores. Insect and hail wounds, fruit cracking, limb rubs, twig punctures, and a variety of picking and packing injuries greatly increase the losses due to brown rot. Growers must realize that brown rot spores are practically everywhere during the fruit-ripening period. Infection is almost certain to occur if the weather is moist and if the fruit skin is broken in some way.

Control

1. Sanitation is very important in controlling brown rot. All dropped and rotted fruit should be picked up and destroyed promptly. At the same time, remove all mummies from the trees. Prune out all cankers during the dormant season. Overripe or rotting fruit in the packing shed should be removed and destroyed at once.
2. Control of insects that feed on fruit is essential. Remember that anything that causes wounding of the

fruit will increase the incidence of brown rot. Special care should be taken during harvesting and packing to prevent puncturing or bruising of ripe fruit.

3. Remove wild or neglected stone fruit trees that serve as reservoirs for the disease.
4. Fruit should be cooled and refrigerated (as close to 32 degrees F as possible) immediately after harvest.
5. The use of fungicide is an important part of the disease management program for brown rot.

For the most current spray recommendations, commercial growers are referred to Bulletin 506-A2, *Midwest Commercial Tree Fruit Spray Guide*, and backyard growers are referred to Bulletin 780, *Controlling Diseases and Insects in Home Fruit Plantings*. These publications can be obtained from your county Extension educator or the Extension Publications Office, The Ohio State University, 216 Kottman Hall, 2021 Coffey Road, Columbus, Ohio 43210-1044.

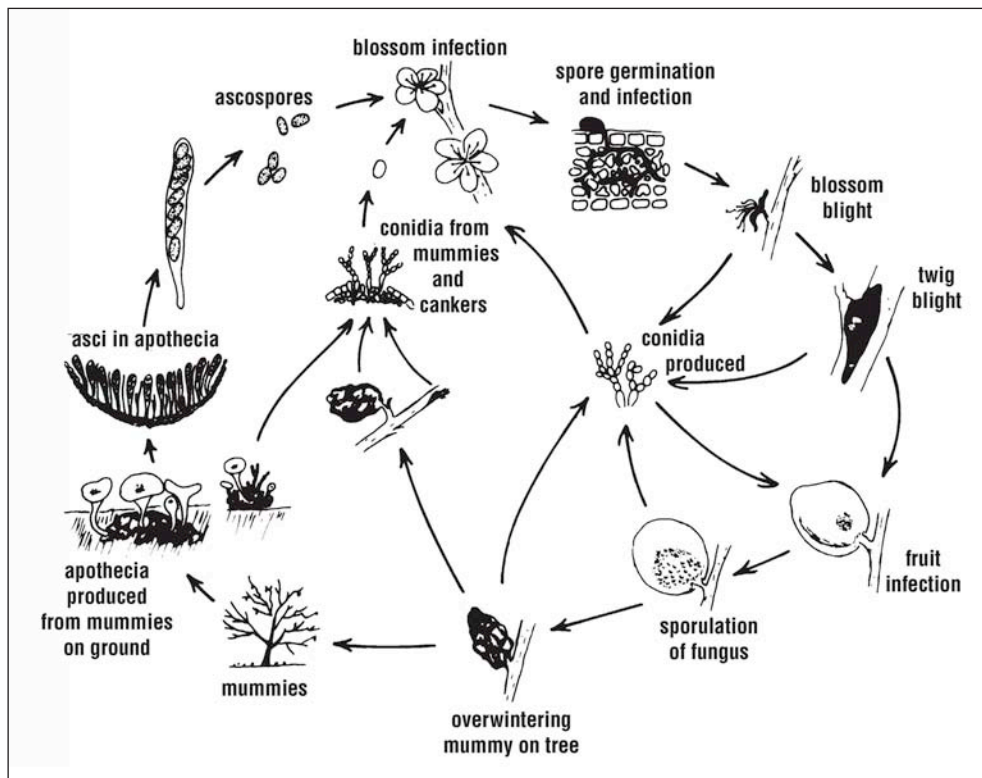


Figure 5. Brown rot disease cycle. We want to thank the New York State Agricultural Experiment Station for use of this figure. Taken from Tree Fruit IPM Disease Identification Sheet No. 2.

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