



BROWN ROT OF STONE FRUITS

Brown rot affects all stone fruits, including those grown for ornamental purposes. The disease occurs throughout Washington but is more serious in the cooler, wetter regions, particularly in western Washington.

The disease can destroy blossoms, fruit, and stems. Greatest losses are from blossom blight and destruction of fruit in the orchard, in transit, and in storage. The disease can develop rapidly, and a few infected fruits in storage can lead to destruction of all surrounding fruit.

Blossom blight may lead to twig infections which are potential sources of infection for the developing fruit, and sometimes a serious problem in fruit production. The blossoms and twig blight usually are most serious on trees grown for ornamental purposes (Figures 2,3).

Brown rot of blossoms appears as a sudden wilting and browning of the flower parts (Figure 1). If conditions are moist, the dead flowers are soon covered by a grayish brown powder consisting of masses of fungus spores. This is the major source of fruit infection.

The disease first appears on the fruit as a small, circular brown spot that rapidly increases in size and develops into a soft rot. Eventually tufts of gray-brown spore masses appear on the affected area and soon cover the diseased fruit (Figure 4).

Diseased fruits often hang on the tree long after being completely rotted. The fruit dries into a firm mummy (Figure 5).

The fungus may spread into twigs from both infected blossoms and fruit. On twigs and smaller branches, brown rot cankers are oval, definite in outline, brown in color and usually sunken. The twig is sometimes girdled and dies (Figures 2,3).

Brown rot is caused by two closely related fungi, *Monilinia fruticola* and *Monilinia laxa*. The former fungus is common throughout the United States and attacks primarily blossoms and fruit. *M. laxa* is considered to be primarily a European fungus and is not common in the United States. It is present in the coastal region of the Pacific Northwest and affects twigs as well as blossoms and fruit.

The fungus lives over the winter in infected twigs and fruiting spurs and in mummified fruit on the tree or on the ground. Masses of spores are produced on these infected tissues in the spring and cause blossom blight.

Cup-shaped fruiting structures on long stalks are also sometimes formed on overwintering mummies. The inner surface of these cups bears many spore-

containing sacs. These spores land on blossoms and give rise to the blossom blight and possibly also cause twig infections.



Fig. 1. Wilting and dying blossoms—an early symptom of brown rot infections.

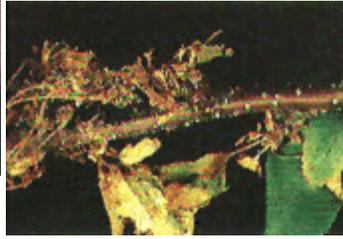


Fig. 2. Dead blossoms are covered with grayish brown spores, and gumming often occurs at base of infected flower spur.



Fig. 3. During summer, flagging (dead twigs and branches) occurs in flowering cherry from springtime infections.



Fig. 4. Abundant spores are produced on brown rot infected fruit (cherry).



Fig. 5. Brown rot mummified peach fruits overwinter in the tree or on the ground.

As with many diseases, prolonged periods of mild, moist weather favor the development and spread of the fungus.

Brown rot is most serious on peaches, plums, and cherries, but also affects apricots. Although apples and pears have also been reported susceptible to brown rot, the disease is of minor importance on these crops in Washington.

Control of brown rot involves three approaches: sanitation to reduce or eliminate sources of infection, removing conditions favorable to disease development, and protecting the fruit and blossoms from infection with fungicides.

Removal of mummified fruits is probably not feasible in most commercial orchards. Cultivation around trees will bury many mummies. In some situations, it is feasible for home gardeners to remove the mummified fruit in the tree and rake up and destroy infected fruit on the ground. In addition, pruning out infected twigs will help to eliminate sources of spores. This pruning should take place in the late spring or early summer when they are readily visible. The brown, dead leaves attached to these girdled twigs, or the dead, brown blossoms at this time of year, make these infections quite obvious (Figure 3). If pruning is delayed until the dormant season, locating infected twigs is almost impossible. Spring or early summer pruning will

also reduce the number of spores responsible for fruit infection.

Improving air circulation through trees will do much to eliminate the moist conditions favorable to brown rot. Remove trees and brush surrounding the orchard. Avoid planting trees too close and remove some trees where they are crowded. Pruning to provide more open crowns will permit better air circulation within the individual tree and will also provide better spray coverage. Infected spurs and shoots should be removed as soon as they are noticed.

In western Washington, or during wet springs in eastern Washington, preventative fungicide applications are necessary in the spring to protect blossoms from infection. Several fungicides are registered (see EB0419, EB0918). An application should be made at early bloom (popcorn) with two additional sprays at 7-10 day intervals during the bloom period. To prevent bee kill, do not mix an insecticide in with these fungicides.

Fungicide sprays prior to harvest are necessary during wet weather to control fruit rot. Be sure to read and follow label directions, especially regarding the interval between the last application and harvest. Bruising of fruit during harvest should be avoided, and the fruit should be kept cool until it reaches market.

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Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

The law requires that pesticides be used as the label directs. Uses against pests not named on the label and low application rates are permissible exceptions. If there is any apparent conflict between label directions and the pesticide uses suggested in this publication, consult your county Extension agent.

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