

Plant Diseases

Brown Rot of Stone Fruits

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Brown rot, caused by the fungus *Monilinia fructicola*, is the most common and destructive disease of stone fruits in Tennessee. Brown rot occurs on peaches, plums, nectarines, cherries and apricots. This disease reduces yields primarily by rotting the fruit both on the tree and after harvest. Brown rot can potentially cause complete crop loss in unsprayed orchards when environmental conditions are favorable for disease development.

Symptoms

The brown rot fungus infects blossoms, twigs, branches and fruits. Infected blossoms wilt, turn brown and may cling to the twig into the summer. Infection often spreads from the blossom in the twig, where a definite oval, brown, sunken canker forms. Gum oozes from the canker during wet periods. Scattered tan to gray spore tufts also appear on the surface. If the canker completely girdles the twig, the terminal growth will wither and die. The dead leaves usually cling to the blighted twigs. Twig blight may also be caused by direct infection near the tips of succulent twigs.

Fruit rot begins with a small, circular, light brown spot. In warm, moist weather, the rot develops very rapidly. Within days, the entire fruit becomes mushy and decayed. The fruit skin has a powdery appearance because of numerous tan to gray spore tufts. The spore tufts are often arranged in concentric rings around the infection center, usually a wound or insect injury. The rotted fruit falls to the ground or hangs on the tree and forms "mummies," which are shrunken, shriveled, dried fruits.

Disease Cycle

The brown rot fungus overwinters in mummies on the tree or ground and in twig cankers produced the preceding year.



At about blossom time, fallen mummies may produce small, tan cup-like structures, called apothecia, that are visible to the naked eye. The inner surface of each apothecium is lined with thousands of spore-containing sacs (asci), each containing eight spores (ascospores). The slightest disturbance will cause the ascospores to be forcibly ejected into the air and carried by air currents to blossoms and young shoots. Apothecia disintegrate soon after bloom and do not contribute directly to infection of fruits.



Apothecia are not produced every year, so ascospores do not always cause primary infection. Another type of spore, called a conidium, is also produced in the tree. Conidia are carried by wind or splashing rain to blossoms or shoots.

Twig cankers are principal source of the conidia that cause fruit infections in the summer. Although significant loss of blossoms rarely occurs in Tennessee, infected blossoms can increase the amount of fruit rot by forming twig cankers. Twig cankers may form around infected blossoms that do not drop, or they may result from direct infection of succulent shoots. Hanging mummies produced the previous year may also contribute directly to fruit infection.

Young, green fruit is subject to infection only if the cuticle is broken. Such infected young fruit is another source of infection for mature fruit. Fruit infection also takes place after harvest, in storage or transit.

Infection of mature fruit may occur through injured or non-injured cuticle. However, wounded fruit are infected much more readily than nonwounded fruit. Infection is almost certain to occur if the fruit skin is broken and the weather is moist. Fruit injuries can result from insects, hail limb rubs, twig punctures, fruit cracks, and picking and packing injuries.

Control

1. Remove all fruit, mummies and blighted twigs from trees after the last picking. This practice reduces the amount

of fungus overwintering in mummies and twig cankers. Other cultural practices that aid in controlling brown rot include open-center pruning to allow for fast drying of the foliage and fruit; removing mummies from the orchard floor so they do not produce spores; the removal of wild plum trees near the orchard to reduce reservoirs; and weed control to reduce insect reservoirs. Also, fruit should be thinned prior to pithardening; fruit thinned later are more likely to become infected.

2. Follow a strict fungicide spray program, as outlined in Extension PB375, "Home Fruit Spray Schedules," or PB1197, "Commercial Fruit Spray Schedules." The most important sprays for brown rot control are those applied during bloom and the three-week period immediately before harvest. Good spray coverage is essential. The insecticide component of the spray schedule is also important for brown rot control, as insects enhance the spread of the disease.
3. In harvesting and packing, try to avoid fingernail scratches, bruising and container wounds, as these allow spores to enter. Storage containers should be dry and clean. Careful handling of fruit at all times and immediate hydrocooling followed by refrigeration (as close to 32 F as possible) are needed for satisfactory brown rot control. Plan to eat or process peaches within a couple of days after picking, if refrigeration is not possible.

Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Disclaimer Statement

Pesticides recommended in this publication were registered for the prescribed uses when printed. Pesticide registrations are continuously being reviewed. Should registration of a recommended pesticide be cancelled, it would no longer be recommended by the University of Tennessee.

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