CAES
The Connecticut Agricultural Experiment Station
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BROWN ROT OF STONE FRUITS

Brown rot is a common and destructive disease of stone fruits including peach, cherry, plum, apricot, and other *Prunus* species worldwide. The disease can cause blossom blight, twig blight, stem canker, and fruit rot. Fruit rot poses the greatest disease risk for crop loss of fruits, especially in warm, humid weather conditions. When fruits are injured or bruised, the disease can cause severe postharvest losses in transportation and storage.

SYMPTOMS AND DIAGNOSTICS

In early spring, blossom blight occurs as blossoms open. The initial symptom of blossom blight includes brown spots on young petals, and then the entire infected flower quickly wilts and turns brown. The disease may progress from diseased blossoms into spurs, twigs, and small branches, which results in reddish brown cankers that may girdle the stem and kill the twig (twig blight) (Figure 1). Fruit can be infected at any stages of its development, but the fruit is most susceptible to the disease between 2 to 3 weeks prior to harvest. Symptoms of fruit rot appear tan-brown, circular spots (Figure 2), which enlarge rapidly and cover the entire fruit (Figure 3). Under humid conditions, the fungus forms fuzzy gray mold (masses of conidia) on the surface of diseased parts (Figure 3). Gray mold on flowers, twigs, and fruits is a diagnostic sign of the disease. Diseased fruits may drop prematurely on the ground or remain on the tree to be dehydrated and shriveled mummies (Figure 4).

DISEASE DEVELOPMENT

Brown rot of stone fruits is caused by a fungal pathogen, *Monilinia fructicola,* that forms two types of spores, ascospores (sexual

Figure 1. Twig blight on a cherry branch

Figure 2. A brown spot on a peach fruit

Figure 3. Gray mold on peach fruits

Figure 4. Mummies on a plum tree

spores) and conidia (asexual spores). The pathogen overwinters in mummies (withered diseased fruits), twigs, and perennial cankers, which serve as the initial inoculum source of the disease in the spring. During periods of rains in the spring, ascospores are released from sexual fruiting bodies that formed on colonized mummies and twigs. Released ascospores are dispersed by wind to opening blossoms that are the first emerging susceptible tissues in the season. Spores that land on blossoms germinate and infect plant tissues when they remain wet for more than five hours. Rainy, humid weather with mild daytime temperatures and cool nights is favorable for blossom blight in the spring. The fungus forms masses of conidia on the diseased blossoms and twigs that, in turn, form secondary inoculum in the form of asexual conidia. During a season, there can be many cycles of secondary infections on blossoms, twigs, and fruits, which results in further spread of the disease in an orchard or yard. Like ascospores, conidia are disseminated by air movement and wind-blown rain-splash. Insect damages, mechanical injury, and bird pecks on fruits make them more vulnerable to fruit rot.

MANAGEMENT

*Sanitation:*Sanitation is one of the most important steps in reducing the initial inoculum. Remove and destroy diseased twigs and fruit mummies to reduce the amount of initial inoculum for next season.

Culture: Prune trees to maintain an open canopy for better air circulation and sunlight penetration. Control insects to prevent direct damages to fruits. Avoid injuring and bruising fruits during the season and after harvest.

Fungicides: If brown rot is historic and the spring weather is predicted particularly wet, a fungicide program is necessary to prevent the disease. For a successful control of brown rot, a fungicide spray program must begin just as blossoms open and continue throughout the growing season to give enough protection against the infection. Fungicides registered for brown rot of stone fruits include calcium polysulfide, copper hydroxide, copper products, fenarimol, iprodione, mancozeb, propiconazole, sulfur, thiophanate-methyl, and ziram. To prevent developing fungicide-resistant strains of the pathogen, rotate fungicides in different FRAC groups. Remember always read labels and follow instructions before using any pesticides.

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