UF IFAS Extension UNIVERSITY of FLORIDA

HS1265

Fungal Gummosis in Peach[1]

Sara Sherman, Mercy Olmstead, Philip Harmon, and Thomas Beckman[2]

Introduction

The fungus *Botryosphaeria dothidea* causes the disease peach fungal gummosis. Additional species of *Botryosphaeria*, including *B. rhodina* and *B. obtusa*, have also been associated with gumming and dieback symptoms on peaches in the United States.

Gummosis takes its name from the large amounts of resinous compounds (gum) that are exuded from fungal infections at lenticels or from other entry wounds on branches or tree trunks.

Gummosis symptoms can be caused by physical or chemical injuries and other non-pathogenic (abiotic) causes. Biotic causes of gummosis include larval feeding of both lesser peach tree borer (*Synanthedon pictipes* [Grote & Robinson]) and peach tree borer (*Synanthedon exitiosa* [Say]) in the trunk. However, damage due to these abiotic and biotic factors allow secondary pathogens to infect the wounds, leading to fungal gummosis.

The disease is difficult to control, and peach orchards that are water stressed (Pusey 1989) or poorly managed are at a greater risk for severe disease damage.

Trunk and Branch Symptoms

The earliest symptoms of fungal gummosis are raised blisters 1–6 mm in diameter that appear on the young bark of vigorous trees (Figure 1). These blisters will generally have a lenticel at their center, which is where the pathogen, usually *B. dothidea*, has infected the bark (Pusey 1986; Weaver 1974). The raised blisters are caused by hyperplasia, the abnormal multiplication of the plant cells. These blisters may be observed late in the season during which infection occurred or during the following year.

Figure 1. A peach limb with the blister symptom of fungal gummosis caused by *Botryosphaeria dothidea*.
Credits: L. Pusey, USDA-ARS

After the second season, the area of hyperplasia surrounding the lenticel is typically much less visible or absent, but the area of necrosis will have grown. Some of these necrotic lesions will secrete gum. Sunken necrotic lesions surrounding the lenticels can be seen on the trunk and major branches by the time the tree is 2 to 3 years old (Figure 2). Lesions may secrete a large amount of sap, particularly after heavy rains. Large cankers will begin to form when

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2. Sara Sherman, student; Mercy Olmstead, assistant professor and Extension specialist; Horticultural Sciences Department; Philip Harmon, associate professor and Extension specialist, Plant Pathology Department; and Thomas Beckman, research horticulturist, USDA-ARS, Southereastern Fruit and Tree Nut Research Lab, Byron, GA; UF/IFAS Extension, Gainesville, FL 32611.

lesions larger than 2 cm begin to coalesce on the oldest bark (Figure 3). These lesions primarily affect the phloem and the cortex, but, in some cases, the necrosis can extend to the xylem. In its most severe form, fungal gummosis can kill branches or even the entire tree. Blossoms, leaves, and fruit of the tree typically are not infected.

Figure 2. Amber-brown gumming on young peach trunks caused by *Botryosphaeria dothidea*.
Credits: M. Olmstead

Figure 3. Coalesced fungal gummosis lesions on 2-year old 'Flordaguard' peach rootstock caused by *Botryosphaeria dothidea.*
Credits: M. Olmstead

Disease Cycle

The fungus survives between infection periods (over-winters) in diseased bark and dead wood. Asexual spores (conidia) of the fungus are produced on the dead and diseased wood from March through October in the south-eastern United States. Spores can be splashed in rainwater throughout the orchard and may infect new trees through existing wounds or lenticels given extended periods of wet and humid conditions. The most favorable conditions for infection tend to occur from May through July, but disease continues to develop after infection of lenticels from March through August. The fungus in diseased cankers can continue to produce new spores for more than a year.

Disease Management

Fungal gummosis can be a difficult disease to manage because protecting trees with fungicides during the long potential infection period each year in Florida can quickly become impractical and cost prohibitive. Fungicides that are applied to manage fruit and leaf diseases may also help suppress fungal gummosis. Maintaining tree health with good horticultural practices including maintaining adequate fertility and irrigation can also help reduce losses due to fungal gummosis. For more information on peach production practices, see: http://edis.ifas.ufl.edu/hs348.

Specific Horticultural Recommendations for Managing an Outbreak of Fungal Gummosis

REDUCE THE AMOUNT OF FUNGAL INOCULUM OR DISEASED WOOD IN THE ORCHARD

The pathogen that causes fungal gummosis survives and produces spores on dead and diseased wood. Use good pruning practices to remove as much unproductive and diseased wood as possible during winter pruning. Remove and destroy the pruned wood mechanically with powered agricultural equipment such as a flail mower to speed decomposition and reduce spore production.

In Florida, summer pruning is an essential production practice, so follow these steps to minimize the chances that spores of the *B. dothidea* are spread in the process:

- Avoid pruning immediately before or after a rain or irrigation event when the foliage is wet
- Allow foliage to dry before resuming pruning activities
- Avoid pruning water- and nutrient-stressed trees

- Prune areas of the orchard, specific trees, or varieties with fungal gummosis last
- Clean pruning tools after pruning an infected tree and before moving to the next tree (which may or may not be already infected). A mild bleach (10%), rubbing alcohol, or quaternary ammonium solution is sufficient to sanitize pruning tools.

WEED CONTROL

Preventing excessive weed growth around peach trunks will help to increase the air movement around the trunk. Consistent moist conditions in orchards with poor weed control exacerbate fungal growth.

IRRIGATION

Consider using irrigation equipment, sprinkler systems, or drip irrigation to prevent wetting the trunk during irrigation sets. Microsprinklers that spray in a fan pattern (<360°) can be optimized to prevent direct water contact. Drip irrigation systems may require two lines on either side of the tree to deliver the volume needed, depending upon the emitter. For more information on peach production practices, see http://edis.ifas.ufl.edu/hs348.

Ideally, the best solution to fungal gummosis would be the development of host resistance in commercial cultivars. However, none of the varieties currently utilized in Florida display useful levels of resistance. Fungal gummosis resistance is one of the goals of ongoing breeding efforts.

References

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