PPFS-FR-S-10

UK COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

Plant Pathology Fact Sheet

Blueberry Diseases

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Kentucky blueberry growers sometimes experience plant and crop losses due to diseases. While most losses are due to root rot, or to stem and twig canker diseases, fruit rots and nutritional problems can also reduce yields. With good crop management, most blueberry diseases can be avoided.

Twig Blights, Stem Cankers, and Stem Blights

Diseases in this group are caused by several fungi, including *Phomopsis vaccinii*, *Fusicoccum putrefaciens*, *Botryosphaeria corticis*, and *B. dothidea*. These fungi produce canker symptoms which result in the dieback of twigs, branches or entire stems. Symptoms may begin on smaller twigs (FIGURE 1) and then spread into larger branches and the crown. Some lesions appearing on infected stems may be a reddish-brown or maroon color (FIGURE 2), have a bulls-eye pattern, and be centered around a leaf scar. Other lesions may appear as a broad brown or tan discoloration of the woody tissue, often on one side of the stem. Extensive stem infections quickly lead to flagging and dieback of the entire stem. Dead branches may have brown or reddish-brown leaves clinging to them. In most cases where canker diseases have devastated blueberry plantings, plants were growing under stressful conditions (e.g., drought or high soil pH).

FIGURE 1. CANKER-AFFECTED TWIG WITH DEAD LEAVES.

FIGURE 2. TWIG CANKER MARGIN WITH YELLOW-GREEN HEALTHY STEM AND DARK CANKER.

Phytophthora Root Rot

Phytophthora root rot is caused by *Phytophthora cinnamomi* or other species of *Phytophthora*. This disease is usually associated with poorly-drained areas of a field

Figure 3. A healthy blueberry plant with a full root system (left) compared to the much-reduced root system and plant death resulting from Phytophthora root rot (right). (Photos: University of Georgia)

where the fungus thrives and survives for long periods of time. The very fine absorbing roots turn brown to black; larger diameter roots may also be discolored. In severely infected bushes, the entire root system is reduced and totally black. As infection advances into the crown, a reddish-brown discoloration can be observed beneath the soft, decayed bark. Above-ground symptoms include chlorosis and reddening of the leaves; small leaves; defoliation; branch dieback; death of entire stems; stunting; and death of the entire bush (Figure 3). The disease may be present in a few infected plants scattered throughout the planting or localized in a group of plants in a low lying area of the field. Phytophthora root rot is most severe where plants are growing in heavy clay soils.

Mummy Berry

This sometimes-devastating disease is caused by the fungus *Monilinia vaccinii-corymbosi*. The fungus overwinters in mummified fruit on the ground. Fungal

Figure 4. Mummy berry twig blight (left) and blossom blight (right).

spores infect young tissue and cause rapid wilting of leaves, blossoms and twigs (Figure 4). These symptoms can be difficult to distinguish from frost injury. The fungus also infects the developing fruit causing it to become malformed. Infected fruit turns salmon-colored or grey by midsummer (Figure 5). By fall, diseased fruits drop to the ground where they turn to mummies ready to produce spores the next spring.

Figure 5. Mummy berry infected fruit. (Photo: University of Georgia, www.ipmimages.org)

Anthracnose

The anthracnose fungus, *Colletotrichum gloeosporioides*, primarily causes a decay of developing fruit or fruit in storage. Infected berries become soft and sunken, usually at the calyx end. The fungus may produce salmon or rust-colored masses of spores on rotted berries. Twigs and spurs may also become infected. Anthracnose is favored by warm, wet weather.

Botrytis Blight / Gray mold

The fungus *Botrytis cinerea* causes a decay of ripening fruit. Infected fruit become covered with the typical gray, moldy growth of the pathogen. *Botrytis* also causes a stem canker which is similar to that caused by other fungi. Cultivars with tight fruit clusters are more prone to gray mold.

Iron Chlorosis

This abiotic disorder appears as chlorotic (yellow) and stunted plants. Leaf veins often remain green while the tissue between the veins turns yellow (Figure 6). Iron chlorosis can occur when blueberries are planted on a site with a pH level above 5.5. Blueberries with iron deficiency will be stressed and are, therefore, more susceptible to many of the canker diseases.

Figure 6. Iron deficiency chlorosis.

Blueberry Disease Management

Blueberry diseases are generally not a serious problem in most Kentucky locations as long as the proper planting site is selected and good cultural practices are followed.

- **Planting material**

Select disease-resistant cultivars where they are available. Purchase only healthy, disease-free virus-indexed plants from a reputable nursery.

- **Site selection**

Choose a planting site that receives full sun throughout the day. Blueberries prefer a highly organic, well-drained sandy silt loam or silt loam soil. Installing tiles or planting in raised beds can help improve drainage in heavier soils to reduce Phytophthora root rot.

In addition, providing a soil pH of 4.5 to 5.2, along with adequate phosphorus and potassium, will help plants to thrive. Determine in advance if soil buffering capacity will allow soil pH adjustments. Begin soil pH adjustments a year or two before planting.

- **Cultural practices**

Pruning helps to improve ventilation and sunlight penetration, thus promoting drying of the fruit and foliage. Old canes, weak stems, twiggy growth, as well as diseased canes, should be removed. Avoid unnecessary wounding.

Maintain the proper soil pH for blueberries and supply plenty of organic matter for good growth. Avoid excess nitrogen fertilization and do not fertilize in late summer. Control weeds and water plants regularly during dry periods to reduce stress.

- **Sanitation**

It is essential that canker-infected pruning material be destroyed once it is removed. If mummy berry disease is a problem, mummies should be destroyed or buried prior to bud break. This can be accomplished by raking up and burning mummies, cultivating between rows, or by applying at least 2 inches of mulch to bury them.

- **Fungicides**

Following good cultural practices can minimize the need for fungicide use. A dormant application of lime sulfur may be helpful in canker disease management.

Additional Resources

Blueberry disease management and production advice can be found in the following publications available at County Extension offices, as well as on the Internet.

- Growing Blueberries in Kentucky, HO-16 (University of Kentucky)
http://www.ca.uky.edu/agc/pubs/ho/ho60/ho60.htm

- Midwest Small Fruit and Grape Spray Guide, ID-94 (University of Kentucky et al.) *2.1 MB file*
http://www.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/ID-94.pdf

- Midwest Small Fruit Pest Management Handbook, B-861 (University of Kentucky et al.) *73 MB file*
http://www.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/MwSmFruitPMHandbook.pdf

(Issued January 2008)