College of Agriculture, Food and Environment
Cooperative Extension Service

Plant Pathology Fact Sheet **PPFS-FR-S-17**

Cane Diseases of Brambles

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Importance

Cane diseases that commonly lead to the formation of cankers are known to cause yield losses in bramble plantings in Kentucky, as well as in surrounding midwestern and southeastern states. Severe infections can extensively damage individual fruiting spurs and/or whole canes (Figure 1), resulting in failure of fruit to ripen properly. Often, cane diseases occur secondarily as a result of environmental or mechanical stressors or tissue damages. If left unchecked, these fungal diseases significantly reduce overall yields and limit the longevity of bramble plantings.

This publication discusses the three most commonly observed cane diseases in Kentucky: anthracnose, cane blight, and spur blight. Anthracnose and cane blight can affect both primocanes (current-year canes) and floricanes (second-year or fruiting canes). Spur blight is limited to primocanes. The following table lists the brambles affected by these diseases.

	Anthracnose	Cane blight	Spur blight
Blackberry	X	X	
Black raspberry	X	X	
Purple raspberry	X		X
Red raspberry	X	X	X

Cause, Symptoms & Signs

Anthracnose

Anthracnose, caused by the fungal pathogen *Elsinoe veneta*, can affect canes and leaves. Initially, infected canes develop circular, light gray spots about 1/8 inch in diameter (Figure 2). Later, these spots enlarge, become sunken, and develop a purplish border with a light gray center (Figure 3). Spots often coalesce (merge together) to form larger cankers, especially on older canes. As cankers age, they become dry and

Figure 1. Cane diseases can significantly damage brambles, reducing yields and plant vigor.

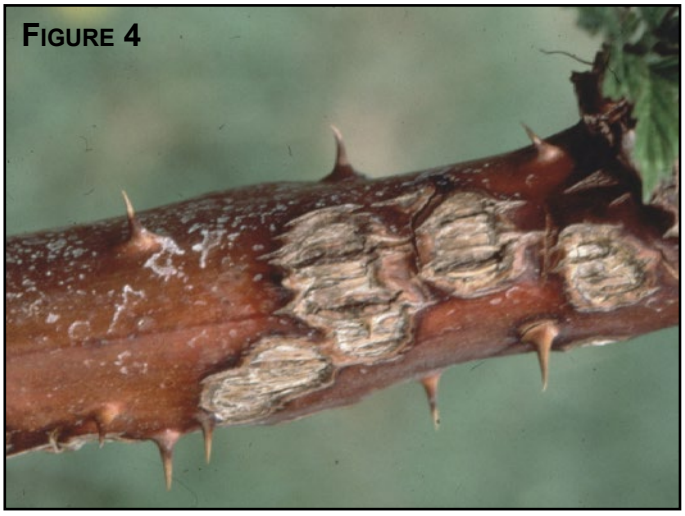

FIGURE 2. EARLY ANTHRACNOSE SYMPTOMS ON CANES ARE GRAY AND CIRCULAR. **FIGURE 3**. ANTHRACNOSE LESIONS EVENTUALLY BECOME SUNKEN WITH A PURPLE BORDER AND GRAY CENTER. **FIGURE 4**. ADVANCED ANTHRACNOSE LESIONS BECOME DRY AND CRACKED.

cracked (FIGURE 4). Fruit associated with diseased canes often ripen abnormally and/or "dry-up" before maturation; abnormal berries may have an "off" flavor. Severely infected canes wilt and die.

On leaves, anthracnose lesions can be about 1/16 inch in diameter, initially yellowish in color, and then turn to a distinct light gray with a red-purple border. Spots often drop out, leaving holes in leaves referred to as "shot holes." Foliar anthracnose occurs infrequently, and even when it does occur, it rarely results in significant defoliation.

Cane Blight

Cane blight is caused by *Coniothyrium fuckelii* (formerly: *Leptosphaeria coniothyrium*). Symptoms include brown to purple cankers that expand to girdle canes throughout the season (FIGURE 5). Foliage on girdled canes wilt, and canes may die (FIGURE 6). During periods of high moisture, black fruiting bodies (pycnidia) may be visible within the cankered areas.

FIGURE 5. CANE BLIGHT LESIONS ARE IRREGULARLY SHAPED GRAYISH-PURPLE SPOTS THAT EXPAND TO WRAP AROUND CANES.

FIGURE 6. DIEBACK AND WILTING OFTEN OCCURS ON GROWTH ABOVE CANE BLIGHT LESIONS.

Spur Blight

Spur blight, caused by the fungus *Didymella applanata*, first appears on young primocanes and their leaves. These symptoms may be evident in late spring or early summer. Purple to brown lesions develop on canes just below leaves or buds (FIGURE 7). Lesions expand lengthwise, and bark on affected canes splits (FIGURE 8. Fungal fruiting bodies may be observed as black specks in diseased tissue.

Infected leaves develop V-shaped necrotic (brown to black) areas (FIGURE 9) and may drop prematurely.

FIGURE 7. DARK-COLORED SPUR BLIGHT LESIONS DEVELOP AT OR BELOW LEAVES OR BUDS. **FIGURE 8.** THE BARK OF PRIMOCANES AFFECTED BY SPUR BLIGHT EVENTUALLY SPLIT. **FIGURE 9**. SPUR BLIGHT FUNGI CAN CAUSE V-SHAPED LESIONS ON LEAVES.

Disease Development

The pathogens that cause cankers on brambles overwinter on bark, in lesions on infected canes, and in improperly pruned cane stubs. During spring when weather is wet and warm, spores are released and spread to susceptible tissues by splashing rain, wind, and insects. Once primary infections begin and the fungus becomes established, additional spores cause secondary infections, which can continue through autumn. Lesions on dead canes may continue to produce spores for several years, remaining a source of inoculum (e.g., infective spores). Generally, severe disease is favored by prolonged wet weather during the growing season. Dense canopies with low light penetration remain humid and encourage spread of disease.

Abiotic stresses (disorders) such as winter injury, root damage, drought, defoliation, and other plant stresses all contribute to disease development and spread. Wounds generated from summer pruning or "tipping" of primocanes, as well as insect-damaged tissue, are primary sites for new infections.

Disease Management

Site selection & early care

Pre-plant and immediate post-plant strategies offer some of the most effective practices for disease prevention in young plantings. Good practices can reduce future disease pressure, resulting in less labor and expenses devoted to disease management.

- Select a site with good air circulation, soil drainage, and sunlight exposure to encourage more rapid canopy drying.
- Choose cultivars that are region-specific. Cold-sensitive cultivars can become damaged by low temperatures and drying winds. Canes may crack and become susceptible to infection.
- Purchase disease-free, high-grade, vigorous planting stock from reputable nurseries.
- Properly space new plants; avoid crowding that will reduce air circulation and hinder drying.

Sanitation

Since the fungi that cause cane diseases overwinter in old infected tissues, sanitation is important for effective disease management.

- Remove and destroy infected canes immediately to reduce spore production and overwintering inoculum. Do not drop cuttings on the ground. Do not compost diseased canes.
- Remove and destroy wild brambles in the vicinity of cultivated brambles to prevent disease spread.
- Remove floricanes (those that have already fruited) right after harvesting to reduce overwintering inoculum.

Other cultural practices

The following cultural practices can also help manage cane diseases.

- Induce faster leaf drying by pruning for better air circulation. Remove short, spindly, weak, or damaged canes, as well as those that are unhealthy or diseased.
- Manage weeds to further promote air circulation. Closely mowed sod aisles encourage more rapid drying after rains or heavy dews.
- Maintain plant health and vigor by irrigating and fertilizing as necessary.
- Keep plants mulched to maintain soil moisture.
- Avoid overhead irrigation to reduce cane wetness duration.
- Avoid excess nitrogen fertilizer since succulent new growth is most susceptible to infection.
- Avoid wounding primocanes, paying particular attention to tool and equipment use. Make clean pruning cuts
- Manage cane damaging insects, such as borers, girdlers, aphids, mites, scales, and plant bugs, which create openings for infection.

Fungicides

Fungicide sprays can supplement sanitation and cultural practices for disease management.

- Apply a delayed dormant (bud swell) application of liquid lime sulfur if disease was problematic the previous year. Completely cover all canes for maximum effectiveness. In most cases, good disease control early in the season reduces the need for later-season applications. Do not apply lime sulfur after new shoots are ¾ inch long, as it may cause phytotoxicity and "burn" leaves and buds.
- If a planting has a history of disease, fungicides should be applied to all brambles within the planting.

- Fungicides (other than lime sulfur) may be applied between pre-bloom and harvest. Commercial growers should refer to the *Midwest Fruit Pest Management Guide* (ID-232) for current spray recommendations. Fungicide recommendations for residential plantings can be found in *Disease and Insect Control Programs for Homegrown Fruit in* Kentucky (ID-21).
- In severe disease situations, additional fungicide sprays may be required after harvest.

Additional Resources

Production Information

- Fertility Guidelines for Home Fruit & Nut Plantings (HortFact-3004)
http://www.uky.edu/hort/sites/www.uky.edu.hort/files/documents/Home_Fruit_Fertility_Guides_2016.pdf
- Growing Blackberries and Raspberries in Kentucky (HO-15)
http://www.ca.uky.edu/agc/pubs/ho/ho15/ho15.pdf
- Midwest Home Fruit Production Guide (B591, The Ohio State University) *5.7 MB*
http://plantpathology.ca.uky.edu/files/mw_home_fruit_productn_b591.pdf

Disease Management

- Backyard Berry Disease Management Using Cultural Practices (with Low Spray, No Spray & Organic Options) (PPFS-FR-S-25)
http://plantpathology.ca.uky.edu/files/ppfs-fr-s-25.pdf
- Commercial Midwest Fruit Pest Management Guide (ID-232)
http://plantpathology.ca.uky.edu/files/id-232.pdf
- Disease and Insect Control Programs for Homegrown Fruit in Kentucky, Including Organic Alternatives (ID-21)
http://www.ca.uky.edu/agc/pubs/id/id21/id21.pdf
- Homeowner's Guide to Fungicides (PPFS-MISC-07)
http://plantpathology.ca.uky.edu/files/ppfs-gen-07.pdf
- Midwest Small Fruit Pest Management Handbook (B-861, The Ohio State University) *73 MB*
http://plantpathology.ca.uky.edu/files/mw_sm_fruit_pest_mngmt.pdf

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