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Dr. Yonghao Li
Department of Plant Pathology and Ecology
The Connecticut Agricultural Experiment Station
123 Huntington Street, P. O. Box 1106
New Haven, CT 06504

Phone: (203) 974-8601
Fax: (203) 974-8502
Email: Yonghao.Li@ct.gov
Website: www.ct.gov/caes

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BOTRYOSPHAERIA CANKERS OF WOODY ORNAMENTALS

Botryosphaeria canker is a major problem on a wide range of woody ornamentals, such as crabapple, dogwood, Leyland cypress, juniper, maple, mountain laurel, pieris, redbud and rhododendron, in nurseries, landscapes, and in the forest. Since most canker pathogens are considered opportunistic fungi, they usually cause diseases and severe damages when plants are stressed from drought, heat, winter injury, compacted soil, or other factors that can affect plant vigor.

SYMPTOMS AND DIAGNOSTICS

Although Botryosphaeria canker fungi infect stems and trunks where symptoms are noticeable, but they also affect the canopies. Most common symptoms on canopies are wilting or dieback of individual branches on a tree or shrub. Sometimes cankers on stems may not be noticeable when wilt and dieback occur. Early symptoms of cankers on stems and trunks include reddish or dark brown sunken lesions, splits of barks, and uneven surfaces of stems (Fig. 1). In some cases, cankers may be surrounded and contained by callused wound wood, particularly on larger branches and trunks. As the canker develops, bark may peel and drop from the cankered area. Black fungal spore-producing structures (pycnidia) are sometimes present on diseased tissues and can be observed erupting through the bark (Fig. 2). The presence of pycnidia is an

Figure 1. Dark brown cankers (arrow) on a rhododendron branch

Figure 2. Black fungal fruiting bodies (arrow) on stem of Japanese maple

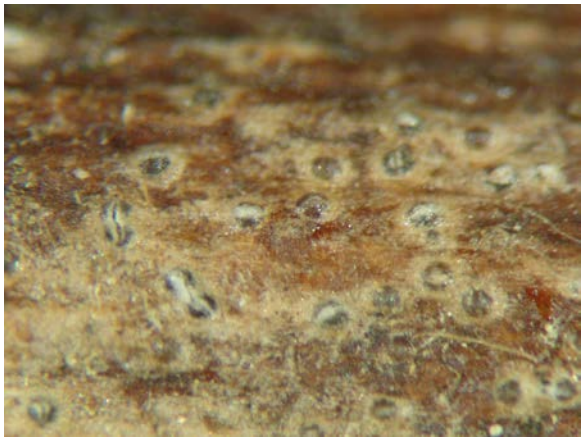

Figure 3. Close-up of black fungal fruiting bodies on the surface of a stem

important sign and a defining characteristic for diagnosis of Botryosphaeria canker.

DISEASE DEVELOPMENT

The genus *Botryosphaeria* is the sexual stage of several genera, including *Diplodia*, *Dothorella*, and *Sphaeropsis*, that are normally seen during the growing season. Botryosphaeria fungi are not host-specific and can infect and cause diseases on many plant species. However, differences in aggressiveness on host species were reported among individual isolates of this group of fungi. The pathogens overwinter in diseased and asymptomatic stem tissues. Spores are released from fungal fruiting bodies (pycnidia) when conditions are wet and spores are dispersed to the other parts of the plant or other plants by rain-splash, wind, insects, and pruning tools. Spores geminate and infect plant tissue through wounds, growth cracks, leaf scars, insect feeding damages, and natural openings. Spore dispersal and infections can occur during the whole growing season, but primarily occurs during spring and early summer. After infection, symptom development depends on weather conditions and host resistance. Sometimes, infections of Botryosphaeria canker on rhododendron are found on the stem of the floral inflorescence where it colonizes the tissue progressively downward and causes a branch dieback (Fig. 1).

MANAGEMENT

Disease-free planting material: For planting new trees or shrubs, choose good quality materials from a reputable nursery or dealer. Inspect plant materials before planting to prevent the disease from moving into the landscape.

Cultural practices: Since most healthy, vigorous plants are tolerant to the disease and will resist the spread of the pathogen in stem tissues, the best management strategy is to maintain plant vigor and practice good sanitations. Water plants during extended dry periods by providing 1 inch of water per week, fertilize if soil mineral levels are low, apply a 2-3 inch layer of mulch over the root zone, and avoid damage and wounding of stems and trunks. Remove symptomatic branches at least 6 inches below the disease portion and immediately dispose of the debris to reduce inoculum in the area. Disinfect pruning tools after each cut with either 10 percent household bleach or 70 percent alcohol. Avoid overhead irrigation to reduce the opportunity of disease spread.

Fungicide application: Fungicide treatments are not recommended since no fungicides have been proven to be effective to control Botryosphaeria canker.

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