



## **Botryosphaeria canker**

Several species of the fungus *Botryosphaeria* (sexual stage) cause cankers on branches and stems of a trees and shrubs with low vitality. Several genera including *Botryodiplodia*, *Diplodia*, *Dothiorella* and *Sphaeropsis*, are the asexual stages of the *Botryosphaeria* species normally seen during the growing season.

### **Host Plants:**

Depending on the species of *Botryosphaeria* fungus a dozen, to several hundred species of woody plants are susceptible to infection when plant vitality is low. In fact, several species of *Botryosphaeria* can infect many of these weakened plants. Commonly afflicted plants include apple, ash, crabapple, dogwood, elm, holly, honeylocust, linden, maple, mountain ash, oak, pine, redbud, rhododendron, and sycamore.

### **Description:**

The cambium, sapwood and inner bark of weakened trees are vulnerable to extensive cankers that cause observable impairment of water and mineral transport beyond that point. Typical symptoms are the sudden browning of leaves or failure to leaf out in the spring beyond the canker lesions on affected twigs and branches.



**Botryosphaeria canker on redbud stem**



**Wilt symptoms as Botryosphaeria canker disrupts water transport on established rhododendron**

Photos: (left) A. S. Windham and (right) R. K. Jones, *Diseases of Woody Ornamentals and Trees*. APS Press.

The size of *Botryosphaeria* canker infections ranges from small areas of bark to girdled branches to extensive cambial death several feet along a trunk. Numerous water sprouts along the trunk as well as discolored and flaking bark are other frequent symptoms. Winter damage, prolonged dry periods, repeated defoliation, root problems, and physical wounds often cause similar symptoms. These agents also weaken plants and facilitate opportunistic infections by *Botryosphaeria* canker.

### **Disease Cycle:**

Once established in the branch the *Botryosphaeria* canker fungus forms pimple-like, black fruiting structures (pycnidia and/or pseudothecia) that erupt through the bark of canker lesions. Wet conditions stimulate masses of spores (conidia and/or ascospores) to exude from fruiting structures primarily in the spring, but also when conditions are wet all through the growing season. Wind, rain-splash, insect feeding, and contaminated pruning tools disperse the spores. Spores infect breaks in the bark, which include wound sites, growth cracks, insect feeding damage, and natural openings. Once the fungus colonizes the site, it produces enzymes that reduce the

cambium and sapwood tissues to a form that the *Botryosphaeria* fungus consumes as nourishment. Botryosphaeria canker survives dormant periods in infected branches.

**Management Strategies:**

Intervene to minimize environmental and cultural stress on affected trees. A tree with good vitality responds physically and biochemically to inhibit the spread of the *Botryosphaeria* fungus beyond the initial point of infection. Irrigate during extended dry periods, fertilize if soil mineral levels are low, maintain a 2-3 inch layer of well-composted organic mulch over the root zone, and avoid branch, stem, and root damage. Remove infected branches when the weather is too cold or dry for the fungus to infect the pruning wounds, and dispose of the debris away from the trees.

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