



## PHOMOPSIS CANKER AND DIEBACK OF RUSSIAN OLIVE

The Russian olive (*Elaeagnus angustifolia*) is a small tree or shrub prized for its silver-gray foliage and its tolerance of adverse climatic conditions. One of the most serious diseases of Russian olive is a canker and dieback caused by the fungus *Phomopsis elaeagni* (formerly called *Fusicoccum elaeagni*). This disease is now very common in the Midwest and East. The Phomopsis canker and Verticillium wilt are rapidly making Russian olive trees unsuitable for ornamental plantings. Unlike most canker-producing fungi, *P. elaeagni* is an aggressive pathogen that can attack vigorous trees.

Although the Phomopsis fungus alone is rarely fatal, it can cause a tree to rapidly lose its attractive appearance and can weaken a tree enough to allow other pathogens and pests to become established. Trees seriously injured by drought, hail or ice will be subject to decline and more rapid spread of the fungus canker disease.

### SYMPTOMS

Phomopsis-infected trees often appear ragged, with several dying or dead twigs and branches. Current-season twigs and small branches often wilt and die. The dead, withered leaves remain



Figure 2. *Phomopsis* canker with bark cut away showing brown discoloration. (Illinois Natural History Survey)



Figure 1. *Phomopsis* canker of Russian olive. Note the slightly raised, black stromata embedded in the dead bark. (Courtesy D.F. Schoeneweiss).

attached for some time. An examination of the large branches and trunks may reveal oval-to-elongate, depressed cankers of varying size, mostly 1 to 6 inches long. The diseased bark on cankers varies from orange-brown to dark reddish-brown. Ridges often form around the margins (Figure 1).

Cankers on branches under an inch in diameter usually are not noticeably sunken or as obvious as the larger ones. The bark remains smooth and turns reddish-brown with dark brown margins. Branches girdled by the enlarging cankers wilt and die. The white sapwood underneath the cankers turns brown or black. The discoloration often extends beyond the margins of the canker (Figure 2).

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The black, spore-producing bodies (stromata, containing pycnidia) of the *phomopsis* fungus appear as numerous minute, slightly raised, rounded pustules embedded in the dead, cankered bark (Figure 3). An amber-to-brown, gummy exudate often oozes through cracks in the dead bark, especially at the margins of the diseased area. This exudate may be found both above and below the cankered area.

## **DISEASE CYCLE**

The *Phomopsis* fungus overwinters in cankers as mycelium and pycnidia. It does not overseason in the soil. Microscopic spores (conidia) are produced in large numbers during extended periods of wet weather. The spores are spread by insects, splashing water, or mechanically by man. Avenues of entry into healthy tree tissue is through bark wounds, branch stubs, and damaged thorns. The fungus is virulent and can infect Russian olive trees of all sizes throughout the growing season.

Small one-year-old twigs can be girdled and killed within a month after initial infection. It may take a year or more for this to happen to large, structural limbs. Pycnidia are formed in cankers about 4 to 6 weeks after infection. Reinfection can occur repeatedly during the growing season, whenever viable spores and fresh wounds are present.

## **CONTROL**

1. Plant disease-free nursery stock. Purchase only healthy, vigorous trees from a reputable nursery for ornamental plantings. Avoid trees showing any evidence of Phomopsis canker and dieback. The nursery may be able to exclude this disease by a careful roguing and destruction of diseased Russian olive seedlings.
2. Avoid all unnecessary bark wounds, since the pathogen's main avenue of entry is through injuries. Pruning cuts should be made flush with the branch to avoid leaving stubs.
3. Sanitation. All seriously infected trees in ornamental plantings should be cut off near the soil line and destroyed, preferably by burning. Attempts to prune out or surgically remove cankers on branches and trunks may not be effective as a means of completely eliminating all diseased tissue. However, in large established trees, pruning out all dying and dead branches can prolong the useful life of most trees and will greatly reduce if not eliminate the fungus. Pruning out any new twig growth that shows early stages of wilting during the growing season has proven reasonably effective in preventing canker development on larger branches and the trunk.

No fungicides are registered for or have been found effective against Phomopsis canker on Russian olive trees.