

# 12. Phomopsis Blight

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## Hosts

Many members of the Cupressaceae (cypress family) are susceptible to infection by *Phomopsis juniperovora*. Juniper species are particularly susceptible, followed by cypress and cedar species. The pathogen is occasionally detected on other gymnosperm hosts, but these occurrences are of relatively little importance.

## Distribution

*P. juniperovora* and the blight it causes occur throughout the eastern half of the United States, California, and the Pacific Northwest.

## Damage

Phomopsis blight can cause severe seedling loss in nursery beds leading to the failure of an entire crop (fig. 12.1). This disease will initially appear as a tip or shoot blight and occur in individual patches of the nursery beds. As the blight spreads to adjacent seedlings, the initially infected seedlings may progress from dieback to mortality. Seedlings affected by Phomopsis blight perform poorly and have high mortality rates following outplanting.

## Diagnosis

*P. juniperovora* infects only immature, succulent foliage; therefore, infection and associated symptoms are initiated at growing seedling terminals and branch tips (fig. 12.2). Infections may appear initially as small yellow spots on young foliage but rapidly progress to a blight resulting in reddish browning and eventually graying foliage with necrosis of small twigs and stems. Infected stem and branch tips often curl into a



**Figure 12.1**—Seedbed of eastern redcedar badly damaged by *Phomopsis juniperovora*. Photo by Gregory A. Hoss, Missouri Department of Conservation.



**Figure 12.2**—Tips of eastern redcedar seedlings showing symptoms of *Phomopsis blight*. Photo by Edward L. Barnard, Florida Division of Forestry.

“shepherd’s crook” as infected tissues dry and become gray. Small, pale orange, grayish or black, pimple-like pycnidia (asexual spore-producing structures) develop in, and erupt from, necrotic tissues. Under high moisture conditions (humidity, rainfall, or irrigation), active pycnidia exude pale yellowish to cream-colored masses or hair-like tendrils of conidia (fig. 12.3). Two different conidia spores are produced by pycnidia (fig. 12.4). Alpha-spores are elliptical, colorless, single spores with two oil drops (7.5 to 10.0 by 2.2 to 2.8 microns). Beta-spores are needlelike, colorless, single spores that are curved at one end (20 to 27 by 1 microns). The alpha-spores are the only conidia that germinate and sometimes are the only spores produced by pycnidia.

Other foliage blights affecting members of the Cupressaceae can sometimes be confused with Phomopsis blight. Infections caused by *Passalora sequoiae*

(equal to *Cercospora sequoiae* and *Asperosporium sequoiae*) typically progress from older needles or scales on lower branches, spreading upward and outward over time. Infections caused by *Kabatina juniperi* and *Sclerophoma pythiophyla* are similar in development and appearance to those caused by *P. juniperovora* and are best distinguished by microscopic examination.

### Biology

*P. juniperovora* overwinters in host tissues infected the previous year. Conidia (asexual spores) are produced in the spring in pycnidia formed the previous year. These spores are released and disseminated by splashing rain or overhead irrigation. New infections occur on succulent young foliage tissues with new pycnidia and sporulation developing on infected tissues within 3 to 4 weeks.

### Control

#### Cultural

Avoid excessive irrigation and high seedbed densities as these conditions favor moisture buildup and retention and disease development. Do not sow seed of susceptible hosts adjacent to beds containing older host seedlings and avoid using junipers and other hosts as nursery windbreaks, because older seedlings and adjacent trees may be problematic inoculum sources. Infected seedlings should be rogued from seedbeds to minimize spread of infective spores. Irrigation should be applied early during the day to enable quick drying of the foliage. In some areas and for some uses, disease resistant junipers may be a helpful alternative management strategy.

#### Chemical

Protective fungicides applied at 7- to 10-day intervals during seasons of active seedling growth are helpful.

### Selected References

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- Sinclair, W.A.; Lyon, H.H. 2005. *Diseases of trees and shrubs*, 2nd ed. Ithaca, NY: Cornell University Press. 660 p.



**Figure 12.3**—Pycnidia of *Phomopsis juniperovora* on symptomatic foliage of eastern redcedar exuding string-like tendrils of asexual spores (conidia). Photo by Edward L. Barnard, Florida Division of Forestry.



**Figure 12.4**—Alpha-spores (elliptical) and beta-spores (needlelike) of *Phomopsis juniperovora*. Photo by Michelle M. Cram, USDA Forest Service.