

14. Phomopsis Blight

Glenn W. Peterson and Charles S. Hodges, Jr.

Hosts

Phomopsis blight, caused by the fungus *Phomopsis juniperovora*, occurs on several species of conifers in the cypress family, such as juniper, cypress, white-cedar, and arborvitae. In the United States, the most frequent hosts are eastern redcedar, Rocky Mountain juniper, and Arizona cypress.

Distribution

The fungus occurs in 33 States (fig. 14-1).

Damage

The fungus can destroy entire beds of first- and second-year seedlings. Infected trees over 2 years old are seldom killed because the fungus does not girdle stems and branches over one-third of an inch in diameter; however, the numerous dead tips make infected trees unsightly.

Infected seedlings that survive in the nursery have a low rate of survival when outplanted.

Diagnosis

Phomopsis juniperovora initially infects foliage, then spreads to and sometimes kills stem tissue. On young juniper needles, look for small, yellow spots that occur 3 to 5 days after infection. Newly developing needles are especially susceptible while they are still in the yellowish-green stage; after needles develop a normal green color, they are no longer susceptible. When the fungus has permeated the needles, it invades and girdles young branches (fig. 14-2). Eventually, the fungus reaches the main stem, which it may girdle if the stem is less than one-third of an inch in

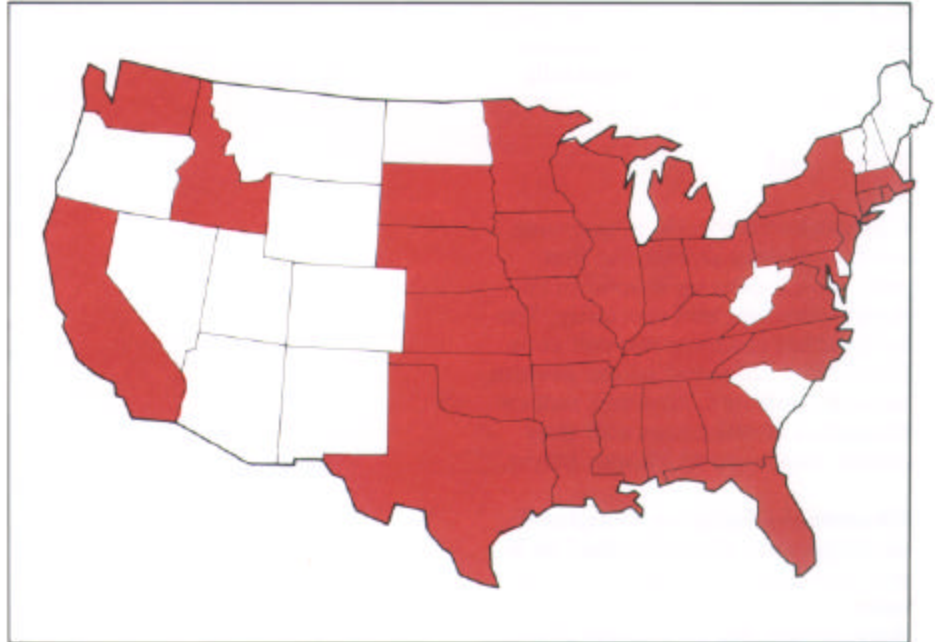


Figure 14-1—Distribution of Phomopsis blight of juniper.



Figure 14-2—Typical symptoms of Phomopsis blight on eastern redcedar.

diameter. The portion of the seedling above the girdled area then dies (fig. 14-3).

Infected tissues first turn light green but rapidly change to the characteristic red brown. The dead



Figure 14-3—Dead top on seedling girdled by *P. juniperovora*.

shoots finally turn ashen gray. The small, dark pycnidia are most frequently found in ashen-gray tissues (fig. 14-4).

The pycnidia formed within infected tissue produce two kinds of spores (fig. 14-5). Alpha-spores are hyaline, elliptical, one-celled, and 8-10 x 2-3 microns. Beta-spores are needlelike, bent or curved, and 20-30 x 0.5-1 microns. Only the alpha-spores germinate and cause infection. Only a low percentage of pycnidia produced in the field contain beta-spores. However, pycnidia formed in agar cultures produce a high percentage of beta-spores.



Figure 14-4—Pycnidia of *P. juniperovora*.



Figure 14-5—Alpha-spores (elliptical) and beta-spores (needlelike) of *P. juniperovora*.

When cultured on potato dextrose agar and several other media, the fungus produces a characteristic deep-yellow coloration, usually accompanied by bright orange-red crystals.

The following symptoms may be used to distinguish *Phomopsis* blight from other agents causing damage to junipers:

The demarcation between green and dead tissue is gradual in drought-affected seedlings; the demarcation is sharp in *P. juniperovora*-infected seedlings.

Tops killed by the lesser cornstalk borer (see chapter 50) are straw colored; tops killed by *Phomopsis* blight are a red-brown color. In addition, the borer makes feeding wounds on the lower stem and taproot.

Cercospora blight of juniper (see chapter 2) first affects the oldest needles on the lower branches and spreads upward and outward, leaving the tips with green needles. *Phomopsis* blight starts at or near the tips of the new shoots, resulting in their death.

Biology

Phomopsis juniperovora can overwinter in trees infected the previous year. In the spring, spores from pycnidia formed the previous year infect the new foliage. Within 4 weeks, these new infections also form pycnidia and produce spores, which spread the fungus during the year they were formed. The spores are dispersed by splashing rain.

Control

Prevention—Remove infected seedlings from nursery beds only when seedlings are dry; destroy seedlings. If possible, avoid sowing juniper seed adjacent to beds containing juniper stock. Avoid using junipers or other hosts of this fungus in nursery windbreaks or in landscape plantings on nursery grounds; they may be a source of inoculum. Such trees are more likely to be extensively infected if pruning results in development of juvenile foliage. Avoid poorly drained areas because losses are often greater there.

Chemical—If overhead sprinklers are used, irrigate seedlings so that water on seedlings dries before nightfall. Because shading frames increase the time that moisture remains on foliage, they should not be used unless absolutely necessary.

Chemical—Susceptible new foliage is present throughout the growing season in juniper seedling beds. Thus, protective fungicides like benomyl need to be applied regularly during this period. Wet the foliage thoroughly with the fungicide spray. When benomyl is applied at 7- to 10-day intervals and

infected seedlings are removed at the same intervals, control of *Phomopsis blight* is excellent.

Selected References

Hodges, C.S.; Green, HA 1961. Survival in the plantation of eastern redcedar seedlings infected with *Phomopsis juniperovora* in the nursery. *Plant Disease Reporter*. 45: 134-136.

Peterson, Glenn W.; Hodges, C.S., Jr. 1982. *Phomopsis blight of junipers*. For. Insect & Dis. Leaflet. 154. Washington, DC: U.S. Department of Agriculture, Forest Service. 7 p.