

13. Phoma Blight

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Hosts

Phoma blight, associated with several species of *Phoma* (primarily *P. eupyrena*), affects Douglas-fir; red and white firs; mugo, lodgepole, and ponderosa pines; and Engelmann spruce.

Distribution

Phoma blight has been reported at the Humboldt Nursery in northern California, at the Bessey Nursery in central Nebraska, and at several nurseries in Idaho.

Damage

Phoma blight may cause defoliation and tip dieback and may, ultimately, kill the seedling. Losses may sometimes be significant.

Diagnosis

On lodgepole pine, look for chlorotic needles, especially near the groundline. Foliage covered with soil becomes necrotic. As the disease progresses, the entire seedling becomes chlorotic and finally dies (fig. 13-1).

On Douglas-fir, also look for chlorotic needles. Infected needles finally turn a golden brown and frequently drop prematurely.

Dieback or blight of terminal and lateral branches occurs on both Douglas-fir and true firs but is more common on the latter. The dieback starts at or near the buds (fig. 13-2), progresses down the stem, and may result in death of the seedling.

Phoma blight differs from lower stem canker (chapter 12) of Douglas-fir in the Pacific Northwest in that stem cankers are not formed and *Fusarium roseum* may occasionally be present, though



Figure 13-1—Seedlings of lodgepole pine affected by Phoma blight.



Figure 13-2—Seedlings of red fir affected by Phoma blight.

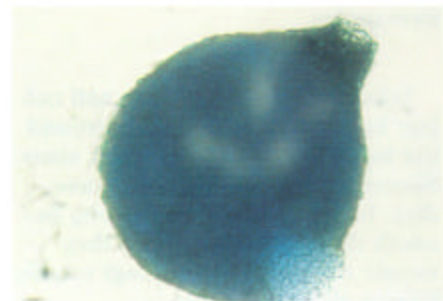


Figure 13-3—Fruiting body of *Phoma* sp.

it is not involved in disease symptoms.

The fungi form fruiting bodies (fig. 13-3), which appear with a 10 x hand lens as black raised spots, on the dead needles and stems. Spores of *Phoma* are hyaline and one-celled. Size varies according to species. Spores of *P. eupyrena* are 3-6 x 1.5-3 microns.

Biology

The fungi associated with Phoma blight are common soil inhabitants. When overhead irrigation or rain splash results in excessive buildup of soil collars around the stems of seedlings, the fungi invade seedlings from this soil, usually through the lower needles. Infection then spreads up the crown of the seedling, killing the needles until the seedling is defoliated. Frequently, the disease also kills new

buds. Seedlings weakened by nutrient imbalances, such as calcium and iron excesses, are especially susceptible to attack.

Control

Cultural—Sow early to increase seedling height during the first year, which may be helpful in reducing damage and mortality. The foliage that is above the soil cone formed the following winter seldom becomes infected. Mulches reduce formation of soil cones and thus reduce incidence of Phoma blight.

Chemical—Spraying Douglas Fir seedlings with chlorothalonil at 2- to 4-week intervals during the dormant season (October to April) reduces losses due to Phoma blight.

Selected References

- James, R.L. 1979. Lodgepole pine seedling chlorosis and mortality at the Bessey Nursery, Nebraska. Bio. Eval. R2-79-2. Denver, CO: U.S. Department of Agriculture, Forest Service, State and Private Forestry, Rocky Mountain Region. 10 p.
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