

## CHAPTER FIFTEEN

# Phoma Blight

**John T. Kliejunas**

Phoma blight, caused by the soilborne fungus *Phoma eupyrena*, has caused severe needle loss of Douglas-fir and mortality of red and white fir in northern California. The

**Phoma blight may be confused with:**  
**Frost damage**  
**Lower stem canker**  
**Pesticide damage**  
**Winter desiccation**

fungus has also been associated with stem cankers of Douglas-fir in the Pacific Northwest and chlorosis of lodgepole pine seedlings, needle and twig blight of Engelmann spruce, and mortality of mugo pine. Tip death of ponderosa and lodgepole pine seedlings at nurseries in Montana, Idaho, and Oregon is associated with *Phoma* species and is covered in more detail in Chapter 18, Tip Blight of Pine.

**Phoma blight symptoms appear:**  
**2+0**  
**Winter through spring**

Phoma blight on Douglas-fir and true firs typically develops after heavy rains when seedlings are dormant between the first and second growing seasons. The splashing of muddy water against



**Figure 15-1.** *Phoma* infection of Douglas-fir needles ultimately causes a needle loss in the lower foliage.

the seedlings causes soil cones, or collars, to build up around stems and lower foliage. The fungus moves from the soil to invade needles and dormant buds. On Douglas-fir, symptoms first appear on the lower needles and spread upward. Needles turn chlorotic, then golden brown, and fall off (Figure 15-1). On true fir, dormant buds are infected, causing dieback or blight of terminal and lateral branches. The dieback starts at or near the buds and progresses down the stem. Seedlings die if all buds are killed (Figure 15-2). Tissues formed in the second growing season usually remain unaffected.

A preventive spray program in which chlorothalonil is applied at 2- to 4-week intervals during the dormant season (October to April) has re-



**Figure 15-2.** *Phoma* infection of red fir buds is followed by dieback of branches as the fungus moves down the stem.

duced the incidence of *Phoma* blight on Douglas-fir and true fir in northern California. Early sowing of seed increases the height of Douglas-fir seedlings during the first growing season. Foliage above the soil cones seldom becomes infected. Applying a mulch to nursery beds before the winter rainy season to reduce the splashing of soil has also reduced the incidence of the disease.

## Selected references

- Hansen, E.M.; Hamm, P.B. 1988. Canker diseases of Douglas-fir seedlings in Oregon and Washington bareroot nurseries. *Canadian Journal of Forest Research*. 18:1053-1058.
- James, R.L. 1979. Lodgepole pine seedling chlorosis and mortality at the Bessey Nursery, Nebraska. Report 79-2. U.S. Department of Agriculture, Forest Service, Rocky Mountain Region. 10 p.
- James, R.L. 1980. Engelmann spruce needle and twig blight at the Coeur d'Alene Nursery, Idaho. U.S. Department of Agriculture, Forest Service, Northern Region. 7 p.
- James, R.L. 1983. Mortality of Mugo pine seedlings at the Fantasy Farms Nursery, Peck, Idaho. U.S. Department of Agriculture, Forest Service, Northern Region. 7 p.
- Kliejunas, J.T.; Allison, J.R.; McCain, A.H.; Smith, R.S., Jr. 1985. *Phoma* blight of fir and Douglas-fir seedlings in a California nursery. *Plant Disease*. 69:773-775.
-