

# 10. Pestalotiopsis Foliage Blight

Scott A. Enebak

Revised from chapter by Charles E. Affeltranger and Charles E. Cordell, 1989.

## Hosts

Pestalotiopsis foliage blight, caused by *Pestalotiopsis funerea* (syn. *Pestalotia funerea*), affects seedlings of many conifer hosts. Eastern white pine has been particularly sensitive to the pathogen in southern forest nurseries.

## Distribution

Pestalotiopsis foliage blight occurs in forest tree nurseries throughout the United States wherever susceptible conifer hosts are grown.

## Damage

Widespread mortality seldom occurs in the nursery; however, the fungus has been associated with damping-off, root and collar rot, shoot or tip blight, twig dieback, and stem cankers. Outplanting of infected and severely damaged seedlings (defoliation, tip blight, etc.) can result in greater mortality and reduced growth when compared with apparently healthy seedlings.

## Diagnosis

The first symptoms appear from late August to October. Infected seedlings have small yellowish spots on the needles that eventually coalesce and turn brown. Needle browning will progress rapidly toward the needle tips. Symptoms appear in small patches throughout the nursery (fig. 10.1) and, if conditions are favorable, seedlings in the entire nursery bed may look brown and scorched (fig. 10.2). Extensive defoliation can occur within a few weeks. By the time seedlings are harvested (December to March), defoliation



**Figure 10.1**—Small infection center of *Pestalotiopsis* blight on eastern white pine. Photo by Scott A. Enebak, Auburn University.

can be so intense that only a few green needles remain near the terminal bud. On affected needles, small, shiny, black, fruiting bodies can be seen with the naked eye or with a 10x hand lens. Under moist conditions, long, black ribbons of spores are exuded from the fruiting bodies. Individual spores are mostly five-celled and are 22 to 32 by 7 to 13 microns. The

spores are ornamented with two to three slender appendages on one end and a single appendage on the other (fig. 10.3).

## Biology

*P. funerea* is known as both a pathogen and an opportunistic colonizer of stressed and damaged conifers. The fungus produces acervuli fruiting bodies on browned needles and stems. Conidia erupt from the fruiting bodies when moistened in a sticky black matrix or hornlike projections called tendrils. Rain splash, irrigation, and perhaps insects spread the spores. Infection is correlated with extended periods of above-average rainfall during the growing season and there appears to be a moisture relationship as disease increases with increasing precipitation. The disease incidence is highest and damage most severe in densely stocked seedbeds.



**Figure 10.2**—Widespread defoliation of eastern white pine due to *Pestalotiopsis* blight. Photo by Scott A. Enebak, Auburn University.



**Figure 10.3**—*Conidia* of *Pestalotiopsis* species associated with foliage blight of conifers. Photo by Michelle M. Cram, USDA Forest Service.

**Selected References**

Affeltranger, C.E.; Cordell, C.E. 1989. Eastern White Pine Foliage Blight. In: Cordell, C.E.; Anderson, R.A.; Hoffard, W.H.; Landis, T.D.; Smith, Jr., R.S.; Toko, H.V., tech. coords. Forest nursery pests. Agriculture Handbook 680. Washington, DC: USDA Forest Service: 38–39.

Graham, J.E.; Nichols, C.R.; Affeltranger, C.E. 1974. An evaluation of five fungicides for control of a white pine foliage disease at the Piedmont Forest Tree Nursery in South Carolina. Asheville, NC: USDA Forest Service, State and Private Forestry, Forest Pest Management. 7 p.

Nag Raj, T.R. 1993. Coelomycetous anamorphs with appendage-bearing conidia. Mycologue Publications. Waterloo, Ontario, Canada. 1,101 p.

Vermillion, M.T. 1950. A needle blight of pine. Lloydia. 13: 196–197.

**Control**

**Prevention**

Use of disease-free mulches such as hydro-mulch, sawdust, and pine bark is recommended. Avoid pine straw mulch, since it may carry the fungus into the nursery. In nurseries that grow white pine seedlings, avoid using white pine for windbreaks, which can be an inoculum source. Cull infected seedlings and never ship diseased seedlings between nurseries.

**Cultural**

Plant at densities of fewer than 270 seedlings per m<sup>2</sup> (25 seedlings per ft<sup>2</sup>) as high seedling densities increase moisture retention of the foliage and decrease air movement—conditions that favor the

spread of the fungus. Irrigate during the early morning hours, when seedlings dry most quickly. Remove and destroy seedlings that have 50 percent or more of their foliage discolored or that are 25 percent or more defoliated. More intensive practices may be needed when culling white pine seedlings that may be used for Christmas tree stock.

**Chemical**

Fungicides registered for use in conifer nurseries have been effective in controlling this disease. If the disease is prevalent, apply foliar sprays to seedlings from May to October. Use additional fungicides during periods of excessive rainfall. Soil fumigation has been shown to be effective in reducing the disease incidence in problem areas.