

Dothistroma Needle Blight of Pines

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Dothistroma Needle Blight (DNB), also known as Red Band Needle Blight, is a serious disease of pines. It is caused by the fungus *Mycosphaerella pini*. *Dothistroma septosporum* and is the asexual stage of the fungus, which is commonly found on diseased needles. DNB has been reported from over 60 countries infecting over 80 different species of pine and several other non-pine species. Austrian, Monterey, and Ponderosa pine are the pine species most susceptible to this disease. DNB infects needles of all ages, causing a reduction in photosynthetic capacity and premature mortality.

Symptoms

Symptoms of the disease first appear as light green lesions on needles. Lesions eventually turn tan to reddish brown as the disease develops. It is within these red bands that the small, black, spore-containing fruiting bodies tend to be found with symptoms most apparent in June and July (Figure 1). A distinct transition line forms between the necrotic lesion and healthy green tissue. Needle tips may die back while the bases remain green in severe cases. Premature needle drop occurs, leading to gradual thinning of the canopy. Symptoms are most severe in portions of the canopy located within 6 to 10 feet of the ground (Figure 2).

Figure 1: Fruiting bodies on needles



Disease Cycle

The infected needles on the tree and the fallen needles on the ground serve as sources of inoculum. The disease is favored by wet weather since spores are dispersed via splashing or wind-driven rain. Under

these conditions, the spores landing on the new needles germinate and penetrate the tissue through stomata in only a few days. Fruiting bodies will eventually erupt through the needle surface and

Figure 2: Symptoms on canopy



Figure 3: Symptoms of Dothistroma needle blight on severely infected Austrian pine needles



liberate spores during periods of wet weather to continue the infection cycle. Infection of first year needles occurs in midsummer, while second year and older needles may become infected anytime from spring through autumn (Figure 3).

Young developing needles are less susceptible to infection (Figure 4). DNB is more prevalent on dense plantings where there is poor air circulation and shading of the pine canopy.

Figure 4: Symptoms of Dothistroma needle blight apparent on older growth, white pine needles



Management

Suppression of DNB can be achieved by the use of well-timed fungicide treatments. The first treatment should be made at budbreak to protect old growth from new infections. The second treatment applied in mid-June will protect recently matured new growth. A third treatment may be necessary later in summer during wet years with heavy disease pressure. Fallen, diseased needles should be removed from beneath the tree canopy to reduce the amount of inoculum available to cause infection. Proper spacing at time of planting to allow trees adequate space at maturity will help facilitate air and sunlight penetration to the lower canopy and help reduce infections. Cultural practices including mulching, irrigation during droughts, and fertilization based on soil analysis will aid recovery of trees affected by DNB.



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