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Procera Root Rot of White Pine



Reduced candle elongation (shoot failure) on white pine (*Pinus strobus*) due to procera root rot. R. L. Anderson, USFS, Bugwood.org

Procera root rot also known as white pine root decline is caused by the fungus *Leptographium procerum* (syn. *Verticicladiella procerum*). It infects the inner bark and sapwood of the roots and lower trunk of white pine. Although the disease is most serious on white pine, it can also kill Scots and Austrian pines.

Symptoms and Diagnosis

In the Spring, trees, aged 3 to 15 years, which have been infected for several years, show delayed bud break and reduced candle elongation. Mature foliage then fades, droops, and turns brown, in stark contrast to healthy trees nearby. Mortality appears to be at random with a few trees dying each year. Resin flow is visible at the tree base and is associated with a girdling chocolate brown to dark olive-brown canker under the bark. The trunk may be flattened on the affected side. Galleries of insects such as the pine root collar weevil may be found in the canker and provide a place for the fungus to sporulate. Weevils and other bark-infesting insects may serve as vectors for this disease. Although the fungus does not survive well in the soil, it may be spread by contaminated insects as they emerge from diseased trees and feed on healthy trees nearby.

Integrated Pest Management Strategies

1. **Planting.** Avoid planting eastern white pine on wet sites. Trees planted on wet sites seem to be more susceptible to the fungus. Excessively dry sites also seem to predispose trees to attack.

2. **Sanitation.** Remove and destroy infected trees including stumps, if possible. Do not replant eastern white pine among the stumps of recently killed trees.

3. **Replant.** If trees need to be replaced, do not plant a pine. Use arborvitae or spruce.

Organic Strategies

All of the recommended IPM strategies are strictly organic approaches.

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Resin flow at the base of an eastern white pine (*Pinus strobus*) infected with Procerca root rot. The resin indicates the presence of a canker, usually chocolate brown to dark olive-brown, under the bark. *M. Mielke, USFS, Bugwood.org*

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