

Plant Pathology Fact Sheet

Shoestring Root Rot - A Cause of Tree and Shrub Decline

By John Hartman

Most woody landscape plants are susceptible to shoestring root rot, cause of dieback and decline in the landscape. Diagnosis of this problem requires close examination of the base of the trunk which often reveals loose or decayed bark and dead cambium. By peeling back the bark one can often observe dark brown rhizomorphs (thick strands of hyphae), resembling narrow “shoestrings” (Figure 1).

These rhizomorphs are signs of one or more species of *Armillaria* and perhaps other related fungi, cause of shoestring root rot. Decayed roots with rhizomorphs growing along their surface can be observed by digging up the roots.

Creamy white fans of fungal mycelium may also be observed under the bark. The mushroom stage (Figure 2) of shoestring root rot sometimes develops in fall on dead trees or decayed logs.

Shoestring root rot is also called Armillaria root rot, mushroom root rot, and oak root rot.



FIGURE 1. ARMILLARIA RHIZOMORPHS

This disease is sometimes confused with Phytophthora root and collar rot. The decay associated with *Phytophthora* is usually a darker brown color, decayed bark is more moist, and rhizomorphs are absent.

Shoestring root rot has a very wide host range and is most frequently observed in oaks, maples, pines, hornbeams, taxus, and fruit trees in the landscape. Often, it is associated with formerly wooded sites converted to landscapes because the fungus can persist for many years in decaying wood in soil. Most trees with Armillaria root rot are trees



FIGURE 2. ARMILLARIA MUSHROOMS

which have been previously exposed to stressful growing conditions such as drought, winter injury, insect defoliation or borers, mechanical injuries, or construction damage. These kinds of stresses, along with infection by the *Armillaria* fungus are frequently part of the sequence of events that leads to decline and death of trees and shrubs.

Once trees or shrubs begin to show serious symptoms of decline, including dieback of twigs and branches, undersized and off-color leaves, increased trunk and limb sprouts (epicormic branching), and excessive fruit set, the decline is often not reversible. Thus, trees or shrubs with *Armillaria* root rot probably cannot be saved, and should be removed. Reduce the threat of this disease by providing good conditions for tree and shrub growth, minimizing stress, and removing infected stumps and roots.

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