

Phyllosticta Needle Blight

Pierce Taylor and Peng Tian

MU Plant Diagnostic Clinic



Phyllosticta Needle Blight, caused by *Phyllosticta thujae*, is a fungal pathogen which primarily infects Arborvitae. The majority of *Phyllosticta* species are regarded as secondary pathogens on conifers, and many of them are poorly understood. While the infection may not cause death of the tree, the browning needle tips caused by *P. thujae* are unsightly for homeowners and landscape designers. *Phyllosticta thujae* is frequently seen after stressful events that weaken a tree's defenses against pathogen infection. Winter injury, drought stress, excessive pruning, etc. are a few examples of common stressors which lead the pathogen to take hold.



Figure 1. Yellowed Tips from a *Phyllosticta thujae* infection on Arborvitae. Photo: Iowa State University

Name: *Phyllosticta thujae*

Symptoms and Signs: Plants infected with *P. thujae* generally have blighted needle tips and/or discolored (pale green to yellow) needles that appear dry (Figure 1). Infections frequently start at the needle's tip and spread to the base. When the weather is damp and moderate, black fungal tissue pads called pycnidia (Figure 2) burst through the epidermis on symptomatic needles to release vast amounts of spores called conidia, which are then splashed or blown to surrounding shoots to start new infections. The dense canopies of arborvitae, especially those that have been sheared, provide the optimum environment for the growth of pathogens.



Figure 2. Pycnidia (spore-bearing structures) produced by *Phyllosticta thujae* on an infected arborvitae needle. Photo: Photo: Iowa State University

Life cycle: Infections usually develop during damp weather in spring, when fresh needles are sprouting and maturing. As the infection progresses, pycnidia develop on the diseased needle tips, spreading spores to other portions of the canopy. By removing infected branches and dropped needles around the tree, the spread of infection can be hindered.

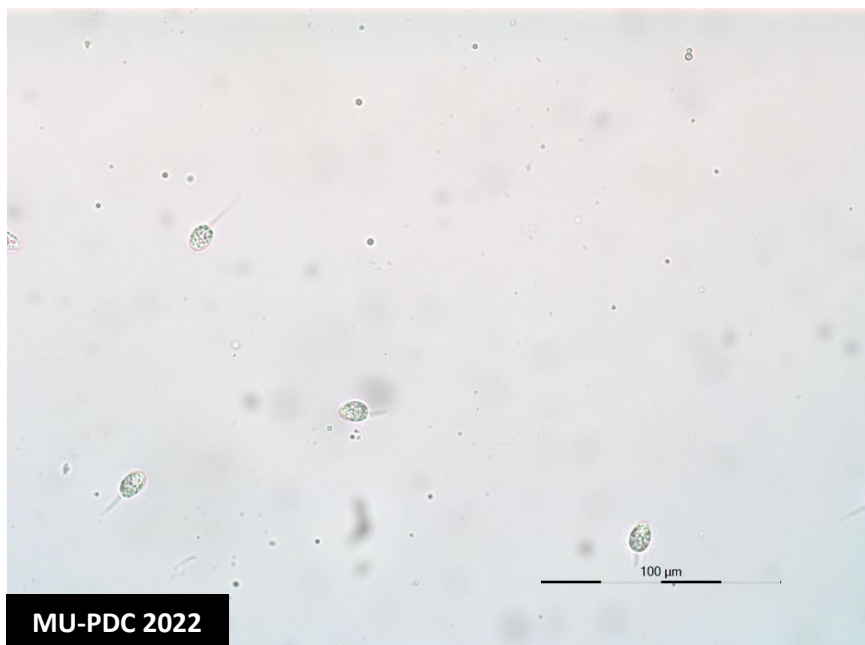


Figure 3. Conidia of *Phyllosticta thujae*. Photo: MU Plant Diagnostic Clinic

Host range and damage: Originally, *P. Thujae* was thought to exist only on *Thuja* species. However recent reports indicate this fungus could also affect juniper, false cypress, and Leyland cypress (*Cupressocyparis leylandii*) (*Juniperus* spp.). Generally, *P. Thujae* doesn't kill a tree, but causes needle blight which is unsightly and negatively affects tree health. Usually, affected hosts are already diseased or have been subjected to recent stress.

Disease Management:

1. **Prevent Environmental Stress.** Provide sufficient watering, fertilization, and air circulation to trees.
2. **Clean up diseased branches.** Prune and destroy as many infected branches as possible, clean up dropped needles as well. Do not compost these materials, as the fungus will remain active. Avoid pruning when foliage is wet and avoid overhead irrigation. Drip irrigation is preferred and will reduce spread of the disease. Make sure irrigation water is going down into the soil profile, arborvitae can easily become drought stressed. Thus, supplemental watering is required during hot, dry months. However, avoid over irrigation.
3. **Chemical Management.** Chemical control with fungicides may be warranted when plants are young, or disease pressure is high. Fungicides labeled for use on ornamentals can be considered, look for products with one of these active ingredients: chlorothalonil, copper hydroxide, or mancozeb. Fungicides should be use preventatively and applied in the spring to protect new growth. Follow label instructions for rates and repeat applications.

References:

1. **Phyllosticta Needle Blight**, Iowa State University, Extension and Outreach.
<https://hortnews.extension.iastate.edu/phylllosticta-needle-blight>
2. **Arborvitae Needle Blight**, University of Massachusetts Amherst, UMass Extension.
<https://ag.umass.edu/landscape/fact-sheets/arborvitae-needle-blight>
3. **Arborvitae Needle Blight**, Purdue University, Landscape Report.
<https://www.purduelandscape.com/article/arborvitae-needle-blight/>

We encourage you to visit our website <https://extension.missouri.edu/programs/plantdiagnostic-clinic> and review submission guidelines before submitting your sample. If possible, you may take photos and send them to plantclinic@missouri.edu.

Watch this recent MU Extension video for lab information and guidelines on submitting plant samples! Please click here: <https://www.youtube.com/watch?v=XEWVT9IUflo>

For sample submission and fee payment, you can either:

- 1) Visit our new online submission system at <https://extension.missouri.edu/services/plant-diseasesample>. Fill out the submission form online using your computer or mobile device and make payment online securely with a credit card.
- 2) Download the submission form at <https://extension.missouri.edu/programs/plant-diagnosticclinic/sample-submission>. Fill it out and send to us together with your sample and payment. Check or money order. No cash please.