

Bur Oak Blight

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Across the Midwest, Bur Oak Blight (*Tubakia iowensis*) is a fungal pathogen infecting the Bur Oak (*Quercus macrocarpa*). Affected plants display chlorosis and fruiting bodies on the leaf vein and petiole in mid to late summer. The small-acorn variety of bur oak (*Quercus macrocarpa* var. *oliviformis*), is affected more severely than other varieties. The disease can re-infect trees year to year and can eventually cause death after several years of defoliation.



Figure 1. Leaf Symptoms of Bur Oak Blight Photo: MU Plant Diagnostic Clinic

Symptoms and Signs: Typical symptoms include necrosis (death) occurring around the leaf veins, as well as the tip (Figure 1). Eventually the fungus occurring on leaf veins results in tissue death. The presence of fruiting bodies can be seen along the veins on the underside of the leaf and around the petiole as a purple discoloration. (Figure 2). Due to the death of foliage, Bur Oak Blight is often confused with Oak wilt or Anthracnose disease. These fruiting bodies, or pycnothyrium, presence on the petiole and the tree retaining its leaves over winter are symptoms of Bur Oak Blight which differentiate it from similar diseases. The conidia spores of *Tubakia iowensis* are microscopic and cannot be seen unaided, thus proper identification requires analysis with a laboratory microscope. *Tubakia* spp. have a pycnothyrium that composes of a shield like scutellum of radial projected hyphae. The scutellum is supported by a short columnar stalk that bears the round to ovoid conidia spores (Figure 3).



Figure 2. Fruiting Bodies on the leaf vein of a Bur Oak Photo: MU Plant Diagnostic Clinic

Life cycle: The conidia spores of *Tubakia lowensis*. overwinter on the petioles of infected trees and on the ground leaves they drop onto the ground. Spring wind and rain splash spreads last year's fungal spores to infect trees early in the season. Infected trees may remain asymptomatic until mid to late summer, or early fall. Repeated infection can occur year to year if the disease is left untreated, weakening the trees immune system and leaving it susceptible to other disease and pests which will compound the issue.

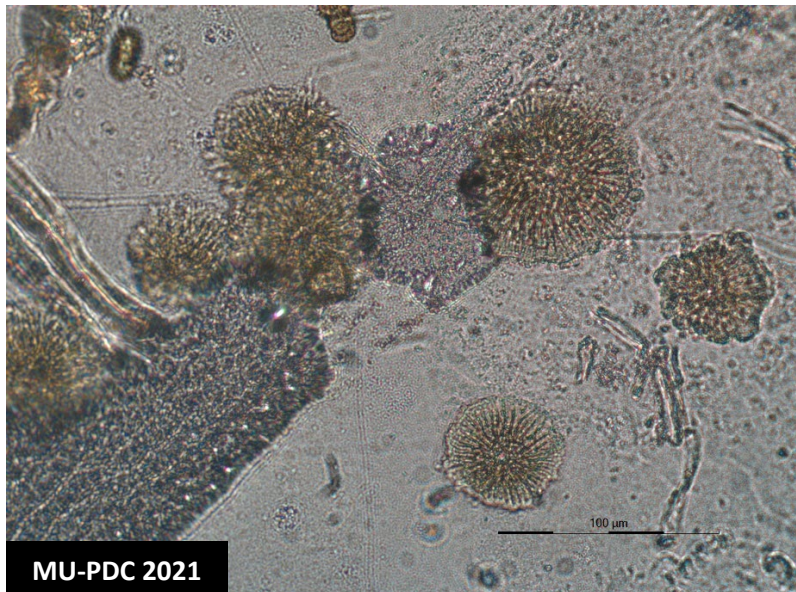


Figure 3. Tubakia lowensis pycnothyrium. Photo: MU Plant Diagnostic Clinic

Host range and damage: Bur Oak Blight primarily affects the Bur Oak Tree, but many species of Oak are susceptible to the disease. There have been reports of Bur Oak Blight in swamp white oak (*Q. bicolor*), and it is thought that small fruiting oaks such as *Quercus macrocarpa* var. *oliviformis* are affected more severely than other varieties by the fungus. Damage resulting from *Tubakia iowensis* infection includes leaf dieback in the months of mid-July to September. Multiple years of infection may weaken a host and cause mortality, but susceptibility to secondary infections or pests such as the two-lined chestnut borer (*Agrilus bilineatus*) and Armillaria root rot can lead to mortality as well.

Disease Management:

1. **Prevent Environmental Stress.** Provide sufficient watering, fertilization, and air circulation to trees.
2. **Clean up tree litter.** Removal of infected ground leaves and twigs can reduce the presence and spread of infectious spores. If composting, all leaves require exposure to temperature of at least 140 °F to eliminate the fungus.
3. **Chemical Management.** Fungicide applications are generally unnecessary. Early season fungicide applications during wet conditions may be warranted, but usually involves infusion treatments and should be performed by a professional.

References:

1. **Bur Oak Blight**, Minnesota Department of Natural Resources, Forest Health management https://www.dnr.state.mn.us/treecare/forest_health/bur-oak-blight/index.html
2. **Bur Oak Blight**, Iowa State University, Extension and Outreach. <https://hortnews.extension.iastate.edu/bur-oak-blight>
3. **Bur Oak Blight**, Bartlett Tree Experts, The Bartlett Lab <https://www.bartlett.com/resources/bur-oak-blight.pdf>
4. **Bur oak blight and Tubakia species**, Iowa State University, Thomas C Harrington. <https://faculty.sites.iastate.edu/tcharrin/bur-oak-blight-and-tubakia-species>
5. **Bur oak blight on Quercus macrocarpa**, Iowa State University, Danielle Penke <https://hutchinsonmn.gov/wp-content/uploads/2017/08/buroakblight.pdf>

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Watch this recent MU Extension video for lab information and guidelines on submitting plant samples! Please click here: https://youtu.be/9g312_U1iil?si=hRzY3hIn9y_tzo66

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- 1) Visit our new online submission system at [Plant Disease Sample | MU Extension \(missouri.edu\)](#). Fill out the submission form online using your computer or mobile device and make payment online securely with a credit card.
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