

RESEARCH LABORATORY TECHNICAL REPORT



Bur Oak Blight

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Bur oak blight (BOB) is a recently identified disease that causes leaf blight, branch dieback, and in extreme cases, death of bur oak (*Quercus macrocarpa*) in the Midwestern states. BOB occurs from Illinois and Missouri west to Kansas, Nebraska, and Minnesota. The disease is most severe on the northern variety of bur oak that produces small fruit: *Q. macrocarpa* var. *oliviformis*. The causal agent of BOB has been recently identified as the fungus *Tubakia iowensis*. Five species of *Tubakia* are known to cause leaf disease on oaks, but only *T. iowensis* causes bur oak blight.

Symptoms

Symptoms first appear in summer as brown, wedge shaped blotches on leaves. Portions of leaves turn yellow and purple-brown lesions form along the veins of the lower leaf surface. Lesions coalesce, producing large dead areas on the leaf blade imparting a scorched

Figure 1: Note that blighted leaves turn brown and are retained on twigs late into winter and the following spring (left and right)



or wilted appearance. Raised black fruiting structures of *Tubakia* will be evident under a 10X magnifying lens. *T. iowensis* fruiting structures also occur on petioles distinguishing BOB from leafspot diseases caused by the other species of *Tubakia* that do not fruit on petioles. As the disease progresses through the summer, entire leaves become blighted and tend to be retained on trees into winter (Figure 1). Some infected

leaves will be removed by wind, leaving the petiole still attached to the twig. This is one of the key symptoms for field diagnosis. Symptoms may appear in one section of the crown, especially in lower portions, and spread and intensify with time. The disease tends to intensify over several years, resulting in twig and branch dieback and tree mortality. Bur oaks exhibit wide variation in susceptibility to BOB. There are numerous observed instances of trees that are severely declining from BOB growing immediately adjacent to symptomless ones.

Figure 2: Black fruiting structures of *Tubakia iowensis* on leaf blades and petioles. Fruiting structures of *Tubakia* on petioles are a key diagnostic symptom of bur oak blight (below)



Disease Cycle

T. iowensis overwinters as fruiting structures on leaf blades and petioles. In spring, spores are carried by wind and rain to emerging leaves causing new infections. Fruiting structures that form on diseased current-year growth cause new infections through the growing season. The disease is favored by mild temperatures and frequent rainfall in spring and summer. Oaks stressed by BOB are prone to borer and bark beetle infestations and may be infected by root and canker disease fungi. These secondary invaders usually play a key role in decline and death of trees affected by BOB.

Management

There are fungicide treatments have proven to be effective for suppression of symptoms.

Maintaining the health of bur oak by mulching the root zone, irrigating during dry periods, and fertilizing based on soil analysis is recommended. On trees exhibiting early decline from BOB, Bartlett's Root Invigoration in conjunction with injection of propiconazole offers the most effective treatment protocol.



Founded in 1926, The Bartlett Tree Research Laboratories is the research wing of Bartlett Tree Experts. The Lab also houses a state-of-the-art plant diagnostic clinic and provides vital technical support to Bartlett arborists and field staff for the benefit of our clients.