

Bacterial Leaf Scorch

Identification and Management

Bacterial Leaf Scorch (BLS) is caused by a xylem-limited bacterium *Xylella fastidiosa*. This gram-negative bacterium causes decline and death of many herbaceous and woody plant hosts due to restriction of water flow from the roots to the crown of the plant. This is a newly recognized disease and many researchers are currently seeking to answer questions that remain about the pathogen and disease cycle. Frequently reported hosts are listed in Table 1, but there are many more species that are infrequently found with this disease. This pathogen was first discovered in grapes and causes Pierce's Disease. BLS is vectored mainly by insects in the leafhopper (Cicadellidae) and the spittlebug (Cercopidae) families, but research is being conducted to evaluate additional vectors. BLS is established in almost all warm areas of the country as far north as New Jersey, through the south, west to Texas, and in California. There has also been confirmation of the disease occurring in Illinois.

SYMPTOMS

BLS symptoms are very irregular. Leaves emerge apparently healthy in the spring, but with the onset of hot, dry weather, symptoms develop rapidly during July and August. Trees with chronic disease may leaf out late and have light green leaves. The general symptoms of most trees include a characteristic leaf scorch that progresses inward from the margin and results in premature defoliation across all tree species. In the earliest stages, there may only be a few limbs that display foliar symptoms within the crown, but as a result of scorching and premature defoliation over the years, limb dieback and water sprouts develop. Because the trees are stressed from this disease, they become more susceptible to secondary pests such as cankers and borers.



*Bacterial
Leaf Scorch
Symptoms
on
Sycamore*

DIAGNOSIS

Diagnosis can be difficult in the field due to the indistinct symptoms produced by the disease. The symptoms are indicative of many other problems that inhibit water movement in the xylem. Because of this, close attention must be paid to the host species involved and adequate and proper sampling. The Bartlett Tree Research Laboratories provides Enzyme-Linked Immunosorbent Assay (ELISA) tests to confirm the presence or absence of the pathogen. Sample quality and quantity is critical to achieve accurate results. The sample should be composed of 25-30 freshly collected leaves, preferably attached to twigs, so that sap containing the pathogen can be extracted for analysis.



MANAGEMENT

Research at the Bartlett Tree Laboratories is achieving some success in the treatment of this disease. Through injection of various products we have been able to delay the onset of symptoms and extend the life of some species of trees. However, if the treatments are not performed annually, symptoms quickly return.

Maintaining the health of the tree through proper mulching and irrigation practices may delay and suppress the symptoms of the disease by assuring adequate moisture availability for the tree. Fertilization should be based on soil analysis results. Secondary pests, including canker diseases, borers and bark beetles, should be monitored and controlled as needed. There is no data to suggest that sanitation, immediate removal of diseased trees, reduces the incidence of new infections. Pruning out diseased limbs as a means of eradicating the disease also has not been shown effective.

Table 1.

Commonly Infected Species		Susceptible, but Infrequently Infected Species	
American Sycamore	Native Elm	Red Maple	Sweetgum
London Plane Tree	Pin Oak	Sugar Maple	Boxelder
Mulberry	Southern Red Oak	Bur Oak	Dogwood
Almond	Northern Red Oak	Willow Oak	
Oleander	Scarlet Oak	Water Oak	
Grape	Shingle Oak	Live Oak	