

LOUISIANA PLANT PATHOLOGY

DISEASE IDENTIFICATION AND MANAGEMENT SERIES

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Bacterial Leaf Scorch of Landscape Trees

Xylella fastidiosa Wells et al.

Bacterial leaf scorch (BLS) is a broad term for a number of diseases of landscape trees caused by the xylem-inhabiting bacterium *Xylella fastidiosa*. This bacterium is known to infect more than 100 species of plants from at least 46 families, including many common landscape trees (Table 1). Not all strains of the bacterium, however, infect or cause symptoms in all of the hosts. These diseases occur from coast to coast throughout the southern United States and are quite prevalent in Louisiana, particularly on oaks and pecans. Other common diseases in the South caused by *X. fastidiosa* include Pierce's disease of grapes, plum leaf scald and phony peach. Additionally, the pathogen was recently found causing leaf scorch and decline of southern highbush and rabbiteye blueberries, and it is quite likely that additional hosts will be identified as more species are tested.

The most obvious symptom of BLS is the brown, marginal necrosis along the edges of the leaves that typically occurs in the late summer and fall and is often mistaken for drought and/or heat stress. The bacterium that causes the disease inhabits the xylem (or water-conducting) tissues of the infected trees. As the bacterium multiplies and spreads throughout the tree, it blocks the flow of water and nutrients. Infected trees are then more sensitive to environmental stresses such as heat, drought and wind. Over time, the infected trees gradually decline exhibiting twig and branch dieback and eventually die. Although many infected hosts show no symptoms (Table 2), they can potentially still serve as sources of inoculum for spread of the pathogen.

Oak trees infected by *X. fastidiosa* may show a variety of symptoms in addition to the typical leaf scorch. Infected trees may leaf out later in the spring than healthy trees and may suddenly drop their leaves. This may occur over the whole tree



Fig. 1. Typical marginal leaf scorch symptoms on oak.



Fig. 2. Scorching of leaves (right side of tree) and thinning of the canopy following premature leaf drop and regrowth (left side of tree) due to infection of an oak by *Xylella fastidiosa*.

or be limited to individual branches or sectors of the tree. These trees will then leaf out again, but the foliage may remain relatively sparse compared to healthy trees. Occasionally, large branches scattered throughout the canopy may die suddenly as well.

The bacterium is spread primarily by sharpshooter leafhoppers and other xylem-feeding

insects such as spittlebugs. Once a tree is infected, there is no cure. The use of cultural practices that reduce environmental stresses, particularly water stress, may help prolong the life of infected trees. Management of these diseases relies on the removal of declining trees and replanting with species that are not known to be susceptible to the disease.

Table 1. Landscape trees susceptible to <i>Xylella fastidiosa</i>	
Common name	Scientific name
Crape myrtle	<i>Lagerstroemia indica</i>
Dogwood	<i>Cornus florida</i>
Elm	<i>Ulmus</i> spp.
Hackberry	<i>Celtis occidentalis</i>
Jacaranda	<i>Jacaranda mimosifolia</i>
Magnolia	<i>Magnolia grandiflora</i>
Maidenhair tree	<i>Ginko biloba</i>
Maple	<i>Acer</i> spp.
Oak	<i>Quercus</i> spp.
Peach	<i>Prunus persica</i>
Pecan	<i>Carya illinoensis</i>
Plum	<i>Prunus domestica</i>
Purple-leaf plum	<i>Prunus cerasifera</i>
Sweetgum	<i>Liquidambar styraciflua</i>
Sycamore	<i>Platanus occidentalis</i>
White mulberry	<i>Morus alba</i>

Table 2. Some symptomless hosts of <i>Xylella fastidiosa</i>	
Common name	Scientific name
American beautyberry	<i>Callicarpa americana</i>
American elder	<i>Sambucus canadensis</i>
Bermuda grass	<i>Cynodon dactylon</i>
Blackberry	<i>Rubus procerus</i>
Boston ivy	<i>Parthenocissus tricuspidata</i>
Dallis grass	<i>Paspalum dilatatum</i>
English ivy	<i>Hedera helix</i>
Goldenrod	<i>Solidago fistulosa</i>
Johnson grass	<i>Sorghum halapense</i>
Peppervine	<i>Ampelopsis arborea</i>
Periwinkle	<i>Vinca minor</i>
Sumac	<i>Rhus</i> sp.
Virginia creeper	<i>Parthenocissus quinquefolia</i>
White clover	<i>Trifolium repens</i>
Wild grape	<i>Vitis</i> sp.
Wild strawberry	<i>Fragaria</i> sp.
Yellow buckeye	<i>Aesculus</i> x hybrid

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