



BACTERIAL LEAF SCORCH

(*Xylella fastidiosa*)



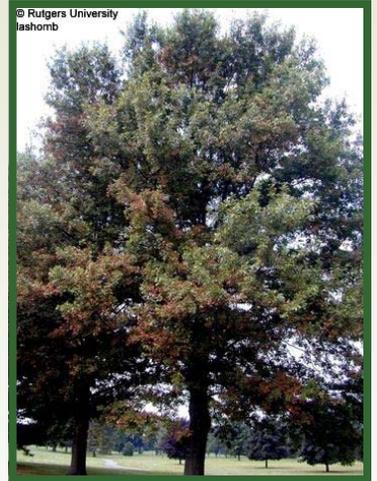
BLS DAMAGE

Bacterial leaf scorch (BLS) of shade trees is considered a threat to urban trees such as oak, sycamore, maple, and elm throughout the Eastern United States and as far west as Texas. The disease is caused by the bacterium *Xylella fastidiosa*, which grows and multiplies in the xylem (water conducting tissue) of affected trees. As bacteria spread throughout the tree, water transport is disrupted, resulting in moisture stress. The bacterium may also trigger a defense reaction in the tree, which further impedes water transport. This moisture stress causes marginal leaf scorch, tree decline, and in some hosts, death.

LOCAL HISTORY

In the most northern range of this disease (southern New York to Delaware), BLS is primarily associated with oaks in the red oak group. Incidence on other shade trees is rare. In New Jersey, BLS causes leaf scorch and decline primarily on mature red and pin oaks planted as landscape and street trees. The disease was first identified in the region in the mid 1980s and has since increased to alarming proportions (up to 44%) in some areas.

MARGINAL LEAF SCORCH ON RED OAK



IDENTIFICATION

Symptoms of BLS appear in late summer and continue through autumn. The margins of leaves on affected branches dry and turn brown in an irregular pattern. A distinct, yellow to brown transition zone between the margin of scorched and healthy tissue is often evident. Affected leaves may prematurely fall from the tree. Disease severity may increase during periods of drought. Symptoms may be confused with other foliar diseases, the effects of environmental stress, or normal fall changes in leaf pigmentation.

HOST PLANTS

HOST PLANTS:

Oak, sycamore, London plane, sweetgum, elm, mulberry and maple. *Xylella fastidiosa* also causes diseases in alfalfa, citrus, coffee, grape, peach, and plum.

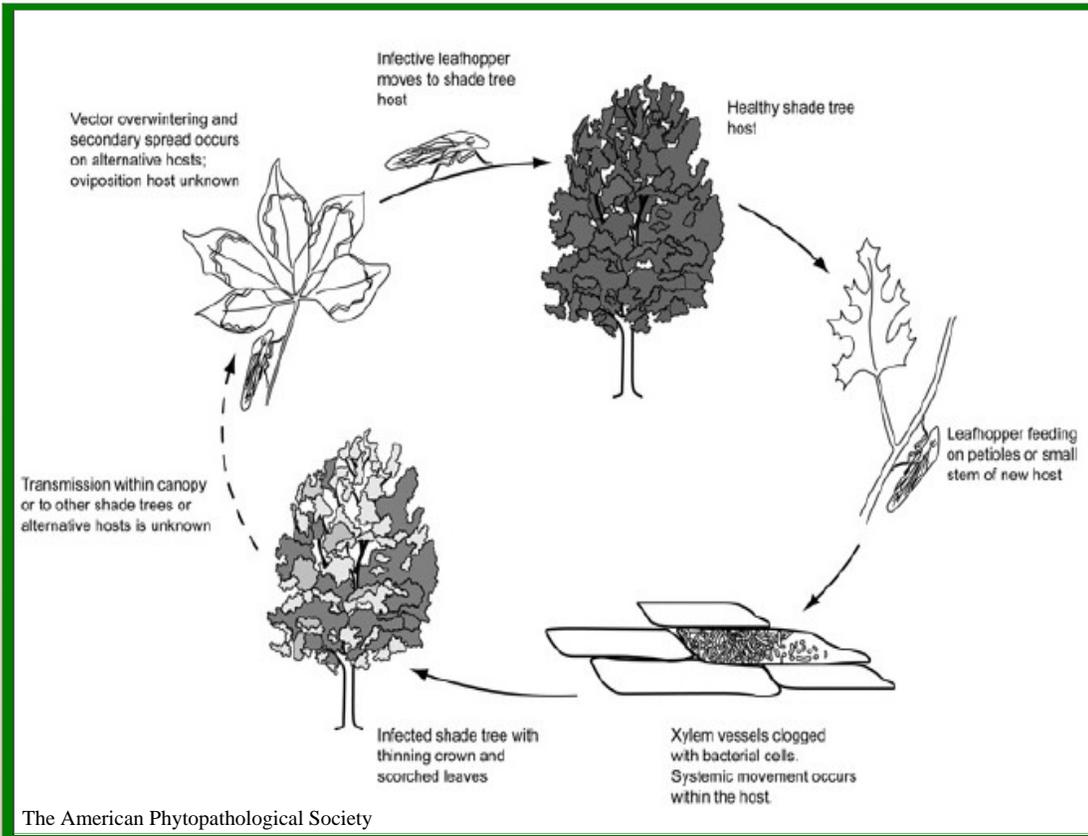
WHERE TO LOOK:

Leaves on diseased trees begin to die along leaf margins and death of then leaf progresses slowly downward toward the midrib and petiole.



LEAF SCORCH

LIFE CYCLE



LEAFHOPPER

BLS is spread primarily by leafhopper insects known as sharpshooters, and to a lesser extent, spittlebugs (family Cercopidae). Both adult and immature (nymph) stages acquire the bacterium when feeding on succulent tissues of infected hosts by pierce-sucking mouthparts. Xylem fluid is drawn into the insect, bacterial cells attach to the foregut of the insect. There, the bacterium multiplies and once an insect acquires bacterium, transmission to a new host can begin within 1 to 2 hours.

LEAF DAMAGE



WHEN & WHERE TO LOOK

Leaves on diseased trees begin to scorch in an irregular pattern along leaf margins in summer and fall. During early stages of the diseases, leaves on one or more branches are symptomatic. As the disease progresses, the canopy thins and branches die. Affected oaks may enter a long period of decline during which branches that pose a hazard must be removed. Other shade trees, such as elm, may be killed outright.

MANAGEMENT

Currently, there is no cure for BLS. Injecting diseased trees with antibiotics reduces symptom development but cannot eliminate the pathogen. Injections are expensive and must be repeated. Tree life, however, may be extended by improving general tree health. It is recommended that soils where young, smaller-diameter oaks are growing be tested for soil pH and nutrients and amended accordingly. Water during drought, and inspect trees regularly for branches that pose a hazard and must be removed.




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A special thanks to Marge Daugherty & Ann Gould for their con-