



Oak Wilt Identification Guide



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The purpose of this guide is to help consulting foresters who select northern red (*Quercus rubra*) and white oak (*Q. alba*) for harvest of high value logs destined for international export avoid stands with oak wilt disease. Diseased oak logs could spread the fungus responsible for oak wilt to currently unaffected countries if they are not properly treated. As of 1 January 2021, the European Union (EU) no longer allows the use of methyl bromide for fumigation of imported U.S. oak logs with bark. Selection of source trees from oak-wilt free stands is one way to address EU concerns about US oak logs. While such measures are not required for domestic use of oak timber, recognition and proper handling of logs and lumber from diseased stands also can prevent spread of the disease within the USA.

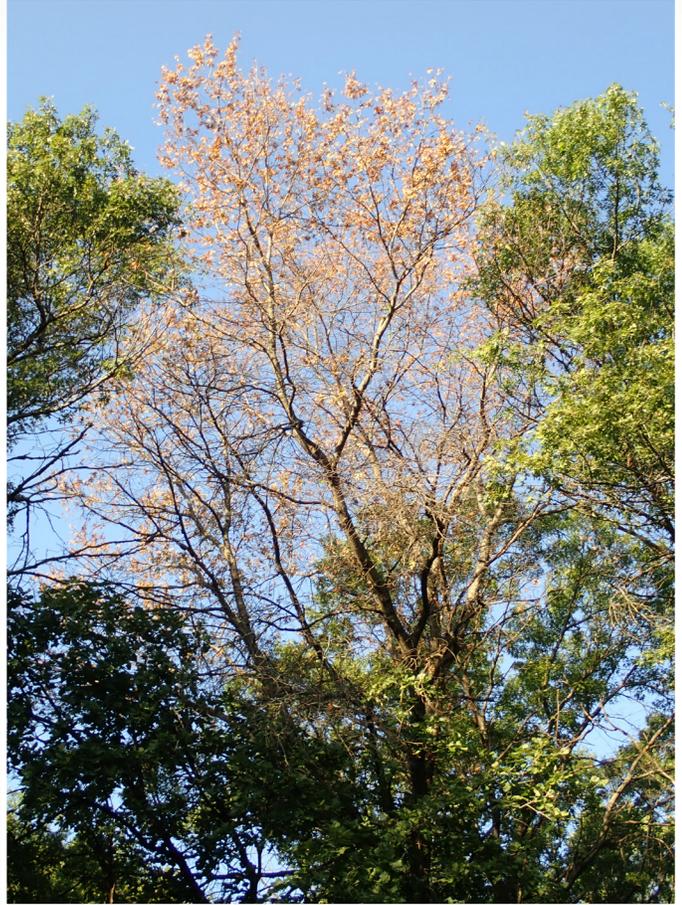
What is Oak Wilt?

Oak wilt is caused by the fungus *Bretziella fagacearum* and grows through an infected tree's water conducting system, causing the tree to wilt and die. Oak wilt is introduced to an area by sap feeding beetles that carry oak wilt spores to fresh wounds. Oak wilt kills thousands of trees each year in forests, woodlots, and urban areas in the United States. Oak wilt can attack and kill healthy trees. The disease is a particularly serious problem for species in the red oak group. Once wilting symptoms are apparent on a red oak, the infected tree will lose most of its leaves and die within approximately one month. Trees in the white oak group, demonstrate moderate disease tolerance; living several years to many years, after symptoms first appear.

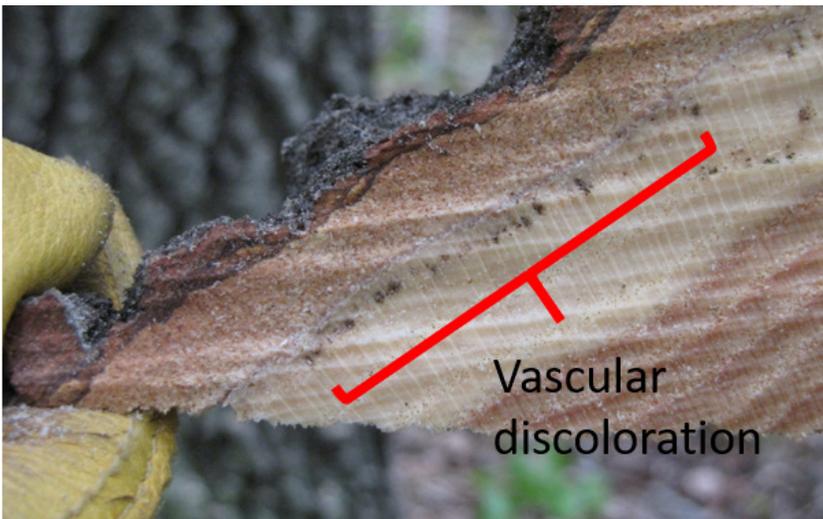
Spore-bearing fungal mats develop under the bark in the fall or spring after the infected tree dies. The sap-feeding beetles are attracted to the fungal mats and can transport oak wilt spores from mats to fresh wounds on healthy trees or to recently cut oak stumps. Once in an area, the disease spreads to nearby oaks through interconnected (grafted) root systems, creating an expanding pocket of dead oaks.

Oak Wilt in Red Oaks

Initial symptom is a subtle off-green color shift that may be visible in the upper portion of the tree. This symptom may first appear in mid-to late spring or throughout the summer. (Shown in the picture on the right) The leaves begin to wilt quickly from the top of the crown downward and have a bronzed appearance.



Oak Wilt is usually identified in red oaks by rapid leaf discoloration and wilting (Top left picture). The outer ring of vessels of diseased trees will be plugged with a brown substance that is often visible in cross sections (Bottom left picture) taken in the spring following the year that a red oak completely wilted.



Oak Wilt in White Oaks

White oaks usually die slowly, one branch at a time, over a period of one-to-many years. Leaf wilting and death occur in a similar fashion to that of red oaks, but these symptoms usually progress much more slowly in white oaks. Affected leaves exhibit a pattern of discoloration somewhat similar to that of red oaks, but the pattern is more variable. Leaves develop yellow veins that eventually turn brown (Bottom left picture). Discoloration on leaves proceed from the margins to the base. Affected leaves fall from scattered, affected branches within the tree crown (shown in picture to the right). The crown progressively (over multiple years) thins out until the entire tree is dead.





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