

# Vascular Wilt Diseases

## TREE DOCTOR TIPS

### Vascular Wilt Diseases (*Verticillium Wilt / Oak Wilt*)

#### DESCRIPTION:

Vascular wilt diseases are caused by different fungi that attack the vascular (water-conducting) system of trees. A tree responds by blocking its vascular system to contain the disease. In doing so, the water supply to the leaves is cut off. Common vascular wilt diseases include Maple wilt and Oak wilt.

#### HOSTS:

Maple wilt (*Verticillium wilt*) is most commonly found in maples, but it also affects several other plant species.

Trees in the red oak group (red, black, pin and scarlet) are highly susceptible to oak wilt disease. The white oak group (white and bur) varies in species resistant to oak wilt, but these trees usually die slowly over a period of years.

#### BIOLOGY AND SYMPTOMS:

Maple wilt is caused by *Verticillium dahliae* or *V. albo-atrum*; soil-borne fungi that invade susceptible trees through the roots and basal wounds. The first symptoms are sudden wilting and dying of leaves on scattered, individual branches during the summer. In some cases, large areas in the tree may wilt and die. Infected branches often show an olive-green discoloration in the new sapwood. Drought stress predisposes trees to maple wilt. The disease does not move easily from tree to tree.

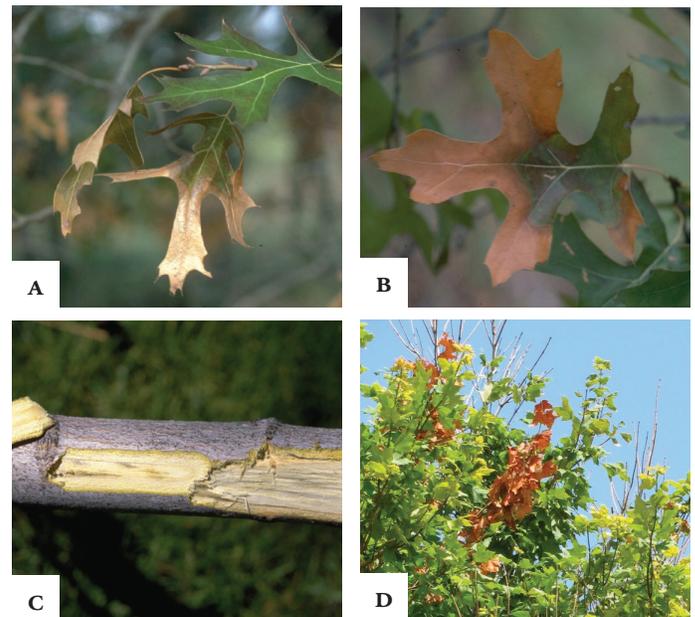
Oak wilt is caused by *Ceratocystis fagacearum* fungus, which can be spread by sap beetles that carry the pathogen on their bodies from an infected tree to an uninfected tree. It also spreads via the vascular system of grafted roots of adjacent trees. Oak wilt causes leaves in the upper crown to turn dull green, bronze or tan, beginning at the leaf margins. Soon the leaves wilt and drop off the tree with various degrees of discoloration. Brown streaks develop in the new sapwood.

#### MANAGEMENT:

Some trees suffering from maple wilt may recover if the

disease is managed properly. For trees with only a few affected branches, prune away the infected parts and then fertilize. Trees with healthy growth can “wall-off,” or contain the disease, within the old wood tissue, and produce new wood that is not infected. During dry periods, water and mulch the tree to help improve recovery. There are no fungicides labeled for managing this disease.

The major strategy with oak wilt is to prevent its spread to healthy oaks. This can be an expensive project, involving the prompt removal of infected trees and the disruption of root grafts. Without these measures, the disease can spread and kill more trees. If there is a healthy oak within 40 feet of the diseased one, trenching should be done to prevent root graft transmission of this fungus at least 10-15 days before the diseased tree is removed. Healthy trees, or those with minimal infection, can be managed by treating with labeled fungicide.



FIGURES A. & B. DISCOLORATION BEGINNING AT THE LEAF MARGINS IS A SIGN OF OAK WILT (Photo credit: Paul A. Mistretta, USDA Forest Service, Bugwood.org)

FIGURE C. SAPWOOD OF A MAPLE REVEALING DISCOLORED XYLEM TISSUE, VERTICILLIUM WILT (Photo credit: William Jacobi, Colorado State University, Bugwood.org)

FIGURE D. VERTICILLIUM WILT SYMPTOMS IN CROWN OF MAPLE (Photo credit: Larry Osborne, Bugwood.org)

The scientists at **The Davey Institute** laboratory and research facility support our arborists and technicians in diagnosing and prescribing based on the latest arboricultural science. For specific treatment and application details, your arborist may consult *The Davey Institute PHC Handbook*.

