

OAK WILT DISEASE

Ceratocystis fagacearum



Figure 1. Sudden wilting of terminal branches in canopy is typical.



Figure 2. Early leaf drop of brown, green and mottled leaves is a sign of disease.



Figure 3. Symptoms are discolored leaves and sometimes vascular streaking in the sapwood.

SYMPTOMS: This disease is characterized in the **red oak** group (red, black and pin oaks) by a sudden wilting and premature defoliation of the leaves at the top of the tree (Figure 1 and 2). Wilting can progress rapidly downward through the crown. Some oaks, such as the **live oak**, have leaves that develop brown veins but green tissue remains. Early foliar symptoms are wilting, bronzing, and shredding of leaves at the end of the branches. The bronzing begins at the tip and outer margins of the leaf blade and spreads to the midrib and base. Leaves tend to curl around the midrib. Many leaves fall before they become totally discolored. Trees in the **red oak** group completely defoliate within three to six weeks after initial wilt symptoms occur. **Live oaks** defoliate over a period of three to six months and may live up to a year with the infection. The **white oak** group is infrequently affected, but symptoms include a slow wilt of individual branches. Leaves usually remain on the tree and only the terminal portion of affected leaves turn brown. Discoloration of annual rings (infected sapwood) (Figure 3) can occur, but is less commonly detected as an internal symptom in the **red oak** group.

CAUSE: Oak wilt is a vascular disease caused by the fungus *Ceratocystis fagacearum*. The fungus spreads locally from infected trees to nearby healthy trees through root grafts. Long distance spread may occur through the feeding and breeding activity of sap feeding beetles and wood boring insects such as the bark beetle. Insects spread the disease by carrying spores from fungal pads formed under the bark of infected trees. Natural wounds or pruning cuts on healthy trees can attract spore-carrying insects during flight periods in the spring.

For laboratory confirmation, send samples of branches ($\frac{1}{2}$ " diameter) that show symptoms, but are still green, from an area that is near a wilting portion of the canopy.

SOLUTION: Pruning and trimming oaks in the spring and early summer should be avoided as fresh wounds attract sap-feeding beetles. If pruning is required during spring, the wound should be covered immediately with a tree wound dressing to temporarily minimize attraction of fungus-carrying beetles. An insecticide application to the entire tree would provide better protection.

Mechanically trenching or placing a chemical barrier around infected trees can prevent the spread of this disease through root grafts to nearby healthy trees. Trees that have been positively identified with oak wilt should be immediately removed and the wood removed from the property. Wood to be used for firewood should be covered with clear plastic for at least one summer to heat-kill fungal mats or bark beetles.

Trunk-injections with a registered fungicide labeled for the suppression of oak wilt may be effective on live oak, northern red oak and northern pin oak as a preventative treatment.