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## Oak Wilt

Oak wilt is an aggressive, tree killing disease of oaks. It affects oaks in a manner similar to how Dutch elm disease affects elms. The fungus enters the water conducting vessels of the sapwood through fresh wounds or through roots connecting healthy and diseased trees.

When the fungus is in the vessels, adjacent cells develop balloon like structures that extend into the infected vessels and plug them. This disrupts the sap flow in the vessels and the foliage wilts and falls. The disease is a threat to all oaks, but trees of the red oak group (red, black, pin and scarlet oaks) are killed more rapidly than trees of the white oak group (white, bur, and swamp white oaks). Little can be done to help infected red oaks. Tactics are available to help infected white oaks and reduce the threat of infection to noninfected oaks located close to infected trees.

### Symptoms in Red Oak Group

Early foliar symptoms are wilting, bronzing and shedding of the leaves at the ends of branches in the upper crown. The symptoms can spread through the crown very quickly, often within a few weeks.

Bronzing begins at the outer leaf edges and moves toward the midrib. The boundary between the green and discolored areas is often not distinct. The leaves often wilt along with the discoloration. Both discolored and entirely green leaves fall from the tree in large numbers, but a few discolored leaves usually remain on the tree. As the disease progresses, fungus mats may be produced between the bark



and sapwood the year after the tree dies. The fungus mats can exert enough pressure on the overlying bark to actually raise and rupture it. A fruity odor is produced from the mat that will attract sap beetles to feed on the mat.

### Symptoms in White Oak Group

Symptoms in white oaks are much more variable than in red oaks. Symptoms may develop in the upper crowns of white oaks as with red oaks, but they do not spread as quickly. Symptoms are often restricted to one or a few branches at a time. Members of the white oak group are seldom killed outright as those in the red oak group are. Leaf discoloration occurs, but the changes are often more gradual than with the red oak group. Streaking of sapwood beneath the bark of infected branches is much more common on white oaks. Spore mats are not produced on the white oaks.



**Left: Bronzing on these Red Oak leaves are a symptom of Oak Wilt disease; Center: Discolored, wilted leaves remain; Right: The streaking of sapwood occurs from Oak Wilt fungus in this White Oak branch.**

It is important to remember that oak wilt is commonly confused with drought, construction stress, borers, or root problems. The following items can help distinguish one from the other.

### Drought, Construction Stress, Borers, or Root Problems

- More common during last half of summer
- Regular size leaves, little wilting
- Leaves browning uniformly
- Leaves remain on the tree after discoloring
- Dying trees scattered throughout stand
- More common on stressed sites
- Often with trunk sprouts
- Signs of borer or root disease

### Oak Wilt

- More common during first half of summer
- Small leaves, thin crown, wilting
- Edges and tips of leaves turning color first
- Leaves drop soon after discoloring
- Dying trees found in groups (root grafts)
- Streaking/discoloration of vascular tissues

### Management

Positive identification of oak wilt requires recovery of the fungus from trees suspected of having the disease. During the growing season, samples are cultured in a private or public laboratory.

At present, there is no cure for oak wilt in infected red oaks. Management in red oak stands, therefore, consists of preventing the spread of the disease within the stand. For the white oak group, injectable fungicides may stop the spread of the disease in infected trees if it is detected early. These fungicides may also reduce the spread of the disease via root grafts between infected and diseased trees of the red oak groups. Five considerations should be kept in mind:

1. Avoid pruning oaks, especially red oaks, in known oak wilt areas from April 1 through July 15. "Picnic" beetles are thought to move the fungus from the spore mats to fresh pruning cuts during this period.

2. If red oaks must be pruned during this time, pruning cuts should be covered with a wound dressing. This is one of the few times that wound dressings are a recommended arboricultural practice. The dressing keeps the picnic beetles away from the fresh wound.

3. Sever root grafts between diseased and healthy trees. Oaks within 50 feet of diseased trees already may be infected without showing symptoms. We must consider such trees to be suspect and place additional barriers between them and neighboring oaks. Root grafts can be severed by trenching to a depth of 3 to 4 feet. Trenching is often difficult in urban areas because of underground utilities and surface obstructions.

4. If healthy red oaks are located within 50 feet of a diseased red oak, root grafts should be cut before the diseased tree is removed. If no healthy red oaks are within 50 feet or the root grafts cannot be cut, then remove the diseased red oak before the following spring. Diseased white oaks do not need to be cut down, but diseased branches should be removed and the tree treated to improve its vitality (proper watering, mulching and SoilCare<sup>SM</sup>).

5. A systemic fungicide is now labeled for treatment of the oak wilt fungus. The fungicide is injected into oak trees for both preventive and therapeutic treatments, depending on the oak species involved. For the red oak group, the fungicide is most effective when used in a preventive, rather than curative, fashion.

If you have any additional questions or concerns about oak wilt in your area, please do not hesitate to contact your local office for further details.



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