Natural Resources Conservation Service

Central Texas Oak Wilt

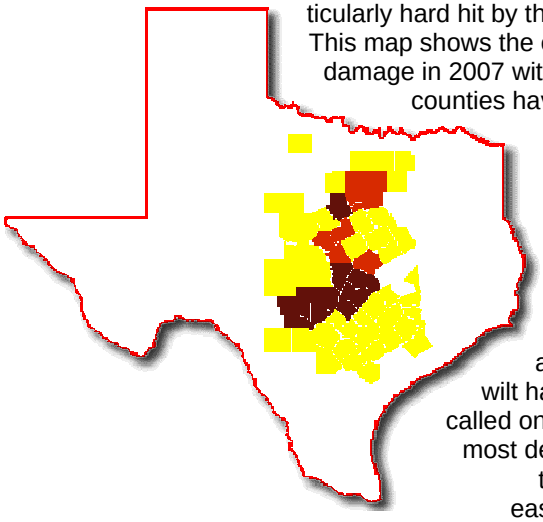
Forestry Fact Sheet - TX 1

What is oak wilt?

Oak wilt is an aggressive fungal pathogen (*Ceratocystis fagacearum*) that affects many species of oak, killing thousands of trees each year in woodlots and home landscapes.

Where is it in Texas?

The Hill Country and Central Texas areas have been particularly hard hit by this disease. This map shows the extent of its damage in 2007 with yellow counties having a few incidences and the brown counties recording over 400 mortality areas. Oak wilt has been called one of the most destructive tree diseases in the United States and is at epidemic proportions in the Central Texas Hill Country.



Does it kill all oaks?

All oaks are susceptible to oak wilt to some degree. Red oaks are extremely susceptible, followed by live oaks and white oaks. Particularly vulnerable red oaks include Spanish, Nuttall (Texas red), Shumard and blackjack oak. White oaks including post, bur, Mexican white, shin, Durand, and Lacey are somewhat resistant and may lose a limb at a time or may even sustain the infection without showing symptoms. Post oak may be the most resistant while Lacey oak and bur oak are the least. Live oaks are the most seriously affected of the oaks due to their tendency to grow from root sprouts, their interconnected root systems (root grafts) that allows the fungus to spread between adjacent trees, and Texan's love for this species.

Red Oaks

Bristled, pointed lobes

White Oaks

Rounded lobes

Live Oaks

How does oak wilt kill trees?

Oak wilt infects the sapwood and stops sap flow to the branches, twigs and leaves. When the flow is restricted during the growing season, trees wilt and die. In red oaks, this condition may bring on early autumn-like coloration while surrounding trees are green.

What are the symptoms of oak wilt?

Red oaks, white oaks, and live oaks express the disease in different ways but they have one common symptom – **leaf drop**. When this occurs with any of the following symptoms, oak wilt can be reliably suspected:

Red Oaks

- Initial subtle off-green color shift in the upper portion of the tree crown.
- Wilting of leaves from the top of the crown downward.
- Leaves turning partially green and partially brown or bronze. Discoloration begins at the tips and progresses toward the base.
- Distinct line between the bronze and green areas.
- Wilting leaves typically curling around the midrib.
- Rapid progression of symptoms from the top of the tree downward.
- Cracks in the bark caused by fungal mats formed by the fungus between the bark and sapwood. The mats may have a distinctive fruity odor.
- Tree death in 4 to 6 weeks.

White Oaks

- Leaves that are partially green and partially brown, or an olive drab color with a dry appearance.
- Progression of symptoms from the ends of branches inward.
- Branches dying one at a time over time.
- Tree death may take months or years.

Live Oaks

- Initial chlorotic leaf mottling and browning.
- Development of yellow veins that eventually turn brown – Veinal necrosis.
- Symptoms appearing all over the tree.
- Trees may develop stunted leaves on trunk sprouts.
- Tree death in 1 to 6 months.

How can oak wilt be confirmed?

Confirmation is best made through laboratory analysis of symptomatic tissue (generally limbs). Samples can be sent to the Texas Plant Disease Diagnostic Laboratory at Texas A&M University. Contact the Texas Forest Service, Texas AgriLife extension agent, or a trained horticulturalist for assistance.

Can oak wilt be confused with other problems?

Oak wilt can be misdiagnosed. There are many problems that can afflict oak that are unrelated to oak wilt. Assistance can be obtained through the Texas Forest Service, Texas AgriLife extension agent, or a trained horticulturalist.

Can oak wilt be cured?

Once a red oak tree becomes infected with oak wilt, there is no chemical treatment that is capable of curing the disease. However, injections of the fungicide Alamo® may extend the life of live oaks and is reported to save white oaks that are not in advanced progression of the disease.

Control of infected sites is the best course of action when the disease is diagnosed. This should include the combination of disrupting root grafts, removing and properly disposing of diseased red oaks (after severing the root grafts) and using Alamo® as a preventive. Contact the Texas Forest Service, Texas AgriLife extension agent, or a trained horticulturalist for assistance and more information.

Problems confused with oak wilt

Human Activities- Adding soil over the top of roots, damaging and cutting roots during construction, or compacting the soil over tree roots can lead to crown dieback or wilting.

Defoliating Insects - Many insects such as tent caterpillars and inchworms can defoliate trees but are rarely serious threats. The green caterpillar (larval stage) of the oak leaf roller can roll the leaf around themselves as they feed for protection against predators, This rolling can be confused with a symptom of oak wilt.

Twig Insects – The oak twig girdler and oak twig pruner can cause noticeable damage in the summer by cutting twigs. The leaves on affected twigs turn brown prematurely.

Spider Mites – When mites are present in large numbers, the injuries at their feeding sites can cause a bronze look to the foliage.

Leaf Diseases – Cool, wet weather can bring on several foliage diseases such as leaf blister and anthracnose. Leaf blister causes discrete bulges on the leaf surface with some cupping, whereas anthracnose causes formless, ragged brown areas. Anthracnose is more damaging on the white oaks and blister is more severe on red oaks, but they are usually not serious threats to healthy trees.

Hypoxylon Canker – This fungal disease has characteristic growth on tree trunks and large limbs. It attacks weakened trees and can cause dieback. Unlike oak wilt, rapid defoliation is not a symptom.

Herbicide Damage – Some broadleaf herbicides, particularly those that can move in the soil, can cause injuries similar to those on the weeds they are used against.

How is oak wilt spread?

Oak wilt can be spread to adjacent trees through root connections called grafts. Because live oaks tend to grow from sprouts off a shared root system (clonal) and develop root grafts with other live oaks in the area, the fungus can travel trough its root system up to 100 feet per year. Movement through the roots of red oaks is less common, slower, and covers shorter distances.

In addition, the fungus can be carried to new areas by sap-feeding beetles, which move fungal spores from infected trees to freshly wounded healthy trees.

Oak wilt can also be moved in firewood. Infected firewood can form spore-producing fungal mats under the bark that attract insects. These insects feed on these mats and transfer the spores to healthy trees.

Can oak wilt be prevented?

It is easier, cheaper and more effective to practice prevention than to try to stop the disease. It should include:

- Not damaging healthy trees and roots during construction and other activities.
- Pruning trees only during the coldest dormant months. Paint the wounds.
- Being careful with firewood, especially if it is unseasoned and from infected trees.
- Using the integrated control methods described above for high value trees.
- Seeking professional advice and assistance.