



Oak Wilt

Treatment Guide



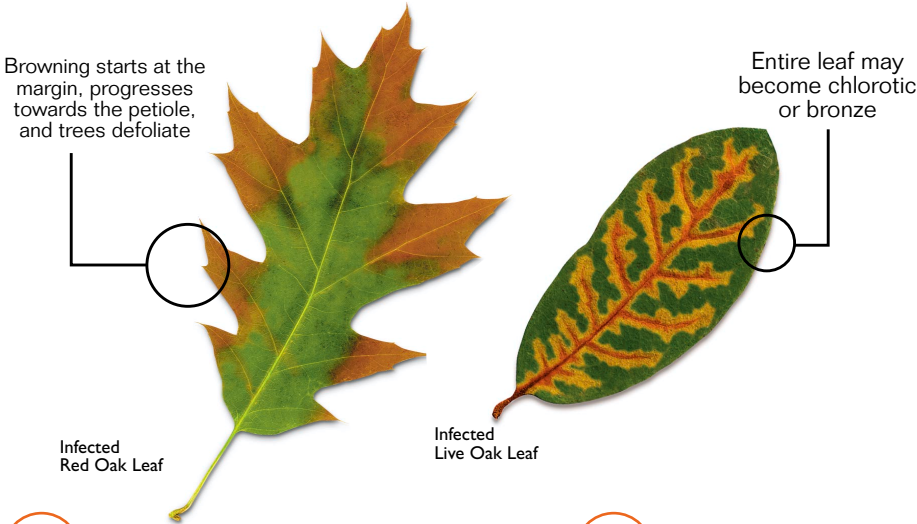
What is the cause of Oak Wilt?

Oak wilt is a lethal disease caused by the fungus *Ceratocystis fagacearum*. The fungus invades and disables the water-conducting system in live, red, Spanish, and other oak species. Different species of oaks vary in susceptibility to the disease. Red or Spanish oaks typically die within 4 to 6 weeks of initial symptom development, while live oaks may survive or take 1 to 6 months to defoliate and die.

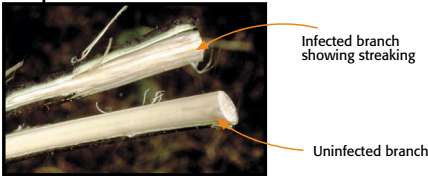
Most of the spread of oak wilt is through root grafts between interconnected and grafted root systems. Root graft disruption and fungicidal treatments aid in preventing the spread of oak wilt.



Managing Oak Wilt



1 Prompt Diagnosis	2 Isolate	3 Sanitize	4 Protect
<p>The primary symptom of oak wilt in live oaks is shown in the leaf above. The internal portions of the leaves along the veins turn yellow and eventually brown before falling off the tree. In red and Spanish oaks, the disease expresses itself less distinctly than live oak. In early spring, young leaves wilt and turn pale green and brown. Mature leaves turn pale green or bronze, beginning at the leaf margins and progressing inward. Mature leaves may also develop dark-green, water-soaked symptoms. In red and Spanish oaks, the wilting progresses from the top of the canopy downward, while in live oaks the disease symptoms may be scattered throughout the tree.</p>	<p>An important aspect of oak wilt control is physical disruption of the root grafts between infected and healthy trees. Trees within the trench line, trees that cannot be trenched, and small groups of trees are good candidates for Alamo® infusion.</p>	<p>Spore mats are produced only on members of the red oak family, and they are the fungal source for all new infection centers created by beetles. It is important to remove all recently killed (within 1 year) or dying red and Spanish oaks after separating root grafts. Remove the bark of red and Spanish oaks that are to be used for firewood or seal the pile with plastic for one year to kill the fungus and prevent contaminated beetles from escaping.</p>	<p>Scientific research conducted at Texas A&M University by Dr. David Appel(1992). has shown that Alamo® fungicide can be used as an effective tool for managing oak wilt and will protect many trees that may otherwise be at risk of becoming infected with the disease.</p>



Alamo Macro-Infusion System is the only treatment method currently recommended by the Texas Forest Service for oak wilt.



1. Excavate around the base of the tree to expose the root flares.



2. Drill a series of small one inch deep holes around the tree at the root flares.



3. Insert infusion tees and hook up tubing harness to pump.



4. Typical application time is 1 to 5 hours.

ALAMO MACRO-INFUSION SYSTEM protects symptomless live, red, and Spanish oaks at high risk for infection by coating the water conducting tissue where the fungus grows. It can also be used therapeutically to save live oaks that have suffered a small amount of crown loss. It is essential that the chemical is distributed throughout as much of the tree as possible. The best method to accomplish this is a macro-infusion of Alamo® into the root flares of the tree.

How does Oak Wilt spread?

Sap feeding beetles (Nitidulidae) are the most common insect vector, but bark beetles (Scolytidae) have also been reported as a vector. They feed on fungal spore mats that form between the bark and the wood of the oak, and carry oak wilt spores to wounds on uninfected trees. In the northern range of oak wilt, overland transmission takes place throughout the spring and early summer, while in Texas it can occur any time of the year.

Because beetle vectors (carriers) are attracted to fresh wounds it is important not to prune oaks during the season that spore mats are present. In the north, prune only during the dormant season; in the south pruning is recommended only during December and January. Pruning paint is only necessary for wounds occurring during the growing season in the north, however in the south seal all wounds regardless of the season.



Fungal spore mat



Nitidulidae beetles

photo courtesy of Minnesota DNR

New infection centers are caused by overland transmission of fungal spores.



Roots grafted together
(spreading disease to other oaks)

Root graft transmission is the most common mode of infection. Over 90% of all new oak wilt infections are transmitted in this manner. A root graft is formed when the roots of two trees of the same species meet and fuse together. The disease is then able to move from an infected tree into an uninfected tree.