



OAK TREE DISEASES

Anthracnose (fungus - *Gloeosporium* sp.): Anthracnose is more common on white oak group (Bur Oak, Over Cup Oak, White Oak and Post Oak) than on the other more common oaks. The disease is first observed in early summer, causing irregular, brown spots. These will most often be adjoining veins and midribs of the leaves. They may cover most of the leaf area. The blotches and spots are irregular, distortion of leaves, and papery texture are diagnostic characteristics. Late in the growing season dark pustules, formed by the fungus, can be seen on the veins and midribs of infected leaves.

The fungus develops at its optimum rate under warm, moist conditions during the spring months. Maximum growth occurs at 83 degrees F and a relative humidity of 97 percent.

The fungus overwinters on dead twigs. To control anthracnose, destroy the diseased foliage, remove all dead twigs from the tree, and spray with a copper fungicide. Make first application when leaves are half grown and repeat in two weeks. The fertility program should also be increased to offset the weakening effect of continued defoliation.

Oak Leaf Blister (fungus - *Taphrina caerulescens*): Leaf blister is one of the major foliage diseases of oak trees in Texas. It is particularly damaging on red oaks and also attacks members of the white oak group. Leaves infected by leaf blister have discrete round, bulges in the leaf tissue with some cupping and twisting. The fungus overwinters on the bud scales. Infection will occur if the weather is cool and rainy during leaf emergence. The initial flush of leaves during extended periods of dry weather and above normal spring temperature are the only ones subject to infection by this organism. A copper fungicide just prior to bud opening is effective.

Actinopelte Leafspot (fungus - *Actinopelte dryina*): This disease is most severe on members of the red oak group but white oaks are also infected. The spots are small (2 to 5 mm in diameter), round and reddish-brown in color. The disease is most severe in late summer and early fall. Severe defoliation can occur. Actinopelte leafspot is a primary leafspot but can be found associated with other fungi. Infected leaves should be destroyed and trees which are severely defoliated by the fungus should be fertilized slightly more than normal to stimulate growth. Check foliage for possible minor element deficiency. Damage is sometimes associated with low levels of iron. Newly planted trees (first 3 years) are more subject to attack by this disease than well established trees.

Spot Anthracnose (fungus - *Elsinoie quercus*): Infection by this fungus can cause small spots on the foliage of red oaks. The spots are only on the upper surface of the leaf and are blackish-brown. The centers of spots are lighter in color and are generally 1 mm in diameter. Symptoms are first visible in early June and increase in number until the middle of August. By that time the foliage is severely damaged and the tree is a pale yellow. Defoliation occurs when infection is severe. Sanitation is important in the prevention and control of this problem. Remove all diseased leaves. Spraying is seldom required. Trees which have been severely damaged by the disease should be given additional fertilizer to stimulate new growth.



Powdery Mildew (fungi - *Microsphaera alni* and *Phyllactinia guttata*): Powdery mildew occurs on all groups of oaks. Infected leaves have a faint indistinct spot on the upper leaf surface and a white to off-white powdery growth on the lower side. The fungus will most often be found along the veins and midribs of the leaf. It is normally observed in late fall. Infected leaves will be slightly disfigured in severe cases.

Powdery mildew is seldom a problem on large individual trees. Damage can occur in nurseries and on low sucker limbs but rarely is disease sufficient to require spraying. Limb removal improves air circulation and will help reduce the occurrence of this disease.

Rust (fungus - *Cronartium strobilinum*): *C. strobilinum* (Southern cone rust) infects pines in mid-winter. The telial stage is only produced on an evergreen oak. They are thus closely associated with live oaks.

Infected oak leaves have yellow to orange pustules on the lower sides of the leaves. Severe infection may rarely cause defoliation. This most often occurs in late spring and early summer. The disease cycle is broken if the alternate host is removed; however, the spores can drift long distances between the oaks and pines. No control is normally required.

Hypoxyton Canker (fungus - *Hypoxyton atropunctatum* and other *Hypoxyton* spp.): The disease is first evident as a dieback of one or more branches. The foliage of the diseased limbs turns yellow and dries. This dieback continues from branch to branch through the stem until eventually the tree dies. This may require 1 or more years depending upon the environment and amount of stress experienced by the tree. Near death or shortly after tree death the outer bark sloughs off and exposes large masses of brown, dusty one-celled spores (conidia). These spores are gone within a few weeks and a grayish surface is visible. This is covered with numerous black fruiting structures. Mature fruiting structures (perithecia) can forcibly discharge sexual spores (ascospores) for distances of 60 mm. They are then blown to surrounding trees where infection occurs again. Entry appears to be through injured surfaces on limbs or trunk. The fungus grows best at 86 degrees F but can grow at 50 and 100 degrees F.

Hypoxyton canker causes a dark brown discoloration of the sapwood. With age the infected wood is lighter in color and has black zones or patterns in the wood when observed in cross section.

Hypoxyton canker occurs primarily on trees which are or have been in stressed conditions. Trees which have been damaged by excessive fill soil are often attacked by this organism. It is also suspected to be a fungus that can invade on oak wilt-infected trees.

Control is achieved by maintaining the trees in a healthy condition. Avoid injury to the trunk and limbs and never apply fill soil around the trees. Chemical treatments would not be effective because the fungus is located within the tree.



Phyalospora Twig Blight (fungus - *Phyalospora glandicola*): Affected trees look like they have been attacked by cicada. Dead shoots with attached brown leaves are found on the tree. The fungus enters through twig wounds. It eventually kills the twigs and branches. Although it causes noticeable damage to the tree, it seldom causes economic losses.

The fungus overwinters in cankers on twigs. Infected limbs should be removed and burned or destroyed during the summer. Make cuts 6 inches below the diseased area. Fertilization, watering and pruning should be practiced to encourage tree vigor.

Endothia Canker (fungi - *Endothia parasitica*, *Endothia gyrosa*): Post oaks and red oaks are particularly susceptible. It has been associated with pruning cuts or limb breakage. Removal of cankers by pruning and increased tree vigor helps reduce losses.

Canker Rots (fungi - *Irpex mollis*, *Polyporus hispidus* and *Poria spiculosa*): Infection by these organisms tend to cause circular cankers which have a depressed center rather than a conk or mushroom. The center of the canker is a brown punk. They will quite often form after a limb has been damaged or broken off.

To reduce canker rots, remove any dead limbs or limb stubs in a tree. Prevent any injury to trees that might serve as an infection site.

Burls (fungus - *Phomopsis* sp.): Large swellings on the limbs and trunk are caused by a species of *Phomopsis*. Burls can occur on both oaks and hickories. There are some swellings which occur on white oaks that aren't caused by a fungus but rather by the wood naturally growing over young buds and forming a gall or swelling.

True burls can be removed by pruning or in some cases by surgery. They do little or no damage to trees.

Oak Wilt (fungus - *Certocystis fagacearum*): This is an important disease of all oaks. Members of the white oak group die very slowly after infection occurs and can carry the fungus in the vascular system without showing any symptoms. Red oaks die rapidly after infection occurs. Symptoms show up on red oaks in early May as a bronzing of the leaves. On live oak, the leaf symptom is variable. The most common symptom is brown necrosis of the leaf veins. The remainder of the leaf may remain green or turn slightly yellow. Severe leaf drop occurs while the leaves are still green. Cuts made through the wood may show discoloration in the last annual ring. Symptom development usually begins on one limb or branch and in time spreads rapidly to the remainder of the tree. [Further information is available.](#)

The fungus may be carried from tree to tree by various insects and through root grafts. Sap feeding beetles are important in the short range spread. Red oaks which wilt in the late summer or early fall develop spore mats under their bark during the next spring. As the mats develop, the bark sloughs off or ruptures exposing the fungus. Insects are attracted to the mats.



If the insects move from mats to healthy trees which have open wounds the fungus can then enter the healthy tree and move into the water conducting tissue.

Control is obtained by destroying diseased trees immediately. Remove or burn stumps. To prevent spread between trees, cut a ditch two to three feet deep around an infected tree. Vapam can also be used for this purpose. To apply the vapam, drill holes six to eight inches apart and 15 to 24 inches deep. The Vapam is diluted one part to four parts water and one cup of the mixture is applied to each hole. As soon as the hole is filled, it should be plugged with soil. Before using the Vapam treatment or making a ditch, the presence of Oak Wilt should be confirmed by a professional pathologist. This is a severe treatment and can result in plant damage if not done properly.

Oak trees should never be pruned during late March, April, May and early June.

Oak Decline (fungus - *Cephalosporium diospyri*): Live oak decline is a weak vascular pathogen of trees in Texas. Plants affected by the fungus first show signs of thinning out in the top of the tree which when first noticed, twigs in the upper portion of the tree show signs of dieback. The dieback will generally increase each year. As the dieback reaches the larger limbs which comprise the main canopy, sucker growth becomes evident on the main scaffold limbs. As the disease continues to progress, only the main scaffold limbs remain alive yet they also eventually die. This may take from five to ten years on Live Oaks, but less on other oaks after the first visual symptoms are observed.

Root grafting is suspected as one means of spreading the fungus. Recently, bark beetles have been associated with the spread of Oak Decline. The fungus has been isolated from the body of the suspect insects. If insects are involved this would explain the spread of the disease across areas too great for root grafting.

Live Oak, Post Oak, Water Oak, Texas Red Oak, Willow Oak, Sycamore, persimmon, Winged Elm, Hackberry, American Elm and Western Soapberry are reported to be hosts for Oak Decline.

A simple, easy method of identifying Oak Decline is not now available. Laboratory isolations are not always satisfactory; this can lead to considerable difficulty in making any type of a reliable recommendation for control. For the most part, recommendations are based on positive identification of the problem. Mechanical injury to the roots can cause symptoms easily confused with disease caused by fungi. In newly built areas, the damage most often observed is from root injury.

Steps to Reduce Live Oak Decline Losses:

1. Identify the problem.
2. Reduce the stress conditions that weaken trees.
3. Optimize fertilizer and water applications to tree.
4. Remove dead limbs on tree.



5. Do not import wood from Oak Decline infected areas as it could be a source of the disease spread into a previously disease free area.
6. Use trees not known to be a host of Oak Decline.

Cotton Wood	Pine	Baldcypress
Arizona Cypress	Willow	Walnut
Hickory	Magnolia	Cedar
Pear (Bradford)	Osage-orange	Sweetgum
Mimosa	Crab Apples	Mesquite
Hercules Club	Redbud	Honey locust
Dogwood	Chinaberry	Boxelder
Palms	Mountain Laurel	Catalpa
Chinese Tallow	Oriental Oaks	Quercus ilex
Chinese Holly	Quercus acutisimon	

This is a list of trees not currently known to be hosts for Oak Decline. In selecting trees, you should contact the County Extension Agent in your county for those trees that do well.

Wetwood (bacterium - *Erwinia nimipressuralis*): Affected trees exhibit a sapflow from crotches. The bark below the crotch has a watersoaked appearance. The sap flow is the result of bacterial by-products producing abnormally high pressures within the vascular system. For more information on wetwood and its control, refer to the section on elms. Ball Moss: (See section on "Plants That Grow on Other Plants") Lichens: (See section on "Plants That Grow on Other Plants") Tar Spot: (fungus - *Morenoella quercina*): Black spots up to 1/4 inch in diameter occur on shaded live oak branches. Prune low hanging branches to improve air circulation. Raking and destroying fallen leaves may reduce the problem.