



OAK WILT

ESSENTIALS

What is oak wilt?

...a highly destructive fungal disease, usually fatal to susceptible species of trees.

Which species are susceptible to oak wilt?

---"Red oaks" (Spanish oak, blackjack) are particularly susceptible; once infected, they almost invariably die. In addition, diseased red oaks play an essential role in the external spread of oak wilt.

---"Live oaks" are slightly more resistant: some 15% survive, to some degree, but ***because of their growth pattern in large groups and their wide-spreading, interconnected roots, live oaks are particularly vulnerable to oak wilt.***

---"White oaks" (including chinkapin, post, bur, and Lacey oak) are much less susceptible, although not immune.

What happens to a susceptible tree infected with oak wilt?

The fungus rapidly disables the tree's vascular system, preventing essential absorption of moisture and nutrients. Infected red oaks typically die within weeks of developing symptoms; live oaks may survive for some months.

How is oak wilt spread?

...externally, through spores carried by beetles; then

...internally, along root connections with healthy trees.

The initial source of infection is spores on fungal mats that often form underneath the bark of red oaks recently killed by oak wilt. These sweet-smelling spore mats attract insects including the sap-feeding beetles believed to be the primary vector for disease transmission. These beetles also feed on the sap of fresh tree wounds. If a beetle contaminated with oak wilt fungal spores feeds at a fresh cut on a susceptible tree, the fungus can easily invade that tree through the wound.

Then, once one tree is infected, the fungus may also spread to adjacent healthy trees through root connections to the diseased tree, a typical pattern of oak wilt in live oaks due to their wide-spreading and interconnected roots. Vast stands of live oaks can thus be infected as the result of a single tree originally exposed to the disease.

What are the symptoms of oak wilt in red oaks?

Typically, the tree's foliage simply wilts, changing overall color very rapidly. The tree may die within weeks but often retains its dead leaves for some months.

Then, several months later, pressure pads may develop beneath the bark of the dead tree. These mats are covered with ***fresh spores of the oak wilt fungus, the initial source of new disease***

What are the symptoms in live oaks?

---often a gradual defoliation with progressive loss of canopy over a period of months. A group of dead and dying trees in varying stages of defoliation is a strong indication that it is the oak wilt fungus affecting tree after tree in a widening infection center.

While the leaves of infected live oaks show a number of different patterns, one particularly distinctive leaf pattern is considered diagnostic: "veinal necrosis" describes the characteristic browning or yellowing along the central veins of an otherwise green leaf.

In contrast to red oaks, ***live oaks are not known to form fungal mats.*** When a live oak is infected by external exposure to oak wilt spores, the fungus can only spread internally through underground root connections to nearby healthy trees. In a sense, these stricken live oaks represent a final, dead-end phase of the disease, since, ***except through root connections, they are not "contagious," in stark to spore-producing diseased red oaks.***

What can be done to stop an oak wilt outbreak?

The first step is to confirm diagnosis, for management techniques are based on specific characteristics of the oak wilt disease cycle. If you suspect oak wilt, don't delay. For advice on how to proceed, contact the Texas A&M Forest Service Project Forester for our region (830-792-8885), or the Bandera County A&M AgriLife Extension Service in Bandera at 830-796-7755. There is no charge for a site visit and consultation.

How can a live oak infection center be managed?

A tree already showing symptoms of oak wilt is essentially dead, but aggressive action can effectively limit future losses, especially when the disease is caught early. Effective techniques for disease management in live oaks include disrupting root connections with healthy trees by trenching to encircle the infection center, uprooting diseased trees within that center, and protecting still-healthy trees near infected trees with a systemic treatment of fungicide.

---**Trenching** Current trenching recommendations are to cut through the soil to a depth of at least 4 ft. and a minimum 100 ft. distance past the last symptomatic tree, using trenching machine, ripper bar, backhoe, or rock saw. The Texas Forest Service may provide cost-sharing assistance to landowners following these guidelines if the active infection center can be completely encircled. ***Wherever possible, uproot all diseased trees, to further disrupt root connections to healthy trees.***

---**Fungicide treatment** Alamo™ and similar Propaconazole-based fungicides. "macro-injected" into a tree's roots can temporarily protect individual healthy live oaks at imminent risk of infection from an advancing infection center. The fungicide is not a cure, however, and it does not stop root transmission of disease. Further, repeated injections may be required as long as the threat of infection remains, since each fungicide treatment is effective for a couple of years at most.

How can new outbreaks of oak wilt be prevented?

---**Avoid pruning oaks between January 15 and July 1** Fungal mat production, insect activity and tree susceptibility all reach a peak during this period. If pruning must be done, the optimal times are during the hottest days of August and the coldest days of January.

---**Always, regardless of season, paint any pruning cut** or other deep injury to an oak tree ***immediately*** with wound dressing. Infection is most likely within the first two days.

---**Exercise extreme caution in using firewood** from unknown sources. Select only well-seasoned firewood (with dry, crumbly bark), store firewood wrapped securely in clear plastic, and purchase only enough to burn by the end of January. ***Wood cut from diseased red oaks is a potential hazard, and has been implicated in the long-distance transmission of oak wilt,*** as fungal spores may form on a diseased red oak even after the tree is felled, cut into firewood, and transported far from the infection site. As a result, new infection may appear in areas formerly free from oak wilt.

---**Destroy or disable any diseased red oak without delay**, as soon as it develops clear symptoms of oak wilt: ***the fungal spores that may form on these diseased trees a few months later will put all healthy oak trees within a half-mile radius at risk*** Ideally, that dying tree should be burned or buried on site. If prompt destruction is not possible, deep-girdle it without delay, cutting through to the white wood as low as possible on the trunk, then leave the tree standing for a year or until the wood has dried past a point that can sustain spore development.