



DROUGHT AND OAK WILT

Oak wilt is one of the most destructive tree diseases in Texas, killing trees at epidemic proportions in some areas. Foliar (leaf) symptoms are a great way to diagnose oak wilt when combined with other observations, such as the pattern of mortality and crown symptoms. Multiple stressors, both biotic and abiotic, can cause similar symptoms to oak wilt. For example, both extreme drought and overwatering can cause veinal necrosis. Moreover, bacterial leaf scorch can cause marginal necrosis on red oaks that resembles that of oak wilt.

EFFECTS OF DROUGHT STRESS

Drought is the absence of precipitation for a period of time sufficient to deplete soil moisture and injure plants. Drought stress develops when water loss exceeds the ability of a plant's roots to absorb water and begins to interfere with normal plant processes.



SYMPTOMS OF DROUGHT STRESS

- **Foliar Symptoms.** Trees' leaves may show curling, rolling, mottling, scorching and chlorosis. As drought intensifies, wilting and dieback of twigs and branches in the tree crowns may occur.
- **Early Leaf Shedding.** Premature leaf drop may be induced by drought stress to conserve energy.
- **Growth Inhibition.** Shoot, trunk and root growth are all negatively affected by drought conditions. Trees can show effects of a severe drought for 2-3 years after the drought has subsided.
- **Pest Problems.** Drought predisposes trees to secondary pests due to low energy reserves and reduced defenses to insect and disease attacks.

Diagnosis of oak wilt in areas with severe drought impacts can be challenging.

Symptoms of oak wilt and severe drought can be easily confused. Contacting your local Texas A&M Forest Service representative or an ISA Certified Arborist is recommended. More information about oak wilt identification, management, and sampling can be found at TEXASOAKWILT.ORG.

OAK WILT



DROUGHT STRESS

Because symptoms of drought can be similar to oak wilt, diagnosing the disease, particularly in live oaks, involves identifying multiple factors: pattern of mortality, diagnosis in individual trees and foliar symptoms.

PATTERN OF MORTALITY

What species are affected? Only oaks or are other species affected as well? Look for the progression of the disease in the landscape, from old dead trees to recently dead, to symptomatic trees. If a large number of trees show the symptoms at the same time, it is probably not oak wilt. Where there is an oak wilt infection, the disease will spread slower through the root system of oaks during severe droughts compared to years with normal conditions, potentially affecting management strategies.

INDIVIDUAL TREES

With oak wilt, look for rapid defoliation and possible death in 3-6 months in live oaks and 4-6 weeks in red oaks. Premature and rapid shedding of leaves can

be induced by drought stress as well, so make sure to consider all diagnostic factors. Does properly watering the tree help slow the rate of leaf drop? If so, it may be drought.

FOLIAR SYMPTOMS

Look for symptoms such as veinal necrosis, interveinal necrosis, tip burn, or marginal necrosis. Severe drought can also cause veinal necrosis, tip burn and marginal necrosis, and can be easily confused with oak wilt.

TAKING SAMPLES

Taking samples can be utilized to confirm the presence of the pathogen if needed; however, because the fungus is heat sensitive, recovering the pathogen from samples in high temperature seasons may be difficult.

WHAT TO DO DURING DROUGHT



- **WATER** slow, steady and thorough, but not too much nor too long, in the absence of rainfall.

- Properly applied and maintained **MULCH**, conserves water.



- **MONITOR** for diseases and secondary pest attacks. Identify and treat if possible.

- **WAIT.** If the plant partially turns brown or appears dead, correct any imbalances, then wait and see if the tree survives the drought before removal. Test multiple twigs on each major branch for green tissue under the bark by scratching a small area of the twig. If the tissue is brown and dry under the bark, that branch is dead.



WHAT TO AVOID DURING DROUGHT

- **FERTILIZER.** Let the plant maintain what is there. Fertilizing triggers new growth in the plant, which requires a lot of additional energy that the plant lacks in drought conditions.
- **PRUNING.** Pruning live branches may disrupt the tree's processes of producing carbohydrates, transporting water, and surviving. Only prune dead or diseased branches if necessary.
- **DAMAGE.** Damaging the plant in any way, including soil compaction from heavy vehicle traffic and damage to the trunk and roots from mowers or other equipment, can directly affect transport of sugars, water and nutrients, that is vital for tree health. In addition, wounds can be potential entry points for pathogens.
- **PLANTING.** Avoid planting new trees, shrubs and grass until more favorable conditions return. When planting, choose native species well-suited for your site and provide water for the first two years.



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