OAK WILT
IDENTIFICATION & MANAGEMENT
Information from the Texas A&M Forest Service
texasoakwilt.org
WHAT IS OAK WILT?

- Caused by the fungus: *Bretziella fagacearum*
- Primary vascular pathogen (disease) of oaks
- Invades the water-conducting vessels of the tree, called xylem
- Tree responds by plugging these tissues, resulting in a lack of water to the leaves
THE IMPACT OF OAK WILT

- Thousands of acres throughout central and west Texas have been adversely affected by oak wilt.
- Oak wilt may reduce urban and suburban property values by 15-20%.
WHERE IS OAK WILT?
OAK WILT IN TEXAS

- Counties with confirmed oak wilt occurrences as of 2019
- Verified by lab sample, aerial detection, and on-site inspections
- First detected in Texas in 1961
WHAT TREES ARE SUSCEPTIBLE?

ALL OAKS!

- **Red Oaks** are extremely susceptible to the pathogen and play a unique role in disease spread.
- **White Oaks** are more tolerant of the disease; however, they are **not immune** to infection!
- **Live Oaks** are intermediate in susceptibility; however, they are seriously affected due to their vast, interconnected root systems that allow for disease spread among trees.

OAKS ARE AFFECTED DIFFERENTLY

Less susceptible post oak

Susceptible live oak

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HOW IS OAK WILT SPREAD?

Above ground (long distance) via sap-feeding beetles:

- Fungal spores are picked up from certain infected red oaks and carried to fresh wounds on other oak species. New infection centers are started in this manner.
HOW IS OAK WILT SPREAD?

- Underground (localized) via interconnected root systems:
- The fungus travels from tree to tree in the interconnected root system.
- This occurs primarily in live oaks and is responsible for the majority of spread and tree deaths in central Texas.
- Rate of spread averages 50 feet to 75 feet per year through the root system.
OAK WILT IN LIVE OAKS

- Rapid defoliation
- Death in 3 to 6 months
- Spread to adjacent trees
- No fungal mat formation
- About 5-15% survival rate with no treatment
- Leaf symptoms: veinal necrosis, vein banding, tip burn, and marginal necrosis
OAK WILT IN LIVE OAKS

Tip burn / marginal necrosis

Veinal necrosis
OAK WILT IN RED OAKS

- Maintain leaves, then defoliate
- Flagging: branches turn brown or red
- Death in 4 to 6 weeks
- Possible spread to adjacent trees
- Possible formation of fungal mats
- 100% mortality (no survivors)
- Bronzing leaves
OAK WILT IN RED OAKS

• Fungal mats contain the oak wilt spores
• Form only on red oaks
• Form under bark
• Can have multiple mats per tree
• Produces a sweet odor like rotting fruit which attracts the sap beetle
• Trees infected in fall/winter may produce mats
• Mat production is accelerated by cool, moist weather (springtime)
LAB SAMPLES

• Samples can be taken and sent to a lab to confirm the presence of oak wilt

• For more information, contact the Texas Plant Disease Diagnostic Laboratory at (979) 845-8032 or PlantClinic@ag.tamu.edu or visit them online at plantclinic.tamu.edu
There is no cure for oak wilt, but managing the disease can significantly reduce tree losses.
OAK WILT MANAGEMENT

Early detection and prompt action are essential for successful management of oak wilt.

Four key management approaches:
• Prevention
• Diversity Plantings
• Trenching
• Fungicide Injections
PREVENTION: PRUNING

• Peak beetle activity and fungal mat production occur in the spring; therefore, avoid wounding and pruning oaks from February through June.

• Regardless of season, immediately paint all pruning cuts and other wounds to oaks.

• The paint discourages sap beetles from visiting fresh wounds by blocking the sweet scent coming from the tree.
PREVENTION: RED OAK FIREWOOD

- With an infected red oak, destroy it by:
  - Burning
  - Chipping
  - Burying
  to prevent fungal mat formation.

- **Never** use infected red oaks as firewood!
PREVENTION: WHITE & LIVE OAK FIREWOOD

• With non-red oak infected firewood:
  • Only use dry, well-seasoned firewood
  • Leave unseasoned firewood on-site for one year before moving
  • Do not store infected wood near or up against healthy trees
DIVERSITY PLANTINGS

Select trees that are:

• Native or adapted to the local environmental conditions
• Tolerant of temperature extremes, amount and pattern of precipitation, and local soil conditions
• Not invasive nor detrimental to the local environment
• Suitable for the space available – right tree, right place
DIVERSITY PLANTINGS

• Avoiding planting monocultures (planting only one species)
• Create diversity in the landscape
• Avoid wounding oaks during planting
• For more planting information and recommended trees in your area, visit texasoakwilt.org
TRENCHING

The goal of installing a trench is to halt the spread of oak wilt moving through interconnected root systems by severing these connections.

Trenches must be:
- Placed a minimum of 100 feet ahead of the disease
- Excavated to at least 4 feet deep (sometimes deeper)
- Sever all root connections to be effective
TRENCHING

- Determine the disease perimeter using visual symptoms
- Locate the trench a minimum of 100 feet from the disease perimeter (measured from the drip line of infected trees, not their trunks)
- Equipment choice should be based on site characteristics and not solely on meeting minimum depth requirements
- Backfill the trench using same soil
- Pushing all oaks down within the barrier may improve effectiveness
FUNGICIDE INJECTION

• Used to protect high-value oaks in advance of an expanding oak wilt center

• Best candidates for injection are healthy, non-symptomatic live oaks up to 75-100 feet from symptomatic trees

• Injection does not stop root transmission of the fungus; it only protects the individual tree injected
FUNGICIDE INJECTION

• Success depends upon the health of the tree, application rate, and injection technique.
• Several products are currently labeled and registered for this treatment.
  • However, macro-injections of Alamo® fungicide in the root flares have been scientifically proven effective and continue to be the industry standard.
FUNGICIDE INJECTION

Root Flare Injection Advantages:

• Bark is thinner below the soil line
• Increases the number of potential injection sites
• Spreads out the wounding, especially if future injections are needed
• Research has demonstrated superior distribution of the fungicide throughout the tree
FUNGICIDE INJECTION

For more information and instructional videos, please visit texasoakwilt.org.
HOW YOU CAN HELP

- Do **not** prune oaks February through June
- Paint all wounds to oaks immediately
- Do not bring firewood from unknown sources onto your property, especially if it is unseasoned
- Talk with your neighbors about oak wilt prevention and management
- Contact your community leaders, city officials, or the Texas A&M Forest Service if you suspect oak wilt on your property

Visit [texasoakwilt.org](http://texasoakwilt.org) for more resources and information