



OAK WILT

IDENTIFICATION & MANAGEMENT

Information from 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

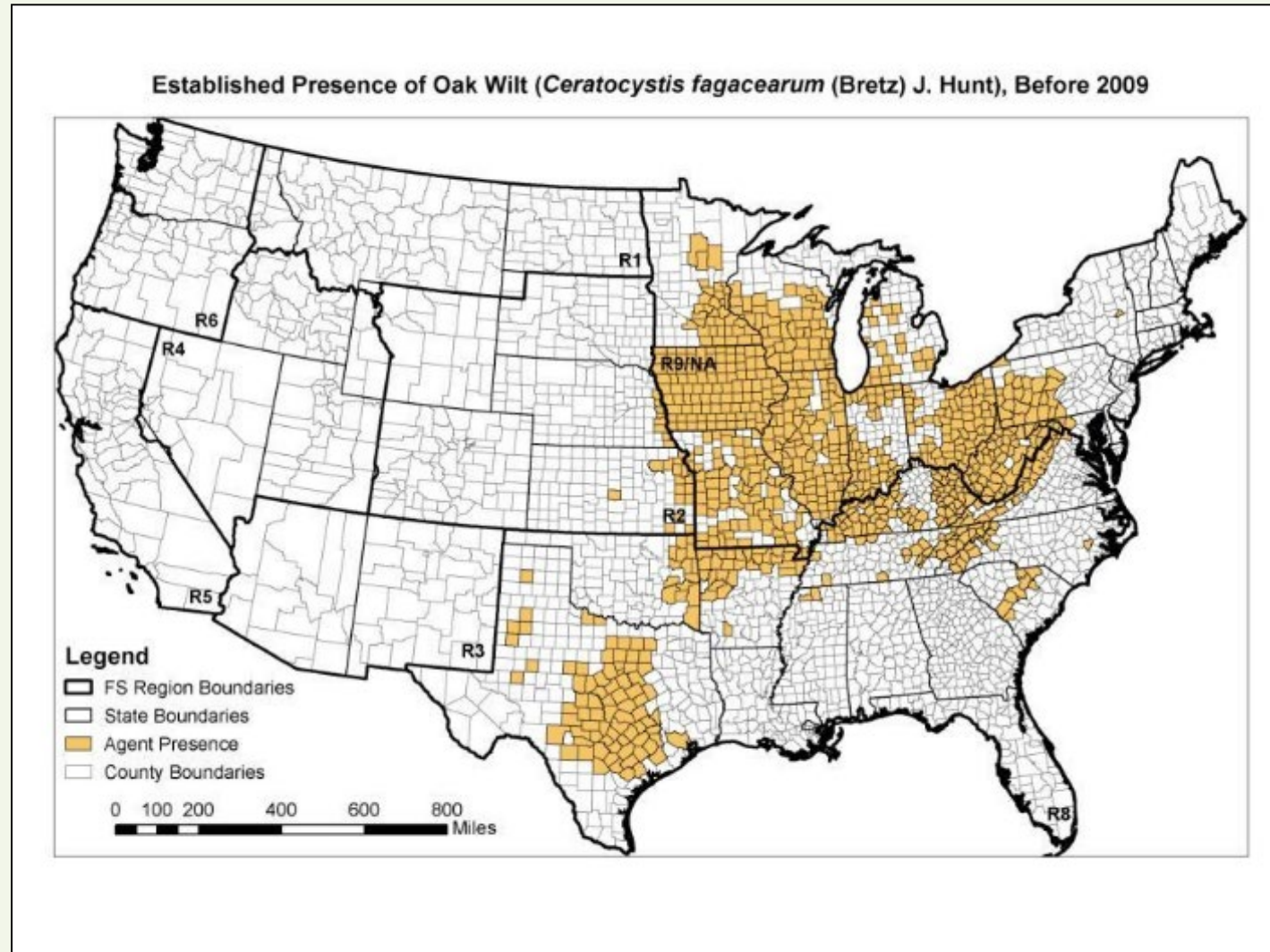


THE IMPACT OF OAK WILT

- 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%

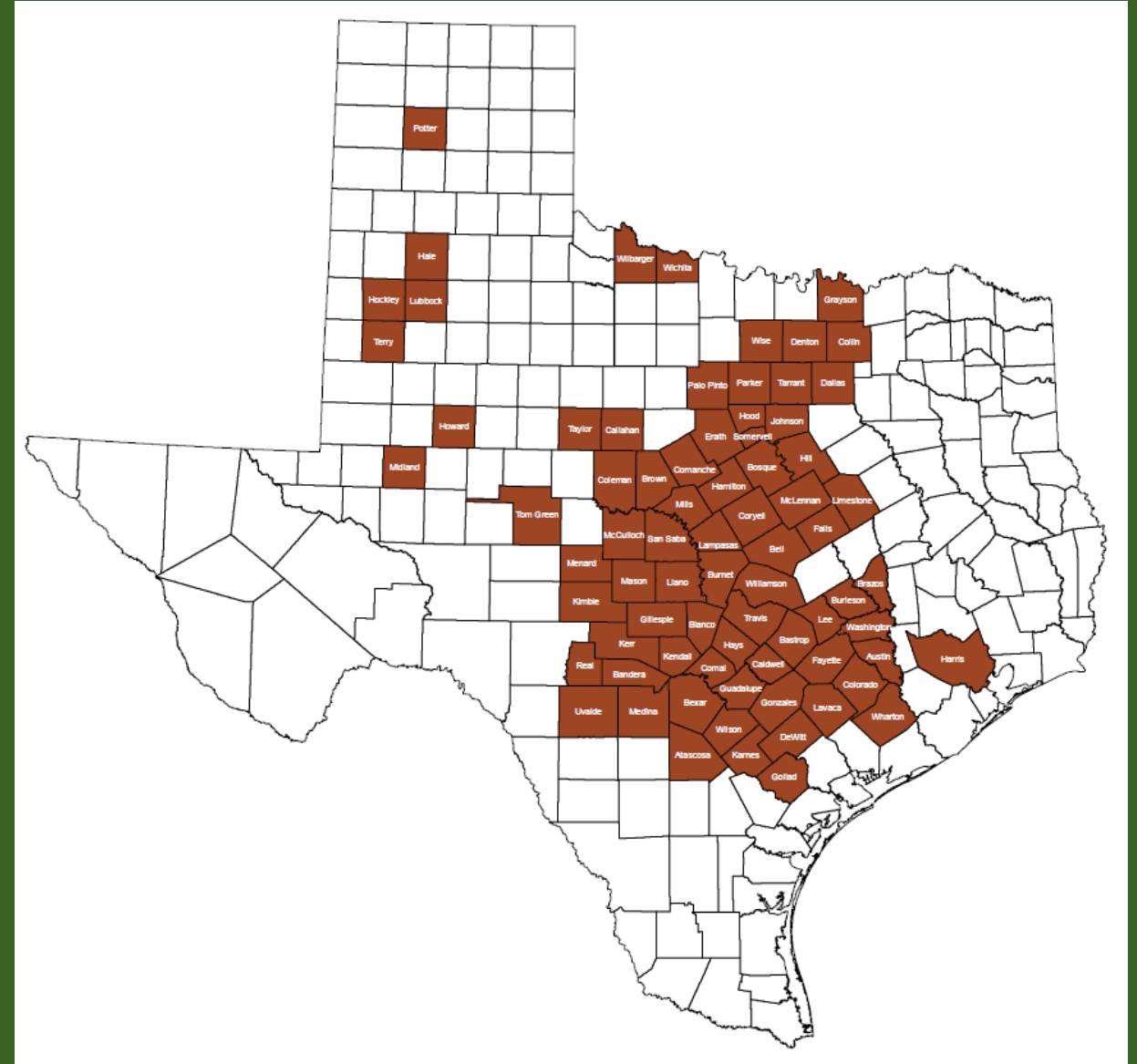


WHERE IS OAK WILT?



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 TO INFECTION?

Red oak



White oak



Live oak



ALL OAKS CAN BE INFECTED BY THE FUNGUS

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

OAKS ARE AFFECTED DIFFERENTLY



HOW IS OAK WILT SPREAD?

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

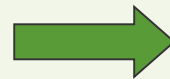
- Fungal spores are picked up from certain infected red oaks and carried to fresh wounds on other oak species. New infection centers are started in this manner.



Sap Beetle



Fungal Mat on
Red Oak



Fresh Wound on Different
Oak

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.



Live Oak Mott

Root Grafts



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



Veinal necrosis

OAK WILT IN LIVE OAKS



Tip burn / marginal necrosis



Veinal necrosis



Vein banding

OAK WILT IN RED OAKS

- Typically maintains leaves, then defoliates
- 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 infected red oaks
- Mats 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
- Learn how to take a sample with this [video](#)
- For more information, contact the Texas Plant Disease Diagnostic Lab:
 - Phone: (979) 845-8032
 - Email: plantclinic@ag.tamu.edu
 - Website: plantclinic.tamu.edu



OAK WILT MANAGEMENT

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.

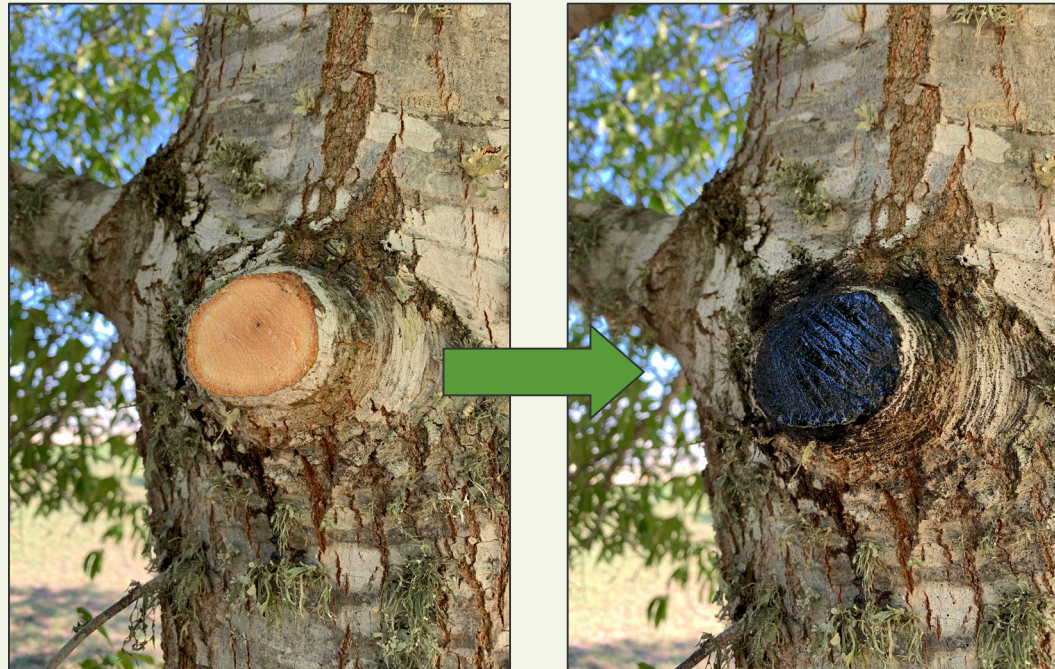
Four key management approaches:

1. Prevention
2. Plant Other Trees
3. Trenching
4. Fungicide Injections



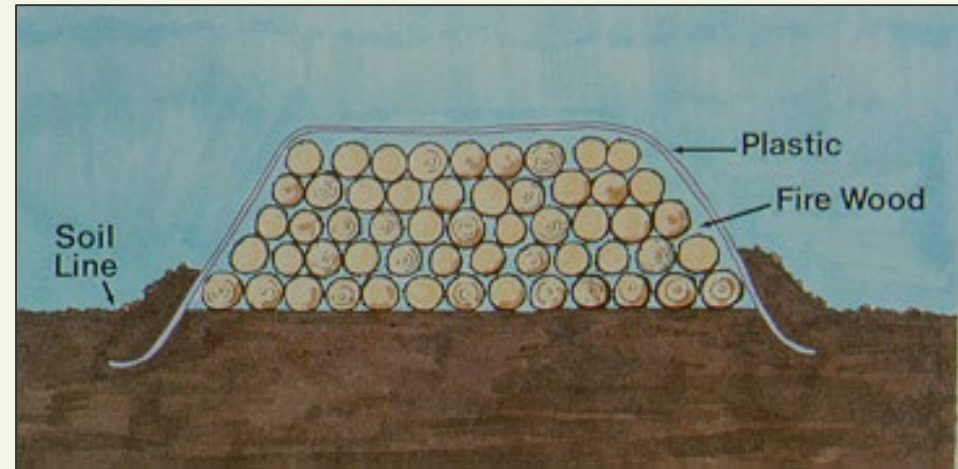
1. PREVENTION: Pruning

- Peak beetle activity and fungal mat production occur in the spring; therefore, avoid wounding and pruning oaks from **February through June** unless there is an immediate safety concern.
- 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.



1. PREVENTION: Red Oak Firewood

- With an infected red oak, destroy it by:
 - Burning
 - Chipping
 - Buryingto prevent fungal mat formation.
- **Never** use infected red oaks as firewood!



1. 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



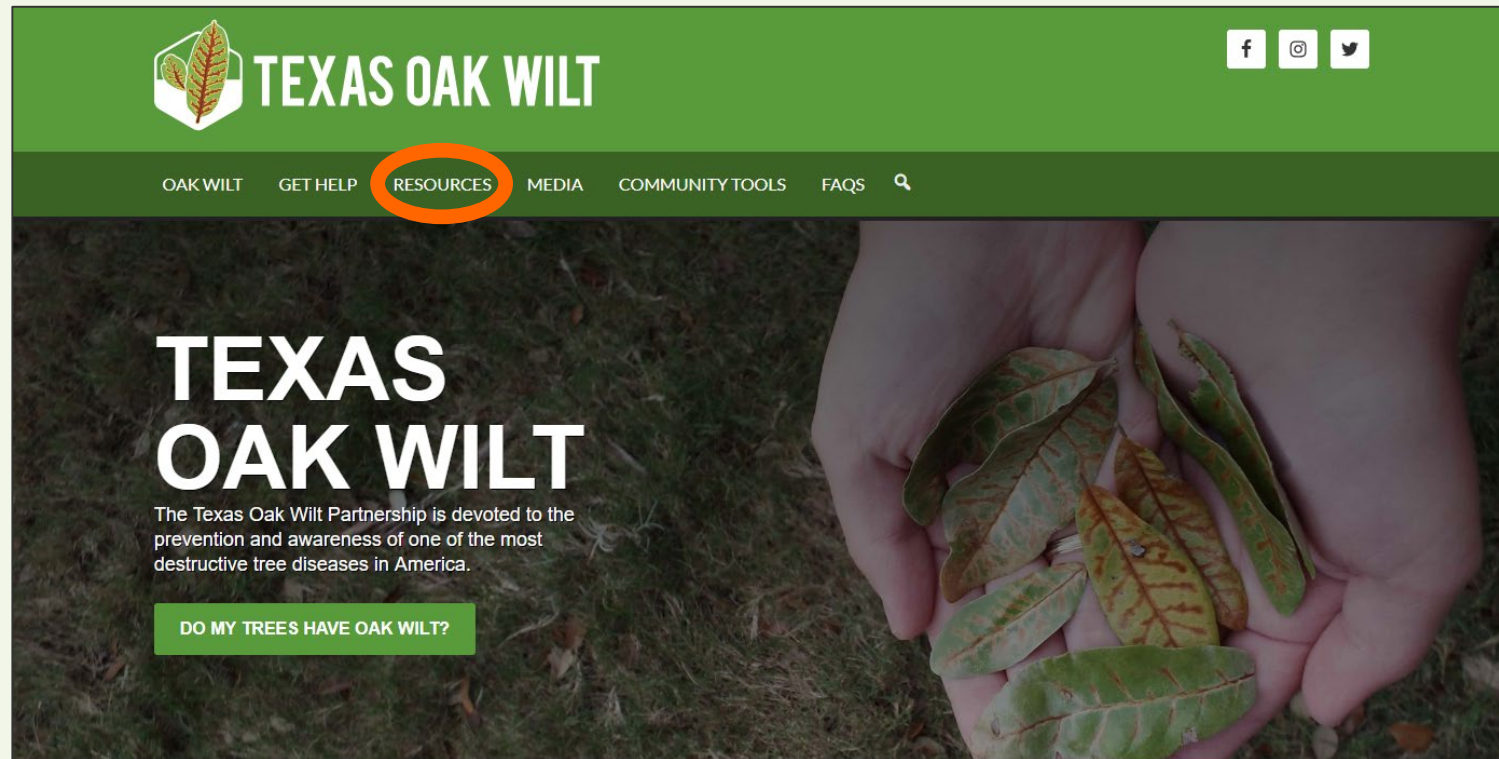
2. PLANT OTHER TREES

- Avoiding planting monocultures (planting only one species)
- Create diversity in the landscape
- Avoid wounding oaks during planting
- Plant native and adapted trees for the area. Avoid planting invasive species.
- Pick a tree that is suitable in size and shape for the available space – right tree, right place!



2. PLANT OTHER TREES

For suggested trees and information on proper planting, please visit texasoakwilt.org.

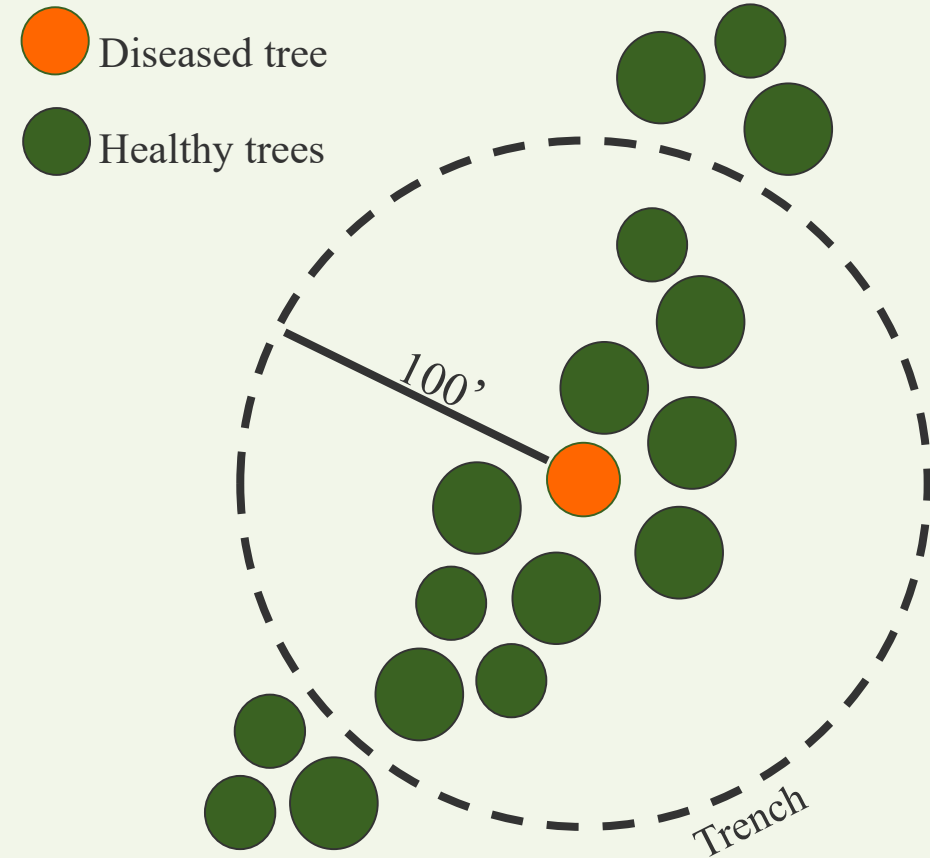


3. TRENCHING

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



3. 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



4. FUNGICIDE INJECTION

- May be 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 100-150 feet from symptomatic trees
- Injection does **not** stop root transmission of the fungus
- Injections only protect the individual tree injected when successful



4. FUNGICIDE INJECTION

- Success depends upon the severity of infection, the 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.



4. FUNGICIDE INJECTION

Root Flare Injection Advantages:

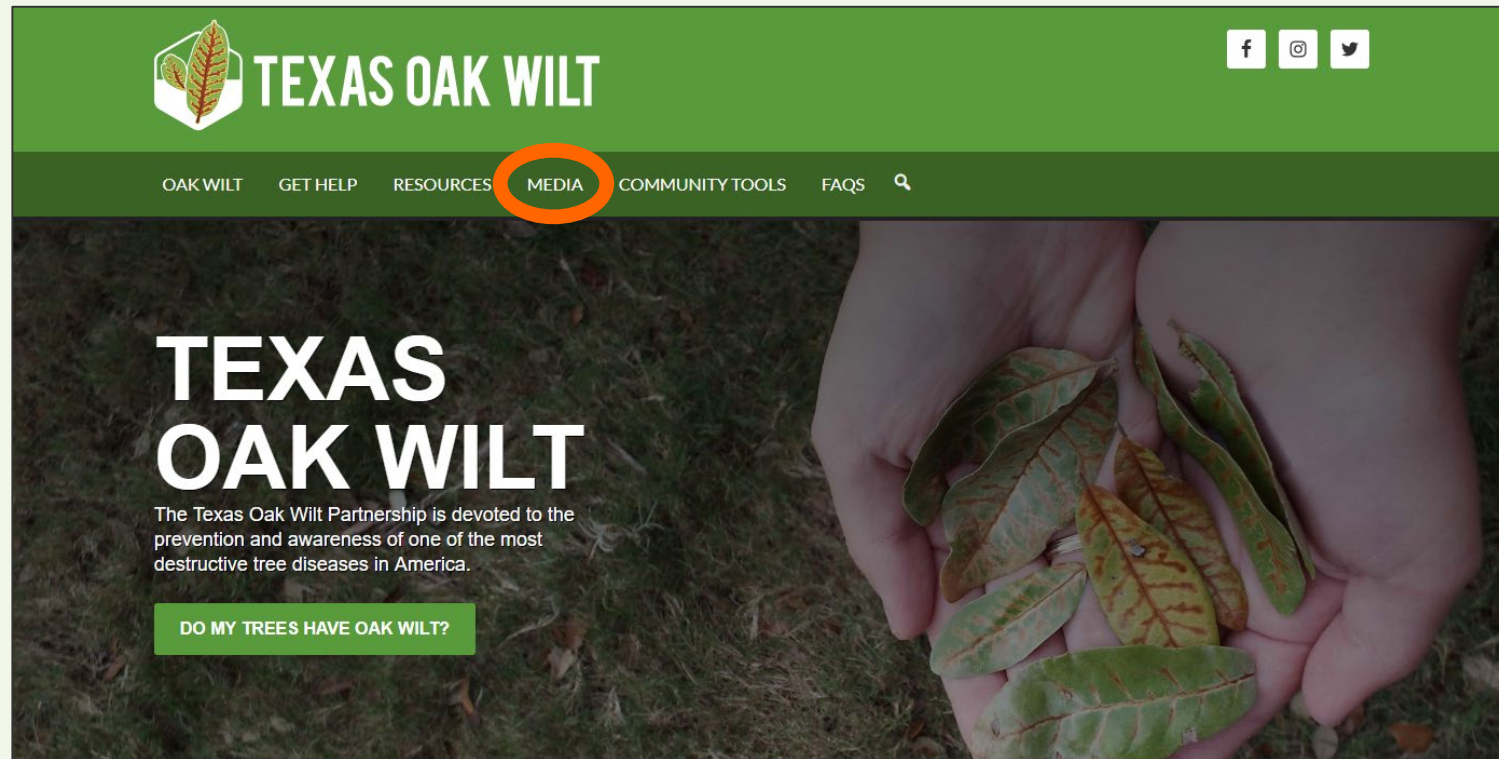
- Bark is thinner below the soil line
- Increases the number of potential injection sites
- Spreads out the wounding, especially if future injections are needed
- Research has demonstrated superior distribution of the fungicide throughout the tree



4. FUNGICIDE INJECTION

Learn about the injection process and how to inject your trees by watching this [video](#).

For more information and videos about fungicide injections, please visit texasoakwilt.org.



HOW YOU CAN HELP

- Do **not** prune oaks February through June, unless there is an immediate safety concern
- 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 for more resources and information.



THANK YOU

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Texasoakwilt.org

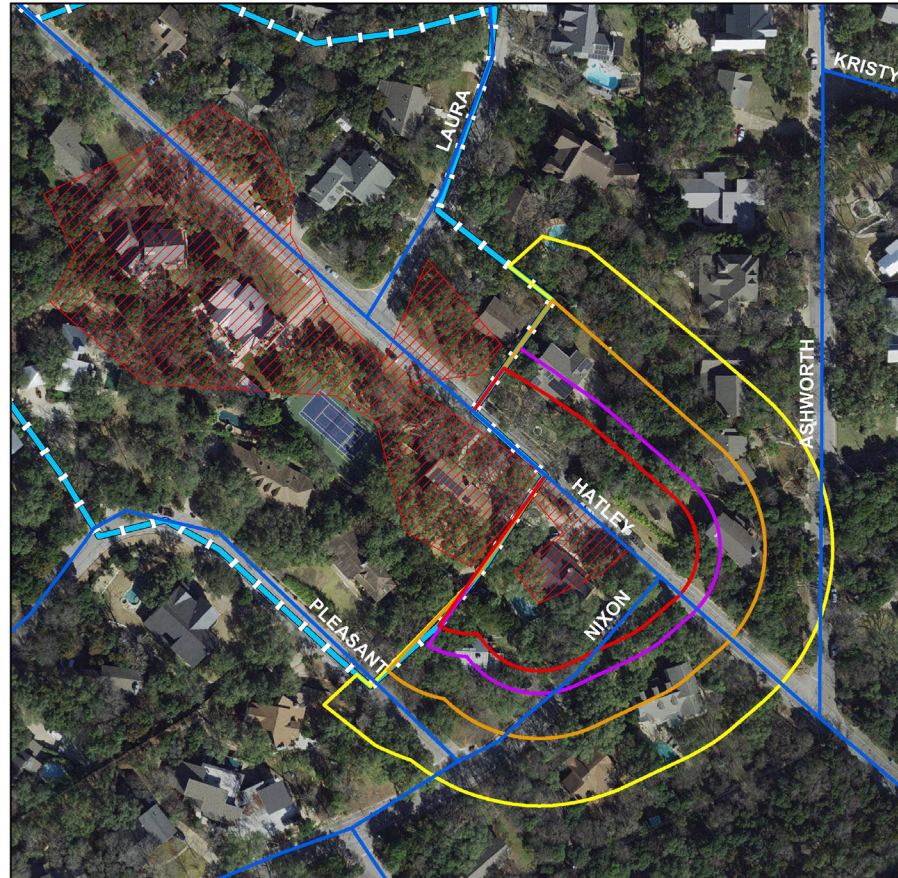
Central Texas Woodlands- Texas A&M Forest Service



ctxwoodlands 





Oak Wilt Potential Spread Map



LEGEND

-  75 Feet- 1 Year Max Spread
-  150 Feet- 2 Year Max Spread
-  225 Feet- 3 Year Max Spread
-  100 Feet- Minimum Trench Distance

Diagnosis

-  OW
-  Oak Wilt Trench

Map Scale
200 100 0 200 Feet



Location: Rollingwood
Case:
County: Travis
Quadrangle: Austin West
UTM Northing: 3350348
UTM Easting: 616654
Mortality Numbers: 17641
Map Date: January 4, 2022
Forester: Karl Flocke, TFS Austin