Tree Diseases

In North Texas home owners cherish their trees for their beauty and for their shade protection from summer’s sun. Unfortunately, trees can experience problems that affect their attractive appearance and may even lead to death. Trees are vulnerable to environmental stress, infectious diseases, insects and human-caused damage. Correctly diagnosing the cause of a tree’s problem is the most important step in successful treatment.

To determine if your tree has a disease, examine the whole tree not just the area showing symptoms suggests Iowa State University Extension Service (Diagnosing Tree Problems).

- Check leaves for holes or ragged edges, discoloration or deformities
- Look at the tree’s trunk for damage to the bark such as cracks or splits
- Consider previous activity that may have impacted the tree’s root system such as planting shrubs nearby or construction of a sidewalk or adding hardscape like a deck or patio

The following diseases occur in Denton County. This is not all-inclusive, but Master Gardeners have seen all of these (with the exception of oak wilt). If you need help diagnosing a tree problem, send a picture of the entire tree and close-ups of the problem area(s) to the help desk at master.gardener@dentoncounty.com. If it is a new tree, include a picture of the bottom of the trunk where it meets the soil. Include such information as:

- Age of the tree
- When the problem was noticed
- Sudden or gradual onset
- Presence of insects
- Anything else you believe is relevant

**Anthracnose**

This fungus is usually on lower branches, following a cool, wet, spring. Lesions on leaves are the only symptom. It is quite common on ash trees in this area. Repeated annual defoliation caused by anthracnose weakens trees and makes them more susceptible to insects and other diseases.

Source: University of Illinois IPM, “Anthracnose Disease of Shade Trees”
Retrieved from: http://ipm.illinois.edu/diseases/series600/rpd621/

*Figure 1: Anthracnose. Photo by Bruce Watt, University of Maine, Bugwood.org*
**Mushroom Root Rot (or Oak Root Rot) Armillaria spp.**

These parasitic fungi cause death, wood decay, and growth reduction. They infect and kill trees that have been weakened by competition, other pests, or environmental factors. The fungi also infect healthy trees, either killing them or predisposing them to attacks by other fungi or insects. There may be mushrooms at the base of the tree. When the bark is peeled back, a white fungus (pictured) is present and is a distinguishing feature of the disease. Lawn grass growing close to the tree may encourage the fungus.


**Bacterial Leaf Scorch Xylella fastidiosa**

“Bacterial Leaf Scorch is an infectious disease transmitted by insects that feed on xylem (water-conducting tissue). The bacteria colonize and clog the xylem. Water can no longer be transported, and the tree looks as if it needs water. There is a band of brown around the outer edges of the leaves, with a halo separating the dead tissue from the green tissue. Symptoms recur each year, eventually killing the tree. It is easily confused with physiological leaf scorch. There is no treatment available.” The Texas Plant Disease Diagnostic Lab can verify the diagnosis (see link at bottom of article).


**White Rot Botryosphaeria spp.**

Botryosphaeria is an opportunistic fungus. Symptoms are commonly wilting or dieback of a branch or branches on a tree or shrub that otherwise appears healthy. “Cankered twigs and branches may not be noticeable until wilt and dieback occur. Removing the bark reveals discoloration of the wood. Cankers may appear sunken or be contained by callused wound wood. In other cases, bark may peel and drop from cankered areas.”

Source: Bush, Elizabeth A., College of Agriculture and Life Sciences, Virginia Tech 
Butt Rot Ganoderma
Butt rot is caused by several common fungi that frequently attack oaks. By the time the reproductive bodies (basidiocarps) are visible at the base of the tree, decay is well advanced. If you see something like the picture below, take action by calling a certified arborist or a tree removal company to protect yourself and your property.

Retrieved from https://www.ces.ncsu.edu/depts/pp/notes/Ornamental/odin30/od30.htm (This site has excellent pictures of different types of basidiocarps.)

Cotton Root Rot Phymatotrichum omnivorum
Symptoms are most likely to occur in the summer. This fungus attacks many different types of plants. “The first symptoms are slight yellowing or bronzing of the leaves. The upper-most leaves wilt within 24 to 48 hours after bronzing, followed by wilting of the lower leaves within 72 hours. Permanent wilt occurs by the third day,
followed by death. The leaves remain firmly attached to the plant.” Trees and shrubs may die more slowly. Affected plants can be pulled from the soil with little effort. The fungus can survive in the soil for many years.


**Dutch elm disease Ophiostoma ulmi**

Dutch elm disease is a fungal disease spread by the elm bark beetle. Although not common, it has been found in Denton County. “Symptoms may appear on one or more branches on any part of the tree in contrast to phloem necrosis where tops of infected trees show first abnormalities. Leaves on individual branches wilt and turn yellow; in some instances, leaves wilt very rapidly, dry out, then fall while still green. Twig terminals of affected branches sometimes become curved to resemble a shepherd’s crook. As a further diagnostic aid, twigs when cut across, show discoloration or browning of water-conducting tissues in the sapwood. Tree defoliation may occur rapidly or take place over an entire season. Likewise, infected trees may die in a single season or live for several years.” Look for insect galleries under the bark as pictured below.

Source: Texas Plant Disease Handbook, “Elm”
Retrieved from https://plantdiseasehandbook.tamu.edu/landscaping/trees/elm/

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**Figure 7**: Dutch elm spread by the elm bark beetle.
*Photo: Whitney Cranshaw, Colorado State University, Bugwood.org*

**Figure 8**: Dutch elm disease. Photo by Mary Morrow, DCMG

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**Entomosporium Leaf Spot Entomosporium maculatum**

This fungus is a severe problem on woody ornamentals in the family Rosaceae, particularly red tip photinias and Indian hawthorne. It is quite common in Denton County. Early symptoms consist of small, circular, red spots on both the upper and lower surfaces of new leaves. Mature leaves develop dark brown or gray spots surrounded by reddish purple rings. Eventually, the leaves will fall off. Repeated leaf drops over several years often results in plant death.

Source and further information: Ong, Kevin, (March 2003) “Entomosporium Leaf Spot of Photinia and Indian Hawthorne,” Agrilife Extension publication No. 175
Fire Blight *Erwinia amylovora*

Fire blight bacteria overwinter in cankers of host trees. Pear trees and other pome fruit are very susceptible. In spring when the trees resume growth, bacteria multiply in diseased tissues and ooze from branch or twig surfaces in a light tan liquid. Injuries caused by wind, hail, or insect feeding are easily invaded by fire blight bacteria. Ideal conditions for infection and spread of the pathogen are rainy or humid weather with daytime temperatures in the range of 75° to 85°F, especially when night temperatures stay above 55°F.

Once fire blight bacteria enter the blossoms, they may cause only a localized infection and eventually die, or they may move into the twigs and branches. For treatment options:
http://plantclinic.tamu.edu/factsheets/fireblight/

Source: University of California IPM, revised 7/11, “Fire Blight”
Retrieved from http://ipm.ucanr.edu/PMG/PESTNOTES/pn7414.html

*Figure 9: Entomosporium leaf spot. Photo: Gerald Holmes, California Polytechnic State University, San Luis Obispo, bugwood.org*
**Hypoxylon canker**
Hypoxylon canker is a very common fungus that causes cankers and death of oaks and other hardwood trees. It most frequently attacks trees that are stressed or otherwise weakened by insects or environmental factors. Drought-stressed trees are particularly susceptible. In the Denton area, it is seen on post oaks, blackjack oaks and pecans. When the tree is nearly dead, the bark sloughs off to expose brown spores. After a few weeks the spores are gone, revealing silver-grayish wood. Later those areas turn black. No treatment is possible. The best prevention is maintaining trees in a healthy condition.

**Oak Leaf Blister Taphrina caerulescens**
This fungus is more common in cool, moist conditions and is usually seen as leaves are forming in spring. Defoliation can occur, but it does not seriously affect the health of the tree.

Source: Texas Plant Disease Diagnostic Lab, “Oak Leaf Blister”

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**Oak Wilt Ceratocystis fagacearum**
Oak wilt progresses very quickly. In spring, red oak leaves simply wilt and turn bronze but remain attached to the tree. The tree will die within 4-6 weeks. Live oaks progress a bit slower. The veinal necrosis seen in the picture below is a hallmark symptom, and the tree will rapidly defoliate.

Although there have reportedly been a few cases of oak wilt in Denton County, it is still very uncommon. However, if you suspect your tree is infected, you can send a sample to the Plant Clinic at A&M (link at end of article) for a positive diagnosis. Be sure to follow their directions to properly package and ship the sample.

Powdery Mildew *Microsphaera alni* and *Phyllactinia guttata*

Symptoms usually appear late in the growing season. It is common on cedar elm in the fall. The fungus usually appears during periods of high relative humidity, crowded conditions that prevent air circulation, or shade. It does not significantly affect the health of the tree and generally does not require management.

Figure 14: Powdery mildew. Photo: Rosser1954 Roger Griffith - Own work, Public Domain, https://commons.wikimedia.org/w/index.php?curid=7502933

Cedar-apple Rust *Gymnosporangium juniperi-virginianae*

Cedar-apple rust is fairly common in Denton County. This fungus spends part of its life cycle on one host (cedar) and part on the other (apple) and requires both hosts to complete its life cycle. There are several similar rusts that occur on different species. In severe cases, these rusts can be managed with fungicides. Mild cases require no treatment.

Figure 15: Cedar-apple rust. Photo: Howard F. Schwartz, Colorado State University, Bugwood.org
**Slime Flux or Bacterial Wetwood**

Slime flux is a bacterial disease. It is typically caused by wounding the tree or by environmental stress. It is foul-smelling and unsightly but is not normally a serious problem if the tree is otherwise healthy. There is no cure or preventative measure.


![Figure 16: Slime flux. Photo: https://commons.wikimedia.org/wiki/File:Baumstumpf_mit_Rotem_Schleimfluss_-_20100521-02.jpg](https://commons.wikimedia.org/wiki/File:Baumstumpf_mit_Rotem_Schleimfluss_-_20100521-02.jpg)

**Tubakia Leaf Spot Actinopelte dryina**

This fungus is prevalent on red oaks. It is most severe in late summer and fall, particularly in wet years. Collect and destroy infected leaves. Broad spectrum fungicides may prevent disease, but chemical treatment is not warranted.

Source: Texas Plant Disease Diagnostic Lab, “Tubakia (Actinopelte) Leaf Spot”

![Figure 17: Tubakia leaf spot. Photo: Paul Bachi, University of Kentucky Research and Education Center, Bugwood.org](http://plantclinic.tamu.edu/factsheets/tubakia-actinopelte-leaf-spot/)
**Twig Blight**
Several different fungi attack several species of juniper, including cedar and arborvitae. They are very similar. Affected twigs should be pruned out and destroyed.

Source: University of Illinois, August 1999, “Phomopsis Twig Blight of Juniper”
Retrieved from http://ipm.illinois.edu/diseases/series600/rpd622/

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**Verticillium Wilt**
The symptoms of this fungus appear suddenly. Often, the older leaves on one or more branches wilt. Leaves yellow, then die and fall. There is often discoloration of the vascular tissue under the bark. The fungus persists in the soil indefinitely. Chronic symptoms include small, yellow foliage, leaf scorch (marginal browning), slow growth, abnormally heavy seed production and dieback of shoots and branches.

Source: Ash, C., University of Minnesota Extension
Additional information:

This University of California site is extremely helpful. Click on a tree and get a list of pests, diseases, and management options: http://ipm.ucanr.edu/PMG/GARDEN/plantmenu.html

This is another great resource for oaks: http://plantdiseasehandbook.tamu.edu/landscaping/trees/oak/

The Texas Plant Disease Diagnostic Lab in College Station can help diagnose disease and fungi. Obtain a submission form here: http://plantclinic.tamu.edu/forms/

For questions about taking samples or proper packaging, send an email to plantclinic@tamu.edu