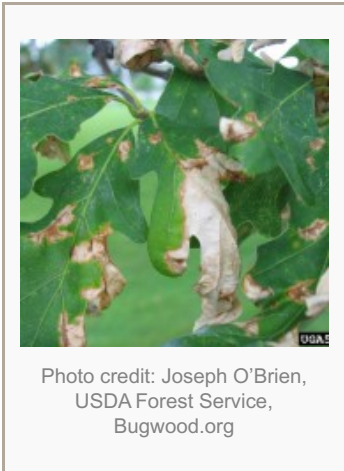


Oak

 plantdiseasehandbook.tamu.edu/landscaping/trees/oak/

Fungal pathogen	<i>Apiognomonia quercina</i> (<i>Gleosporium</i> asexual stage)
Area(s) affected	Leaves and twigs
Signs/Symptoms	<p>Brown, irregular spots form on the leaves. These spots tend to follow the leaf veins and midrib causing only a portion of the leaf to turn brown. After drying, the spots will have a papery texture. Late in the growing season the fungus can be seen as dark pustules on the veins and midribs of infected leaves and dead twigs.</p> <div data-bbox="763 552 1104 1020" data-label="Image">  <p>Photo credit: Joseph O'Brien, USDA Forest Service, Bugwood.org</p> </div>
Hosts	Black, California black, bur, cherrybark, chestnut, English, laurel, live, California live, Oregon, pin, northern pin, post, northern red, southern red, scarlet, Shumard, water, white, swamp white and willow oaks. White oaks are the most susceptible.
For more information	http://extension.psu.edu/pests/plant-diseases/all-fact-sheets/anthracnose-on-shade-trees

Oak Leaf Blisters

Fungal pathogen	<i>Taphrina caerulescens</i>
Area(s) affected	Leaves

Signs/Symptoms	<p>Occurs on species in both the red oak and white oak groups. The fungus causes leaf cells to divide abnormally and enlarge. If you flip the leaf over you will observe light-green cup-like depressions. Yellow, blister-like bulges, corresponding with the lower leaf depressions, will be seen on the upper leaf surface. As the disease progresses, blisters coalesce and will cause the leaf to curl. The fungus can sometimes be seen in the depressions, first colorless then darkens after spores are released.</p> <div data-bbox="764 312 1096 655" data-label="Image"> </div> <p>Photo credit: Andrew J. Boone, South Carolina Forestry Commission, Bugwood.org</p>
For more information	http://extension.psu.edu/pests/plant-diseases/all-fact-sheets/oak-leaf-blister

Tubakia (Actinopelte) Leaf Spot

Fungal pathogen	<i>Actinopelte dryina</i>
Area(s) affected	Leaves

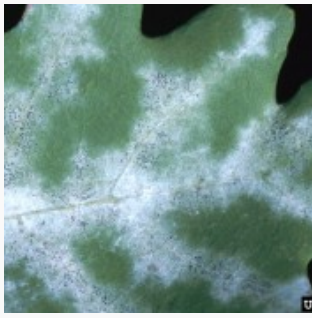
Signs/Symptoms	<p>This disease is most severe on members of the red oak group, but white oaks are also susceptible. Small, round spots form on the leaves. These spots are usually reddish-brown and tend to have a yellow halo around them. If the infection is severe, defoliation may occur.</p> <div data-bbox="764 218 1105 659" data-label="Image"> <p>Photo credit: Jason Sharman, Vitalitree, Bugwood.org</p> </div>
For more information	http://texasoakwilt.org/Documents/Diseases/Actinopelte.pdf

Spot Anthracnose

Fungal pathogen	<i>Elsinoe quercus</i>
Area(s) affected	Leaves
Signs/Symptoms	Tiny sunken blackish-brown spots will form on the upper surface of the leaf. Symptoms are first visible in early June and increase in number until the middle of August. By that time foliage is severely damaged and the tree is a pale yellow. When infection is severe, defoliation occurs.
For more information	

Powdery Mildew

Fungal pathogens	<i>Microsphaera alni</i> and <i>Phyllactinia guttata</i>
Area(s) affected	Leaves



Signs/Symptoms	<p>Powdery mildew occurs on all groups of oaks. Infected leaves have a faint indistinct spot on the upper leaf surface and a white to off-white powdery growth on the lower surface. The fungus will most often be found along the veins and midribs of the leaf. In severe cases, infected leaves will be slightly disfigured.</p> <div data-bbox="763 247 1104 718" data-label="Image">  <p>Photo credit: Petr Kapitola, State Phytosanitary Administration, Bugwood.org</p> </div>
For more information	http://www.clemson.edu/extension/hgic/pests/plant_pests/flowers/hgic2049.html

Southern Cone Rust

Fungal pathogen	<i>Cronartium strobilinum</i>
Area(s) affected	Leaves
Signs/Symptoms	<i>C. strobilinum</i> infects pines in mid-winter. The telial stage is only produced on evergreen oaks, which are closely associated with live oaks. Yellow to orange pustules can be observed on the lower leaf surface of infected oak leaves.
For more information	http://www.fs.fed.us/r8/foresthealth/forestpests/diseases/socnrust.pdf http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Our-Forests/Forest-Health/Forest-Health-Publications/Insects-and-Diseases/Southern-Cone-Rust

Hypoxylon Canker

Fungal pathogens	<i>Hypoxylon atropunctatum</i> and other <i>Hypoxylon</i> spp.
Area(s) affected	Entire tree

Signs/Symptoms	<p>Hypoxylon canker occurs primarily on trees which are or have been in stressed conditions. The fungus invades the tree through injured surfaces on its limbs and trunk. The disease is first evident as a dieback of one or more branches. The foliage of the diseased limbs turns yellow and dries. This dieback continues from branch to branch until the tree dies. The fungus infects the inner bark causing the outer bark to slough off. This exposes large masses of brown, dusty spores which disseminate. Left behind is a grayish surface covered with many black fruiting bodies. The fungus causes black to brown discoloration in the sapwood which can be observed in a cross-section of the wood.</p> <div data-bbox="764 380 1105 873">  <p>Photo credit: USDA Forest Service – Region 8 – Southern Archive, USDA Forest Service, Bugwood.org</p> </div> <div data-bbox="764 905 1105 1371">  <p>Photo credit: Molly Giesbrecht, Texas A&M AgriLife Extension Service, Bugwood.org</p> </div>
For more information	<p>http://txforestservicetamu.edu/main/article.aspx?id=1262</p> <p>http://www.fs.fed.us/r8/foresthealth/publications/r8_pr_29.pdf</p>

Twig Blight

Fungal pathogen	<i>Physalospora glandicola</i> (syn. <i>Botryosphaeria quercuum</i>)
Area(s) affected	Twigs and branches
Signs/Symptoms	<p>The fungus enters the tree through wounded twigs. Brown streaks can be observed in the sapwood of infected twigs and branches. Bark lesions that resemble pimple-like swellings will also develop. Infected twigs and branches die and the attached leaves will turn brown. Affected trees will look like they have been attacked by cicada.</p>

For more information	Sinclair, Wayne A., Howard H. Lyon, and Warren T. Johnson. "Diseases of oak caused by <i>Botryosphaeria quercuum</i> and related fungi." <i>Diseases of Trees and Shrubs</i> . Ithaca, NY: Comstock Pub. Associates, 1987. 178-79. Print.
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Endothia Canker


Fungal pathogen	<i>Endothia parasitica</i> and <i>Endothia gyrosa</i>
Area(s) affected	Branches and trunks
Signs/Symptoms	Post oaks and red oaks are particularly susceptible. It has been associated with pruning cuts or limb breakage. Removal of cankers by pruning and increased tree vigor helps reduce losses.
For more information	http://harris.agrilife.org/files/2011/05/oakdisease.pdf

Canker Rots

Fungal pathogens	<i>Irpex mollis</i> , <i>Polyporus hispidus</i> and <i>Poria spiculosa</i>
Area(s) affected	Branches and trunks
Signs/Symptoms	<p>Infections by these organisms tend to cause circular cankers which have a depressed center rather than a conk or mushroom. The center of the canker is a brown punk. They often form after a limb has been damaged or broken off.</p> <div data-bbox="777 1102 1084 1411" data-label="Image"> </div> <p>Photo credit: USDA Forest Service – Region 8 – Southern Archive, USDA Forest Service, Bugwood.org</p>
For more information	http://www.na.fs.fed.us/spfo/pubs/fidls/canker-rots/fidl-cr.htm

Burls

Fungal pathogen	<i>Phomopsis</i> spp.
Area(s) affected	Branches and trunks

Signs/Symptoms	<p>Burls can occur on both oaks and hickories. The fungus causes large tumor-like swellings on the branches and trunk of the tree. There are some swellings which occur on white oaks that aren't caused by a fungus, but rather by the wood naturally growing over young buds and forming burl-like swellings.</p> <div data-bbox="761 245 1101 690" data-label="Image">  <p>Photo credit: Robert Anderson, Bugwood.org</p> </div>
For more information	http://forest.mtu.edu/research/hwback/hardwood_defects/burls.html

Oak Wilt

Fungal pathogen	<i>Ceratocystis fagacearum</i>
Area(s) affected	Entire tree
Signs/Symptoms	<p>This is an important disease of all oaks. Members of the white oak group die very slowly after infection occurs and can carry the fungus in the vascular system without showing any symptoms. Red oaks die rapidly after infection occurs. Symptoms show up on red oaks in early May as a bronzing of the leaves. On live oak, the leaf symptoms are variable. The most common symptom is brown necrosis of the leaf veins. The remainder of the leaf may remain green or turn slightly yellow. Severe leaf drop occurs while the leaves are still green. Cuts made through the wood may show discoloration in the last annual ring. Symptom development usually begins on one limb or branch and in time spreads rapidly to the remainder of the tree.</p> <p>The fungus may be carried from tree to tree by various insects and through root grafts. Sap feeding beetles are important in the short range spread. Red oaks which wilt in the late summer or early fall develop spore mats under their bark during the next spring. As the mats develop, the bark sloughs off or ruptures exposing the fungus. Insects are attracted to the mats. If the insects move from mats to healthy trees which have open wounds the fungus can then enter the healthy tree and move into the water conducting tissue.</p>



Photo credit: Joseph O'Brien,
USDA Forest Service,
Bugwood.org



Photo credit: Paul A. Mistretta,
USDA Forest Service,
Bugwood.org



Photo credit: Ronald F. Billings,
Texas Forest Service,
Bugwood.org



Photo credit: Ronald F. Billings,
Texas Forest Service,
Bugwood.org

**For more
information**

<http://texasoakwilt.org/oakwilt/oak-wilt-identification/>

Oak Decline

Causal agents	Combination of abiotic stress factors, fungal pathogens, and insects
Area(s) affected	Entire tree
Signs/Symptoms	<p>Trees affected by the fungus first show signs of thinning out and twig dieback in their upper canopy. The dieback will generally increase each year. As dieback reaches the larger limbs, which comprise the main canopy, sucker growth becomes evident on the main scaffold limbs. As the disease continues to progress, only the main scaffold limbs remain alive, however, they will eventually die. This may take from five to ten years on live oaks, but less on other oaks after the first visual symptoms are observed. Live oak, post oak, water oak, Texas red oak, willow oak, sycamore, persimmon, winged elm, hackberry, American elm and western soapberry are reported to be hosts for Oak Decline.</p> <div data-bbox="776 1245 1081 1551" data-label="Image"> </div> <div data-bbox="792 1566 1068 1642" data-label="Text"> <p>Photo credit: Joseph O'Brien, USDA Forest Service, Bugwood.org</p> </div>
For more information	<p>http://www.na.fs.fed.us/spfo/pubs/fidls/oakdecline/oakdecline.htm</p> <p>http://www.uky.edu/Ag/Forestry/extension/pub/pdf/for99.pdf</p>

For additional support and current disease management information, contact your local AgriLife Extension Office: <http://counties.agrilife.org/>

Content editor: Corinne Rhodes, Undergraduate Extension Assistant, Texas Plant Disease Diagnostic Laboratory.
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Extension Service (April 25, 2014)