

# Leaf Blister of Oak

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## Introduction

Many fungi produce leaf spots, blotches and blights on oak leaves. Leaf blister, an infectious disease of many species of oak (*Quercus* sp.) trees, is caused by the fungus *Taphrina caerulescens*. Leaf blister occurs throughout North America but is especially common in the southern states. Red and black oaks are most susceptible to this disease; however, all oak species can develop leaf blister. In Arkansas, willow oak (*Quercus phellos*), water oak (*Quercus nigra*) and southern red oak (*Quercus falcata*) are the most common oaks affected by the disease. A close fungal relative of the leaf blister fungus causes a similar disease on peaches called peach leaf curl. This disease of peaches may have a significant economic impact on fruit production. On oak, the leaf blister fungus is more of a cosmetic problem rather than an economic one. Under some circumstances, if the disease is severe for several consecutive seasons, overall tree health may be compromised. The leaf blister disease often goes undetected until infections have reached a severe level.

## Damage

Most of the fungi that attack oak leaves do cosmetic damage only. The major impact of oak leaf blister is premature defoliation of the shade tree following severe disease, usually caused during favorable spring weather conditions as new leaves are emerging. If disease pressure is severe

enough, leaf deformity may often result in infected leaves becoming unsightly. Leaf blister is often misdiagnosed as an insect problem.

Symptoms usually become evident during early summer in the South. Raised blisters or bulges appear on the upper leaf surface and depressions on the underside. These depressions are often light green to yellow (Figures 1 and 2). As blisters become older, they will often become gray. Interior areas of the depressions appear as fuzzy patches, which are actually fruiting bodies of the fungus.



**Figure 1. Leaf blister symptoms on red oak**



**Figure 2. Leaf blister symptoms on water oak**

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During early summer, the leaf lesions are whitish in color. This white color represents a spore bloom over the “blister” surface. Numerous blisters may merge to cause leaf twisting or other deformities. In the similar disease, peach leaf curl, affected leaves often become severely distorted and pink in color (Figure 3).



Figure 3. Leaf curl of peach (courtesy K. Simon)

## Disease Cycle

The leaf blister fungus overwinters primarily as microscopic spores on the leaf bud scales. The first infections begin as new leaves emerge in the spring. Disease outbreaks are favored by cool, moist conditions during the latter portions of February and March. Infected leaves on the ground from the previous growing season may also serve as an overwintering source. Infections occur immediately at bud break if environmental conditions are favorable for disease development. As leaves mature, they tend to be more resistant to infection.

## Management

Chemical control of oak leaf blister is usually not practical for the homeowner, especially on larger landscape trees. If an oak in the home landscape is consistently attacked, an appropriate fungicide may be considered, but timing is crucial since infections occur at bud break. For fungicides to be effective, they must be applied prior to bud break in the spring. Fungicides are not effective after leaves emerge, since infection has already occurred. The fungus is usually controlled by a dormant application of an appropriately labeled fungicide. Fungicides containing the active ingredient chlorothalonil or mancozeb are labeled for this disease. For effective chemical control, complete spray coverage of the tree is also important. A professional applicator should be considered for spraying larger oaks in the landscape.

Good sanitation practices can also help homeowners reduce this disease. Since the fungus is well adapted to survive on fallen leaves and twigs, raking and disposing of these during the winter and early spring before bud swell can help. In order to promote and maintain tree vigor and reduce the effect of the disease, homeowners should be sure the tree is fertilized correctly and watered well.

Promoting good plant growth is an integral part of disease management. Contact your local county Extension office for information about collecting and submitting a soil sample for analysis. Early and accurate disease diagnosis helps make control measures more effective. The Plant Health Clinic at Fayetteville provides accurate disease diagnosis on various plants. The clinic is considered a valuable component in plant disease management decisions.

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