

Leaf and Needle Diseases of Trees

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Plant Pathology

Leaf diseases are common on many deciduous trees and may result in defoliation and reduced growth. Most leaf diseases are caused by fungi which occur on specific hosts. Dead spots or blotches develop on leaves and occasionally these fungi can invade the new branches and cause minor dieback. Young, newly emerging leaves are more susceptible to infection. These diseases occur most often on the lower portions of the crown where weather conditions, primarily high humidity, are more favorable. Though appearing to be serious, leaf diseases are usually of minor consequence, and chemical control is often not required. However, young trees and newly planted trees can be damaged. Affected trees may decline when the disease is severe and occurs in successive years. By the time the disease is evident, most of the damage has already occurred for that year. Cool, wet weather early in the growing season is favorable for the fungi and will determine the extent of these diseases.

Needle diseases can do more damage than leaf diseases because they often affect a greater portion of the needles and result in dieback of portions of the crown, including the important terminal shoots. Conifers, unlike broad-leaved species, usually are not able to produce new foliage when defoliated. The fungi involved on conifers are host specific and varieties of the same species may vary in their degree of susceptibility. All leaf and needle diseases are not caused by fungi. Unfavorable weather such as drought, severe winds carrying soil particles, chemicals including deicing compounds, and insecticides and herbicides can cause spotting of leaves and defoliation, often resembling fungus-caused spots.



Pine needle rust



Sooty mold



Brown spot needle blight



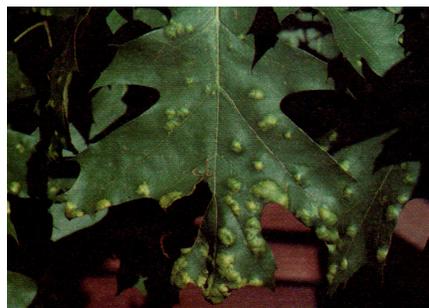
Dothistroma blight



Anthracnose on oak



Black spot on elms



Oak leaf blister



Tar spot of maples

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It is relatively easy to identify leaf and needle diseases using the host and general appearance of the spots. Black spots on elm leaves, caused by “Gnomonia ulmea,” suggest a disease called black spot. Black spots on maple and willow are caused by species of “Rhytisma” and are called tar spots. Needle spots on Scots pines are very likely caused by the brown spot fungus. Needle spots on Austrian pine are likely caused by Dothistroma blight. Orange projections on pine needles are signs of pine needle rust.

Management Strategies

In many instances, such as anthracnose on white oaks, control is seldom required. Once the warm, drier weather prevails, the fungi involved are no longer active. Some diseases may require fungicide applications to reduce losses, especially in nurseries where there are large plantings of a single species and for newly planted trees. Fungicides should be used as a last resort and must be used as reco-

mended on the label for that disease. Overhead watering, as used in nurseries, should be avoided where leaf diseases are a problem. Vigorously growing trees are better able to survive leaf and needle diseases, so fertilization and watering when needed during the summer months are beneficial.

Fungicides

When using fungicides, it is essential to follow these guidelines: Use only registered materials for that particular disease. There must be Environmental Protection Agency (EPA) approval. Use protective clothing, avoid application other than on target plants. It is especially important to keep chemicals out of ponds, lakes, and water supplies. Wash thoroughly after handling fungicides.

Do not store fungicides in unlabeled container. They should be in original containers only and in a place not accessible to children.

Table 1. Common and Trade Names of Fungicides

Chemical Common Name	Chemical Trade Names	Chemical Common Name	Chemical Trade Names
Benomyl	Benlate, Benomyl, Tersan 1991	Mancozeb	Dithane DF, F-45, M-45; Fore, Manzate 200
Bordeaux	Bordeaux, Bordo-Mix	Thiophanate	Cleary 3336, Topsin M, M4.5F; Duosan
Chlorothalonil	Bravo 500, W-75, 720, 90 DG; Daconil 2787, Ortho Multi-purpose Fungicide	Triadimefon	Bayleton

Table 2

Host	Disease Controlled	Chemical (Common Name)*
Ash	Anthracnose	Benomyl, Mancozeb, Thiophanate
Aspen	Leaf and Shoot Blight	None available
Ohio Buckeye	Leaf Blotch	Chlorothalonil, Mancozeb
Crabapple	Apple Scab	Benomyl, Chlorothalonil, Mancozeb, Thiophanate
(ornamental)	Cedar Apple Rust	Chlorothalonil, Mancozeb, Triadimefon
Dogwood	Anthracnose	Benomyl, Bordeaux, Chlorothalonil, Mancozeb, Thiophanate
Elm	Black Spot	Chemical control not warranted
Maple	Anthracnose	Benomyl, Bordeaux, Mancozeb, Thiophanate
	Tar Spot	Chemical control not warranted
Oak (red)	Leaf Blister	Chlorothalonil, Mancozeb
Oak (white)	Anthracnose	Benomyl, Bordeaux, Thiophanate
Walnut	Anthracnose	Benomyl, Mancozeb, Thiophanate
Willow	Tar Spot	Chemical control not warranted
Coniferous Species		
Austrian Pine	Diplodia Tip Blight	Bordeaux
	Dothistroma	Bordeaux
Spruce	Rhizosphaeria	Bordeaux, Chlorothalonil
Juniper	Phomopsis Blight	Bordeaux, Mancozeb, Thiophanate
Red Pine	Pine needle rust	None (eradication of goldenrod and aster)
Scotch Pine	Brown Spot	Bordeaux, Chlorothalonil, Mancozeb
	Lophodermium	Bordeaux, Chlorothalonil, Mancozeb
Various Hosts	Powdery Mildew	Chemical control not warranted
	Sooty Mold	Chemical control not warranted

*See table 1 for listing of chemical trade names.