

TREE DISEASES

There are many different diseases that affect landscape trees and shrubs. Control of tree and shrub diseases cannot be properly accomplished until the disease pest is identified. Identification of tree and shrub diseases is crucial because, although most diseases can be controlled, there are some diseases that cannot be controlled.

Disease control on landscape trees and shrubs can sometimes be accomplished by more than one method, depending on the particular disease that is infecting your landscape plants. Fungicides are often used to control diseases on landscape trees and shrubs and fungicides may be sprayed, injected into the tree trunk, or even injected into the soil surrounding the roots of the tree or shrub. In other cases cultural changes, such as tree pruning, tree fertilization, or altering watering habits, may reduce disease infection on landscape trees and shrubs.

Even if you are going to attempt to control a disease that is infecting your landscape trees or shrubs you should consider consulting a local arborist. The arborist can identify the disease and advise you if there are treatments available to control the disease and the proper time to apply the disease control treatments.

Some Common to Our Area Are:

Leaf spots are round blemishes found on the leaves of many species of plants, mostly caused by parasitic fungi or bacteria.

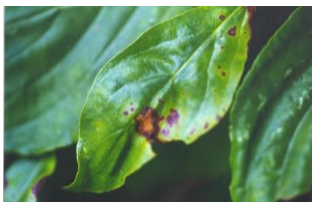


A typical spot is "zonal", meaning it has a definite edge and often has a darker border. When lots of spots are present, they can grow together and become blight or a blotch. Fungal spots are usually round or free-form in shape. [\[1\]](#)

In most cases, leaf spots are considered to be only a cosmetic problem, but they can have economic effects on nurseries or in floriculture

ANTHRACNOSE DISEASES OF LANDSCAPE TREES

Anthracnose diseases can infect a number of common landscape trees. The effect of Anthracnose infection is leaf discoloration and deformation. The disease causes dead areas, or blotches, on tree leaves.



Although there are several recognized species of Anthracnose fungi, the disease is host specific. The species of Anthracnose that attacks your Dogwood tree will not also attack your Sycamore or Maple tree.

Anthracnose diseases may infect leaves, twigs, buds, shoots, and even the fruit of various landscape trees. Repeated Anthracnose infections can weaken a tree and cause it to be more susceptible to attack by insect pests or to decline due to adverse environmental conditions.

Anthracnose spores overwinter on fallen leaves, on infected buds, and in cankers on infected twigs. In the spring these spores are blown or splashed onto newly emerged leaf tissue. If the weather is cool and moist the spores will germinate and infect the tender leaf tissue. Once warmer weather arrives, and the leaves mature, the incidence of Anthracnose infection diminishes.

A number of shade and ornamental trees can be infected by Anthracnose including Ash, Basswood, Birch, Catalpa, Dogwood, Hickory, Horse chestnut, Tulip tree, and Black Walnut. Anthracnose can be particularly bad on American Sycamore and White Oak, as well as other oaks in the white oak group, such as English Oak or Swamp White Oak.

Although trees in the red oak group are less likely to be infected by Anthracnose, it can still be found to infect Black Oak, Bur Oak, Pin Oak, Red Oak, Scarlet Oak, and Swamp Chestnut Oak.

Maple species susceptible to Anthracnose include Boxelder, Japanese Maple, Norway Maple, *Acer glabrum*, Silver Maple, Striped Maple, and *Acer rubrum*.

The London Planetree, which is a cross between the American Sycamore and the Oriental Sycamore, is resistant to Anthracnose infection.

SYMPTOMS OF ANTHRACNOSE DISEASE

Evidence of Anthracnose varies depending on the tree species being infected. Tree leaves may have small dead spots or large irregular dead blotches. The spots, or blotches, on the leaves may be black, brown, or purple and infections are often found along the veins of tree leaves. Infected leaves often become distorted due to the unequal growth occurring from healthy and infected portions of the leaf.

Powdery Mildew

Powdery mildew is a fungal disease that affects a wide range of plants. Powdery mildew diseases are caused by many different species of fungi. Powdery mildew is one of the easier plant diseases to identify, as its symptoms are quite distinctive. Infected plants display white powdery spots on the leaves and stems. The lower leaves are the most affected, but the mildew can appear on any above-ground part of the plant. As the disease progresses, the spots get larger and denser as large numbers of asexual spores are formed, and the mildew may spread up and down the length of the plant.



Powdery mildew grows well in environments with high humidity and moderate temperatures.^[3] In an agricultural setting, the pathogen can be controlled using chemical methods, genetic resistance, and careful farming methods. It is important to be

aware of powdery mildew and its management as the resulting disease can significantly reduce crop yields.^[4] Greenhouses provide an ideal moist, temperate environment for the spread of the disease.



Woolly aphids (Eriosomatinae) and other sucking insects are often vectors of transmission for powdery mildew, and other infectious diseases. Typically woolly aphids in sub temperate climates precede and are an indicator of various infections, including Powdery mildew. Aphids penetrate plant surfaces where they often reside and provide a host of potential inoculants through physical, digestive or fecal secretions.

Aphids are often an indicator of other potential plant problems.

Chemical control is possible with fungicides.

Sphaeropsis blight

Sphaeropsis blight is a disease that affects pines worldwide. This disease was previously known as Diplodia tip blight. Sphaeropsis blight is considered to be a "disfiguring disease" that attacks pine trees that are growing under stressful conditions. Sphaeropsis blight does not typically kill the tree, but will significantly disfigure the tree if not properly cared for or controlled. Most commonly, **Sphaeropsis blight** attacks Austrian (*Pinus nigra*), Scotch (*P. sylvestris*), and red (*P. resinosa*) pine trees. This disease is a problem in the United States, nationwide, from coast to coast, and can be found worldwide.



Sphaeropsis blight is caused by the fungus *Diplodia pinea* (= *Sphaeropsis sapinea*) and is known to infect the younger and healthy needles of newly formed candles. The trees that are most greatly affected by this disease are typically over 30 years of age, and rarely does it occur in the younger trees. The reason for this disease attacking older trees is due to the diseases growth from old, dying or dead seed cones. Younger trees can become infected if located near older, infected trees.

This disease is known to attack the tips and needles of trees that have been weakened by stress from drought, injuries to roots, not enough nutrients in the soil, excessive amounts of shade, as well as injuries inflicted from weather (high winds, hail, etc.) and insects.

This disease causes what is known as "tip blight," which resembles cankers that appear on the stems and branches of pine trees and can cause death, most typically in the lower branches of these trees. The cankers secrete a resin that can cause dead infected needles to stick to other parts of the tree after the dead needles have fallen. This may contribute to further infection of the tree. The most evident sign of a pine tree being infected with Sphaeropsis blight is if the tree(s) have "brown, stunted new shoots with short, brown needles".^[1]



The spores from *Sphaeropsis sapinea* fungus typically first develop on the structures that will eventually develop on the “black fruiting structures that form on needles, fascicle sheaths, scales of second year seed cones, and bark”^[1]

During the wet/rainy season, (depending on the location, could be from early spring until late fall) where the wet weather and wind can allow the spores to travel, as well as allow them to germinate the shoots and needles of the trees.

Penetration of the shoots and needles normally occurs through the stomata opening or through the epidermis of young stems.

Once the needles are infected, the fungus quickly destroys the tissues within the needle which is the cause for the shoot and needles to become stunted and die after only a small amount of growth. The growth of the fungus is quick and deadly to the needles, traveling “through the needle, then to the stem, and finally into adjacent needles”.^[2]

The needles and stems that have matured or have survived uninfected through the previous year’s growth, as well as the pollen cones do not normally become infected. It is usually the new needles that are just beginning to form or have yet to form that are most susceptible to attack. During the winter, the *Sphaeropsis sapinea* fungus survives inside of “fruiting structures that develop on infected second-year cones, blighted needles, shoots, and cankers”.^[1]

It is important to remember that only the growth of the current season is susceptible to being infected by the *Sphaeropsis sapinea*. As the needles mature or survive more than one season, they become resistant of the fungus.

In order to help prevent this disease and its spread, it is important to reduce or prevent the stress that pine needle trees go through.

Pruning of diseased branches and tips will help with the overall look of the tree, but not prevent or stop the spread of the disease. The best time to prune the tree would be in the fall when the tree will be most dry.

The trees need to be provided with sufficient water, make sure the soil around the tree does not become compact, ensure the tree is not shaded and receives enough sunlight, and not affected by too much heat.

Some fungicides are available for prevention of spread of the disease, but consulting with a professional for application is required.

Cedar Apple Rust The Connecticut Agricultural Experiment Station

Cedar-apple rust is a distinctive disease that is indigenous and widespread throughout the Northeast in areas where apples and crabapples grow in close proximity to members of the juniper family.

Cedar-apple rust, caused by the fungus *Gymnosporangium juniperi-virginianae*, is a heteroecious rust that requires two different hosts to complete its two-year life cycle. The primary hosts are species of *Malus*-- apple (*M. domestica*) and crabapple (*M. sylvestris* and other *Malus* species). The alternate hosts are members of the genus *Juniperus*, which includes the native Eastern red cedar (*J. virginiana*) as well as many ornamental junipers. The fungus must spend part of its life cycle on both hosts. The cedar-apple rust fungus is a *Gymnosporangium* rust and has a similar life cycle and is closely related to several other *Gymnosporangium* rusts, including cedar-hawthorn rust and cedar-quince rust.

The symptoms of cedar-apple rust disease on Eastern red cedar and other junipers are inconspicuous during the winter and appear as brown, kidney-shaped galls that vary in size from ¼-2 inches in diameter. As the temperatures begin to rise in the spring, the fungus begins to grow in the galls. After periods of cool, rainy weather, the spectacular and distinctive bright orange, gelatinous spore horns develop and protrude from the surface of these galls. They can be up to four inches long. Spores called teliospores are produced in these gelatinous spore horns or tendrils. As the teliospores germinate, they produce another type of tiny spore, called a basidiospore. These spores can only infect apple and crabapple. Basidiospores are released and carried by wind and driving rain to newly emerging leaves of the alternate hosts, apple and crabapple. As many as 7.5 million basidiospores may be produced in a single gall. These spores have been shown to be carried as far as six miles. Once the spores land on the emerging apple or crabapple leaves, they germinate and infect the leaves when they are wet. Symptoms of infection on the apple and crabapple hosts are also quite colorful. Lesions first appear in early June as greenish-yellow spots that increase in size. They develop into characteristically brightly colored spots--the color can vary from yellowish-orange to red, depending upon the apple or crabapple cultivar. Symptoms are visible on both the upper and lower leaf surfaces.

Symptoms rarely develop on fruit and twigs. By mid-summer, minute "spore cups" called aecia develop at the edge of the lesions on the lower leaf surface threatening disease to either type of host so control measures are usually not necessary in most cases. However, if significant defoliation and/or fruit loss is experienced on apple or crabapple hosts, control measures may be necessary. This disease can be effectively managed through the combined use of culture, sanitation, resistance, and fungicide sprays. Cultural methods involve removal of either host within ½-1 mile from the other, although in most cases this is not feasible. Sanitation involves pruning and removing galls from the red cedar and juniper hosts during the dormant season. Once again, this is practical in limited situations where only a few trees are involved and only a few galls are present.

Selection and planting of resistant cultivars or varieties is the most effective means of control since this effectively reduces or eliminates the occurrence of the disease. Examples of resistant apple cultivars include Delicious, Empire, Jonamac, McIntosh, and Paulared. Resistant crabapples include Ellwangerina, Henry Kohankie, Ormiston Roy, and Red Baron. Resistant junipers are: *Juniperus chinensis* var. *sargentii*, *J. communis* cv. *Aureospica*, and *J. virginiana* cv. *Tripartita*.

The final strategy for disease control involves the proper selection, timing, and application of fungicide sprays. Thorough coverage of all parts of the tree is necessary.