

Plant Clinic Fact Sheet: Common Conifer Tree Diseases in Illinois

Cytospora Canker

Cytospora, also known as *Leucostoma*, is a common fungal canker disease of conifers including spruce, pine (pictured), and Douglas fir. This disease is associated with stressed trees, and damages host health and aesthetics. Cankers usually form on branches, though in severe cases the trunk can also be affected. If a canker girdles a branch, all the tissue beyond the canker dies. The disease usually progresses from the lower branches to the higher ones. Dead or dying limbs are the first symptom of the disease. Resin is exuded from the cankers, and as it drips down the tree it hardens into a white crust. *Cytospora* is managed by increasing tree vitality, pruning out dead branches, and selecting good sites before planting susceptible conifers. Trees with trunk cankers will not recover.



Juniper Rusts

There are three common fungal rust pathogens in the genus *Gymnosporangium* that affect juniper and red cedar hosts. All three diseases require additional hosts in the Rosaceae family (apple, crabapple, pear, hawthorn, and quince trees are the most common primary hosts in Illinois). The pathogens overwinter in brown galls on the conifer host. The larger, more noticeable galls range in size from ¼ to over 2 inches in diameter and have a dimpled surface. In spring, gelatinous horns form on the gall (pictured). The smaller galls appear as rough swellings along the branches. Galls may damage the aesthetics of the host plant, but rarely cause permanent injury. Management involves pruning out the galls, removing unwanted hosts, and fungicide applications.

Phomopsis Tip Blight

This disease is caused by the fungus *Phomopsis juniperovora*. The most common host in Illinois is juniper (pictured), although red cedar, arborvitae, Douglas fir, true fir, and yew plants can also be affected. The pathogen only attacks the current year's growth, causing a tip blight or dieback. Symptoms appear from spring through early fall. Yellow spots develop at the shoot tips of young needles, followed by a gradual discoloration of the new shoot growth from light yellow to red-brown to grey. This disease is most destructive to younger plants, though it can cause aesthetic injury to older plants as well. Because the symptoms of *Phomopsis* tip blight are easily confused with other biotic and abiotic conditions, testing at a diagnostic lab is recommended for a definitive diagnosis. Planting resistant species, pruning out blighted branches, and fungicide applications are recommended techniques for managing this disease.



Spruce Needle Casts

There are two major fungal needle casts of spruce in Illinois: *Rhizosphaera* and *Stigmina*. Both pathogens cause similar symptoms. Last year's needles turn purple-brown and eventually drop while the new growth is asymptomatic, leading to bare branches with tufts of green needles at the tips. Both diseases are associated with stressed trees. Colorado blue spruce (pictured) and white spruce are the most commonly affected spruce trees in Illinois. Needles must be observed under magnification to distinguish between the two pathogens. Management focuses on increasing tree vitality. Fungicides are recommended for managing *Rhizosphaera*, but have not been shown to be very effective against *Stigmina*.



Pine Wilt

Pine wilt is caused by the pinewood nematode, which is vectored by the pine sawyer beetle and damages the vascular tissue of infected trees. Scotch pines are particularly susceptible. Austrian, red, and jack pines are moderately susceptible while mugo and white pines are rarely affected. The disease is rarely detected on trees less than 10 years old. Symptoms progress rapidly, with the needles becoming discolored: first a greyish green, then brown. Mature trees die within weeks or months of the symptoms appearing, with brown needles persisting on dead trees for up to a year. Symptoms can appear at any time, though most mortalities occur in late summer to late fall. While not the cause of the disease, blue-stain fungus (pictured) is closely associated with pine wilt. The fungus colonizes the tree after it has been weakened or killed by the nematodes. Management involves removing dead trees from the landscape, and the use of resistant conifers.

Pine Needle Casts and Blights

There are a number of these fungal diseases. The two most common in Illinois are discussed below. Most needle diseases are associated with trees under stress. For many of these diseases, microscopic fruiting structures must be observed to make a definitive diagnosis. Host susceptibility and disease management varies depending on the pathogen involved.

Diplodia Tip Blight or Sphaeropsis Blight

Two- and three-needle pines are the most susceptible, though the pathogen may also attack Douglas fir, spruce, arborvitae, juniper, and other conifer trees. This disease only affects the current year's needles and cones, leading to branches with brown tips. Tiny fruiting structures can be seen on the needles and cones (pictured) of affected trees. *Diplodia* tip blight damages the aesthetics of the host, and repeated infections will reduce tree vigor. Sanitation, improving tree vigor, and fungicide applications are recommended for disease management.



Dothistroma Needle Blight

This disease has a wide host range of pine species. Austrian (pictured), ponderosa, mugo, and Scotch pine are the most common hosts in Illinois. Symptoms first appear in fall and early winter as yellow spots on needles of all ages. The spots darken to reddish brown, and the tips of the needles die. The new growth in spring is not affected, leading to branches that are brown with green tips. This disease can cause premature defoliation and reduce tree vigor. Management includes sanitation, increasing tree vigor, and fungicide applications.