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Dothistroma Needle Blight of Pines

What is Dothistroma?

Dothistroma Needle Blight is a fungus that causes needle spots, discoloration and substantial needle loss during heavy infection. The Austrian pine is particularly susceptible, though the disease also attacks mugo, ponderosa, and other species of pine

Symptoms and Disease Cycle

Infection most commonly affects one, two or three year old needles, although current season needles may also show symptoms. The first symptom is scattered spots, varying in color from yellow to red. These appear in midsummer or fall, and later turn brown. They often develop into red bands that encircle the affected needles. The tip of the needle beyond the band turns brown and dies, while the base may remain green for a period of time. The dead portion is not always separated from the healthy portion by a band, but there is an abrupt transition between healthy appearing green tissue and dead tissue.

The fungus produces black fruiting structures on infected needles during wet weather, spring through fall. The spores are disseminated by splashing and wind driven rain. The rate at which spore germination and infection occurs is regulated by temperature and available moisture. Infection rate is most rapid between 62°F and 68°F, with several days of rainy or overcast weather. Infection is much more likely to be severe and damaging during wet springs and summers than during dry years.

Infected needles commonly fall off during late spring or early summer, although they may drop at any time. The needle loss destroys the dark green dense foliage that typifies these ornamentals. Sometimes needle loss is so severe that all that is left is a tuft of new needles at the branch tip. Young trees can be killed by this disease. Older trees that are continuously defoliated lose their aesthetic value as landscape trees.

The spots on the needles and heavy loss of older needles are good diagnostic symptoms for field identification. Be careful not to confuse Dothistroma needle blight with injury from air pollution (typified by sudden discoloration of current season needles in midsummer), or with seasonal needle discoloration and loss, characterized by yellowing of inner foliage in the fall of the year.

Disease Control

Cultural Practices: Cleaning up infected needles under the tree may have some practical value in controlling the disease where isolated infections are found. It is extremely important to avoid wetting the foliage when watering the tree or lawn as the disease thrives in wet conditions. Individual trees vary considerably in susceptibility to this disease. If infection is detected in valuable ornamentals, chemical treatments should be considered.

Chemical: Some copper-containing fungicides are effective in controlling the disease. One example is Bordeaux mixture. Most other fungicide products are ineffective. Usually two applications of fungicide are required to protect both current season growth and older needles. The first spray is done when needles are just emerging (generally around mid-May in Ohio) and the second spray is applied three to four weeks later. The needles increase in susceptibility as they become older which means the first spray protects the previous years foliage and the second spray will protect current season foliage. All foliage in the lower 20 feet of the tree must be covered by the fungicide because missed needles may become infected. The disease tends to be most severe within six feet of the ground becoming very slight above 20 feet.

The use of fungicides to control Dothistroma needle blight will prevent further infection, but they will not cure the disease. Diseased needles will continue to deteriorate until the needles die and fall from the tree.

Since the fungicide applications only protect the new and uninfected existing growth it is important to understand that it may take two or more year of successive treatments to return the tree to good health.