

## **Rhizosphaera Needle Cast Colorado Blue Spruce Trees**

**“Disease commonly found on Colorado Blue Spruce trees.** Rhizosphaera needle cast has been infecting blue spruce in the tri-states for a long time. The reason for this is due to extremely wet Spring weather, due to climate change. This, combined with an average temperature of 69.5 degrees, creates conditions for the disease.

**Rhizosphaera** needle cast is caused by the fungus *Rhizosphaera kalkhoffii*. Colorado blue spruce is highly susceptible, followed by White or Black Hills spruce, which is moderately susceptible, and then Norway spruce which has some degree of resistance. Infected branches begin to thin out near the bottom of the tree and spread to upper branches. Symptoms are most obvious on the older inner needles working from the inside out. These older infected needles on the inside of the branches turn purplish brown and fall from the tree in the summer and fall of the following year, leaving only the newest needles at the branch tips. Small black fruiting bodies of the fungus will be found growing in the pore-like openings (stomata) of the infected needles. The rows of stomata occur along the length of the underside of the needle and can be seen with a hand lens.

**Trees** of any age may become infected, especially those that are stressed. This disease does not quickly kill the tree.

The life cycle of the disease takes 12-15 months from infection to needle drop. Infections occur in the spring with symptoms developing in the fall of the year. The fungus overwinters in infected needles on the ground. Spores from infected needles are released in the spring, during wet weather and are dispersed by splashing rain to infect newly emerging needles. The needles turn from purplish brown to brown from summer through fall and are then shed the following spring and summer. After several years of early needle loss, the branches may be killed.

**The** optimal temperature for fungal development is 75 degrees. Infections will occur on wet needles in 24-48 hours if spores are present. Prolonged wetness can induce extensive infection. Trees suffering from other environmental stress are even more prone to the disease. Dead branches in the mix that have died out completely probably

have a canker disease called Cytospora canker. The two diseases can occur at the same time.

**Control** of Rhizosphaera needle cast is possible, but not without some effort.

Control strategies include:

- Not planting susceptible species.
- Inspecting trees carefully for the disease.
- Removing and disposing of infected fallen needles.
- Prune out and dispose of severely diseased branches.
- Mulch area beneath the base of the tree.
- Avoid overhead watering to alleviate drought stress.
- Improve air circulation to allow needles to dry more quickly.
- Spray the outer needles 3-4 times each spring with a protective fungicide spray.

### **Spraying Instructions:**

If you have a Colorado blue spruce and want to protect it, you must spray preventatively each spring starting in mid-May when the new needles are half elongated. (Do not wait for symptoms to present themselves.) Repeat the spray treatment every 10-14 days. Three to four seasonal applications may be necessary. Proper timing of the fungicide applications is critical for effective control. Fungicides only protect the needles; no need to soak the bark and branches. The below listed fungicides do not kill the disease-causing fungi. Fungicides recommended for the control of Rhizosphaera include chlorothalonil (Daconil 2787), the active ingredient in Ortho Disease-B-Gone, and Bordeaux mix. ***Read and follow all label directions!***

**Applications** can be made using a hose end sprayer manufactured by Ortho called the Tree & Shrub Sprayette. It is designed to spray trees 30 feet tall.



Rhizosphaera needle cast.



Infected needle on top.



Cytospora canker.

