



Rhizosphaera Needle Cast

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What is *Rhizosphaera* needle cast? *Rhizosphaera* needle cast is one of the most common fungal diseases of Colorado blue spruce. This disease can also affect other conifers including Engelmann, black, Serbian and Sitka spruce; Austrian, mugo and eastern white pine; Douglas fir; and western hemlock.

What does *Rhizosphaera* needle cast look like? The first noticeable sign of *Rhizosphaera* needle cast is a loss of the innermost needles on the lower branches of spruce trees. Often the youngest needles remain healthy. If your tree has this pattern of needle loss, use a 10X hand lens to observe the shed needles. If *Rhizosphaera* needle cast is the problem, you should be able to see rows of small black dots erupting through the surface of the needle. These black dots are fruiting bodies of the fungus that causes the disease, and are diagnostic.



Browning of interior spruce needles caused by *Rhizosphaera* needle blight.

Where does *Rhizosphaera* needle cast come from? *Rhizosphaera* needle cast is caused by the fungus *Rhizosphaera kalkhoffii*.

Infected needles, including those that are still attached to branches and those that have fallen to the ground, produce spores that can be blown or splashed to healthy branches or trees.

How do I save a tree or shrub with *Rhizosphaera* needle cast? You can treat infected trees with fungicides containing copper (e.g., Bordeaux mixture) or chlorothalonil. These treatments will not cure existing infections, but can prevent additional infections. Apply treatments every three to four weeks during periods of wet weather. DO NOT use the same active ingredient for all treatments. Instead, alternate the use of copper and chlorothalonil to help minimize problems

with fungicide-resistant strains of *Rhizosphaera kalkhoffii*. For fungicide treatments to be effective, you must thoroughly cover all susceptible needles. This is often difficult in large trees. Be sure to read and follow all label instructions of the fungicide(s) that you select to ensure that you use the fungicide(s) in the safest and most effective manner possible.

How do I avoid problems with *Rhizosphaera* needle cast in the future? Perhaps the easiest way to avoid *Rhizosphaera* needle cast is to avoid planting Colorado blue spruce. If you do plant blue spruce, check existing spruce trees for disease. Remove and destroy any diseased branches. Also, allow adequate spacing between trees in new plantings. This promotes increased airflow and quicker drying of needles, which is less favorable for infection and disease development.

For more information on *Rhizosphaera* needle cast: See UW-Extension Bulletin A2640 (available at <http://learningstore.uwex.edu>) or contact your county Extension agent.

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The Sad Situation for Blue Spruce

One of the most popular evergreen trees is the Colorado Blue Spruce.

Most everyone has experienced the shining bluish color of Blue Spruce trees. It is the most requested evergreen tree in our garden center, and Blue Spruce have become a common feature or focal point of many landscapes.

However..... There is a **PROBLEM**, and it is getting worse every year. The problem is referred to as "Needle Cast Disease," and as the name implies, this disease causes Colorado Spruce trees to "cast off" or drop their needles (needles = leaves). The culprit is a fungal pathogen known as

Rhizosphaera kalkhoffii.



Optimal conditions for infection by *Rhizosphaera* are during times of excessive moisture and humidity, such as those we have experienced each spring for the past several years. The spores of this disease are attached to infected needles, including those still remaining on the tree, as well as those that have already fallen. These disease spores can be wind-blown or splashed onto healthy tree branches.

The disease actually infects the stomata of the leaves (needles) and when mature, usually in spring (wet weather with temps above 75°), their *picnidia* (fungal fruiting structures) which release spores can be seen as small black specks erupting from the normally white stomata. (Stomates are tiny openings on plant leaves through which the plant "breathes" or exchanges gases.)



Chemical control: First, and most importantly, you must understand that any fungicide you apply will not cure a disease problem. Rather, a fungicide application will protect foliage that is healthy from infection. **Timing** is of critical importance, and the first spray application should begin in spring when the needles on new growth are about half the size of old growth. A second spray should then be made about 3 to 4 weeks later. It may be necessary to spray for 2 or more consecutive years, depending on severity. Thorough coverage of all uninfected needles is important (and difficult). Fungicides containing Copper (Bordeaux Mixture) or *Chlorothalonil* (Ferti-lome Broad Spectrum Fungicide) are currently the best defense against the spread of *Rhizosphaera* Needle Cast. However, spraying a Blue Spruce tree that is 20 or more feet tall is a genuine challenge.

At Four Seasons, we believe this disease is serious enough to cause us to stop recommending and/or selling larger Colorado Blue Spruce trees. We suggest Norway Spruce as the best alternative, since Norway Spruce have proven to be resistant to *Rhizosphaera* Needle Cast to date.