



Understand and Manage

Rhizosphaera Needle Cast



Rhizosphaera needle cast is a disease of spruce trees caused by the fungus *Rhizosphaera kalkhoffii* that commonly affects trees growing outside of their native range. *Rhizosphaera* starts on the inner and lower growth and progresses upward through the tree. It can take up to 15 months for the needles to show visible symptoms after the initial infection. Young trees may be killed by this disease, but usually branches die off after 3-4 consecutive years of defoliation, causing trees to look disfigured.

Biology

- New infections begin during wet weather when spores from infected needles on the tree and those that have fallen to the ground are splashed to uninfected needles.
- The yellowish brown to purple discoloring takes one year or more to develop after the initial infection.
- Spores overwinter on this year's and last year's needles.

What you will see:



- Symptoms usually begin on the inner and lowest portions of the tree and progress upward.
- A spruce with a severe rhizosphaera needlecast infection may hold only the current year's needles; whereas, a healthy spruce will retain needles 5 to 7 years.
- Infected needles may show black dots in rows on their underside - these are the fruiting bodies of the fungus.
- Lower branch dieback.

Managing Rhizosphaera

Early identification of Rhizosphaera can prevent major damage to individual trees and prevent the spread to nearby trees. Protecting new growth as it emerges is very important. For best effectiveness, fungicides should be applied when the needles begin to emerge in spring. Heavily infected trees may require several years of fungicide applications.



Rhizosphaera is treated by spraying the needles with the fungicide, Ensign 720.



Rhizosphaera symptoms always begin on the lower part of the tree then work their way up to the top. Treating with fungicides is the only way to stop this disease from killing the tree over the course of a few seasons.

The appearance of treated trees will begin to improve the season after the treatments were performed. Untreated trees will continue to lose needles and branches each year and will die from this disease if the disease is not addressed.

Distinguish from Look-alikes

- Cytospora, another common disease on spruce, forms cankers on branches and trunks and turn branches brown.
- Frost damage will cause browning of foliage on the tips, not the inner parts of the branches
- Sun scald will cause browning of foliage, usually on the south and west facing sides of plant.

Key points for diagnosing Rhizosphaera:

- Rhizosphaera begins on the inner and lowest portions of the tree.
- Rhizosphaera symptoms appear on the two year old needles.

Other Treatment Practices

- Remove fallen needles by raking, if possible.
- Ensure sprinkler heads are not wetting the needles.
- Water newly planted trees and during droughts.
- Prune out infected branches during dry weather.
- Plant resistant spruce species such as Norway or white spruce.
- Properly space trees when planting to improve air flow.