

Extension FactSheet

Plant Pathology, 2021 Coffey Road, Columbus, OH 43210-1087

Rhizosphaera Needlecast on Spruce

Nancy J. Taylor and Stephen T. Nameth
The Ohio State University

Spruce, in particular, Colorado blue spruce, can be infected with a needlecast disease caused by the fungus *Rhizosphaera kalkhoffii*. Trees planted in nurseries, Christmas tree plantations, and landscapes can be infected. Trees are not usually killed by this disease; however, premature needlecast results in trees that are not marketable, or which are not acceptable in the landscape.

Symptoms and Disease Cycle

A healthy spruce will retain its needles 5 to 7 years. A spruce severely infected with *Rhizosphaera* needlecast may hold only the current year's needles. *Rhizosphaera* needlecast infects needles on the lower branches first and gradually progresses up the tree (Figure 1). This pattern holds true for most needle diseases on conifers and is the result of more favorable conditions for disease development near the ground. Under epidemic conditions, lower branches may be killed by this fungus.

Although needles on new growth become infected in May and June, symptoms are not visible until late fall or the following spring, when infected needles turn purple to brown and begin to drop (Figures 2, 3, and 4). Tiny fruiting bodies of the *Rhizosphaera* fungus protrude through the stomata of the infected needles. Under a hand lens, these stomata appear as fuzzy black spots instead of their usual healthy white color (Figure 5). During wet weather in late spring, spores are released from

these fruiting bodies and are rain splashed onto newly developing needles where infection occurs and the disease cycle is repeated.

Cultural Control

Very little is known about cultural control of *Rhizosphaera* needlecast. The following guidelines will help prevent serious losses.



Figure 1. Lower needles of blue spruce showing symptoms of needlecast.

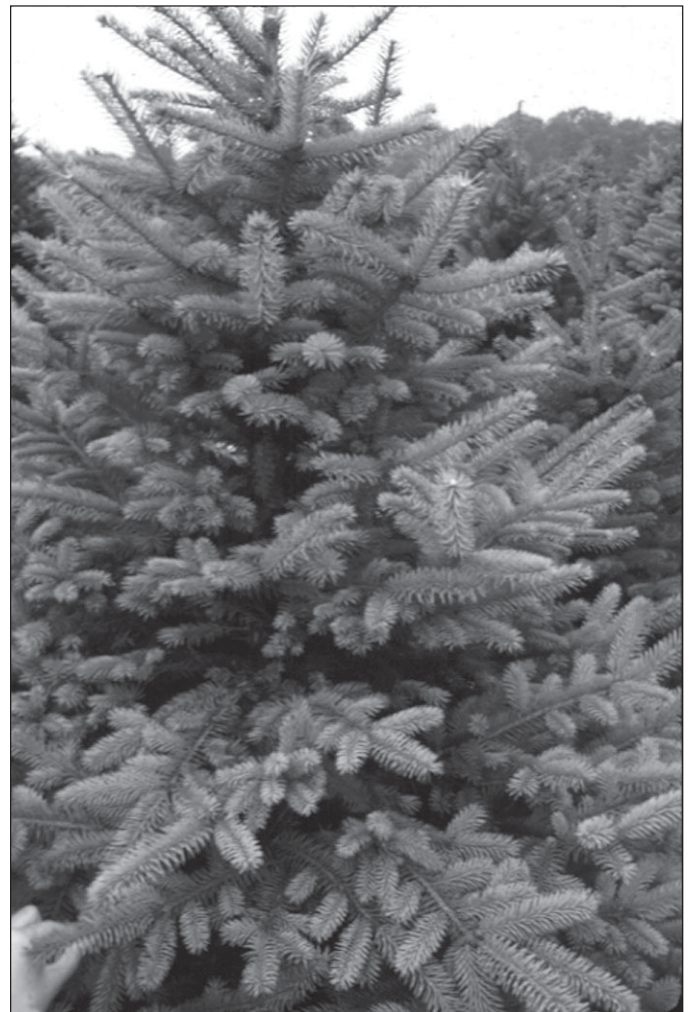


Figure 2. Purple needles in the interior of a spruce infected with *Rhizosphaera*.



Figure 3. Purple needles of spruce infected with *Rhizosphaera*.

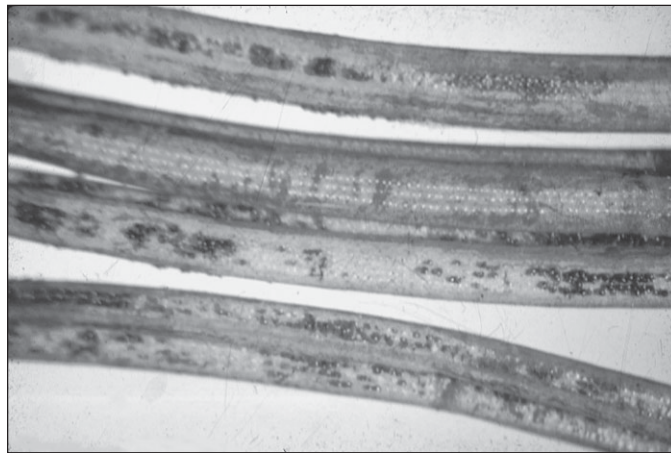


Figure 5. Fruiting bodies of *Rhizosphaera* erupting from infected needle.



Figure 4. Defoliation of spruce caused by *Rhizosphaera*.

Use Healthy Stock

At planting time, the foliage of blue spruce should be examined for fruiting bodies of *Rhizosphaera* protruding through needle stomata. If these bodies are present, the tree should not be planted.

Maintain Tree Vigor

Although detailed studies are lacking, it has been observed that trees suffering from environmental stresses are often more seriously attacked by *Rhizosphaera*. Spruce in Ohio are particu-

larly sensitive to heavy, compacted soils which become quite dry in late summer. Vertical mulching such soils to improve aeration and water penetration may help lessen the severity of the disease. Root irrigation during dry weather should also be carried out whenever possible.

Prevent Spread by Shearing Tools

Shearing when the foliage is wet may result in spread of the spores on shearing tools. To avoid this possibility, do not shear infected trees when the foliage is wet (such as when dew is on the foliage in the morning). Shear healthy trees first to avoid carrying the spores from a diseased tree to a healthy one. If this is not possible, tools should be sterilized after shearing a diseased planting. Denatured alcohol, available at most paint stores, will kill the spores and also remove pitch from tools. A three- to five-minute dip will do the job.

Chemical Control

If the decision is made to use chemical treatment, applications should be made in the spring because *Rhizosphaera* infects newly emerging spruce needles. Begin treatment when needles are half elongated.

Chlorothalonil fungicides such as Bravo or Daconil 2787 and manganese/zinc such as Cleary's Protect T/O are labeled for control of this needlecast. Follow label directions for rate and frequency of application.

Reference to trade names is for educational purposes only. No endorsement is included, nor is criticism implied of similar products not named.

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Keith L. Smith, Associate Vice President for Ag. Adm. and Director, OSU Extension
TDD No. 800-589-8292 (Ohio only) or 614-292-1868