Insect and Disease Fact Sheet Compliments of New Century

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Rhizosphaera Needlecast on Spruce

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.

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

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.

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

Figure 3. Purple needles of spruce infected with Rhizosphaera.

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

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.

Figure 4. Defoliation of spruce caused by Rhizosphaera.

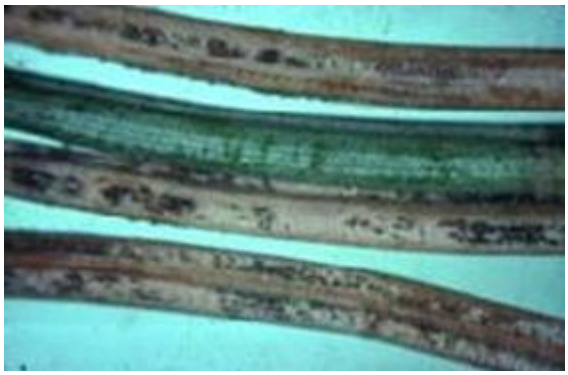

Figure 5. Fruiting bodies of Rhizosphaera erupting from infected needle.

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. Spruces in Ohio are particularly 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.

Information obtained through the Ohio State Extension Factsheet HYG-3059-96