

Needle Cast Disease of Blue Spruce

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Guide H-163

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DIAGNOSIS AT A GLANCE

Caused by	The fungus <i>Rhizosphaera kalkhoffii</i>
Symptoms	<ul style="list-style-type: none">• Needle discoloration: yellow to reddish-purple to brown• Premature defoliation• Premature death
Sign	Black pycnidia (fruiting bodies) develop on infected needles.
Disease conditions	Warm (65–75°F), wet weather
Disease management	<ul style="list-style-type: none">• Plant only healthy trees.• Avoid planting new trees next to established trees.• Sterilize pruning shears between cuts.• Promote good air circulation around trees by open spacing, selective pruning, and removing brush and grass around trees.• Apply fungicide.

Rhizosphaera needle cast, a fungus disease caused by *Rhizosphaera kalkhoffii*, is affecting blue spruce (*Picea pungens*) trees in New Mexico. The disease has been identified in San Juan County, and spruce trees described with similar symptoms have been reported in other parts of the state.

Symptoms

Symptoms of the disease are discoloration of the needles, needle drop, and eventual defoliation. Infected needles turn yellow in July and then reddish-purple in August. The needles eventually turn brown and fall off one to several branches. A severely af-

ected tree will have many bare branches. Premature needle drop is the primary damage, causing the tree to become unsightly. However, branches that are defoliated for four or five years may die. If left uncontrolled, the disease can eventually kill the tree.

The disease affects spruce trees but does not affect most other conifers or deciduous trees. Douglas fir has been reported as a host, but the disease has not been observed affecting these trees in New Mexico.

The disease affects blue spruce of all ages. Infection takes place in the spring, but symptoms are not visible until the following spring and summer. The fungus can sometimes be seen with a hand lens (10X) as tiny brown to black spots called pycnidia, or fruiting bodies, emerging from stomata (pores) on the needles. Infected needles turn yellow in July and then reddish-purple in August. Many of the affected needles fall off in the late summer of their second growing season.

Some needles stay on the tree over winter and the following spring produce spores, which spread the disease. New growth may appear at the ends of some of the bare branches in the spring, so the owner may think the tree is recovering.

Rhizosphaera Biology and Disease Spread

The disease is spread primarily by rain water splashing the spores from infected needles to newly emerging needles in the spring. Pycnidia emerge from these newly infected needles the following spring to start a new disease cycle.

Disease Management

The best control measures are to plant only healthy trees and avoid planting new trees next to established trees. Additional cultural controls that help prevent disease spread include promoting good air circulation in and around trees by proper plant spacing and pruning, and mowing grass and removing brush from

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around trees. Pruning shears should be sterilized with alcohol (70% isopropyl alcohol) between cuts and between trees.

If trees are infected, fallen needles should be cleaned up and discarded in a sealed plastic trash bag and sent to the dump. If a blue spruce tree is in such bad condition that the owner wants to replace it, a tree species other than spruce should be considered, so the new tree doesn't succumb to the same disease.

Fungicides also can be used as part of a management program. Infected trees can be sprayed with bordeaux mixture 8-8-100 (8 lb hydrated lime, 8 lb copper sulfate, 100 gal water) or chlorothalonil fungicide. Fungicides should be available at local nurseries, garden supply stores, or feed stores. Fungicides provide protection against infection and prevent spread of the disease within the tree. They should be applied to the tree when the new needles are half developed and again when they are full length.

Two years of treatment usually restores moderately affected trees to full foliage. Severely affected trees may require more years of treatment. Homeowners who have blue spruce trees that are losing needles can contact their pest control person to inspect their trees and spray if appropriate. Tree owners can spray their own trees if they have the equipment to adequately

cover the tree. Label directions for using pesticides should be followed to the letter.

Purchasing New Trees

Nursery owners should closely inspect their trees to make sure they don't sell any infected trees. Use a hand lens to inspect trees for fruiting bodies of the fungus emerging from the stomata of the needles. Purchasers should also inspect trees closely when they are purchased.

References

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