Stigmina Needle Cast on Blue Spruce

Morgan Goodnight and Peng Tian

Plant Diagnostic Clinic

The MU Plant Diagnostic Clinic received a Colorado Blue Spruce sample in March that showed symptoms of needle discoloration and barely distinguishable black spots running along the needles. It was diagnosed as Stigmina Needle Cast disease.

Name: *Stigmina lautii*

Signs and Symptoms: Symptoms of Stigmina Needle Cast progress slowly over a three-year course and eventually develop into needle discoloration and severe needle drop on the lower canopy of the tree. The first sign of the disease are black spots along the needles that are nearly invisible to the naked eye. About one year after the initial infection, symptoms start to become more severe and work their way up the tree to the newer foliage. Needles start to become darker and discolored, ranging from yellow, purple, and brown hues. Severely infected trees under other environmental or cultural pressure may die in the third year.

Comparison with another needle cast disease: Stigmina Needle Cast can be easily mistaken for Rhizospharea Needle Cast from symptomology alone. Microscopic observation is required to distinguish the two needle cast diseases. Rhizospharea Needle Cast develops small, circular spores that were not present on the sample the MU Plant Diagnostic Clinic received. Stigmina Needle Cast, however, produce sporodochia on the surface of needles (Figure 1).

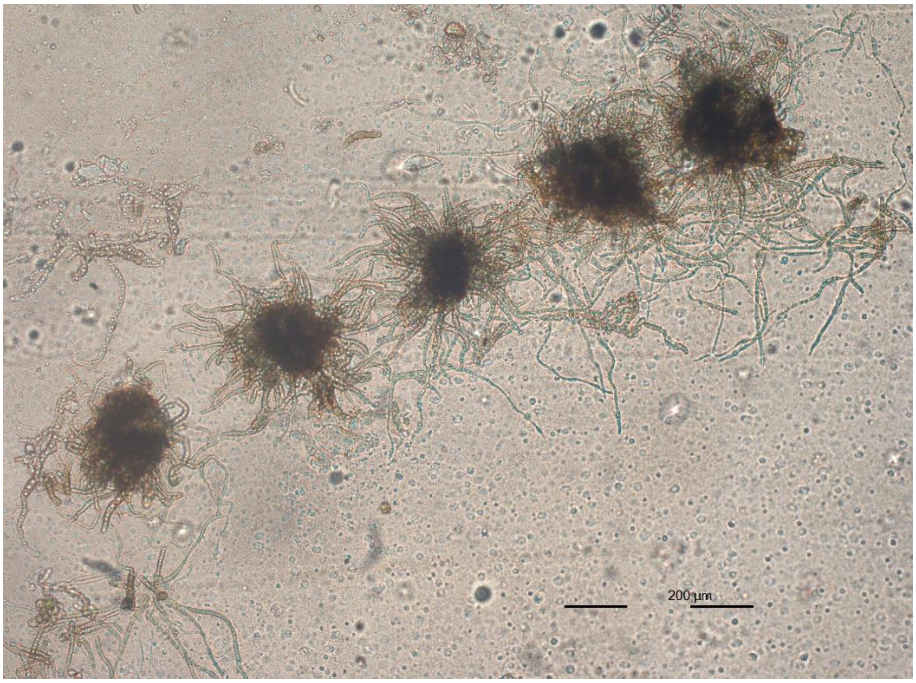

Figure 1. Sporodochia of Stigmina Needle Cast on blue spruce caused by *Stigmina lautii*.
Photo: Morgan Goodnight

Life Cycle and Damage: Stigmina Needle Cast has a two to three years life cycle. Sporodochia, fruiting bodies of the fungus that were developed on the host plant, emerge by late spring after the initial infection and mature fully by the fall. They act as survival structures in the winter and produce and release spores in the following spring once temperatures are consistently above 40-50°F. These spores can infect any age of needle throughout a growing season if conditions are favorable for this disease.

Disease Management:

1. **Select an alternatives to Colorado Blue Spruce.** In an area where the disease is prominent, choose trees that may withstand the disease pressure more effectively. White pine, Douglas fir as well as Norway spruce are good options for the replacement.
2. **Remove infected trees.** This practice disrupts the disease cycle and slows progression of the disease in a high-risk area.
3. **Prune dead branches.** Sanitation is always a good practice to keep the population level of pathogens low.
4. **Fungicides may be used** but may only be sensible on large scales such as a nursery or Christmas Tree farm. No fungicides are currently labeled for Stigmina Needle Cast, but fungicides for other needle diseases may be used in states labeled for them.

References:

1. **Stigmina Needle Cast**, Iowa State University, Horticulture and Home Pest News, https://hortnews.extension.iastate.edu/stigmina-needle-cast#:~:text=Stigmina%20needle%20cast%20is%20a,are%20hosts%20to%20this%20pathogen
2. **Rhizosphaera Needle Cast**, Iowa State University, Horticulture and Home Pest News, https://hortnews.extension.iastate.edu/rhizosphaera-needle-cast
3. **The Old and the New: Two Needle Diseases of Spruce in North Dakota**, North Dakota State University, Lawns, Gardens & Trees, https://www.ag.ndsu.edu/publications/lawns-gardens-trees/the-old-and-the-new-two-needle-diseases-of-spruce-in-north-dakota