THE OHIO STATE UNIVERSITY EXTENSION

Extension FactSheet

HYG-3033-96

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

Cytospora Canker of Spruce

Stephen Nameth and C. Wayne Ellett
Department of Plant Pathology

Jim Chatfield
Ohio State University Extension

The most important disease of spruce in landscape plantings in Ohio is *Cytospora* canker. This disease is caused by a fungus and is frequently found on Norway spruce and Colorado blue spruce and its cultivars. White spruce is also susceptible and there are a few reports on Serbian spruce. In addition to the spruces, Cytospora canker is sometimes found associated with Douglas fir, hemlocks, larches, and balsam fir.

Symptoms

Dying of a lower branch with subsequent needle browning is usually the first symptom. The brown needles may remain on the branches or they may fall off. As the disease progresses over several years, higher branches show damage. The actual cankers are often first seen at the base of branches near the main trunk of the tree. On the more susceptible species (Norway spruce), trunk cankers develop which may result in girdling and death of the tree.

The bark of the cankered areas is not visibly different in color, nor does it become sunken as in cankers on many deciduous trees. However, resin flow is usually associated with Cytospora canker and the white patches of dried resin are quite conspicuous on the bark. Resin flow can, however, be associated with any injury to branch tissue.

Cankers often cannot be located without cutting into the bark. Removal of the outer bark from cankers reveals brown, dead areas of the inner bark and cambium. Within the cankered areas, a careful search using a magnifying hand lens will often reveal black pinhead sized structures that produce the spores of the pathogen. Careful removal of layers of bark make these structures even more visible. During wet weather, yellow to orange colored masses of spores oozing out of these black structures in tiny tendrils can be observed. Sometimes these tendrils or gelatinous spore masses are visible to the unaided eye.

Causal Fungus

Cytospora canker of spruce is caused by the fungus, *Cytospora kunzei* var. *piceae* (also reported as *Valsa kunzei* var. *piceae*). The spores (conidia) described above are readily disseminated by splashing water, wind-driven rain, by man during pruning, and also very likely by insects and birds. The fungus generally becomes established through wounds.

Disease Management

Cytospora canker is more common on trees over 15 years old. This disease is more prevalent on trees of low vigor. Those trees with shallow roots, weakened by drought, low fertility, mechanical injury, or insect damage; and trees growing in an unfavorable site are more susceptible to Cytospora canker. The following practices lessen the likelihood of this disease.

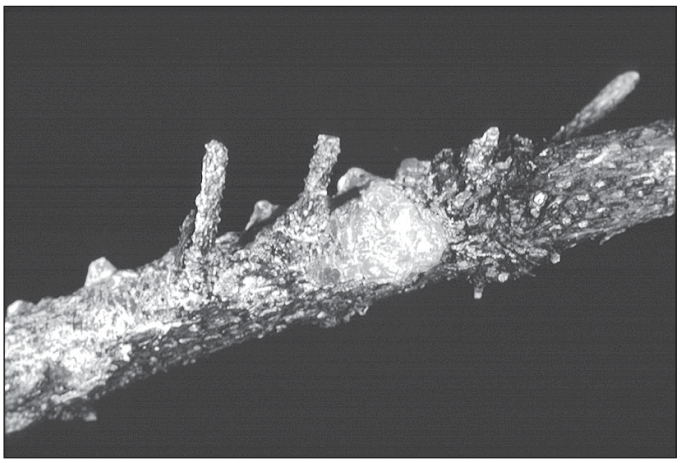

Figure 1. Cytospora canker on spruce twig.

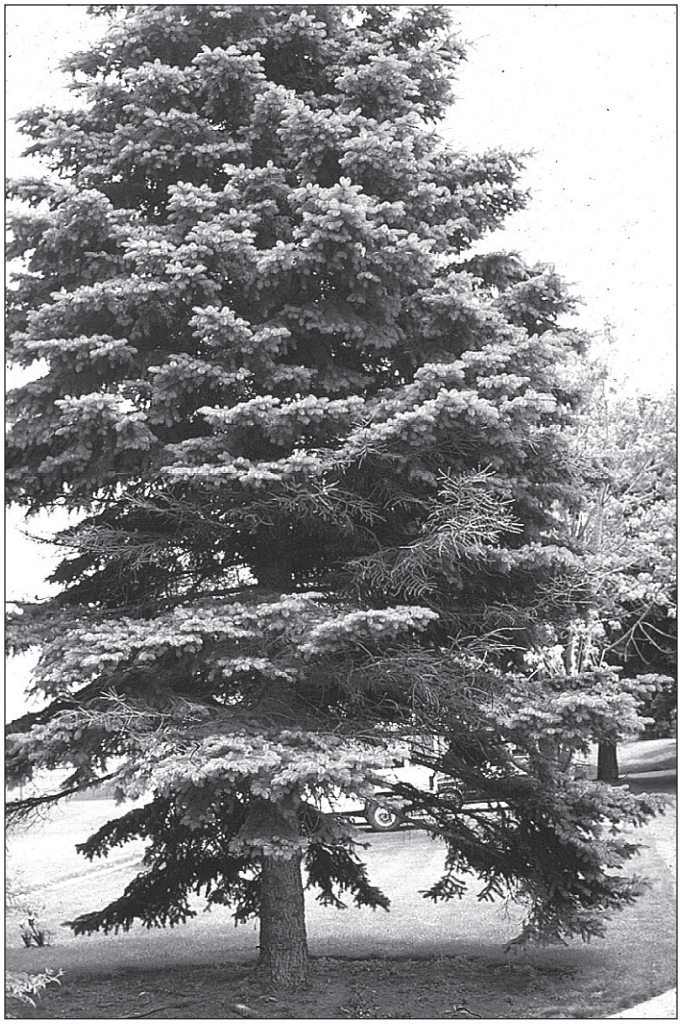

Figure 2. Cytospora canker occurring on lower branches of blue spruce tree.

Figure 3. Effects of Cytospora canker on spruce tree. Note that the lower limbs have been removed due to infections by Cytospora.

1. Avoid bark and stem injuries.
2. Control insects and mites; especially spruce gall adelgids and spider mites.
3. Fertilize according to horticulturists' recommendations.
4. Water during extended dry periods. Water thoroughly so that soil is moistened 18 to 24 inches deep. A root irrigator may be needed to accomplish this.
5. Follow accepted pruning practices.
6. Vertically mulch to relieve soil compaction, poor aeration, and inadequate water penetration.

Once established, the following may aid in suppressing disease development. Remember that affected branches cannot be saved.

Prune and remove or destroy affected branches. To lessen the spread of the fungus, prune only when the trees are dry. Pruning tools should be disinfested with 70% alcohol between cuts. It will generally be necessary to prune back to the main trunk. No effective chemical control measures are available.

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