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Cytospora canker on coniferous

By Toso Bozic

Cytospora canker, also known as Leucostoma canker, is a pervasive and damaging disease, primarily caused by the fungus *Cytospora kunzei*. The disease is notable on spruce species, such as the Colorado blue spruce (very susceptible to Cytospora canker), Norway spruce and native white and Engelmann spruce. Disease causes tree significant structural damage; reduces their effectiveness in blocking wind, snow, noise, and leading to a decline in tree health and, in severe cases, tree death.

This fungus thrives in shelterbelts, windbreaks, urban areas and environments where the host trees are under stress due to factors like drought, poor soil conditions, mechanical injury, or other environmental stressors. The pathogen primarily invades through wounds caused by humans or natural openings in the bark, establishing itself in the cambial tissue.

Symptoms

The symptoms of Cytospora canker are distinctive yet can be confused with other types of canker diseases or abiotic damage. Cytospora canker typically begins on the lower branches of the tree and gradually progresses upwards. The initial sign of infection is the browning of needles on affected branches, which then die and fall off within a few months. A distinctive feature of this disease is the flow of white or bluish-white resin from the cankers, which coats the bark of the dead or dying branches.

As the disease progresses, these cankers expand, girdling branches and sometimes the main trunk, leading to dieback of the affected parts. In advanced stages, the bark around the cankers becomes loose and falls away, revealing discolored wood underneath. Needles on infected branches turn yellow, then reddish-brown, and eventually fall off, leading to sparse foliage and a generally unhealthy appearance of the tree. In severe cases, the entire tree may succumb to the disease, particularly if multiple cankers coalesce and girdle the trunk.



Picture 1. flow of white or bluish-white resin from the cankers (L), infested large branches on Colorado Blue spruce (C and R)



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Spread

Cytospora canker spores are spread primarily by wind, rain, insects, and contaminated pruning tools. Wet and humid conditions favor spore germination and infection, while dry periods can induce stress in trees, making them more susceptible to infection. Human activities, such as improper pruning, mechanical injuries from lawn equipment, or construction activities, create entry points for the pathogen and stress the trees, enhancing the likelihood of infection.

Crowded and stressed trees are particularly vulnerable to infection. Stress factors include drought, poor soil nutrition, root damage, and other diseases or pest infestations. Trees in urban settings are often more susceptible due to compacted soils, limited root space, and pollution, which collectively weaken their natural defenses. Accurate identification of Cytospora canker through [laboratory testing](#) is essential for proper management

Management and Control

There are few management options for the control of the Cytospora canker:

- Minimize environmental stresses by providing adequate water during dry periods, applying mulch to conserve soil moisture.
- Water trees deeply and infrequently to encourage deep root growth and reduce water stress. Avoid wetting the foliage and bark, as prolonged moisture can favor fungal growth.
- Plant trees in well-drained soils with adequate space for root expansion. Avoid areas with compacted soils and poor drainage
- Prune infected branches to the trunk during dry periods (or in wintertime) to reduce the spread of the fungus. Sterilize pruning tools between cuts to prevent cross-contamination. Avoid creating large wounds that can serve as entry points for the pathogen
- Remove away, burn and destroy infected plant material to reduce the source of inoculum. Burn or dispose of pruned branches away from healthy trees.
- Regularly inspect trees for early signs of infection, such as resin exudation, canker formation, and needle discoloration. Early detection allows for timely intervention and reduces the spread of the disease.
- Chemical/fungicide treatments are generally not very effective in controlling Cytospora canker

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