



# Cytospora Canker of Spruce

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Cytospora canker of spruce, caused by the fungus *Cytospora kunzei*, is one of the most prevalent diseases on Colorado Blue Spruce in Michigan. The disease is also found on Norway Spruce, Koster's Blue Spruce, Douglas-fir, and other spruces when planted as ornamentals.

## SYMPTOMS

Browning and death of the branches near the ground are usually the first recognized symptoms (Figure 1). The disease generally progresses upward in the tree at a slow rate, often only one branch becomes infected each year. Many homeowners attribute this slow death of branches to other causes such as insects or excessive shading. It is only after many limbs have died, or when the branches die at the rate of several each year that an individual becomes concerned. Cytospora canker seldom kills a tree, but con-

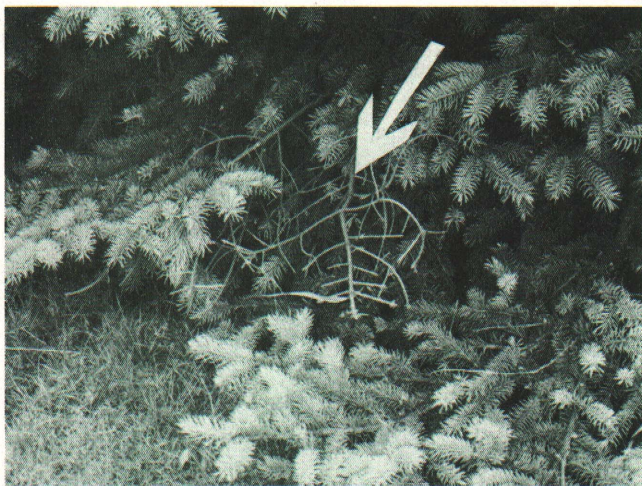


Figure 1. First symptom of Cytospora canker is the appearance of dead branches near the ground. (Arrow)

siderably reduces its value as an ornamental due to the presence of dead and dying branches.

The needles of infected branches may drop immediately (Figure 2) or persist for over a year. Usually there are white patches of resin on the bark of dead or dying branches (Figure 3). Resin may also be found on the main stem of the tree, particularly if the infection is in the upper portion of the tree. Lower branches may sometimes become covered with these resinous exudations.

## CAUSE

The fungus and the cankers are not readily apparent on infected limbs. If the bark is shaved carefully in the area between diseased and healthy tissue, tiny, black fruiting bodies of the Cytospora fungus can be found (Figure 4). These fruiting bodies contain fungal spores which can cause new infections when transmitted to healthy limbs during periods of wet weather.

## CONTROL

Branches which are already infected cannot be saved. Infected branches should be cut-off 6 inches be-

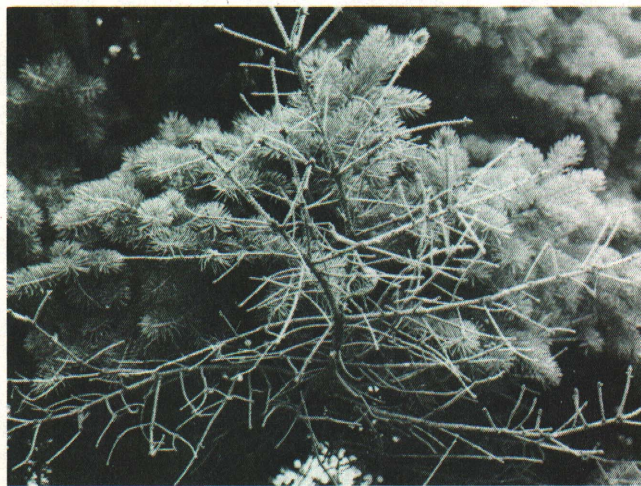


Figure 2. Cytospora infected branch of Colorado Blue Spruce contrasted to nearby healthy branches.



low the infection point, or at the point of attachment to the main stem as soon as the infection is noticed. This pruning should be done during dry weather to avoid spreading the spores to healthy limbs. Infected branches and twigs should be disposed of immediately.

Many plant pathologists feel that spraying the lower branches with Bordeaux mixture each 2 weeks during the spring will help prevent infection. However, this method has not been proven to give effective control.

Cytospora is most often found on older, less vigorous trees. Therefore, a fertilization program, such as



Figure 3. Close-up of a limb in a Blue Spruce infected with *Cytospora* canker showing the white resinous exudations.

that described in Extension Bulletin E-786, "Fertilizing Shade and Ornamental Trees," should be followed. This will increase or maintain tree vigor, which may lessen disease severity. Also the new growth which may be initiated following fertilization will help fill-in the pruned-out areas.

As with most diseases, the best cure is prevention and early detection. Check spruce trees often, at the first symptoms of *Cytospora* canker prune out infected branches. This will reduce the probability of more extensive disease development.

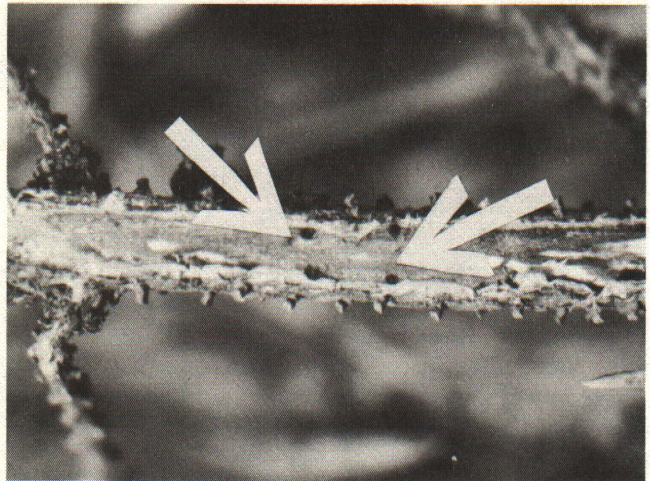


Figure 4. Limb with bark shaved, exposing the black fruiting bodies of the *Cytospora* fungus.

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