



Cytospora Cankers of Ornamental Trees: *Cytospora* spp.; *Leucocytophora kunzei*

Introduction

Many frequently encountered twig and branch killing cankers of ornamental, forest, and fruit trees are caused by fungi of the genera *Cytospora* and *Leucocytophora*. Many species of these fungi cause cankers on scaffold branches or young tree trunks in addition to twig dieback. The appearance, spread, and control of these twig diebacks and cankers are similar.

The host range of *Cytospora* fungi is broad: maple, spruce, willow, hemlock, poplar, mountain ash, cherry (ornamental, forest, and orchard types), Douglas-fir, true fir, pear, mulberry, walnut, sassafras, Japanese pagoda tree and peach. However, cross-infection by these fungi from one plant to another does not occur. *Cytospora kunzei* (syn. *Leucocytophora kunzei*) causes the well-known 'spruce canker'. On many other hosts, larch and sycamore for example, *Cytospora* and *Leucocytophora* fungi are weak pathogens or secondary invaders of branches weakened by other factors.

Symptoms and Signs

The characteristic spruce canker is a dead, slightly flattened area in the bark of a large branch. The bark tends to remain on the branch during the first year or more of infection. In many cases, the dead bark will cling to the branch indefinitely while the canker (area of dead bark) expands. The bark eventually breaks. Underneath it an area of dead wood surrounded by a roll of healthy tissue can be seen. This roll is callous that the tree produces while attempting to delimit the canker. When twigs are killed, symptoms of dieback occur (Fig. 1). Small branches may not produce needles in the spring or needles on infected twigs turn

purplish-brown and begin to drop.

Conifers (spruce, hemlocks, etc.) often respond to twig infection or branch cankers by oozing resin (pitch) that builds up on the infected area as a whitish deposit (Fig. 2). In severe cases, so much resin may be produced that it may drip onto lower branches. Cherries and peaches often respond by exuding gum at the base of dying twigs or at the margins of cankers. This gumming often first appears in early spring.



Figure 1: Symptoms of dieback caused by spruce canker (provided by Dr. George W. Hudler, Cornell University)

Disease Cycle

Cytospora and *Leucocytophora* species produce millions of microscopic spores on their respective host plants. The spores are produced in tiny, pimple-like structures that can be found in the surface layer of bark on a canker or killed twig. These structures can often be detected by shaving off a thin layer of

bark. Sometimes they protrude through the surface of thin-barked species and can be seen without the use of a knife. During wet weather, masses of spores ooze from the fruiting structures and are carried by insects to new sites. These spores cause new infections.

Cytospora species are less likely to invade healthy plants than weakened or wounded plants. Winter injury, improper pruning cuts or stubs, insect injury, mechanical injury, or previous disease increase the chance of infection by Cytospora.



Figure 2: Symptoms of oozing resins from white patches (provided by Dr. George W. Hudler, Cornell University)

For maples, prune in midsummer to avoid bleeding. Disinfecting pruning equipment between cuts is wise if practical. This can be done by swabbing the cutting blades with a solution of 7 parts denatured alcohol and 3 parts water between cuts. Larger pruning wounds can be protected by painting over cut surfaces with shellac. Avoid pruning in wet weather. Removal of winter-injured twigs or pruning stubs and other weak wood is advisable.

Fertilize to maintain vigor in early spring. Untimely fertilization can stimulate late growth in autumn which will not harden before winter. Avoid high nitrogen fertilization.

Control of borers and other wood-attacking insects is helpful. Such control depends on the host involved and should be done with recommended materials labeled for the specific pest(s) involved and applied according to the label on the pesticide container. Some pesticides may be helpful in preventing the spread of the disease if regularly injected into the root collar area of the tree, but this process must be performed by a pesticide applicator trained in injection techniques.

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Management Strategies

In the home landscape, the best approach is that of prevention and sanitation. Diseased branches should be pruned and discarded or burned. Avoid unnecessary wounding of trees. If pruning must be done, the best time is just as seasonal growth begins.

READ THE LABEL BEFORE APPLYING ANY PESTICIDE! Changes in pesticide regulations occur constantly. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office.

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