



Cytospora Cankers *Cytospora* spp. & *Leucocytospora kunzei*



Figure 1 – Branch and twig dieback on *Picea pungens* due to infection from *Cytospora* spp. (Joseph O'Brien, USDA Forest Service, www.Bugwood.org)



Fig. 2 – Symptoms of *Cytospora* canker on spruce. Note the build up of white resin on the bark. (Michael Kangas, NDSU – North Dakota Forest Service www.bugwood.org)

Introduction: Many frequently encountered twig and branch killing disease of ornamental, forest, and fruit trees are caused by fungi of the genera *Cytospora* and *Leucocytospora*. 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 firs, 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. *Leucocytospora kunzei*) causes the well-known 'spruce canker'. On many other hosts, larch and sycamore for example, *Cytospora* and *Leucocytospora* fungi are weak pathogens or secondary invaders of branches weakened by other causes.

Symptoms: 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 (**Fig. 3**) at the base of dying twigs or at the margins of cankers. This gumming often first appears in early spring.

Disease Cycle: *Cytospora* and *Leucocytospora* 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*.

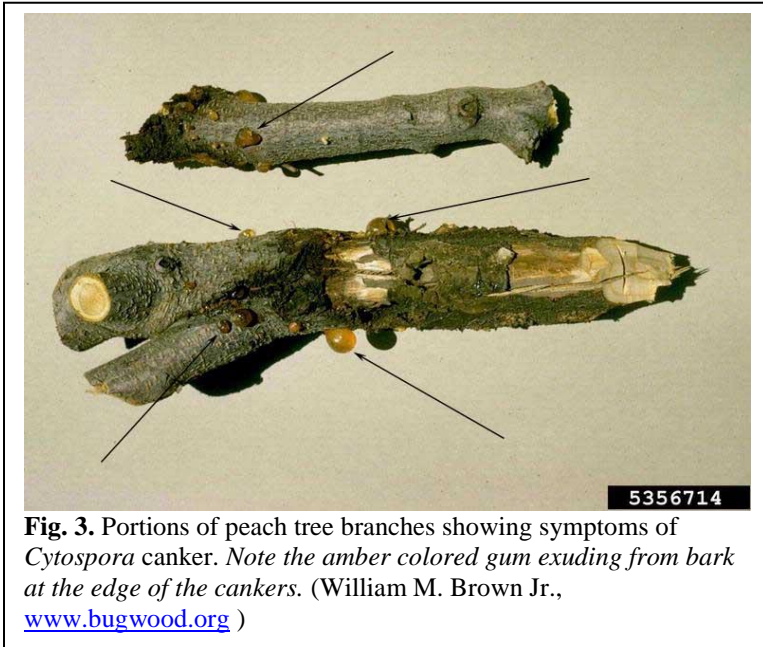


Fig. 3. Portions of peach tree branches showing symptoms of *Cytospora* canker. Note the amber colored gum exuding from bark at the edge of the cankers. (William M. Brown Jr., www.bugwood.org)

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. 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. 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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