

Cankers on Trees

INTRODUCTION

Cankers are dead sections of bark on branches or main trunks of trees. Bark may be killed by mechanical injuries or by plant pathogens, especially fungi and bacteria. Most plant pathogens are unable to penetrate bark directly but will quickly colonize wounded tissue. Canker diseases may cause extensive damage to trees when they kill all of the bark in a particular area, thus girdling a branch or main stem. Girdling results in death of all parts of the plant above the canker. If the trunk is affected, the entire plant may die.

Canker disease and cankers caused by mechanical injuries may not kill trees outright but can be sites for invasion by wood-rotting organisms. Wood decay leads to weak branches and main stems which are hazardous when subjected to high winds or heavy snow and ice loads. Thus, every attempt should be made to prevent cankers from developing on desired trees. When cankers do appear, proper care can limit subsequent damage.

SYMPTOMS

WOUND CANKERS: Injury to the base of the trunk of trees is commonly caused by lawnmowers and other yard equipment. Repeated abrasion may result in girdling and death. Open wounds should be trimmed as described under **MANAGEMENT**. Barriers to prevent this type of injury can extend a tree's life. Bark mulch or gravel around the base will eliminate the need for mowing close to the stem while providing an attractive alternative to grass.

TARGET-SHAPED CANKERS: Several species of fungi cause these cankers on deciduous trees in the Northeast (**Fig. 1**). Infections occur through bark wounds or at junctions of dead and live branches. Once established, the fungi grow slowly through bark during fall and winter while the host is dormant. During the growing season, vigorous trees respond by forming callus tissue in rolls around the edges of affected areas. This alternating growth of fungus and tree results in the target-like appearance. The cankers, *Nectria* (on many hosts), *Strumella* (on oaks) and *Eutypella* (on maples) are typical of this group.

DIFFUSE CANKERS: Some canker fungi grow through host tissue so rapidly that the tree has little chance to respond. The cankers are shallow, and bark on the advancing margins is frequently discolored (**Fig. 2**). Diffuse cankers are usually lethal, and diseased branches should be removed immediately. *Cytospora* canker (on many deciduous trees and on spruce), *Hypoxylon* canker (on aspen), and chestnut blight are typical of this group.

MANAGEMENT STRATEGIES

Specific recommendations for preventing cankers and for minimizing damage should they occur vary with tree species and nature of the canker. However, all management practices should include the following:



Fig. 1. Symptoms of *Eutypella* canker on maple. Note the rolls of callus tissue forming around the edges of the affected area (Joseph O'Brien, USDA Forest Service, www.bugwood.org)

- Vigorous, healthy trees are better able to cope with cankers than are trees in poor health or under stress. Inadequate soil moisture is the most common stress factor in urban and suburban sites, but it can be corrected with regular watering. Trees should not be planted where soil conditions are poor or where structures such as sidewalks and stone walls limit proper root development. Annual fertilization in late fall or early spring will also help improve vigor.

- Proper pruning will help to reduce canker problems. Pruning should be done in early spring, prior to budbreak, or in mid-June after leaf expansion. Remove dead and weak branches and those which are rubbing against others creating wounds.

Cuts should be made such that no stubs are left and the resulting wound is as small as possible. Pruning wounds will close with no further treatment. If a wound dressing is desired, use shellac.

- For cankers on trunks, tracing may help to reduce damage if done soon after the canker is incited. Be sure to cut outside the cankered area and into healthy bark. Shape the cut to an ellipse. Extreme care must be taken to avoid infection of this fresh wound with canker pathogens. Sterilize pruning tools between cuts by dipping them in 10% household bleach or 70% alcohol for several minutes. If the canker is more than one-half way around the circumference of the main trunk, the tree development should be carefully watched for internal decay in subsequent years. If structural integrity is threatened, the tree may have to be removed.
- If you have severe problems with cankers on certain of your trees, replacement with less susceptible species may be the best solution. Poplar, willow and aspen are among the most susceptible to canker diseases.



Fig. 2. An apple branch with bark removed to show symptoms of infection with both *Cytospora* canker and *Valsa* canker. Note the clear distinction between the yellow/green live wood and the brown infected wood. (H. J. Larsen, www.bugwood.org)

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