

Cankers

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Identification, Biology & Management

Cankers are dead sections of bark on branches or main trunks of trees. Bark may be killed by mechanical injuries or fungi and bacteria. Most fungi that cause stem cankers are restricted to bark and xylem tissue that are degraded due to the effects of toxins or secreted enzymes. Such fungi include *Nectria galligena* (Figure 1), *Cryphonectria parasitica*, *Diplodia pinea*, *Hypoxylon mammatum*. Fungi that cause cankers and also extensively invade the xylem, simultaneously causing wood decay, are termed canker rot pathogens (e.g. *Cerrena unicolor*). Generally canker pathogens are unable to penetrate bark directly but will quickly colonize open wounds inflicted by pruning, frost injury, breakage caused by ice and snow, dead branches, branch stubs, twigs, leaf scars or, less commonly, through leaves and/or insect attack. In addition plants weakened by environmental stress (drought, waterlogging, salt damage) are more susceptible to attack. Canker diseases may cause extensive damage to trees when they kill all of the bark in a particular area, 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.

Symptoms

Cankers are generally classified into one of three to include:

WOUND CANKERS: Injury to the base of the trunk of trees by lawnmowers and/or other mechanical equipment results in bark abrasion, girdling and death. Barriers to prevent this type of injury can extend a tree's life. Mulching around the base of the tree will eliminate the need for mowing close to the stem.

TARGET-SHAPED CANKERS: Several species of fungi cause these cankers on deciduous trees. Infections occur through bark wounds or at junctions of dead and live branches. Once established, the fungi grow slowly through bark during autumn and winter. During the growing season, healthy trees can respond by forming callus tissue in rolls around the edges of infected areas. This alternating growth of fungus and tree results in the target-like appearance. Cankers

such as *Nectria* (wide host range), *Strumella* (oaks) and *Eutypella* (maples) are typical of this group.

Figure 1. Apple canker (*Nectria galligena*)





Figure 2. Target shaped canker on willow

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 (Figure. 2). Diffuse cankers are usually lethal, and diseased branches should be removed immediately. *Cytospora* canker (on many deciduous trees and spruce), *Hypoxylon* canker (on aspen), and chestnut blight are typical of this group.

Management

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

Vigorous, healthy trees are better able to cope with cankers than are trees in poor health or under stress. Spring or autumn-fertilise to improve plant vitality.

Inadequate soil moisture is the most common stress factor in urban and suburban sites. Mulch and irrigate during drought periods.

Correct pruning will help to reduce canker problems. Pruning should be done in early spring, prior to bud-break, 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.

Excise the canker. Cut outside the cankered area into healthy bark. Shape the cut to an ellipse. Take care to avoid infection of the fresh wound with canker pathogens. Sterilise pruning tools between cuts by dipping them in 10% household bleach or 70% alcohol for several minutes.

If canker development is greater than 50% of the circumference of the trunk, monitor tree development for internal decay in subsequent years.

Washes of copper based products are recommended during the growing season.



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