

# Dying Cedar Hedges— What Is The Cause?

Dieback of cedar hedging in the landscape is a common problem. In most cases, it is not possible to pinpoint one single cause. Death is usually the result of a combination of environmental stresses, soil factors and problems originating at planting. Disease, insect or animal injury is a less frequent cause.

## Identifying The Host

Certain species of cedar are susceptible to certain problems, so identifying the host plant can help to identify the cause.

The most common columnar hedging cedars are *Thuja plicata* (Western Red Cedar) and *Thuja occidentalis* (American Arborvitae or Eastern White Cedar). Both species are often called arborvitae. Common varieties of Western Red Cedar are 'Emerald Giant', 'Excelsa' and 'Atrovirens'. 'Smaragd' and 'Pyramidalis' are common varieties of Eastern White Cedar hedging. Species of *Cupressus* (Cypress), *Chamaecyparis nootkatensis* (Yellow Cedar or False Cypress) and *Chamaecyparis lawsoniana* (Port Orford Cedar or Lawson Cypress) are also used in hedging. Oriental Cedar, *Thuja orientalis* (now called *Platycladus*), is less common.

## Symptoms

Trees often die out in a group or in one section of the hedge. If they are stunted compared to healthy trees, this is an indication that they have been under stress and declining for several years, probably since the original planting. If death has occurred suddenly, with no previous symptoms, then consider some change or extreme condition that might have happened in the recent growing season. Note whether entire trees have been killed or just a few scattered branches. If entire trees are dead, this suggests damage to the roots and/or base of the tree.

## Planting Problems

Roots fail to grow out of the rootball sufficiently after planting. Trees that survive the first year after transplanting may remain stunted and decline gradually for several years, until another stress results in tree death. Common causes of root growth failure are:

**Desiccation:** In hot summer weather, rootballs can easily dry out in the truck or at the site before the trees are transplanted. This prevents new root growth. When dead trees are dug up, a dry airspace can often be found between the rootball and the side of the planting hole. Plant new hedges in cool weather and keep roots moist.

# Cedar Hedges FACTSHEET



BRITISH  
COLUMBIA

Ministry of Agriculture  
and Food  
Crop Protection Program  
1767 Angus Campbell Rd.  
Abbotsford, BC V3G 2M3  
Phone: (604) 556-3001  
Fax: (604) 556-3030  
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Balled and burlapped plants are more susceptible to desiccation than plants grown in containers, since up to 90% of their root system is lost at digging.

**Twine and Burlap:** Some twine may not disintegrate quickly enough in the soil. If the twine is not removed at planting, it may cut into the stem as it grows, causing decline and death of the tree. Some burlap sacking is treated with copper sulfate to prevent rot. This gives the burlap a blue or green colour. If treated burlap is not removed before planting, the copper sulfate can prevent new root growth. (Untreated burlap will rot quickly in soil and does not need to be removed before planting.)

**Girdling:** If the rootball has become pot-bound in a nursery container and is not cut and spread open at planting, the taproot may grow around the base of the stem and gradually kill the tree. Root girdling can be seen when dead trees are dug.

**Excess Fertilizer:** Can cause root burn from high salts. Trees will show symptoms of yellowing or nutrient deficiency and brown up entirely if new roots do not form. Death usually occurs in the first year after transplanting. A layer of fertilizer is often found in the root zone.

**Soil Type And Compaction:** If the soil at the planting site is quite different from the soil in the rootball, new roots may have difficulty growing into it. This is particularly true where the landscape soil has a high clay content or is compacted from construction.

**Planting Too Deep:** Roots die out from lack of oxygen. Trees brown up in the first growing season, as from desiccation or fertilizer burn.

## Physiological Effects

**Flagging/Browning:** If only a few branches have died out in patches along the hedge in summer, this may be natural cedar flagging. It is very common on Western Red Cedar and less frequent on Eastern White Cedar. Flagging may be more severe in hot, dry weather but is not considered harmful to the tree.

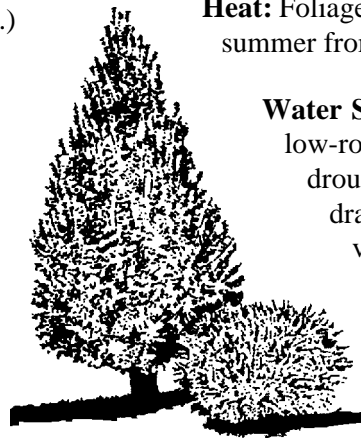
**Discoloured Foliage:** Foliage may take on a bronze to reddish brown to black colour in cold winters. This is natural and the trees will green up as the growing season progresses.

A few varieties have a natural bronze or blue tinge in certain seasons. Some cedars appear blue when flowering.

## Environmental, Soil And Chemical Factors

**Heat:** Foliage can become dull or bronzed in mid-summer from heat and desiccating winds.

**Water Stress:** Cedars are relatively shallow-rooted trees. They are susceptible to drought stress especially on well-drained, sandy soils. The extreme of very wet conditions in the fall and winter, followed by a hot, dry summer, is very stressful for the roots. Hedges should be watered during very dry periods. Mulching will also help to maintain even soil moisture and temperature.



Prolonged flooding and overwatering can also cause root death from lack of oxygen in the soil. Water can accumulate under hedges that are planted downhill from watered lawns. Watering with sprinklers that are timed to go on at short intervals every day will keep the soil continually wet and promote shallow rooting. It is preferable to water deeply for about 30-40 minutes, 2 or 3 times per week.

**Compaction:** After a few years of healthy growth, a hardpan or clay layer in the subsoil may restrict roots, resulting in stunted trees, greater susceptibility to water stress and gradual decline. A hard or clay layer can often be found when the dead tree is dug up.

**pH:** *Thuja* prefer a soil pH of 6 to 6.5, but will grow well in soils up to 7.5. Soils that are too acid can result in nutrient deficiency symptoms (browning or yellowing of foliage) and eventual tree decline. Apply dolomitic lime to increase the pH of acid soils.

**Fertilizer:** Root burn from excess fertilizer is a common problem, especially at the end of the hedge or at a corner, where the applicator may have stopped or turned. Root burn will cause foliage to brown off and may kill the tree if severe.

**Herbicide:** Runoff or drift from herbicides may injure cedar hedges. It may take a year for an entire tree to gradually die after exposure to a systemic herbicide, such as ROUNDUP®.

**Road Salt:** Road salt can damage foliage if slush splashes up onto trees. It can also kill roots by accumulating under hedges in melt water or runoff.

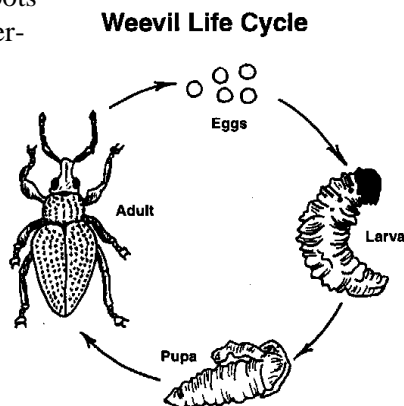
**Mechanical:** Injury to the base of trees from mowers and trimmers.

## Insect, Disease And Animal Agents

(For detailed control measures, see the BC Nursery and Landscape Pest Management and Production Guide).

**Cypress Tip Moth:** Larvae tunnel into leaf scales on one and 2 year-old twigs in the spring. Leaves become yellow, then brown in late winter. White, spun cocoons can be found on leaf scales in early June. Western Red Cedar is not affected.

**Root Weevil:** Adult weevil feeding can girdle young twigs and turn foliage brown, similar to flagging. The weevils feed at night so are not usually seen. Notching of the stem will be evident below the flagged portion of the branch. Damage can occur from March to July. If there is a lot of damage, a sticky band around the trunk will prevent adult feeding. Larvae may feed on roots but do not gener-



ally damage trees once past the seedling stage.

**Mites:** Overall yellowing or browning of foliage in summer may be due to desiccating winds and drought stress or to mites. A few mites are not usually a problem, but in hot, dry weather they can build up to damaging levels. A magnifying glass may be needed to see them. Apply a specific miticide for control.

**Juniper Scale:** Juniper scales attack juniper, arborvitae, cedar and cypress. Cones, twigs and needles are attacked. Heavy infestations deplete plant sap resulting in grey or yellow foliage, reduced growth over time and possible death of young trees. Black sooty mold often develops on honeydew. Scales are round to oval, white and 1.5 mm long. Direct controls against the newly-hatched crawlers in mid-June.

**Mice And Rodents:** Chewing injury can often be found on twigs just below dead leaves. Damage is often worse at the base of the tree, but can occur quite high up. Bark can also be chewed or stripped off at the base of the tree. This may cause death of the branches on one side, or, if the trunk is girdled, may kill the tree entirely. Dogs have also been known to chew lower branches and strip bark from trunks.

**Dog Urine:** Small yellow, brown or black patches of dead foliage at the base of trees.

**Root Rot:** Armillaria root rot is sometimes found in cedar hedges and will kill the trees. Fans of white fungal mycelium can be found under the bark at the base of dead trees and in the roots. Black "strings" called rhizomorphs spread the fungus from one tree to another along the hedge. There is no cure for *Armillaria*. Dead trees should be removed and replaced with a resistant species. Holly and some cypresses, among others, are resistant (see the BC Nursery and Landscape Pest Management and Production Guide for a list).

*Phytophthora* and *Pythium* species can sometimes be found in dead, rotted roots. *Phytophthora* is a weak pathogen on *Thuja*, invading roots that have been damaged by water stress (drought and flooding) or other factors. Western Red Cedar is resistant to *Phytophthora* root rot, but the Eastern White Cedar, especially 'Smaragd', may be somewhat more susceptible.

Cypress and *Chamaecyparis* species can be affected by *Phytophthora* root rot. Port Orford Cedar, also called Lawson Cypress, is resistant to *Armillaria* but highly susceptible to *Phytophthora* and for this reason is now rarely planted as a hedging tree in British Columbia.

## Foliar Blights

Keithia blight caused by a fungus called *Didymascella thujina*, is the most serious disease of *Thuja*. Western Red Cedar is quite susceptible, especially 'Excelsa' and 'Atrovirens'. Eastern White Cedar can also be affected. Infected leaf scales have small, black, circular shotholes and often turn white. Foliage turns brown and drops, leaving branches bare. Small trees and seedlings can be killed entirely but mature landscape trees are less severely affected. On mature trees in dense stands and damp or shaded areas, low branches can appear scorched. Upper branches are less affected. In the landscape, the disease can be controlled with fungicides if necessary. Apply a product containing fixed copper, zineb or mancozeb every 2 weeks from late March to mid-June, especially during wet weather.

Seiridium blight, caused by the fungus *Seiridium cardinale*, occasionally causes twig and foliar dieback and small twig and branch cankers. It is usually a minor or weak pathogen on *Thuja*. Cypress, Yellow Cedar and Oriental Cedar are more severely affected. The disease is also called coryneum canker or Berckmann's blight.

*Kabatina thujae* will cause leaf and shoot death on a few varieties of Western Red Cedar, especially 'Atrovirens'. It will also cause blight occasionally on Eastern White Cedar. Again, this fungus is a more serious pathogen on cypress and *Chamaecyparis*.

### Keithia Blight

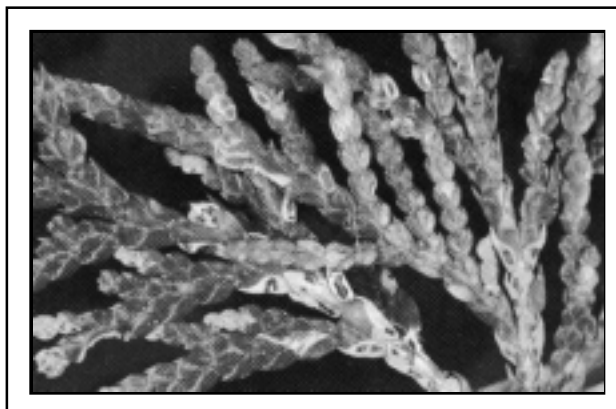


Photo from R.S. Byther, 1996, *Landscape Plant Problems*, Washington State University