

Background

Lawson cypress (*Chamaecyparis lawsoniana*) is an evergreen conifer with flat fern-like foliage, scales rather than needles and small cones that (when present) are about 1 cm or less in diameter (Fig 1). It is often planted as an ornamental tree.

In North America the pathogen *Phytophthora lateralis* has been known as a killer of Lawson cypress for decades. However, recently *P. lateralis* has also been found in parts of Europe, and in 2010 it was reported infecting Lawson cypress in Britain.



Figure 1: Foliage of Lawson cypress.

Symptoms on Lawson cypress

Phytophthora lateralis primarily attacks the roots of Lawson cypress extending up into the lower stem. Infected trees show rapid decline with foliage turning a rusty-red then a dull bronze over **all** or a **large part** of the crown (Fig 2). The pathogen also occasionally attacks the stem or branches, causing discrete aerial infections so that the foliage turns bronze or brown in large, isolated patches in the crown (Fig 3).

When the outer bark is cut away at the base of infected trees discoloured phloem (inner bark) is revealed. It is usually cinnamon brown in colour, and there is a distinct colour difference between the infected and still healthy tissue (Fig 4).

P. lateralis infects Lawson cypress almost exclusively. A single example of a young nursery plant of *Thuja occidentalis* (northern white cedar) has been recorded in Britain, and in North America the Pacific yew (*Taxus brevifolia*) is an occasional host.

Phytophthora lateralis Factsheet

Note: Many people find it difficult to distinguish Lawson cypress from Leyland cypress (*Cupressocyparis leylandii*). There are no known cases of *P. lateralis* infecting Leyland cypress, although foliage browning of Leyland cypress can be very common and is due to a variety of causes including cold winter temperatures or aphid attack. The smell of crushed foliage is an important aid to identification: Lawson cypress is parsley-scented whereas Leyland cypress foliage has a resinous, acrid smell.

However, if in doubt about the species of conifer you are dealing with, examine samples using a reference book to provide guidance on identifying the tree species.



Figure 2: Lawson cypress with *Phytophthora lateralis* root infections



Figure 3: Lawson cypress with *Phytophthora lateralis* aerial infections.

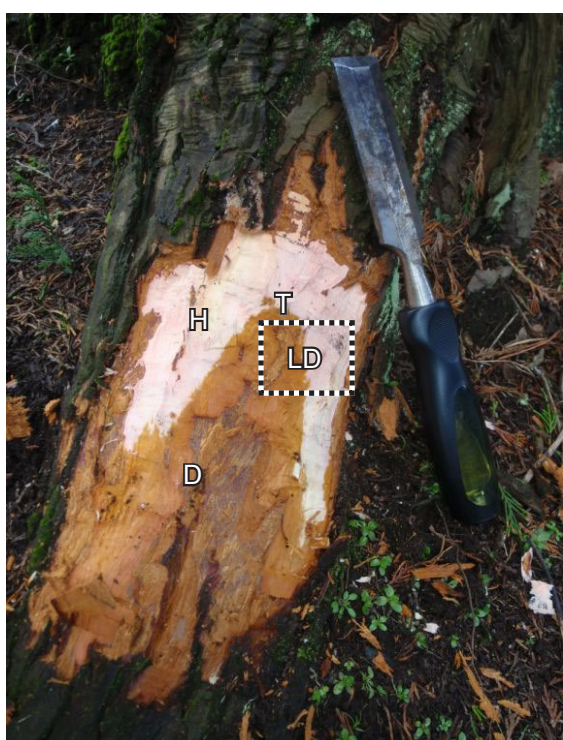


Figure 4: Basal lesions on Lawson cypress infected with *Phytophthora lateralis*. Outer bark has been cut away to reveal the diseased phloem. H indicates healthy phloem; D indicates infected; LD indicates live-dead junction with tongue (T) of infection extending into the healthy tissue. Box indicates good section for sampling.

Collecting samples of Lawson cypress for diagnosis

- Phloem (inner bark) samples are used for diagnosis purposes. Sample from a tree that is in the **early to mid stages of decline**. Trees that are already dead with dead, bronzed foliage do not make suitable samples as the inner bark is invariably too dry to yield *P. lateralis* on isolation.
- Use a mallet and chisel to cut away the outer bark at the base of the main stem including the upper root flares of an affected tree, exposing the phloem (inner bark). Look for signs of browning in the phloem which indicates phloem killing and possible infection by *P. lateralis*. Note: the **outer bark** of Lawson's cypress can be very thick and spongy on older trees and is normally a similar colour to diseased phloem.
- If an aerial infection is suspected, cut away the outer bark at the junction where the affected branch meets the main stem to look for diseased, discoloured phloem.
- Live, healthy phloem is white/pale pink in colour, whereas diseased phloem is dull cinnamon brown (see Fig 4). If the phloem is infected, then work outwards gradually removing bark until revealing the transition between infected and healthy phloem, ie where the cinnamon brown phloem meets the healthy white/pale pink phloem. This is known as the live-dead junction (see Fig 4). With *P. lateralis* the live-dead junction will often be seen as an area of healthy phloem with 'tongues' of infected tissue extending into this area (Fig 4).
- If diseased phloem is found, cut away several sections of phloem, each about 5-10 cm², cutting down to the wood underneath the phloem. Make sure the sample contains the live-dead junction.
- Put samples in a sealable plastic bag (eg a freezer bag) and label with location, date and contact details.
- Send samples **immediately** by first class post. Avoid posting on a Friday.

Depending on the location of the affected trees, send samples
(marked "P. lat" on the outside of the package) to:

**Samples from north of the
Mersey/Humber line go to:**

Disease Diagnostic Advisory Service,
Forest Research,
Northern Research Station,
Roslin, Midlothian,
EH25 9SY.

Tel: 0131 445 2176

e-mail: ddas.nrs@forestry.gsi.gov.uk

**Samples from south of the
Mersey/Humber line go to:**

Disease Diagnostic Advisory Service,
Forest Research,
Alice Holt Lodge,
Farnham, Surrey,
GU10 4LH.

Tel: 01420 22255

e-mail: ddas.ah@forestry.gsi.gov.uk