





Chamaecyparis lawsoniana infected with Phytophthora lateralis in western Scotland.

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Port-Orford-cedar root disease

Port-Orford-cedar (POC) root disease is primarily a disease of Cupressaceae (Cypress) caused by *Phytophthora lateralis*. This disease is not present in New Zealand. Help us keep POC root disease from establishing here by learning what to look for.



Chamaecyparis lawsoniana *showing lesion caused by* Phytophthora lateralis.

Port-Orford-cedar root disease causes a root rot of cypress (Cupressaceae), especially *Chamaecyparis lawsoniana* (Port-Orford-cedar or Lawson cypress), and other tree species in the Taxaceae (yew family). POC root disease has been responsible for severe damage to shelter belts and ornamental plantings of Lawson cypress in France. It has been reported from North America, Asia, Great Britain and Europe.

The pathogen is a threat to countries growing Lawson cypress and is spread between countries through plant trade, particularly with the trade of nursery stock. Once established, *P. lateralis* is spread through water, soil, and, under some conditions, aerially. Limiting the spread of contaminated soil is the major means to limit the spread of the disease.

Symptoms to look for

- Decayed roots
- Root, root collar and branch lesions (pictured below)
- Dead tissue, under bark, is stained cinnamon to dark brown at the root collar
- Foliage throughout the crown turns yellow, then bronze, then light brown
- Trees die quickly; a few weeks for small trees up to a few years for larger trees
- Symptoms can be confused with cypress canker, except that cypress canker presents with bleeding cankers with no staining beneath the bark.



Lesion caused by Phytophthora lateralis on a cypress branch. Notice the dark discolouration on this branch.

Hosts

- Chamaecyparis lawsoniana and many varieties of C. lawsoniana (Port-Orford-cedar and Lawson cypress).
- Callitropsis nootkatensis (=Chamaecyparis nootkatensis) (Nootka cypress).
- Chamaecyparis obtusa and varieties of C. obtusa (Hinoki cypress).
- Chamaecyparis pisifera (Sawara cypress).
- Chamaecyparis sp.
- Juniperus communis (Common juniper).
- Microbiota decussata (Siberian cypress).
- Calibrachoa parviflora (=Petunia parviflora) Petunia.
- Taxus brevifolia (Pacific yew).
- Thuja occidentalis (northern white cedar).

Disease development and spread

- *Phytophthora lateralis* is soilborne and waterborne.
- The pathogen is easily spread by vehicles carrying infested soil, especially along gravel roads.
- Over short distances, the pathogen is spread by recreational activities, e.g., hunting, hiking, and mountain biking.
- Infected roots produce zoospores, which when released can spread through water ways.
- Less frequently, when climatic conditions are suitable, aerial dispersal occurs.
- Root grafts infected with *Phytophthora lateralis* may provide a path for vegetative spread of the pathogen through a plantation.

Identification and testing

Scion's Forest Health Reference Laboratory (FHRL) has a number of tests that can identify *P. lateralis* within 48 hours, including a qPCR assay from infected wood, roots and/or foliage; and immunostrips from symptomatic tissue.

As required by the Biosecurity Act (1993), if you suspect that you have typical POC root disease symptoms, call the Biosecurity New Zealand Pest and Disease hotline – 0800 80 99 66. The Ministry for Primary Industries will coordinate how best to proceed with sampling and identification.

Green, S., Brasier, C.M., Schlenzig, A., McCracken, A., MacAskill, G.A., Wilson, M., Webber, J.F. (2013). The destructive invasive pathogen *Phytophthora lateralis* found on *Chamaecyparis lawsoniana* across the UK. Forest Pathology, 43:19-28.

Hansen, E.M., Goheen, D.J., Jules, E.S., Ullian, B. (2000). Managing Port-Orford-cedar and the introduced pathogen Phytophthora lateralis. Plant Disease, 84:4-14.

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About Scion

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