



Sudden Oak Death in California.

Image: Courtesy of the California Oak Mortality Task Force

Sudden Oak Death

Sudden Oak Death (SOD) is a disease caused by *Phytophthora ramorum*, an incredibly destructive forest pathogen. SOD is not present in New Zealand. Help us keep SOD from establishing here by learning what to look for.



Leaf symptoms on Rhododendron.

Image: Joseph O'Brien, USDA Forest Service, Bugwood.org

Phytophthora ramorum is an aerial *Phytophthora* species that is thought to have originated from East Asia. It has caused the deaths of over 50 million trees in coastal regions of California and Oregon and extensive mortality in Japanese larch plantations (Sudden Larch Death) in the United Kingdom and the Republic of Ireland. It has spread across much of North America and Europe and has recently been reported from Argentina.

Symptoms to look for

Stems cankers have brown/black to light discolouration in the inner bark, cambium and outer sapwood with black zone lines at the edge. Bleeding symptoms are also typical. Trees can exhibit sudden crown decline and even tree death.

Leaf blight and branch dieback is caused by cankers on branches and twigs. Water-soaked lesions develop on leaves. On coniferous hosts branch tips, needles are left hanging from infected branches and are eventually cast.

Leaf spots, blotches and scorches on leaves often have an irregular margin and a corresponding chlorotic halo. Needles often show discolouration and/or dieback.



Grey colouration of Japanese larch needles indicative of infection by *Phytophthora ramorum*.



Canker on tanoak with discolouration under bark.

Hosts

Hosts include 150 species of trees, shrubs, herbs, and ferns, most notably; *Quercus* spp., *Rhododendron* spp., *Larix* spp., *Pseudotsuga menziesii*.

Disease development and spread

- *Phytophthora ramorum* is only known to sporulate prolifically on symptomatic and non-symptomatic leaf or shoot tissue and does not sporulate on infected wood or bark.
- A temperature of 18 to 20°C and extended periods of moisture in the form of fog/mist or rain provide optimum conditions for infection. The main means of infection is via rain splash and sporangia can be spread via wind in water droplets.
- SOD has been isolated from soil and water ways and can be spread via infested soil.

Identification and testing

New Zealand has strict quarantine and biosecurity measures in place to mitigate the introduction of SOD into New Zealand. The Forest Health Reference Laboratory (FHRL) has the capability to detect *P. ramorum* by using morphological and molecular techniques. A qPCR assay for rapid detection, can be used directly from suspected infected tissues, Phytophthora ImmunoStrip® (Agdia, Inc.) tests and cultures.

As required by the Biosecurity Act (1993), if you suspect that you have typical SOD symptoms, call "Biosecurity New Zealand Pest and Disease hotline - 0800 80 99 66". MPI will coordinate how best to proceed with sampling and identification.

Contact information

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About Scion

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