





Rust fruiting, giving a yellow/orange colouration to the gall.

Image: Tod Ramsfield, Canadian Forest Service.

Western gall rust

Western gall rust (WGR) is a serious disease of *Pinus* species caused by the rust fungus *Cronartium harknessii*. This disease is not present in New Zealand. Help us keep WGR from establishing here by learning what to look for.



Symptoms on seedlings

*Cronartium harknessii** does not require an alternate host to complete its life cycle and can spread rapidly from pine to pine. Western gall rust is present throughout most of Canada and the United States. Infection results in the formation of galls, which occur either on branches or on the main stem. While branch galls are rarely lethal, they are important for spore development and disease spread. Stem galls cause serious damage to wood quality, eventual stem breakage and can lead to early mortality, particularly for trees that are infected at a young age.

Symptoms to look for

- Infections of branches and twigs cause globose swellings called galls and can cause branch death.
- Galls that develop on the main stems affect form and growth rate.
- When the rust is fruiting, the galls have an orange or yellow appearance due to spore production.
- Trees of any age are affected, from nursery stock to older plantation trees, but infection only occurs on green tissue in the spring.

Hosts

Western gall rust infects *Pinus* species including but not limited to *P. attenuata*, *P. banksiana*, *P. contorta*, *P. contorta* var. contorta, *P. contorta* var. latifolia, *P. coulteri*, *P. halepensis*, *P. jeffreyi*, *P. mugo*, *P. muricata*, *P. nigra*, *P. pinaster*, *P. ponderosa*, *P. radiata* and *P. sylvestris*.

Disease development and spread:

- Infection occurs on soft succulent new growth in spring.
- Rust spores (aeciospores) germinate and penetrate the epidermal layer of the elongating shoots, including the main leader.
- Globose, spherical woody galls form at the point of infection.
- Sporulation on the galls typically occurs 3 months to 2 years after infection depending on the physiological age of the tree at the time of infection.
- Sporulation occurs annually and would occur from early December until February in New Zealand.
- Spores are wind dispersed.

Identification and testing

Scion's Forest Health Reference Laboratory (FHRL) has the capability to detect WGR, by using morphological and molecular techniques. A qPCR assay for rapid detection within 48 hours, can be used directly from suspected infected tissues.

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

Acknowledgement

We would like to acknowledge Tod Ramsfield, Canadian Forest Service, for his input into this fact sheet.



Numerous branch galls on Pinus banksiana.

* *Cronartium harknessii* taxonomy is currently under revision and may change in the near future.

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