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Resinosis at first branch whorl[1].

Image: Wingfield *et al* 2008.

Pine pitch canker

Pine pitch canker (PPC) is caused by a highly virulent fungal pathogen, *Fusarium circinatum*. This disease is not present in New Zealand. Help us keep PPC from establishing here by learning what to look for.

Pitch canker symptoms in a mature pine stand[1].

Image: Wingfield *et al* 2008.

Pine pitch canker is a destructive disease, associated with reduced yields and high levels of tree mortality, resulting in significant economic losses. The pathogen is thought to be native to Mexico and has spread to the Brazil, Chile, Colombia, Haiti, France, Italy, Japan, Portugal, Spain, South Africa, South Korea, Uruguay, and USA. Italy and France have managed to officially eradicate outbreaks of PPC.

Symptoms to look for

- In the Nursery, PPC causes seed and seedling death. Seedling death is primarily through damping off, fungal infection of the roots and root collar. A large flow of resin at the root collar distinguishes this pathogen from other common 'damping off' pathogens.
- Dieback of branches and stems on young and mature trees. Canker pathogens commonly cause an outpouring of resin, hence the common name "pine pitch canker disease".
- The infection results in flagging or wilting of individual tips or dieback of whole branches and whorls.

Image: Steenkamp *et al* 2012.

Resinosis from infection at root collar[2].

Hosts

Know hosts include 85 pine species and six non-pine species (including *Pseudotsuga menziesii*, *Picea* and *Larix*). The fungus can also live as an endophyte in understorey plant species from several families including at least 20 grass and herb species.

Image: Steenkamp *et al* 2012.

Pitch soaked, resinous wood[2].

Disease development and spread

- PPC can be found sporulating on infected plant material and growing through soil.
- The fungus releases spores throughout the year which are spread by rain splash, fog, wind and insects.
- PPC generally infects plants through wounds but can also infect non-wounded tissues.
- An asymptomatic phase can last in the plant for up to a year which can lead to the accidental movement of nursery stock and plant material into new areas.
- This fungus can live endophytically in a number of understorey plant species (without causing symptoms), including grasses and herbs from several families.

Identification and testing

Scion's Forest Health Reference Laboratory (FHRL) has the capability to detect *F. circinatum*, by using morphological and molecular techniques. A qPCR assay for detection within 48 hours, can be used directly from fruit bodies and/or cultures.

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

1 Wingfield, M., Hammerbacher, A., Ganley, R., Steenkamp, E., Gordon, T., Wingfield, B., & Coutinho, T. (2008). Pitch canker caused by *Fusarium circinatum*—a growing threat to pine plantations and forests worldwide. *Australasian Plant Pathology*, 37(4), 319-334.

2 Steenkamp, E. T., Rodas, C., Kvas, M., & Wingfield, M. J. (2012). *Fusarium circinatum* and pitch canker of *Pinus* in Colombia. *Australasian Plant Pathology*, 41(5), 483-491.

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About Scion

Scion is the Crown research institute that specialises in research, science and technology development for forestry, wood and wood-derived materials, and other bio-material sectors.

Scion's purpose is to create economic value across the entire forestry value chain, and contribute to beneficial environmental and social outcomes for New Zealand.

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Jun 23