Phytophthora pinifolia **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Fungi	Oomycota	Peronosporea	Peronosporales	Peronosporaceae

Common name Daño Foliar del Pino (DFP) (Spanish, Chile)

Synonym *Phytophthora* , sp. AAD-2008

Similar species *Phytophthora megasperma, Phytophthora gonapodyides, Phytophthora inundata, Phytophthora humicola*

Summary *Phytophthora pinifolia* is an oomycete or water mould that has been identified as the likely causal agent of a relatively new disease of Monterey pine (*Pinus radiata*) found in plantations in Chile. It was first observed in 2003 and is locally referred to as \"Daño Foliar del Pino\" (DFP). Characterized by a relatively rapid death of needles and subsequent defoliation of trees, infections typically appear in the late autumn, coinciding with the onset of rain. While some diseased trees can recover the following growing season, others may suffer reduced growth rate and be more susceptible to attack by other pathogens. If trees are infected in their first year of growth the disease may cause death. *P. pinifolia* is currently the most important problem affecting *P. radiata* populations in Chile and seriously threatens the local forestry industry.

view this species on IUCN Red List

Species Description
This new species is characterized by unbranched sporangiophores, and non-papillate, sub-globose to ovoid sporangia that are occasionally free from the sporangiophore with medium length pedicels. Despite using a number of oospore inducing techniques, oogonia/antheridia [sexual structures] were not observed in isolates of *P. pinifolia* (Duran *et al*. 2008).

Habitat Description
Aerial parts of *Pinus radiata* including needles, needle bases and stems of young trees. The habitat of *Phytophthora pinifolia* is unusual in that it is the only species of this genus known to infect green shoots and needles of a *Pinus* sp. (Duran *et al*. 2008). Trees of all ages are susceptible to disease, from seedlings to mature trees.

Reproduction
There are many questions regarding the biology of the pathogen that remain to be answered. While it is assumed that the sporangia are the infective propagules, this has yet to be shown experimentally. These structures were not abundant in culture and more natural conditions under which to produce them will need to be developed. Likewise, infection studies with zoospores and the infection biology and life cycle of the pathogen remain to be understood (Duran *et al*. 2008).

General Impacts
Phytophthora pinifolia causes devastating needle blight disease on Monterey pine (*Pinus radiata*). According to Wingfield (2007) “The disease, locally referred to as Daño Foliar del Pino (DFP), is typified by the relatively rapid death of needles and subsequent defoliation of trees. Infections usually begin to appear in late autumn and co-incident with the onset of rain. Infected needles typically display distinct resinous bands on their laminas. Where infections reach the needle bases, copious amounts of resin exude from the points of attachment with the stems and dead needles fall from the trees. New needle growth in the following season is typically not affected and trees appear to recover unless a new season of infection occurs the following year. Newly planted seedlings and naturally regenerated plants die in the first year of growth.” After a number of years of successive infection mature trees may die, probably caused by increased susceptibility to opportunistic infection by fungi such as *Diplodia pinea*. In Chile *P. pinifolia* is the most important problem affecting *P. radiata* plantations, and poses a serious threat to the local forestry industry (EPPO 2009).

Management Info
Preventative: It seems that only *Pinus radiata* is affected by *Phytophthora pinifolia*. Thus other *Pinus* species may be chosen for plantation development. There is also evidence that different genotypes of *P. radiata* differ in susceptibility, meaning that less susceptible varieties could be chosen for plantation (Duran *et al*. 2008).
Chemical: There are possibilities for use of fungicides to control the disease (Duran *et al*. 2008).

Principal source:

Compiler: IUCN SSC Invasive Species Specialist Group (ISSG) with support from the Ministry of Agriculture and Forestry (MAF)- Biosecurity New Zealand

Review:

Pubblication date: 2009-11-26

ALIEN RANGE

[2] CHILE

BIBLIOGRAPHY
5 references found for **Phytophthora pinifolia**

Managment information

General information
Duran, A., Gryzenhout, M., Slippers, B., Ahumada, R., Rotella, A., Flores, F., Wingfield, B.D., & Wingfield, M.J. 2008. *Phytophthora pinifolia* sp. nov. associated with a serious needle disease of *Pinus radiata* in Chile. *Plant Pathology 57*: 715-727.
European and Mediterranean Plant Protection Organization (EPPO), 2009. *Phytophthora pinifolia* is a new pathogen of *Pinus radiata* in Chile: addition to the EPPO Alert List. EPPO Reporting Service Pests & Diseases
North American Plant Protection Organization (NAPPO), 2007. *Phytophthora pinifolia* nom. prov. NSF Center for Integrated Pest Management
Summary: Available from: http://www.pestalert.org/viewNewsAlert.cfm?naid=49 [Accessed 25 August 2009]
UniProt Taxonomy, 2009. Species *Phytophthora pinifolia*
Summary: Available from: http://www.uniprot.org/taxonomy/538568 [Accessed 25 August 2009]
Wingfield, M.J. 2007. A new species of *Phytophthora* associated with dying pine needles in Chile. Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria 0001. South Africa.
Summary: Available from: http://www.fabinet.up.ac.za/tpcp/pinifolia [Accessed 25 August 2009]