

EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION  
ORGANISATION EUROPEENNE ET MEDITERRANEENNE  
POUR LA PROTECTION DES PLANTES

10-15736  
P PM point 6.4

INITIATION AND PEST CATEGORIZATION :

*Phytophthora pinifolia*

**Stage 1: Initiation**

**1 - Give the reason for performing the PRA**

Identification of a single pest

**Comments:**

Dr Webber (Forest Research, GB) attracted the attention of the EPPO Secretariat to a newly described species of *Phytophthora* which is severely damaging plantations of *Pinus radiata* in Chile.

**2a - Enter the name of the pest**

*Phytophthora pinifolia*

**2b - Indicate the type of the pest**

fungus or fungus-like

**2d - Indicate the taxonomic position**

Chromista; Oomycota; Oomycetes; Peronosporales; Peronosporaceae; *Phytophthora*

**3 - Clearly define the PRA area**

EPPO member countries

**4 - Does a relevant earlier PRA exist?**

no

**6 - Specify all host plant species (for pests directly affecting plants) or suitable habitats (for non parasitic plants). Indicate the ones which are present in the PRA area.**

**Comments:**

So far, the disease has only been observed on *Pinus radiata*. In Chile, other coniferous trees (*P. pinaster* and *Pseudotsuga menziesii*) growing in the vicinity of affected *P. radiata* did not show any symptoms (Ahumada *et al.*, 2009).

No specific study has been conducted on the host range (information requested to Chili).

**7 - Specify the pest distribution**

**Comments:**

Chili

southward from Arauco province, Región del Biobío (VIII) to Valdivia province, Región de Los Ríos (XIV) (Ahumada, 2009)

**Stage 2: Pest Risk Assessment - Section A : Pest categorization**

**8 - Does the name you have given for the organism correspond to a single taxonomic entity which can be adequately distinguished from other entities of the same rank?**

yes

**Comments:**

The disease is known since 2003 and the causing agent could only be identified in 2007.

*P. pinifolia* is phylogenetically closely related to other *Phytophthora* spp. that are mildly pathogenic and normally associated with soil and roots.

**10 - Is the organism in its area of current distribution a known pest (or vector of a pest) of plants or plant products?**

yes (the organism is considered to be a pest)

**Comments:**

In Chili the pest has been causing damage to *Pinus radiata* plantations. The disease causes the rapid death of young

seedlings, and mature trees can be killed after repeated infections. In Chile, it is considered that *P. pinifolia* is the most important problem affecting *P. radiata* plantations, and that it is a serious threat to the local forestry industry although damage in 2007 and 2008 have been much more limited than in previous years (Ahumada *et al.*, 2009).

Symptoms (pictures will be shown at the meeting)

The disease is characterized by needle infection, defoliation and tree mortality. Initially, small dark resinous bands appear on green needles. A reddish discoloration of the needles is subsequently observed, appearing first on the lower side of the branches. Dead and dying needles remaining on the trees give them a scorched appearance. Needles then fall from the trees which can be almost totally defoliated. Exudation of resin at the basis of the needles and necrotic lesions under the bark are also observed.

#### 12 - Does the pest occur in the PRA area?

no

#### 14 - Does at least one host-plant species (for pests directly affecting plants) or one suitable habitat (for non parasitic plants) occur in the PRA area (outdoors, in protected cultivation or both)?

yes

##### Comments:

*Pinus radiata* originates from the western coast of the US.

In the EPPO region *P. radiata* has been mainly planted in northern Spain (ca. 400,000 ha) and to a very much lesser extent in various Mediterranean countries Portugal (between 30 to 40 000 ha) France and Italy (between 5 and 10 000 ha) (source P. Bouillon French Ministry of Agriculture forestry department pers. comm.. 2010). CABI (2005) mentions the presence of *P. radiata* in the British Isles.

*P. radiata* is also planted in parks and gardens for ornamental purposes. In France it is planted as alignment tree near the atlantic coast (Flot, French NPPO, pers. comm. 2010)

In France plantation of *P radiata* as a forest is recommended in Pays Basque only due to its sensitivity to frost and high atmospheric humidity requirement. *P. radiata* also prefers sandy, acidic and deep soils.

Due to its sensitivity to frost the species is unlikely to be survive in central and Northern Europe (JL Flot pers. comm., 2010).

#### 15a - Is transmission by a vector the only means by which the pest can spread naturally?

no

#### 16 - Does the known area of current distribution of the pest include ecoclimatic conditions comparable with those of the PRA area or sufficiently similar for the pest to survive and thrive (consider also protected conditions)?

yes

##### Comments:

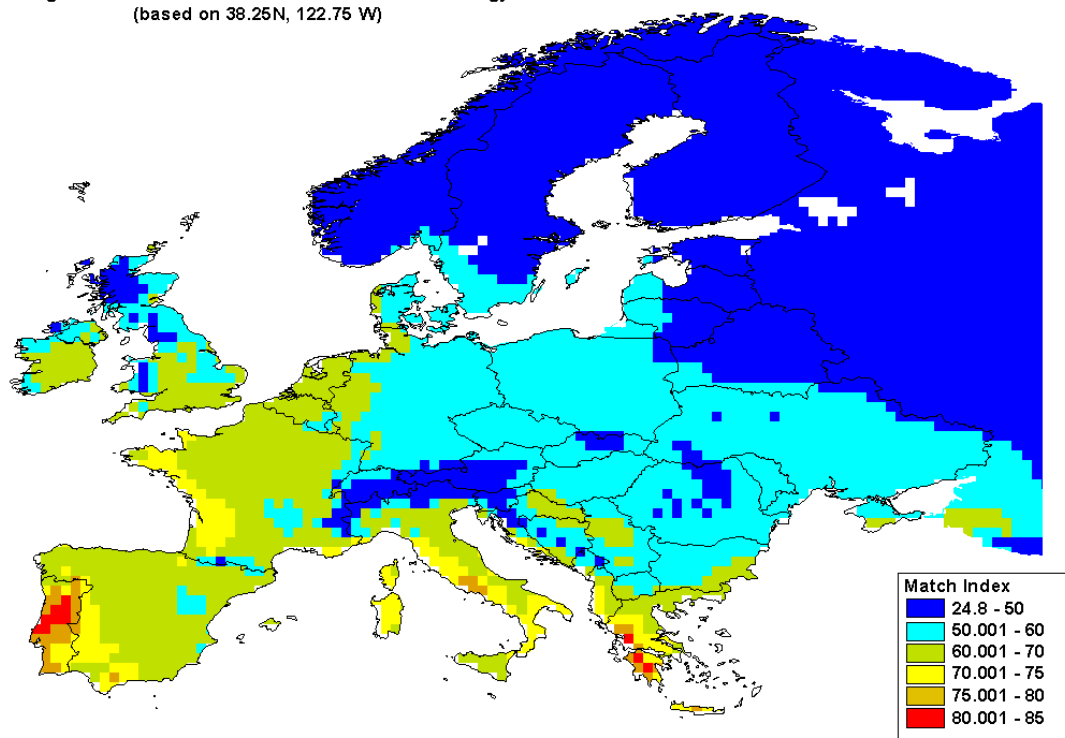
The climatic conditions that favor *P. pinifolia* have not been published.

A climate comparison was made between Conception (Chilean nearest meteorological station to the first outbreak area) and Europe the map is shown below:



Dr Wingfield (University of Pretoria, South Africa) was contacted and commented that climatic conditions favoring infection by *P. pinifolia* are very similar to climatic conditions favoring *P. ramorum* in California. The difference being that Chile is colder than California.

Comparison of California SOD and European Climate  
Using CLIMEX Match Index with CRU Global Climatology  
(based on 38.25N, 122.75 W)



A comparison of climate between a location in California where *P. ramorum* is damaging (an area just north of the San Francisco bay area, south of Santa Rosa) with climatic conditions in the rest of Europe has been performed in the framework of the RAPRA PRA and is shown below.

In a report of a visit of two New Zealander scientists to Chili it is mentioned that in 2007 the damage was less important than in the years before (Bulman & Ganley 2009). They state that in 2006 conditions in autumn were wetter and temperature milder than average whereas 2007 was much cooler than previous years. Dr Wingfield commented that it was true that the disease has been less dramatic these last few years... this is due he believed to colder winters and less rain in Autumn and Spring. Typically the disease begins in Autumn when the rain starts and when it cools down; infection is low in mid winter and then peaks again as it warms up (still cool) in Spring (Wingfield, 2010 pers. comm.). The presentation made by Dr Ahumada (Bioforest SA Chili) at the Sudden Oak Death Symposium confirms that the affected area in 2007 and 2008 was more limited than in previous years (500-1000 ha in 2007-2008 compared to 60 000 ha in 2006).

The pattern of distribution of the disease in new areas correlated with the flow of moist coastal air from north to south and then inland through valley systems and the disease was worse in south facing slopes (Bulman & Ganley 2009).

17 - With specific reference to the plant(s) or habitats which occur(s) in the PRA area, and the damage or loss caused by the pest in its area of current distribution, could the pest by itself, or acting as a vector, cause significant damage or loss to plants or other negative economic impacts (on the environment, on society, on export markets) through the effect on plant health in the PRA area?

yes

Comments:

The disease causes the rapid death of young seedlings. Young trees (up to four years old) can suffer terminal wilt and dieback particularly when growing near older infected stands. Older tree can be severely defoliated. After 2 or 3 years of repeated infection some mortality of older stands has been seen. It is thought that *Diplodia pinea* develops on trees weakened by *P. pinifolia* and is the cause of tree mortality (Bulman & Ganley, 2007). No specific figure is available on damage (i.e. mean percentage of affected trees in a stand). Bulman & Ganley mention that older stands are less affected but no figure is given. Nevertheless pictures presented by M. Gryzenhout at the third international workshop *Phytophthora/Pythium* and related genera in 2008 (<http://www.phytophthoradb.org/pdf/O20Gryzenhout.pdf>) show severe defoliation.

In 2003 the disease was first noted over an area of 70 ha. By 2004 damage had spread throughout an area of 3.300 ha increasing to 30.100 ha in 2005 and over 60.000 by 2006 (Bulman & Ganley, 2009)

In Chile, it was considered that *P. pinifolia* is the most important problem affecting *P. radiata* plantations, and that it is a serious threat to the local forestry industry. In 2007 considerably less damage have been recorded compared to 2006 (see question 16), this is believed to be linked to less favorable climatic conditions.

### **18 – The pest could present a phytosanitary risk for the PRA area.**

#### **Comments:**

The host *Pinus radiata* is present in the PRA area. Forest plantations are limited but *P. radiata* is used as an ornamental species.

#### Climatic conditions

Assuming that *P pinifolia* has climatic conditions similar to *P ramorum*, there are areas in EPPO member countries with suitable conditions for its establishment.

When climatic conditions are suitable similar damage than in Chili is possible.

Little information is available in the literature as well as on internet. Contacts have been made with Chilean scientists and the NPPO to gather more information.

#### Situation regarding potential pathways:

Research is being conducted in Chili to understand the life cycle of *P. pinifolia* (Ahumada *et al.* 2009). Information on spread mechanisms is lacking but spread in Chili seems more natural than human mediated (Bulman & Ganley, 2009).

The current situation in most EPPO member countries is that import of plants of *Pinus* is restricted: plants for planting or parts of plants (cut branches) are prohibited or an import permit is requested but this pest can form an additional basis to support these restrictions.

#### Wood as a pathway:

Studies have showed that green sawn timber was not a likely pathway for introducing *P. pinifolia* to new areas (Ahumada *et al.* 2009).

**Given that few information on the pest is available and that current measures already prevent the introduction of the pest (no need for a detailed PRA to justify measures as no new measures are likely to be requested by our members) the EPPO Secretariat suggests that sufficient information is provided by Alert List sheet for the pest to be added on the A1 list of pests recommended for regulation.**

#### REFERENCES

- Ahumada R, Díaz C, Peredo M, Barría C, González P, Cuevas G (2009) Detection of possible *Phytophthora pinifolia* infection in *Pinus radiata* green sawn timber produced in Chile. Abstracts from the 4th Sudden Oak Death Science Symposium, 2009-06-15/18, Santa Cruz, California, USA, p 18.  
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- Bulman L & Ganley R (2009) Report on visit to Chili to examine DFP-October 2007  
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