

## Report of a Pest Risk Assessment

**Pest :** *Gibberella circinata* Nirenberg et O'Donnell (teleomorph)  
synonym  
*Fusarium circinatum* Nirenberg et O'Donnell (anamorph), *Fusarium subglutinans* f. sp.  
*pini*  
Pitch Canker

**PRA area :** EPPO region

**Assessor :** Plant Protection Service, France

**Date :** 17 April 2000

### Summary of the Conclusions

*Fusarium subglutinans* f. sp. *pini* is defined by its high aggressivity against its specific host : pine. The chances of entry into Europe are high. The fungus can be introduced by several pathways : seedlings (however the introduction of pines seedlings is forbidden), wood (however the introduction of coniferous wood from the countries contaminated is strictly controlled), introduction of insects vector of the disease, vehicles and equipment, seeds. The most important risk of introduction is by seeds : importation of pine seeds are not controlled and the fungi cannot be detected by visual control (it is present outside but also inside the seeds). The pest may easily transfer from the pathway to host material in the PRA area (in nurseries for example).

The potential for establishment is high. The pitch canker was discovered in Virginia USA in 1945, it was already introduced in Japan (1988), Mexico (1989) and South Africa (1990). It can attack 47 pine species, several of them growing to a substantial extent in the PRA area. Many insects (Curculionidae, Scolytidae etc.) can be vector in the PRA area. The known geographical distribution of the disease include ecoclimatic zones comparable with those of the PRA area.

Because of the wide distribution of pine species in Europe, potential damage could be highly significant. No control measures are available in forest.

### Status of the pest

The pest has no quarantine status.

### Further Action

#### 1 Initiation

##### 1.1. Reason for doing PRA

The pathogen was discovered in USA where damages in nurseries and forest are significant. It was introduced in several countries (Japan, Mexico, South Africa). Furthermore, the host species (*Pinus* species) is prevalent in France and throughout the EPPO region.

##### 1.2. Taxonomic position of pest

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synonym :  
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*Fusarium subglutinans* f. sp. *pini* is well defined by its high aggressivity against its specific host : Pine.

We use the name *F. subglutinans* f. sp. *pini*, usually used in literature, but scientific name is *Gibberella circinata*.

## **2 Probability of introduction**

### **2.1 Entry**

#### *2.1.1 Geographical distribution*

North America, South America (Chile), South Africa, Iraq and Japan. Data from Europe are doubtful : Motta E., 1986 from Italy (identification mistake) ; Dwinell et al., 1998 from Spain in nursery.

#### *2.1.2 Major hosts plants*

*Pinus* species.

#### *2.1.3 Which pathway(s) is the pest likely to be introduced on*

The chances of entry into Europe are high. The fungus can be introduced by several pathways : seedlings (however the introduction of pines seedlings is forbidden), wood (however the introduction of coniferous wood from the countries contaminated is strictly controlled), introduction of insects vector of the disease, vehicles and equipment, seeds. The most important risk of introduction is by seeds : importation of pine seeds are not controlled, cones and so seeds can be infected and the fungi cannot be detected by visual control (it is present outside but also inside the seeds).

## **2.2 establishment**

#### *2.2.1 Crops at risk in the PRA area*

*Pinus* species in nurseries, plantations, forests and ornamental trees.

#### *2.2.2 Climatic similarity of present distribution with PRA area (or parts thereof)*

The known geographical distribution of the disease include ecoclimatic zones comparable with those of the PRA area (USA, Japan, Chile...)

#### *2.2.3 Aspect of the pest's biology that would favour establishment*

Many insects (Curculionidae , Scolytidae etc.) can to be good vector in the PRA area.

#### *2.2.4 Characteristics (other than climatic) of the PRA area that would favour establishment*

There are many species of the genus *Pinus* throughout the PRA area, often with a wide distribution. *Pinus* represent 20% of the French forest.

#### *2.2.5 Which part of the PRA area is the endangered area*

The risk is especially high in the south of PRA area because of the optimum growth of the fungi (26°C). But all parts of the PRA area are threatened, because of the wide distribution of *Pinus* species within the EPP0 region. Furthermore, the fungi is now established in several countries with different climatic conditions.

## **3 Economic impact assessment**

### *3.1 Describe damage to potential hosts in PRA area*

Damage to pines include growth suppression, stem deformation, and tree mortality. Potential damage could be highly significant in nursery and forest. In the nursery, mortality is important. In forest, damage is alterate growth rather than mortality. Much of the literature reports the dramatic effect of the disease on urban and roadside trees (M. Dick, 1998).

### *3.2 How much economic impact does the pest have in its present distribution*

There have numerous reports of the seriousness of the outbreak of pitch canker in radiata pine in California (M. Dick, 1998). In 1993, in North Carolina, Carey & Kelley, 1994 reported mortality of 47% in nurseries. Dwinell *et al.*, 1985 have estimated losses for planted *Pinus elliottii* (mainly due to alterate growth) between 385 000 to 870 000 m<sup>2</sup> by year. It was estimated that 2.5 to 3.4 million logs could not be used for solid timber products because of stem malformation (Dwinell *et al.* in M. Dick, 1998).

### *3.3 How much economic impact would the pest have in the PRA area.*

As *Pinus* represent 60% of coniferous trees and 20% of French forest, economic impact could be highly significant (see 3.2).

## **4 Conclusion**

### *4.1 Summarise the major factors that make the risk from this pest unacceptable*

*Pinus* species are widely distributed into the PRA area, they are of significant interest for European forests. Much of the literature reports the dramatic effect of the disease on nursery, forest but also urban and roadside trees. No control measures are available in forest. In nursery control is difficult and expensive.

### *4.2 Give an estimate of the probability of establishment*

The chances of entry into Europe is high. The most important risk of introduction is by seeds : importation of pine seeds are not controlled and the fungi cannot be detected by visual control. The pest may easily transfer from the pathway to host material in the PRA area (in nurseries for example). The potential for establishment is high. The pitch canker was discover in Virginia USA in 1945, it was already introduced in Japan (1988), Mexico (1989) and South Africa (1990). It can attack 47 pines species, several of them growing to a substantial extent in the PRA area. Many insects (Curculionidae , Scolytidae etc.) can to be vector in the PRA area. The known geographical distribution of the disease include ecoclimatic zones comparable with those of the PRA area.

### *4.3 Give an estimate of potential economic impact*

Impact will be of economical nature (mortality in nursery, fungicide and insecticide cost, alterate growth of the trees) but also of environmental nature as *Pinus* are widely distributed in forest and as ornamental trees.

### *4.4 Status of the pest*

Since the disease may affect most of the PRA area, the potential for establishment, and dissemination are high and because of considerable potential economic and environmental impact, the pest must be considered of quarantine status. Introduction of Pine seeds could be forbidden.