

Report of a Pest Risk Assessment

This summary presents the main features of a pest risk assessment which has been conducted on the pest, according to EPPO Standard PP 5/3(1) Pest Risk Assessment Scheme.

The text in italics is to guide the assessor as to what information should be presented, it will not appear on the final summary.

In answering questions, be brief

Pest: *Phytophthora quercina*
PRA area: Germany (and EU/EPPO region)
Assessor: Dr. Thomas Jung
Date: 25/08/2003

1. INITIATION

1.1 Reason for doing PRA: *P. quercina* is a newly described species that is pathogenic to oaks, and involved in oak decline in Germany and several EU/EPPO countries. It was added to the EPPO Alert list in April 2000.

1.2. Taxonomic position of pest: *Phytophthora quercina* Jung, Chromista, Oomycota, Pythiales, Pythiaceae

2. PROBABILITY OF INTRODUCTION

2.1 Entry

2.1.1 Geographical distribution: Germany (PRA area): Widespread.
EU: Austria, France (Northeastern and Southern France; absent from western and southwestern parts of France), Belgium, Luxembourg, Sweden, England, Scotland, and Italy.
 EPPO: Hungary, Turkey (European and Asian part).
 Serbia.
 Origin unknown.

2.1.2 Major host plants: *Quercus robur*, *Q. petraea*, *Q. cerris*, *Q. pubescens*, *Q. ilex*, *Q. suber*, *Q. frainetto*, *Q. vulcanica*, *Q. hartwissiana*

2.1.3 Which pathway(s) is the pest likely to be introduced on: Infested nursery stock (oospores in rhizosphere soil and fine roots of oak plants and non-host plants grown on former oak beds).
 Infested soil particles (containing oospores) adhering to machines for logging and road construction, cars and boots.

2.2 Establishment

2.2.1 Crops at risk in the PRA area: *Quercus robur*, *Q. petraea*, *Q. cerris*, *Q. pubescens*

2.2.2 Climatic similarity of present distribution with PRA area (or parts thereof):	<i>P. quercina</i> is already widespread in all ecoclimatic zones of the PRA area.
2.2.3 Aspects of the pest's biology that would favour establishment:	The short life cycle (sexual reproduction = 1-2 weeks; vegetative reproduction via zoospores = 24-72 hrs) and the long survival time of the oospores together with their low sensitivity to various abiotic factors enable even low populations of the pathogen to become established. Soilborne <i>Phytophthora</i> species are difficult to eradicate and low populations are difficult to detect. <i>P. quercina</i> is rather polymorphic and adaptable to quite different site conditions. Strong competitor for its ecological niche (oak fine roots).
2.2.4 Characteristics (other than climatic) of the PRA area that would favour establishment:	Present in nurseries of the PRA area; therefore rapid spread via infested nursery-grown oak plants and non-host plants is likely. Lack of competitors, compaction of the subsoil that leads to internal waterlogging, and high pH and fertility of the soil at many of the sites that are presently not covered by oak stands but are planned to be converted to (e.g. pure conifer stands on permanently or periodically wet sites, former agricultural land, sites for amenity plantings). Oak species are widespread throughout the PRA area and EU/EPPO. Natural enemies are not known.
2.2.5 Which part of the PRA area is the endangered area:	Geographically and ecoclimatically more than 75% of Germany/EU and more than 50% of EPPO region.

3. ECONOMIC IMPACT ASSESSMENT

3.1 Describe damage to potential hosts in PRA area:	Fine root destruction on oak species. Continuous die-back of trees.
3.2 How much economic impact does the pest have in its present distribution:	<i>P. quercina</i> is involved in the complex disease oak decline, which is a serious threat to forestry in the PRA area and in the EU, by causing a chronic decline that eventually leads to death and by predisposing oaks to various biotic and abiotic factors.
3.3 How much economic impact would the pest have in the PRA area:	<i>P. quercina</i> is involved in the oak decline complex in the PRA area and in the EU/EPPO region (see 3.2). In addition, <i>P. quercina</i> has the potential to become a serious pest in future forest and amenity plantings of oaks if introduced by infested nursery stock.

4. CONCLUSIONS OF PRA

4.1 Summarize the major factors that influence the acceptability of the risk from this pest:	Aggressive pathogen of tree species that are widely grown in the PRA area and EU/EPPO region and that are economically and ecologically important. Already widespread and commonly associated with declining oaks on many sites in the PRA area and EU/EPPO region.
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	The known distribution covers most ecoclimatic zones of EU/EPPO. Rather polymorphic and adaptable to very different site conditions. Short asexual and sexual life cycles. Difficult to detect, and due to the long survival time of the oospores also difficult to eradicate. Especially for oak stands in the field no practicable and economically reasonable control measure is known. Since <i>P. quercina</i> was recovered from oak plants and non-host plants coming from nurseries of the PRA area, rapid spread via infested nursery-stock is likely.
4.2 Estimate the probability of entry:	Medium to high (6.6 for entry via infested nursery stock of oaks; 5.9 for entry via infested nursery stock of non-host plants; 4.4 for entry via infested soil particles adhering to machines or boots etc.; overall 5.67)
4.3 Estimate the probability of establishment:	High (7.25)
4.4 Estimate the potential economic impact:	Medium (3.84)
4.5 Degree of uncertainty	A major point of uncertainty is whether or not <i>P. quercina</i> is of limited distribution. In the PRA area (Germany) the pathogen is probably present in most oak stands on suitable sites. However, more data are needed on the presence of <i>P. quercina</i> in those EU/EPPO countries/regions from which it was not recorded yet. Furthermore, the direct economical impact of <i>P. quercina</i> is difficult to assess because it is part of a multicausal disease complex.
5. OVERALL CONCLUSIONS OF THE ASSESSOR	The geographically widespread and eventually almost non-limited distribution of <i>P. quercina</i> in the PRA area and the EU/EPPO region may not justify a declaration of <i>P. quercina</i> as a quarantine pest. However oaks are commonly used for amenity plantings, for afforestations on former agricultural sites, and for the conversion of storm-vulnerable conifer forests on permanently or periodically wet sites into more stabile forest types. Most of these yet uninfested sites are favourable for <i>P. quercina</i>. The recovery of <i>P. quercina</i> from oak plants and non-host plants coming from nurseries of the PRA area and France, poses a threat to the nursery industry in the PRA area and the EU/EPPO region. More data are needed on the distribution and incidence of the pathogen in nurseries, and phytosanitary measures in infested nurseries should be applied in order to prevent the introduction of the pathogen to uninfested nurseries and oak plantations established in the future. The most efficient measure seems to be the production of oak plants in containers filled with thermo-sterilized substrate.