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

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WPPR point 8.3

Report of a Pest Risk Analysis

This summary presents the main features of a pest risk analysis which has been conducted on the pest, according to EPPO Decision support scheme for quarantine pests.

Pest:	*Puccinia hemerocallidis*
PRA area:	EPPO region
Assessor:	Central Science Laboratory (York, GB) for the risk assessment, EPPO Secretariat for the Risk Management
Date:	First Interception PRA 2002-01-10 revised on 2005-02-17, PRM 2007-02-16

STAGE 1: INITIATION

Reason for doing PRA:	The pest has been detected on two imported consignments of *Hemerocallis* plants from the USA
Taxonomic position of pest:	Fungi: Basidiomycota, Teliomycetes, Uredinales

STAGE 2: PEST RISK ASSESSMENT

Probability of introduction

Entry

Geographical distribution:	The pest is present in: Asia: China; Japan; Korea; Taiwan, Australia/Pacific: Australia - Queensland (EPPO, 2002). North America : Canada, USA Europe Russia - Sakhalin, Kuriles, Siberia; Central America: There is indirect evidence that the rust may be present in Costa Rica as daylilies imported from Costa Rica have been diagnosed with the rust on arrival in Miami (Hernández *et al.*, 2002; Schubert and Leahy, 2001).
Major host plants or habitats:	*P. hemerocallidis* is a heteroecious rust. The aecial host is *Patrinia* spp. (Valerianaceae). The telial host is restricted to the genus *Hemerocallis* (Liliaceae), although there is a record of *Hosta* (Liliaceae) also being a host plant. However, preliminary inoculation studies done in USA failed to transmit the disease to *Hosta*. In USA, it is noted that, so far, the disease has not been observed on *Hosta*, or on *Patrinia* (which is apparently not a commonly grown ornamental in the EPPO region). *P. hemerocallidis* can survive and multiply on *Hemerocallis* alone (asexual multiplication) in the absence of its aecial host.

Which pathway(s) is the pest likely to be introduced on:	Plants for planting, crowns and roots of host plants from countries where *P. hemerocallidis* occurs. It has already entered the PRA area (eradication measures were implemented).

Establishment

Plants or habitats at risk in the PRA area:	*Hemerocallis* are common perennial garden plants in the EPPO region. Apparently, *Patrinia* are not common plants in Europe (Asian origin, used as ornamentals or medicinal plants), but the fungus can multiply and survive without this aecial host.
Climatic similarity of present distribution with PRA area (or parts thereof):	*P. hemerocallidis* has been recorded in climates as diverse as those in Siberia and Florida and would be expected to be capable of establishment in the EPPO region where *Hemerocallis* spp. are grown. No climatic study was made
Aspects of the pest's biology that would favour establishment:	Spores are disseminated by wind, plant handling (e.g. hands, shoes, clothes of workers…).
Characteristics (other than climatic) of the PRA area that would favour establishment:	
Which part of the PRA area is the endangered area:	Whole EPPO region: it appears from the wide and rapid spread of *P. hemerocallidis* under various climatic conditions in USA, that it could survive in most parts of the EPPO region.

POTENTIAL ECONOMIC CONSEQUENCES

How much economic impact does the pest have in its present distribution:	Daylily rust does not necessarily kill plants but can affect plant vigour, susceptibility to other pests and marketability.
Describe damage to potential hosts in PRA area:	First symptoms are bright yellow spots or streaks on the leaves followed by the appearance of yellow/orange pustules (containing orange spores). As the disease develops, leaves turn yellow and dry. Plants are not killed but are severely disfigured.
How much economic impact would the pest have in the PRA area:	The introduction of *P. hemerocallidis* would lead to direct losses to growers through losses in quality. Supply of plants may be affected. Also, there would be a requirement for the application of fungicide treatments on a crop which so far has hardly needed them.

CONCLUSIONS OF PEST RISK ASSESSMENT

Summarize the major factors that influence the acceptability of the risk from this pest:	
Estimate the probability of entry:	The pest has already entered the EPPO region. The probability of entry is high. There is no information on the importance of imports of *Hemerocallis* in the EPPO region.
Estimate the probability of establishment:	The probability of establishment is high

Estimate the potential economic impact:	The probability of economic impact is high as the main host plant, *Hemerocallis*, is not treated for this disease at the moment and there would be an impact on quality and supply as well as on consumer demand.
Degree of uncertainty	Medium: volume of trade of *Hemerocallidis*
OVERALL CONCLUSIONS	**The pest should be considered for Risk Management**

It could be useful for the recipient of this report to receive an illustration, either of the pest itself or of the damage it causes.

STAGE 3: PEST RISK MANAGEMENT

IDENTIFICATION OF THE PATHWAYS

Pathways studied in the pest risk management	Plants for planting of *Hemerocallis* and *Patrinia*
Other pathways identified but not studied	**none**

IDENTIFICATION OF POSSIBLE MEASURES

Possible measures for pathways

Measures related to consignments:

Inspection is not considered as an option as symptoms may not always be easy to detect depending on the imported material (the disease can only be detected on green parts).

Fungicide or disinfectant treatment prior to export does not guarantee a rust-free plant.

Measures related to the crop or to places of production:

Growing resistant cultivars is not an option for now but differences in cultivar susceptibility to daylily rust have been observed in experiments conducted in the US, more research into cultivar susceptibility and resistance is required.

The pest has a high capacity of spread consequently the measures should be pest-free area.

Other possible measures

Eradication: given the epidemiology of the daylily rust fungus and its ability to survive as a latent infection, eradication may be difficult once the pathogen is introduced.

EVALUATION OF THE MEASURES IDENTIFIED IN RELATION TO THE RISKS PRESENTED BY THE PATHWAYS

Measures are only recommended for plants for planting of *Hemerocallis* and *Patrinia*

Degree of uncertainty **low**

CONCLUSION:

Plants for planting of *Hemerocallis* and *Patrinia* originating in countries where *Puccinia hemerocallidis* occurs	PC and, if appropriate, RC Area freedom for *Puccinia hemerocallidis*