

Data Sheets on Quarantine Pests

*Puccinia pittieriana***IDENTITY**

Name: *Puccinia pittieriana* P. Hennings

Taxonomic position: Fungi: Basidiomycetes: Uredinales

Common names: Common potato rust (English)

Rouille de la pomme de terre (French)

Roya de la papa (Spanish)

Bayer computer code: PUCOPT

EPPO A1 list: No. 155

EU Annex designation: II/A1

HOSTS

The main hosts are potatoes and tomatoes. *Solanum demissum* and other wild Solanaceae are also attacked. Although other rusts are known on Solanaceae, *P. pittieriana* is the only telial rust known on potatoes and tomatoes (Laundon & Rainbow, 1971).

GEOGRAPHICAL DISTRIBUTION

P. pittieriana is indigenous to Central and South America, where it occurs in mountain valleys, mostly over 3000 m. It has not spread to other continents.

EPPO region: Absent.

North America: Mexico.

Central America and Caribbean: Costa Rica.

South America: Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Venezuela.

EU: Absent.

Distribution map: See IMI (1994, No. 113).

BIOLOGY

P. pittieriana is a microcyclic rust, producing only teliospores. Below 15°C, the teliospores germinate to produce basidia and basidiospores in 3-24 h (French, 1981). The basidiospores are carried away by wind to new host leaves, and begin infection immediately. The incubation period is 14-16 days on potatoes at temperatures of 16°C or below, and lesions develop fully in 20-25 days. Teliospores mature 30-40 days after inoculation.

At higher temperatures, basidiospores are not formed, so spread is favoured by cool conditions - average temperature of 10°C with 10-12 h of free moisture. The pathogen persists on overlapping potato crops or on solanaceous weeds. The longevity of teliospores has apparently not been determined, but they might persist in debris in soil, accompanying exported potato tubers.

DETECTION AND IDENTIFICATION

Symptoms

Since *P. pittieriana* is one of the only two rusts known on potatoes, identification presents no problem. Rounded lesions 3-4 mm in diameter change colour from pale to red to brown. Rusty pustules (telia) protrude 1-3 mm on the underside of the leaf, with a corresponding depression on the upper side. *Aecidium cantensis*, the only other potato rust, forms larger rust pustules, 5-10 mm across, each composed of many individual aecia about 0.5 mm in diameter (cluster cups).

Morphology

Teliospores ellipsoid, slightly constricted at septum, 23-38 x 17-25 µm. For further details, see Laundon & Rainbow (1971), French (1981).

MEANS OF MOVEMENT AND DISPERSAL

The potential for wind-borne distribution is high, as with all rust fungi, but there is a limitation for long-distance dispersal of basidiospores because they are generally shorter-lived than urediniospores (absent from *P. pittieriana*). Thus wind-borne spread from South or Central America to other continents seems unlikely. The fungus could be introduced on leaves of living material (e.g. material imported for breeding purposes), or on dead plant material (e.g. scientific specimens), or on crop residues or soil accompanying tubers.

PEST SIGNIFICANCE

Economic impact

P. pittieriana is only of significant economic importance in Colombia and Ecuador (French, 1981). It can cause severe defoliation. There is no recent information suggesting that *P. pittieriana* causes significant damage to tomatoes.

Control

Chemical control is possible through the use of carbamate fungicides which can be applied at 14-day intervals (Diaz & Echeverria, 1963). To reduce inoculum, sanitary methods including destruction or removal of crop debris and control of associated weeds are recommended. There are no records on the biological control of the fungus.

Phytosanitary risk

P. pittieriana is an EPPO A1 quarantine organism (OEPP/EPPO, 1988) and is also of quarantine significance for IAPSC. In the EPPO region, *P. pittieriana* could certainly find conditions suitable for epidemic development, especially in northern countries. It is less certain how or whether it could overwinter (as teliospores on debris, on solanaceous weeds). In view of the great importance of the potato crop, the risk from *P. pittieriana* is considered great enough to justify A1 quarantine status.

PHYTOSANITARY MEASURES

P. pittieriana belongs to the group of South American pests of potato which justifies strict post-entry quarantine procedures in the EPPO region, together with equivalent checks before export. Only material for scientific purposes should normally be imported from infested countries. For all other potato material from America (except Canada and USA), importation should be prohibited (OEPP/EPPO, 1990).

BIBLIOGRAPHY

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