

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.

Pest: Potato rough dwarf virus

PRA area: EPPO Region

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1. INITIATION

1.1 Reason for doing PRA: To determine whether potato rough dwarf virus, a recently described virus, should be added to the EPPO A1 list. No previous PRAs exist for this virus.

1.2. Taxonomic position of pest:

Taxonomic position: Virus
Family: Not yet assigned
Genus: *Carlavirus*
Species: Potato rough dwarf virus
Acronym: PRDV
Synonyms: None

2. PROBABILITY OF INTRODUCTION**2.1 Entry**

2.1.1 Geographical distribution: Argentina (Balcarce region) and possibly Brazil and Uruguay.

2.1.2 Major host plants: Potato (*Solanum tuberosum*). PRDV has been transmitted experimentally to *Chenopodium* spp., *Impatiens balsamina*, *Nicotiana* spp. and *Petunia hybrida* and some of these are grown in the EPPO Region.

2.1.3 Which pathway(s) is the pest likely to be introduced on: Breeding material and seed potatoes (tubers and microplants) and ware potato tubers.

2.2 Establishment

2.2.1 Crops at risk in the PRA area: All potato crops.

2.2.3 Aspects of the pest's biology that would favour establishment:

Experimentally, PRDV is transmitted efficiently by mechanical inoculation and inefficiently by aphids (*Myzus persicae*). These aphids and other aphid species which are potentially vectors of PRDV are present throughout the PRA area. The relative importance of mechanical to aphid transmission in the spread of PRDV in the field is not known.

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

The virus is tuber borne and would survive from one tuber generation to the next. It does not seem to produce symptoms in all potato cultivars.

2.2.5 Which part of the PRA area is the endangered area:

All potato growing areas of the EPPO Region.

3. ECONOMIC IMPACT ASSESSMENT

3.1 Describe damage to potential hosts in PRA area:

Infected plants of some potato cultivars e.g. Jaerla and Kennebec (which are grown in the PRA area) may show severe leaf deformation and dwarfing (Fig. 1). Other varieties e.g. Atlantic and Kennebec may show no symptoms.

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

PRDV is said not to be important locally in Argentina, although 4% of Spunta and 0.4% Kennebec affected. Action has been taken to test for the virus in the certification scheme in Argentina.

3.3 How much economic impact would the pest have in the PRA area:

No studies have been done to determine yield loss. Severe yield loss will occur in stunted plants (Fig. 1). The yield loss in symptomless plants may be presumed to be similar to the closely related PVS which may cause yield losses of 0-20% depending on the cultivar infected. In addition, there is the potential for increased symptoms and yield loss from synergistic infection with other viruses. If PRDV became established in the EPPO Region there would be loss of export markets in those countries where PRDV is not known to occur. Further economic impact would be on certification schemes through the introduction of mandatory testing.

4. CONCLUSIONS OF PRA

4.1 Summarize the major factors that influence the acceptability of the risk from this pest:

- PRDV is a pest of potato, a very important crop to the EPPO Region.
- The virus systemically infects all plant parts and can be moved with tubers or microplants in international trade.
- The pest has been detected by the UK in material from Argentina using specific antibodies in post-entry quarantine testing.
- PRDV would be missed by methods currently used by most potato quarantine stations.

- PRDV is symptomless in some cultivars and therefore will not be detected during normal phytosanitary inspections.
- PRDV comes from areas with ecoclimatic zones comparable with areas in the EPPO Region.
- PRDV may be transmitted (inefficiently ?) by aphids which are present in the EPPO Region.
- PRDV can probably be spread from crop to crop on machinery and by people.
- PRDV may have a potential economic impact.

4.2 Estimate the probability of entry:

Breeding material 6.33
Seed 5.00 (microplants/microtubers), 5.17 (minitubers), 6.25 (field grown tubers)
Ware 6.33

4.3 Estimate the probability of establishment:

7.64

4.4 Estimate the potential economic impact:

5.29

4.5 Degree of uncertainty

Because the virus has only been described fairly recently relatively little information is available on its distribution and effect on yield, particularly with different potato cultivars on in combination with other viruses. The relative importance of mechanical to aphid transmission in the spread of PRDV in the field is also not known and this would be important in assessing the likely ease and rate of establishment in the EPPO Region.

5. OVERALL CONCLUSIONS OF THE ASSESSOR

Because PRDV is believed to be absent from the EPPO Region and has a relatively high potential to cause yield loss, it is proposed that PRDV should be a quarantine pest.

Figure 1. Kennebec infected with PRDV

