PEPPER RINGSPOT VIRUS
(PepRSV)

Potatoes Aartappels SA

Compiled and published by Potatoes South Africa (Department: Research and Development Department) 2024

Proposed reference: Potatoes South Africa. 2024. Factsheet: Pepper Ringspot Virus . www.potatoes.co.za/research/factsheets

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Background

The Pepper ringspot virus (PepRSV) was recorded in Brazil already in the 1960's. The spreading in other countries is unknown. In South Africa the PepRSV was recorded in various potato production regions in the Limpopo, Free State, KwaZulu-Natal, North West and Northern Cape provinces. It was also identified in samples gathered at fresh produce markets where it often appeared latently. It must be emphasised that symptoms are often latent and infection levels low.

PepRSV, was first observed locally in 2020 and was positively confirmed in 2023 The virus was also reported on sunflower in 2023 by researchers of the University of Pretoria's Food and Agriculture Biotechnology Institute (FABI).

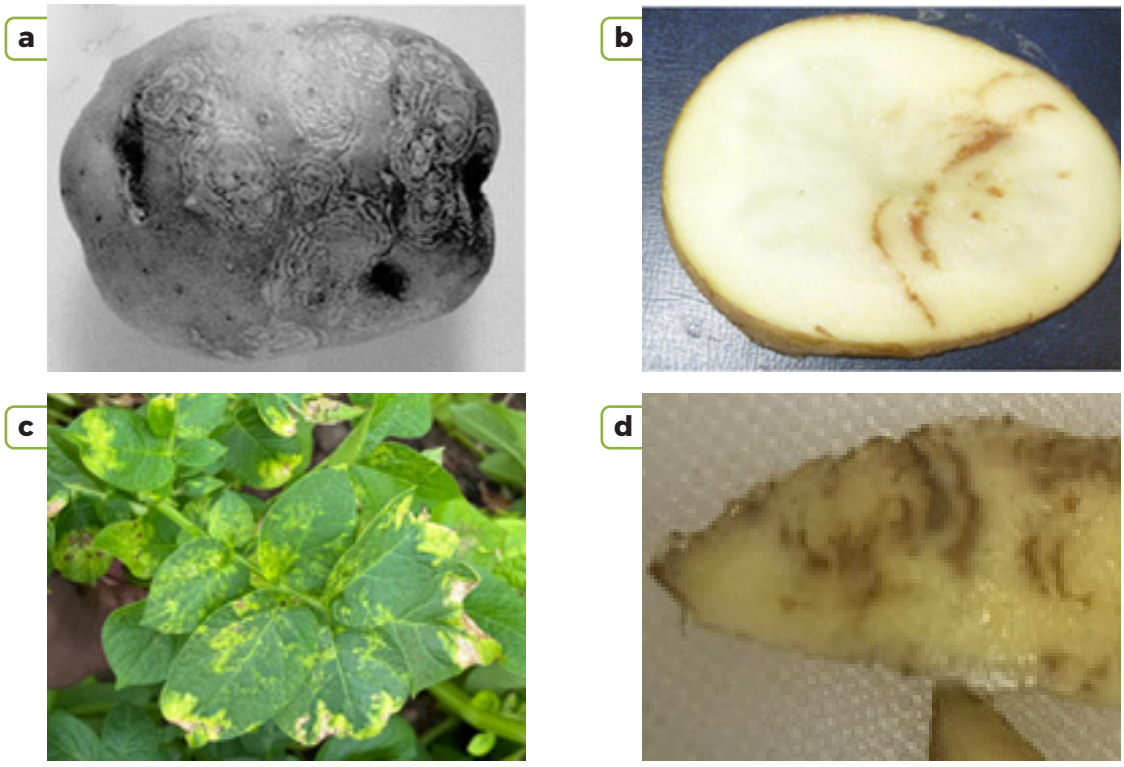
Origin

PepRSV belongs to the Tobra virus genus. It is closely related to the Tobacco rattle virus (TRV) and Pea early browning virus that are not present in South Africa.

Symptoms

PepRSV is visible on the tubers as ring spot symptoms (photo a) and annular internal browning in the tubers (photos b and d). On the leaves it is observed as yellowing (photo c). Photo d shows a tuber with severe symptoms, but it is uncommon.

In many instances the disease appears as a latent infection (asymptomatic) or it is confused with internal browning.



Symptoms: Potato tubers show (a) external ring symptoms, (b) internal brown spots and (c) yellowing of leaves. (d) is an example of extreme PepRSV symptoms. (photo acknowledgement: Dr Lindy Esterhuizen, ARC)

Example of PepRSV on sunflower (Photo Dr David Read, University of Pretoria)

Distribution

Tobra viruses are spread mechanically by seed or pollen on crops such as tomatoes and capsicums (chillies). It can also be spread through implements.

Literature shows that the Tobra virus group is spread by the Stubby root nematode (*Nanidorus minor*). This is an endemic virus that are regularly found on grass types. In the cases of PepRSV the transmission by nematodes still has to be confirmed.

Hosts range

The virus can occur on a wide range of hosts and can also be present latently. Host plants on which PepRSV was recorded includes:

- Blackjacks (*Bidens* sp).,
- Lambs quarters (*Chenopodium amaranticolor*),
- Wild tobacco (*Nicotiana clevelandii*),
- Tobacco (*Nicotiana tabacum*),
- Common bean (*Phaseolus vulgari*),
- Peas (*Pisum sativum*),
- Tomato (*Lycopersicon esculentum*),
- Capsicum (chillies) (*Capsicum* sp.),
- Faba beans (*Vicia faba*),
- Sunflower (*Helianthus annuus*), and
- Artichoke (*Cynara* cardunculus)

Control

Because virus diseases are impossible to control with crop protection products the spreading thereof should be limited.

Currently there is no clarity as to whether the PepRV can be spread by nematodes, or not. However, it makes sense to implement a nematode control strategy and consudt soil test to determine the presence of these nematodes in soils.

Because the virus can be spread by planting material it makes sense to plant different cultivars from different seed sources to reduce the risk of seed contamination. Seed can also be tested for the presence of PepRSV by testing planting material or seed plantings.

There is no known recorded adverse effect on humans. Infected potatoes are fit for human consumption. If the disease is indeed present the following measures can be applied.

1. Infected seed may not be used for seed production purposes.
2. To prevent spreading through the planting of infected planting material, infected seed may not be marketed.

Acknowledgements: Dr Lindy Esterhuizen AND Dr Gerhard Pietersen