




# Reducing the risk of Pepper Ringspot Virus

Prevention is better than cure

## Background

The question regularly comes up how a potato grower can mitigate the risk of introducing Pepper Ringspot Virus (PEPRSV) on his farm. At this stage very little is known about where the virus came from, how does it spread and what can we do to avoid it. The Agricultural Research Council (ARC) and the Department of Agriculture, Land Reform and Rural Development (DALRRD) have however made great strides in monitoring the occurrence throughout the country.



Fortunately, after risk assessment, quarantine measures in terms of the Agricultural Pests Act, 1983 (Act No.36 of 1983) have been lifted for the marketing of fresh potatoes.

It must also be emphasised that potatoes with PepSV are safe for consumption. When lifting the status of table potatoes, DALRRD, did request that the growers should keep records on where they have sourced their plantings should they identify the virus on their farms to assist with the distribution status of the disease. This will also contribute to the economic impact assessment conducted by Potatoes SA.

DALRRD have also contracted the ARC to conduct research and continue with a survey within South Africa which will assist in terms of the determining pest distribution status and trace-back to ensure effective phytosanitary actions and measures.

In the case of Seed Potatoes, DALRRD considers that infested seed potato continues to be a potential risk in terms of transmission and spreading of PepRSV and the conditions for the phytosanitary measures, remain unchanged. This includes the restriction movement of infected seed potato and destruction of the infected material.

## 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)



1  
Infested seed or planting material



2  
Literature shows that the Stubby Root Nematode (*Nanidorus minor*) that feeds on tubers and roots can transmit this virus and Stubby Root Nematode is widely distributed throughout South Africa. It must be highlighted that *N. minor* generally occurs in low numbers as it produces only one egg at a time, unlike the Root-knot nematodes (*Meloidogyne spp*) which produce large quantities of eggs.



3  
Rotation crops can also act as a host for the PepRSV. Sunflower has already been shown to be a host in South Africa and studies are underway by the ARC who are evaluating 25 typical rotation crops as potential hosts for the PEPRSV.



In a research project on surveys led by Dr Lindy Esterhuizen from the ARC the virus was often symptomless (latent) which makes the detection of this virus difficult.

## Preventative measures to avoid PepRSV infestation:

1

Plant certified potato seed. The Potato Certified Scheme visually screen for PepRSV symptoms. If symptoms are present, a sample will be tested with a PCR test and if it is positive all certification actions are suspended on this field.

2

PepRSV cannot be controlled with traditional crop protection products. Instead, the vectors (stubby-root nematode) that spread the virus must be targeted.

3

Diversity is a good method of mitigating risk. This includes planting potato seed from different seed sources. Consider different varieties as varieties should differ in susceptibility.

4

Before planting, test soils for the presence of the Stubby Root Nematode (*Nanidorus minor*) to avoid unnecessary nematicide applications. If the Stubby Root Nematode does occur, consider a nematode application in consultation with your Croplife approved crop protection advisor.

5

Although growers can test their seed potatoes before planting this does however not provide clear evidence on the status of the virus as the sample may not always be representative as the virus is not consistently spread throughout a field. It must also be kept in mind that this is done on own discretion and can be a costly exercise.

## Host Plants

Although the ARC is busy with an assessment on potential host plants for PepRSV the following host have been reported in literature to act as host.



Blackjacks  
(*Bidens sp*)



Lambs' quarters  
(*Chenopodium amaranticolor*)



Wild tobacco  
(*Nicotiana clevelandii*)



Tobacco  
(*Nicotiana tabacum*)



Common bean  
(*Phaseolus vulgaris*)



Peas  
(*Pisum sativum*)



Tomato  
(*Lycopersicon esculentum*)



Capsicum (chillies)  
(*Capsicum sp.*)



Faba beans  
(*Vicia faba*)



Sunflower  
(*Helianthus annuus*)



Artichoke  
(*Cynara cardunculus*)



**The ARC and DALRRD are monitoring the distribution of PepRSV and Potatoes is conducting an economic impact assessment and can be contacted at**

Department of Agriculture, Land Reform and Rural Development (DALRRD) for attention [MaandaR@dalrrd.gov.za](mailto:MaandaR@dalrrd.gov.za) and [Phytomatters@dalrrd.gov.za](mailto:Phytomatters@dalrrd.gov.za) should PepRSV symptoms be noted.

Dr Lindy Esterhuizen for attention [esterhuizenl@arc.agric.za](mailto:esterhuizenl@arc.agric.za)

Potatoes SA for attention [dirk@potatoes.co.za](mailto:dirk@potatoes.co.za)

