Webinar informs about pests, payments, and other problems

By Susan Marais, Plaas Media

Earlier this year several key issues facing the primary potato industry were addressed during a webinar hosted by CropLife SA and Potatoes SA.

During the webinar Dirk Uys, Potatoes SA's research and innovation manager, said the dream was to increase South Africa's current per capita potato consumption from 36 to 50 kg per year. This would involve increasing production from 2.5 million tonnes on 52 000 ha to 3.23 million tonnes on 55 000 ha. "If we can get every person to eat one additional potato per week, we will already have increased demand by 630 tonnes per year, making this dream possible."

However, this increase needs to occur in an environment where the industry is reducing the use of active ingredients due to challenges such as the banning of certain ingredients and the development of disease resistance against others.

PepRSV

Dr Lindy Esterhuizen, a senior researcher at the ARC Vegetable, Industrial and Medicinal Plants campus at Roodeplaat, shared insights regarding a research study the Agricultural Research Council (ARC) has been conducting since 2022 on potatoes and pepper ringspot virus (PepRSV). PepRSV is transmitted by a nematode vector known as *Nanidorus minor* (previously classified as *Paratrichodorus minor*). "This nematode has quite a large host range and in South Africa, it has been reported in vegetables, grain crops, deciduous and tropical fruit and uncultivated areas, which includes fynbos and indigenous forest," Dr Esterhuizen said, adding that the nematode prefers sandy soils because it moves in the water film within the soil.

PepRSV belongs to the *Tobravirus* genus, which also includes the tobacco rattle virus (TRV) and the pea early browning virus (PEBV). PepRSV has only been identified in two places: Brazil (1966) and South Africa (2020). TRV is found in the United Kingdom, Europe, Russia, Japan, Ethiopia, America and the Middle East. Both PepRSV and TRV are problematic because they cause corky spots on tubers, rendering the vegetables unmarketable.

"PepRSV was first identified in *Bidens* species (weeds) in Brazil. It has also been found in peppers, tomatoes, various weeds, peas, and beans. The most important aspect of understanding its distribution is knowing the vector involved," Dr Esterhuizen noted. TRV is vectored by 12 different nematode species, while a single nematode species – *Nanidorus minor* – transfers it.

Discovery and distribution

PepRSV was first discovered during the potato certification process in a commercial planting in the Northern Cape in 2019. Since 2021, incidences of PepRSV have increased countrywide. Between June 2023 and May 2024, the ARC monitored produce at the Johannesburg Fresh Produce Market. This data revealed that PepRSV-infected tubers were present in at least seven of South Africa's provinces (*Table 1*).

The cultivars in which the virus has been identified include Mondial, Panamera, Sifra, Up to Date, Allison, Avalanche, and Lanorma. While the signs can be seen on the plant leaves, Dr Esterhuizen said it does not look the same on all the cultivars. "It is difficult to see the difference between different viruses just by looking at the leaves."

Because PepRSV has not been extensively researched, its full host range remains unknown. However, the known weed hosts are *Chenopodium amaranticolor, Chenopodium murale quinoa, Nicotiana clevelandii, Nicotiana benthamiana, Datura stramonium, Gomphrena globosa, Bidens* species, *Eustoma grandiflorum, Gerbera jamesonii, Gloxinia sylvatica, Pogostenom patchouli, Solanum violifolium* and *Phaseolus pubescens*.

The crops identified as hosts for the virus include beans, faba beans, peas, pepper, potato, artichoke, tobacco, and sunflower. "We are currently conducting a pot trial at the ARC with 26 different plants to determine if they are also hosts of PepRSV."

For management purposes, Dr Esterhuizen advised producers to use virus-free seed. "PepRSV is mechanically transmissible, so pruning tools or knives should be decontaminated." Producers should

also think twice before moving soil from one area to another, as well as be aware of what is in their soil. This will help them control the vector/nematode. "Have your soil tested to determine the presence and number of stubby-root nematodes in your soil," she recommended.

Sustainable production

Prof Martin Steyn, an agronomist from the Department of Plant and Soil Sciences at the University of Pretoria, discussed resource efficiencies, a challenge that will only intensify as global demand for resources rises and climate change escalates.

He focussed on the two most precious non-renewable resources: water and soil.

"Although potatoes are a resource-intensive crop, they are one of the most water-efficient food crops," Prof Steyn noted (*Table 2*). Given that South Africa is located in a water-scarce region, it is crucial to use this already-stressed resource optimally. "The problem will only worsen over time."

In 2016, Prof Steyn was part of a research team that examined the water use efficiencies of 100 potato producers across the country. "While the average South African potato producer uses water very efficiently, some individual producers do not perform nearly as well. It is our job as researchers to help these producers improve their efficiencies." Lower water use efficiencies are usually due to low yields, over irrigation or high rainfall. Large-scale drainage after rains is also a concern that needs to be addressed.

Table 2: Water footprints of food products. (Source: *www.waterfootprint.org*)

Product	Water use
150 g potato (one average-sized potato)	43.5 ℓ (South African irrigation producers use 19 ℓ/150 g of potato)*
150 g orange	80 ℓ
150 g peach	140 ℓ
60 g egg (one egg)	196 ℓ

**Fact added by Prof Martin Steyn.*

Table 1: Detection of PepRSV according to an ARC Survey from 2023 to 2024. (Source: ARC)

Provinces	Areas	Commercial producers	Seed producers
Free State	Bethlehem	23	8
	Bloemhof		
	Brandhof		
	Bultfontein		
	Christiana		
	Harrismith		
	Hertzogville		
	Kroonstad		
	Petersburg		
	Reitz		
	Theunissen		
	Vryburg		
	Warden		
Limpopo	Bendor	6	1
	Dendron		
	Polokwane		
	Vivo		
North West	Bloemhof	5	1
	Skeerpoort		
	Stella		
KwaZulu-Natal	Bergville	5	2
	Mooirivier		
	Winterton		
Northern Cape	Douglas	4	1
	Kimberley		
Mpumalanga	Middelburg	1	
Gauteng	El Sparks	3	
	Tarlton		
	Petit		

Managing soil

Regarding soil and nutrient efficiency, significant nutrient leaching is occurring across the country, particularly in respect of calcium, sulphur, nitrogen and, to a lesser extent, potassium. Adding more nutrients would only increase leaching, while lower levels would result in yield losses. Therefore, producers need to consider nutrients remaining in the soil after potato harvests when planning crop rotations.

Ultimately, farm management is the most crucial factor in minimising unproductive losses, Prof Steyn emphasised. "Improvements must start at the management level." Producers can immediately improve their operations by identifying non-sustainable farming practices and exploring alternative options to improve their farming efficiency."

For more information, email Dr Lindy Esterhuizen at esterhuizenl@arc.agric.za or Prof Martin Steyn at martin.steyn@up.ac.za.

Mondstuk van die Suid-Afrikaanse aartappelbedryf • Mouthpiece of the South African potato industry

CHIPS

VOL 38 NO 5 • SEPTEMBER / OCTOBER 2024

SUCCESSFUL 2024 CONGRESS PAVES THE WAY FOR 2025

COMPETITION COMMISSION ON FRESH PRODUCE MARKETS

Potato waste: Quantity, value, causes

Physiological disorders in potato tubers

Potato cultivation and climate change