

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

CHIPS

VOL 35 NO 05 • NOVEMBER / DECEMBER 2021

**CERES/KOUE BOKKEVELD-
KULTIVARPROEF ONDER BESPROEING:
DONKERBOS 2020/2021**

**EMPANGENI INFORMATION DAY
A SPUD-TACULAR
LEARNING EXPERIENCE**

**Die GeoFarmer-platform
maak monitering maklik**

**Stuit Alfalfa-mosaïekvirus
in sy spore**

**Potato product exports:
A twelve-month snapshot**

drieledige beskerming teen *Lepidoptera*

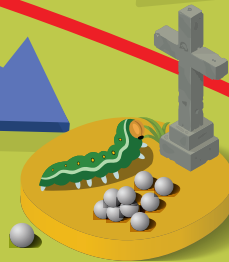


hoogs aktief

Trippel meganisme van aktiwiteit waarborg effektiewe en langdurende werking met minder toedienings, wat tyd en geld spaar



eierdodende aktiwiteit
verhoed dat eiers uitbroei



beïnvloed
voortplantingsvermoë
wyfies lê steriele eiers en
verhoed 'n volgende
generasie

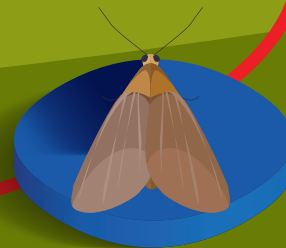


larfdodende aktiwiteit
meng in met die
vervellingsproses



betroubaar

Effektief ongeag die weer en beheer ook individue wat weerstandbiedend is teen organofosfate, karbamate en piretroïede



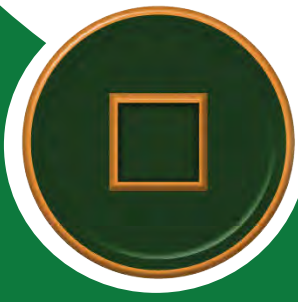
selektief

SORBA werk hoofsaaklik met
inname en is dus veilig vir
voordelige insekte



LEES DIE ETIKET VIR VOLLEDIGE BESONDERHEDE.
SORBA® bevat lufenuron (Reg. nr. 15343, Wet 36 van 1947) VERSIGTIG.
SORBA® is 'n geregistreerde handelsmerk van 'n Syngenta Groepmaatskappy.
Syngenta Suid-Afrika (Edms) Beperk, Privaatsak X60, Halfway House, 1685. Tel. (011) 541 4000. www.syngenta.co.za
© Syngenta Ag, 2000. Kopiereg op hierdie dokument word voorbehou. Alle ongemagtigde reproduksie word verbied.

   @SyngentaSA | www.syngenta.co.za



HARVEST GROUP

When only the best will do

New and well researched potato bag, offering a new alternative to traditional paper bags for packaging potatoes.



ADVANTAGES

- Water resistant
- Recyclable
- Very strong
- Integral handle
- Enhances the shelf life of potatoes
- Can also be made to be biodegradable.

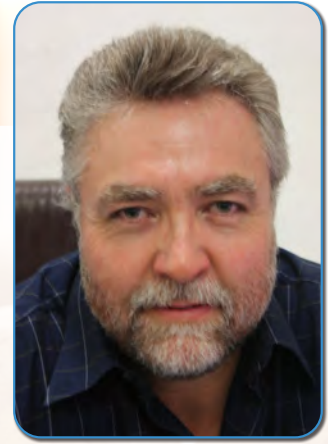


CONTACT DETAILS
www.harvestbags.co.za
info@harvestbags.co.za
012 546 6499



Aartappels SA op die langpad

Deur Willie Jacobs, HUB van Aartappels SA



As die onlangse inligtingstoer van Aartappels SA (ASA) enigsins as 'n aanduiding moet dien van die betrokkenheid en verbintenis wat plaaslike aartappelprodusente tot hul bedryf toon, is ons beslis op 'n goeie plek. Hoewel nog in sy kinderskoene, het die eerste rits besoeke van die inligtingstoer twee dinge duidelik gemaak: ons bedryf staan sterk, en ons produsente is die sout van die aarde.

Die hoofartikel in hierdie uitgawe fokus reeds op die sake wat hoog op die toer se agenda was, en daarom gaan ek nie op daardie besprekings uitbrei nie. Waarop ek graag wil fokus, is die gees van ons bedryf, want uiteindelik is dit die faktor wat ons vorentoe gaan neem en ons produsente deur moeilike tye gaan dra.

Oud en jonk groei saam

Die eerste ding wat my opgeval het is die wonderlike ouderdomsverspreiding van ons bedryfsrolspelers: die inligtingsdae is deur oud en jonk, gevestig en nuut, bygewoon. Dit is goeie nuus vir enige bedryf, want dit spreek van groei asook mentorskap. Die aartappelbedryf is geseënd in hierdie opsig en dit is 'n voordeel wat ons met beide hande moet aangryp.

Geen bedryf kan oorleef sonder nuwe bloed wat deur jare se wysheid gelei word nie. Hopelik kan ASA sy rol hierin behoorlik sement deur die res van die jaar en aanstaande jaar

se inligtingsdae wat nog kom – ons doel is immers om in te lig en by te staan.

“Geen bedryf kan oorleef sonder nuwe bloed wat deur jare se wysheid gelei word nie.


'n Verdere aspek wat my laat regop sit het, was ons produsente se ongelooflike deursettingsvermoë en die gees waarmee moeilike omstandighede aangepak word. Ons land het baie uitdagings, maar droogte en wispelturige weersomstandighede is sleutelfaktore wat die kameel se rug kan breek. By baie van hierdie vergaderings het ons gehoor hoe produsente swaar trek, maar moed hou en planne maak. Hulle is vooruitstrewend en gehard, en beweeg vorentoe.

Dit is ook baie verblydend om te sien en te hoor dat ASA

se deurlopende navorsing en tegniese inligting oor kultivars en aanplantings deur hierdie gemeenskap omarm en toegepas word.

ASA gaan digitaal

Soos wat daar in heelwat mediaberigte verklaar is, gaan ASA sy energie daarop fokus om geïdentifiseerde tekortkominge so spoedig as moontlik aan te spreek. Dit sluit onder andere in die beperkte kommunikasie tussen ASA-personeel en die groter porsie van ons bedryfsdeelnemers en produsente, asook meer intydse beskikbaarstelling van alle relevante kennis en inligting wat na vore kom, soos en wanneer dit versorg en geverifieer is.

'n Klein voorsmakie daarvan sal eersdaags aan die lig kom soos ons gemaklik raak met die akkuraatheid van die voorstellings op ons nuwe platform ... Kyk solank uit vir die Potatoes SA-ikoon in die App Store en op Google Play. Daar sal later meer kennisgewings hieroor uitgestuur word. 

REBELO

AGRICULTURAL GROUP

WORLD CLASS POTATO

AND ONION EQUIPMENT

NICHOLSON
Machinery Ltd

QUALITY POTATO AND

ONION PACKAGING

Sorma Group

EXCELLENT PARTS & SERVICES

Ferrari
COSTRUZIONI
MECCANICHE

STRUIK
SINCE 1934

FORIGO
roteritalia

agricola italiana
PNEUMATIC PRECISION SEED DRILLS

Machinery and Parts:

Jose Rebelo - 082 716 1664

Richard Rule - 072 525 9047

Miguel Rebelo - 079 500 3467

www.rebelo.co.za

info@rebelo.co.za

Packaging and Consumables:

JHB Branch- 011 613 7438

Tarlton Branch - 071 331 1990

Food security: A concept not to be taken lightly

Food security is a term that has been receiving a lot of attention over the past few years. There are several definitions for the phrase. A decade ago, approximately 200 definitions of 'food security' could be found in published writings. The term emerged in the 1970s when discussions focussed on issues ranging from food supply and access to food prices, and famine, as well as focussing on penning a fixed definition of food security.

An adequate definition

During the 1970s and 1980s, this definition changed from "availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices", to "ensuring that all people at all times have both physical and economic access to the basic food that they need", and later to "access of all people at all times to enough food for an active, healthy life".

In 1916, the World Food Summit adopted a more complex definition, which was refined again in 2001 to read: "Food security [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life".

What it boils down to

Ultimately, we should ask ourselves what food security comes down to when all the definitions

are stripped down to their basic meaning. In my mind, it is quite simply the ability to put food on the table every day – whether it is produced and supplied by someone else or by oneself.

Given the realities of the times we live in, it seems almost impossible that we will be able to reach a state of food security at any point. There has not been a time in the history of mankind when food security has ever existed globally. Neither has mankind been able to make any progress in getting the world's population to embrace more nutritious food as a global lifestyle. The latter is proven by statistics showing that what is perceived as hunger and malnutrition, is in fact often undernourishment.

Food security is certainly also a concept that is in the eye of the beholder. For some, it might indicate the ability to obtain any kind of food every day; for others, it might entail healthy, fresh food rather than just any food. It might also be related to culture and honouring religious beliefs which exclude certain foods and must include other foods; and for many it relates to the availability of certain foods at certain times.

The work done at Potatoes SA along with its co-workers, can easily be described as all-encompassing in terms of addressing the issue of food security: it covers everything from production, the supply chain, and markets, to empowering smaller farmers to produce better, and last but not least, the consumption of healthy potatoes.

The November/December issue of *CHIPS* covers all of these aspects and is testament to the significant role that potatoes can play in food security across the world.

Lynette Louw, editor
lynette@plaasmedia.co.za



Bydraers in hierdie uitgawe:

Aartappels SA: Willie Jacobs, dr Fienie Niederwieser, Immaculate Zinde, Janó Bezuidenhout, FP Coetzee, Chantel du Raan, Louis Pretorius, Enrike Verster, Herman Haak, Nomvula Xaba, Masabatha Motsoeneng en Rotondwa Raligidima.

Ander bydraers: Prof Marin Steyn, Universiteit van Pretoria, Isobel van der Stoep, Isowat Consulting, Jamie Jansen van Vuuren, Aartappelsertifiseringsdiens, Carmen Rensburg en Jacquie van der Waals, Universiteit van Pretoria, dr Jacques van Zyl, Wes-Kaapse Departement van Landbou, Chris Barnard, Besproeiingsakademie, Stephan Fourie, produsent, dr Gerhard Verdoorn, Roleen la Grange en Desirée van Heerden, CropLife SA, Anneline Scriven, LWO Werkgewersorganisasie, VDT Prokureurs en Prokon.

EDITORIAL COMMITTEE

Executive editor

Hanrie Greebe
076 116 7206
hanrie@potatoes.co.za

Editor

Lynette Louw
084 580 5120
lynette@plaasmedia.co.za

Publisher

Plaas Media (Pty) Ltd
217 Clifton Ave, Lyttelton, Centurion
Private Bag X2010, Lyttelton, 0140
Tel: 012 664 4793
www.plaasmedia.com

Deputy editor

Jayne du Plooy
jayne@plaasmedia.co.za

Sub-editors

May Nel
may@plaasmedia.co.za

Lize du Toit
lize@plaasmedia.co.za

Layout & design

Annemie Visser
annemie@plaasmedia.co.za

Sales manager & accounts

Marné Anderson
072 639 1805
marne@plaasmedia.co.za

Advertising

Karin Changuion-Duffy
082 376 6396
karin@plaasmedia.co.za

Susan Steyn
082 657 1262
susan@plaasmedia.co.za

Esmarie Moodie
076 330 0745
esmarie@plaasmedia.co.za

Rowena Simmons
079 568 6025
rowena@plaasmedia.co.za

Juan de Villiers
060 508 3188
juan@plaasmedia.co.za

Subscriptions

Beauty Mthombeni
064 890 6941
beauty@plaasmedia.co.za

Printed and bound by

Typo • +27 11 402 0571

CHIPS, Plaas Media and its staff and contributors do not necessarily subscribe to the views expressed in this publication.

© Copyright: No portion of this magazine may be reproduced in any form without the written consent of the publishers.

Published on behalf of

Potatoes SA
012 349 1906
6 De Havilland Crescent,
Perseus Techno Park,
Perseus Park, Pretoria
www.potatoes.co.za

To subscribe

CHIPS is the official magazine of Potatoes South Africa.

It aims to address issues that are relevant to the potato industry. To subscribe, please contact Beauty Mthombeni at 064 890 6941 or email beauty@plaasmedia.co.za.

Subscriptions are free.



INHOUDSOPGAWWE TABLE OF CONTENTS

Topical • Aktueel / Regulatories • Regulatory

- 02 Preface / Voorwoord
- 04 Redakteursbrief / Editor's note
- 06 Potato news / Aartappelnuus
- 08 ASA hou suksesvolle inligtingstoer

Industry information • Bedryfsinligting

- 12 Markmonitor: Die eerste 39 weke van 2021 op varsproduktemarkte
- 17 Die GeoFarmer-platform maak monitoring maklik
- 20 Vergelyking van verskillende besproeiingstelsels: Deel 1

Research • Technical / Navorsing • Tegnies

- 33 Practical irrigation course: Water smarter
- 37 Stuit Alfalfa-mosaïekvirus in sy spore
- 43 Grondorganismes as aanwysers van grondgesondheid
- 46 Proactive research into *Tuta absoluta* to reduce risk
- 51 Ceres/Koue Bokkeveld-kultivarproef onder besproeiing op Donkerbos
- 62 Oos-Vrystaatse kultivarproef onder besproeiing op Oranjeville
- 70 Resistance management in the control of potato tuber moth
- 72 Treatments for *Spongospora subterranea* f. sp. *subterranea*
- 76 Wat op aarde? Deel 5: Donker kurkagtige letsels

Transformation • Transformasie

- 81 PSA bursary recipient reaches for new heights
- 82 Empangeni information day a spud-tacular learning experience
- 84 Developing farmer experiences true transformation with PSA

Marketing • Bemarking

- 86 Potato product exports: A twelve-month snapshot
- 88 Heart-healthy habits with potatoes
- 90 From soil to plate: Potatoes, beef and mixed vegetables potjie

General • Algemeen

- 91 Important dates on the labour law calendar
- 92 Prokon News / Prokon-nuus
- 96 Rights relating to graves on farms

ADVERTISERS / ADVERTEERDERS

Syngenta	Inside front cover
Harvest Group	01
Rebello Agricultural Group	03
Subtropico	11
RSA Aartappelsaad Beurs	15
Valtrac	16
Introlab	22
Bayer Velume	26
Stoller	29
HelloChoice	30, 31
Siza	32
Dormas	35
Corteva	36, 48, 49
First Potato Dynamics	41
AECI Plant Health	42
Nutrico	45
InteliGro	47
ICA International Chemicals	50
SQM Africa	58
Wesgrow	60, 61
Oro Agri	68, 69
Philagro	77
Haifa	78, 79
Uniekum	78
Progression	80
Afrikelp	89
APAC	94
GWK	Back cover



Disclaimer: The views and information contained in these news pages do not represent that of Potatoes SA, Plaas Media, or their affiliates.

Merger between industry giants

Andermatt Madumbi sees two organisations with a shared vision partnering for a better future. Madumbi Sustainable Agriculture has been committed to serving South African growers with access to biorational solutions.

It is on these solid foundations and through a united goal of influencing food production locally, throughout Africa and across the globe, that Madumbi recently joined forces with Swiss company Andermatt Biocontrol. With more than 30 years in the biological industry and as global leaders in virus technology, Andermatt Biocontrol has an extensive footprint of subsidiaries across the globe.

Michelle Lesur, Andermatt Madumbi CEO, says: "Innovation will continue to be key in our approach to tackling complicated environmental and social challenges both globally and locally. In moving forward, we bring together the precision of the Swiss clock with the heartbeat of the African drum." – *Press release, Andermatt Madumbi*

AI app to include potato diseases

Because potato growers need to identify and manage diseases in their fields, the AI-powered mobile app, PlantVillage Nuru, has been expanded to also include diseases. More than two million farmers in East Africa who depend on potatoes, will be able to point their smartphones at a plant and receive an instant disease diagnosis through the PlantVillage Nuru app.

Initially, the app was designed to be twice as good as extension workers in East Africa in diagnosing cassava diseases and has been a major help to cassava farmers.

With support from the Consultative Group on International Agricultural Research's (CGIAR) Research Program on Roots, Tubers, and Bananas (RTB) and the CGIAR Platform for Big Data in Agriculture, PlantVillage Nuru has been expanded to include potato late blight (*Phytophthora infestans*) and early blight (*Alternaria solani*). – *Potato News Today*

Kenya set to boost potato production

The Kenya Agricultural and Livestock Research Organisation (KALRO) is focussing on a high-quality potato seed production and distribution deal with the Syngenta Foundation, hoping to increase production five-fold, to ten million tons a year.

The deal involves increasing high-quality certified potato seed availability to farmers by 25% through rapid multiplication, increased field seed bulking, and capacity building of commercial seed growers. A key target is increasing local potato sales at high-end chain restaurants in Kenya. – *Fresh Plaza*

Korkom sê dankie

Terence Brown is onlangs tydens Korkom se algemene jaarvergadering vereer vir sy jarelange diens tot Ceres se aartappelbedryf. Brown het 'n passie vir atletiek, maar het vir 46 jaar ook sy ander passie, aartappelproduksie, uitgeleef.

Brown was vir twaalf jaar by die Departement van Landbou, en vir 34 jaar by beide die Aartappelraad, wat later vervang is deur Aartappels Suid-Afrika (ASA), betrokke. Hy was ook vir 26 jaar by Korkom en die Sandveldse Aartappelkwekersorganisasie (Sako) betrokke.

Die Korkom-bestuur en -produsente wens hom alle voorspoed toe en is dankbaar vir die insette wat hy oor die jare gelewer het. – *Persverklaring, Korkom*



Pieter du Toit (links), ondervoorsitter van Korkom, en Terence Brown, afgetrede streeksbestuurder van Aartappels SA.



Korkom se sertifikaat van vereering vir jarelange diens.

Bright future for fresh produce market

One of South Africa's best established fresh produce markets has received a big investment boost. The Qonce Fresh Produce Market has a 25-year history as a key Eastern Cape agri trade zone. One of the country's leading fresh produce sales organisations, RSA Group, recently invested in the facility (formally known as the King William's Town Fresh Produce Market) with the intention of expanding the scope and quality of its offering.

"The essentials are still very much in place," says Luan Wentzel, managing director, RSA Group Eastern Cape. "The same management team will continue to run the facility. The goal is to build on an already well-established and successful operation to add more business value for producers, buyers and consumers." – *Press release, RSA Group*

Carbon neutral potatoes a UK first

Puffin Produce in Wales has added a new iconic product to supermarket shelves with the launch of the United Kingdom's (UK) first carbon neutral potato. Root Zero planet-friendly potatoes are grown in Pembrokeshire by Puffin Produce, and have been launched at 200 co-op stores across the UK.

The spuds are certified carbon neutral and are grown using sustainable farming practices to remove carbon dioxide, create healthy soil, and increase local biodiversity. The company has measured every contribution to the potatoes' carbon footprint – from the power used on the farm to the transport used to take Root Zero potatoes to the supermarket, even down to customers cooking their spuds at home.

Huw Thomas, CEO of Puffin Produce, explains: "The food system contributes up to 30% of global greenhouse gas emissions. We have to act now, so we're on a mission to become carbon neutral and farm in a way that protects and regenerates our land, plants and wildlife."
– *Wales Farmer*

Frozen French fry production in China expands

China's frozen French fry production for their 2021/22 marketing year (MY) is forecast at 420 000 metric tons (MT), a 20% increase from the estimated 350 000 MT in MY 2020/21. This is according to a recent report by the United States Department of Agriculture Foreign Agricultural Service. A new frozen French fry production line will be put into production in MY 2021/22 in Inner Mongolia.

Frozen French fry consumption will increase at a moderate pace over the next decade, due to the continued urbanisation of China's rural areas, which brings greater exposure to frozen French fries and related products, along with an increasing number of fast-food restaurants opening in China.

The rapid development of food delivery service in China is also contributing to its consumption. The sale of frozen French fries at convenience stores, supermarkets and through online retailers is expected to increase exposure and allow for greater consumption. – *Potato Pro*

PMA launches sustainability tools

The Produce Marketing Association (PMA) launched their sustainability assessment and communication tools during a virtual media briefing. Ed Treacy, vice-president of supply chain and sustainability at PMA, and Siobhan May, director of communications and public relations at PMA, introduced South African role-players to the new tools.

The tools have been created to aid PMA members in telling their sustainability story, which can be divided into two parts: what do we have to say, and how do we say it. PMA offers two stand-alone tools, namely the assessment tool, which is meant to help members consider and capture all the ways they contribute to sustainability, and the communication guide.

The goal of the communication guide is to create a resource that can aid members in identifying their audience as well as creating meaningful outputs for those audiences. – *Ursula Human, CHIPS*

New potato variety is frost tolerant


Tubers have battled various scourges for about 10 000 years, as well as an unpredictable climate that can cause frost damage to crops. An international team of scientists created a new potato variety that resists frost, making the crop even more resilient. That's a good thing because potatoes have evolved into the world's third-most consumed food, following rice and wheat.

Researchers of the US Department of Agriculture's Agricultural Research Service and their partners from Peru and the University of Wisconsin-Madison's Department of Agriculture, spent several years evaluating potato species from the US Potato Genebank (USPG) for frost tolerance, ultimately selecting *Solanum acaule* and *Solanum commersonii* – both wild potatoes native to South America – because they showed the greatest ability to tolerate frost.

The team combined these two species and evaluated the hybrids, selecting some parents that both withstood snap frosts and developed tolerance to much colder frosts. – *Potato Pro*

Aartappelmarkte nou op Plaas TV

Vir produsente om kritiese produksiebesluite te neem, is dit noodsaaklik dat hulle op hoogte van marktdensense en -pryse bly. Daarom het Aartappels SA (ASA) en Plaas TV onlangs hande gevat om hierdie inligting nog meer toeganklik vir die aartappelprodusent te maak.

FP Coetzee en Janó Bezuidenhout, beide inligtingspesialiste by ASA, sal onder andere weeklikse en daaglikse pryse, daaglikse beskikbare voorraad, langtermyn marktdensense en verkope oor die provinsies op Plaas Media se aanlyn-televisieprogram, Plaas TV, deurgee. Die eerste episode is op 24 September uitgesaai en sal voortaan maandeliks op Plaas TV uitgesaai word. – *Elmarie Helberg, Plaas Media* 



Skandeer hierdie QR-kode om na die markverslag te kyk.

ASA hou suksesvolle inligtingstoer

Deur Izak Hofmeyr, Chris Jooste en Carin Venter, Plaas Media

Aartappels SA (ASA) het onlangs 'n inligtingstoer in die land se aartappel-produksiestreke geloods. Een van die doelwitte van die vergaderings was om aan produsente die geleentheid te bied om hul menings en motiverings te gee oor die voortsetting van die statutêre heffing. Die heffing werk oor 'n vier-jaar siklus, met die huidige siklus wat in 2023 tot 'n einde kom.

Volgens Willie Jacobs, ASA se hoof uitvoerende beampte, is die doel van die vergaderings kortliks die volgende:

- Om vas te stel of alle geaffekteerde partye tevrede is met die statutêre heffing, asook die beoogde verhoging daarvan.
- Om duidelike instruksies vanaf produsente te kry rondom essensiële waardetoevoegingsuitkomst.
- Om die data wat vanaf produsente

verkry is, te benut in die formulering van 'n besigheidsplan vir die volgende heffingsiklus.

Die vergaderings in Howick en Bethlehem was gekenmerk deur debatvoering en baie duidelike sienings oor hoe die pad vorentoe behoort te lyk. In beide gevalle het produsente egter hul ondersteuning gegee vir die proses en voortgesette skakeling oor die geleentheid. 'n Heffingsvoorstel is ook aan produsente oorgedra en behels 'n voorgestelde styging van die bestaande 2,210c/kg tot 2,290c/kg vir die 2022/23-tydperk; 2,370c/kg vir die 2023/24-tydperk; 2,450c/kg vir die 2024/25-tydperk en 2,529c/kg vir die 2025/26 tydperk.

Navorsing in die kollig

ASA befonds verskeie navorsingsprojekte tot voordeel van die aartappelbedryf. Die aartappeldag in Howick het 'n mini-navorsingsposium

ingesluit, waartydens terugvoer aan produsente gegee is oor die vordering van sommige van hierdie projekte.

Volgens dr Fienie Niederwieser, navorsingsbestuurder by ASA, het die eerste aanbieding by die simposium oor aartappelmot gegaan. Hierdie plaag, sê sy, is besig om te versprei na gebiede waar dit nie voorheen 'n probleem was nie, soos KwaZulu-Natal.

Daarna het twee aanbiedings oor aalwurmbesigheid gevolg. Aalwurm, verduidelik dr Niederwieser, is lankal met ons, en in die verlede was die meerderheid beheermaatreëls op chemiese behandeling gebaseer. Baie van hierdie chemiese middels word egter tans veral in Noord-Amerika en Europa van die mark onttrek as gevolg van die omgewingsimpak wat dit kan hê. Dit beteken dat daar na alternatiewe beheermaatreëls gekyk moet word.

"Geen van die alternatiewe maatreëls wat bestudeer word is op sigself so doeltreffend soos die chemiese middels nie," sê sy. "Dit beteken dat 'n holistiese benadering, wat 'n hele aantal maatreëls insluit, gevolg moet word. 'n Belangrike element in hierdie holistiese benadering is rotasieprogramme, wat dekgewasse insluit."

Daar is ook terugvoer gegee oor die resultate van kultivar-evaluasies, spesifiek vanuit KwaZulu-Natal. "Kultivar-evaluasie is 'n belangrike aspek van ons navorsing wat landswyd plaasvind. Ons evalueer deurgaans nuwe én gevestigde kultivars ten opsigte van opbrengs en kwaliteit. Met die verloop van tyd word hierdie inligting bymekaar gebring sodat produsente kan sien watter kultivars dalk al heelwat in 'n spesifieke seisoen geplant is, en dit dus strategies raadsaam sou wees om eerder 'n ander kultivar te gebruik.



Die sprekers by die aartappeldag in Howick. Van links staan dr Mariëtte Marais van die LNR Roodeplaat, James Arathoon van die KwaZulu-Natal Departement van Landbou op Cedara, dr Mieke Daneel van die LNR Nelspruit, Mike Green, ASA se direkteur vir KwaZulu-Natal, dr Fienie Niederwieser, navorsingsbestuurder by ASA, en prof Jacquie van der Waals van die Universiteit van Pretoria.

“Eweneens is hierdie inligting waardevol vir invoerders van plant-materiaal om objektiewe en geloofwaardige inligting te bekom, in terme van watter kultivars gewens sou wees om in te voer,” sê dr Niederwieser.

Stand van varsproduktemarkte

Nog een van die knelpunte wat tydens die inligtingstoer aangespreek was, en wat die hele bedryf raak, was die stand van die munisipale varsproduktemarkte in die land.

“Die toestand van sekere munisipale markte is van so ‘n aard dat dit toenemend moeilik word om produkte op hierdie markte te verhandel,” het Jacobs tydens die vergadering in Bethlehem gesê. “Ons sien al hoe meer verhandelinge wat buite-om die markte plaasvind. Die markte is tradisioneel ‘n belangrike prysformuleringsmeganisme, en die wegkalwing hiervan kan tot groot skade vir die bedryf lei.”

Een van ASA se belangrike take is om met die betrokke munisipaliteite in gesprek te tree en die erns van die saak tuis te bring. Hierdie probleem raak nie net die aartappelbedryf nie, maar die varsproduktebedryf in sy geheel.

ASA gooi ‘n Kaapse draai

Die inligtingstoer in George in die Suid-Kaap, is onder andere deur ASA se streeksdirekteur, DC Schellingerhout, bygewoon.



Werknemers en raadslede van ASA tydens die Bethlehem-inligtingstoer. Van links is Santa Bronkhorst, ASA se kantoorbestuurder in Bethlehem, Hein Oberholzer, hoof finansiële beampte van ASA, Willie Jacobs, hoof uitvoerende beampte van ASA, JF van der Merwe, voorsitter van die ASA-direksie, en Nicolaas Lourens, ASA-direkteur vir die Oos-Vrystaat-streek.

Tydens die vergadering het JF van der Merwe, voorsitter van die ASA-direksie, gesê dit is belangrik dat die kontak tussen ASA en produsente volgehou en verbeter word. Boere moet ASA as hul ‘hulp’ sien. Waar ASA nie self teenwoordig is nie, moet mense in die streke gekontrakteer word om as skakel tussen die organisasie en die produsente te dien.

Jacobs het gesê ASA weet kommunikasie met die produsente is baie belangrik, daarom word al hoe meer van onder andere WhatsApp-groepe gebruik gemaak om inligting soos die bemerkingstyd van die streke uit te ruil.

“ ‘n Nuwe toepassing (app) wat in werking gestel is, maak belangrike inligting vir elke boer op sy selfoon toeganklik. Daarmee kan die produsent byvoorbeeld bewegings in sy eie omgewing teen dié van die hele mark meet. Dit kan hom help om sy uithaaltempo te bepaal en ook met sy bemerkingsplan help.

Die toepassing het baie bykomende inligting oor die produsent se eie produksiestelsels, soos satellietbeelde van die lande vanwaar inligting verkry kan word, wat nie met die oog sigbaar is nie,” het Jacobs verduidelik.

Aartappelverbouing in die Suid-Kaap

Ruben Barnard, ‘n produsent van George, het gesê die omgewing se grond gee ‘n kleur aan die skil wat veroorsaak dat hul produk nie met die Sandveld kan meeding nie. “Ons spot en sê hulle lyk nie so goed nie, maar hulle smaak lekkerder. Daarom konsentreer ons op die produksie van saadaartappels.”

Barnard het bygevoeg dat die nuwe kultivars wat hulle plant bestand is teen laatroes. Daarby is swambeheer maklik met chemiese middels, wat die insetkoste laer maak as in die Sandveld. ‘n Voordeel wat dié streek bo die Sandveld het, is die swaarder grond wat kunsmis beter vashou en hul bemestingsprogram makliker maak.



Van links is JF van der Merwe, voorsitter van ASA-direksie, Johan van Greunen, plaaslike produsent, en Willie Jacobs, uitvoerende hoof van ASA.



DC Schellingerhout (links) is ASA se direksielid vir die Oos- en Suid-Kaap tot in Ceres. Langs hom is pa en seun, SR en Petrus Ferreira, asook Pieter Ferreira. Hulle is aartappel- en sitrusboere in die Gamtoosvallei.



Aartappel- en sitrusprodusente, Ruan en Hardu Scheepers, het ook die ASA-inligtingstoer in Patensie bygewoon.



JF van der Merwe, voorsitter van die ASA-direksie, by Hein Oberholzer, hoof finansiële beampte van ASA, en Willie Jacobs, ASA se hoof uitvoerende beampte, tydens die inligtingstoer in Patensie.


In die Suid-Kaap plant die produsente van Mei tot September aartappels onder besproeiing. Kultivars wat geplant word, is Mondial vir tafelaartappels en verwerking, en Lanorma, Valor en FL2108 vir saadaartappels.

Oor die algemeen het hierdie streek 'n matige, warm klimaat regdeur die jaar. In die somer wissel die gemiddelde dag- en nagtemperatuur tussen 16 en 25 °C, en in die winter tussen 9 en 21 °C. Die gemiddelde reënval wissel van 445 tot 740 mm per jaar.

Uitdagings in die Gamtoosvallei

ASA het ook 'n wye draai gegooi in die Oos-Kaapse Gamtoosvallei, waar die inligtingstoer by die Padlang's Padstal in Patensie plaasgevind het. Hier is sake soos die statutêre heffing, geleentheid vir transformasie en werkskepping in die aartappelbedryf, asook die verbouing van aartappels in die droogtegeteisterde Gamtoosvallei bespreek. Daar is ook geraak aan die bekostigbaarheid van aartappels en huidige verbruikersvereistes.

Petrus Ferreira, 'n sitrus- en aartappelboer van die plaas Nuwelande, saam met Pieter Ferreira, 'n sitrus-, aartappel- en groenteboer van Patensie, was van die produsente wat die vergadering bygewoon het. Hulle het saamgestem dat die uitmergende droogte van die afgelope jare 'n besliste negatiewe uitwerking op aartappelproduksie in die streek het. Die droogte het tot 'n ernstige tekort aan water gelei. Die Kouga-dam het tans slegs 5% water en daar is al regoor die vallei geboor vir water. Laasgenoemde bied ook rede tot kommer aangesien dit tot die uitputting van grondwater kan lei.

Die verbouingsmarge van aartappels in die Gamtoosvallei het gedaal van sowat 3 000 ha, na omtrent net 100 ha. Dit is boonop moeilik om ekstra grond in die gebied te bekom, want bykans al die vrugbare grond is in sitrusblokke omskep. Sitrusprodusente verdien ook dollars, wat dit 'n baie lonende bedryf in die vallei maak. 

Kyk uit vir 'n verslag oor verdere inligtingstoere in die Januarie/ Februarie 2022-uitgawe van CHIPS.



SUBTROPICO

Die Subtropico Groep wens u 'n Geseënde

Kersfees en 'n Vreugdevolle 2022 toe !

Ons hartlike dank vir u lojale

ondersteuning in 2021!



SUBTROPICO
ONLINE



WENPRO

zire



Vir meer inligting kontak Hoofkantoor: 012 460 9910 / www.subtropico.co.za



DIE BESTE BOD

*'n Geseënde Kersfees en 'n Vreugdevolle 2022 word u toegewens!
Ons hartlike dank vir u lojale ondersteuning!*

Tel: 012 460 9916 • hoofkantoor@vleissentraal.co.za • www.vleissentraal.co.za

LEWENDEHAWE • WILD • LOSGOED • EIENDOM



LIVESTOCK • GAME • MOVABLE ASSETS • PROPERTY

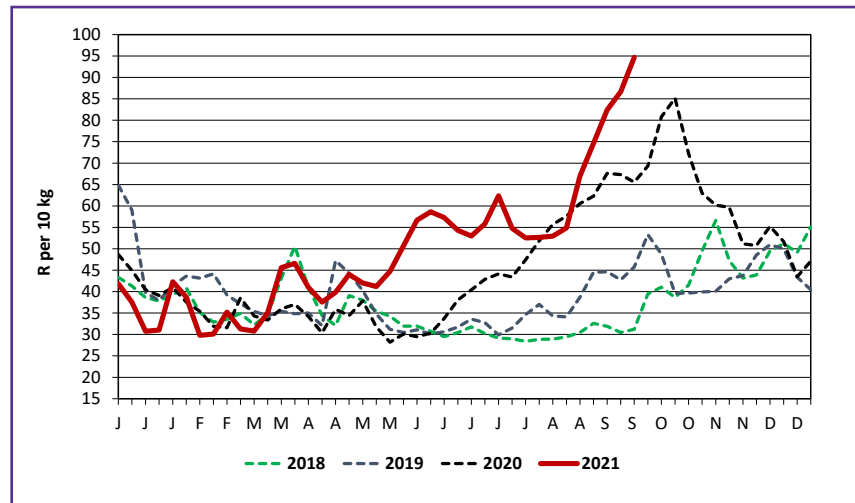
Markmonitor: Die eerste 39 weke van 2021 op varsprouktemarkte

Deur Janó Bezuidenhout, Aartappels SA

Die gemiddelde weekprys op varsprouktemarkte (VPM'e) toon steeds 'n opwaartse tendens. Gedurende middel Augustus is 'n sterk opwaartse druk ervaar en is daar teen einde September rekordpryse ervaar. *Figuur 1* dui die weeklikse gemiddelde prys op alle markte vir alle klasse aan.

Na die onluste in Julie 2021, het voorraad 'n afwaartse tendens begin volg. Hierdie afname in voorraad kan toegeskryf word aan klimaatsomstandighede wat streke tydens produksieseisoene ervaar het. Hierdie klimaatsomstandighede het veroorsaak dat produksiestreke soos die Noord-Kaap, Wes-Vrystaat en Oos-Vrystaat, laer produksievlakke ervaar het. Limpopo het ook ongunstige weersomstandighede

Figuur 1: Weeklikse gemiddelde pryse (alle markte en alle klasse).

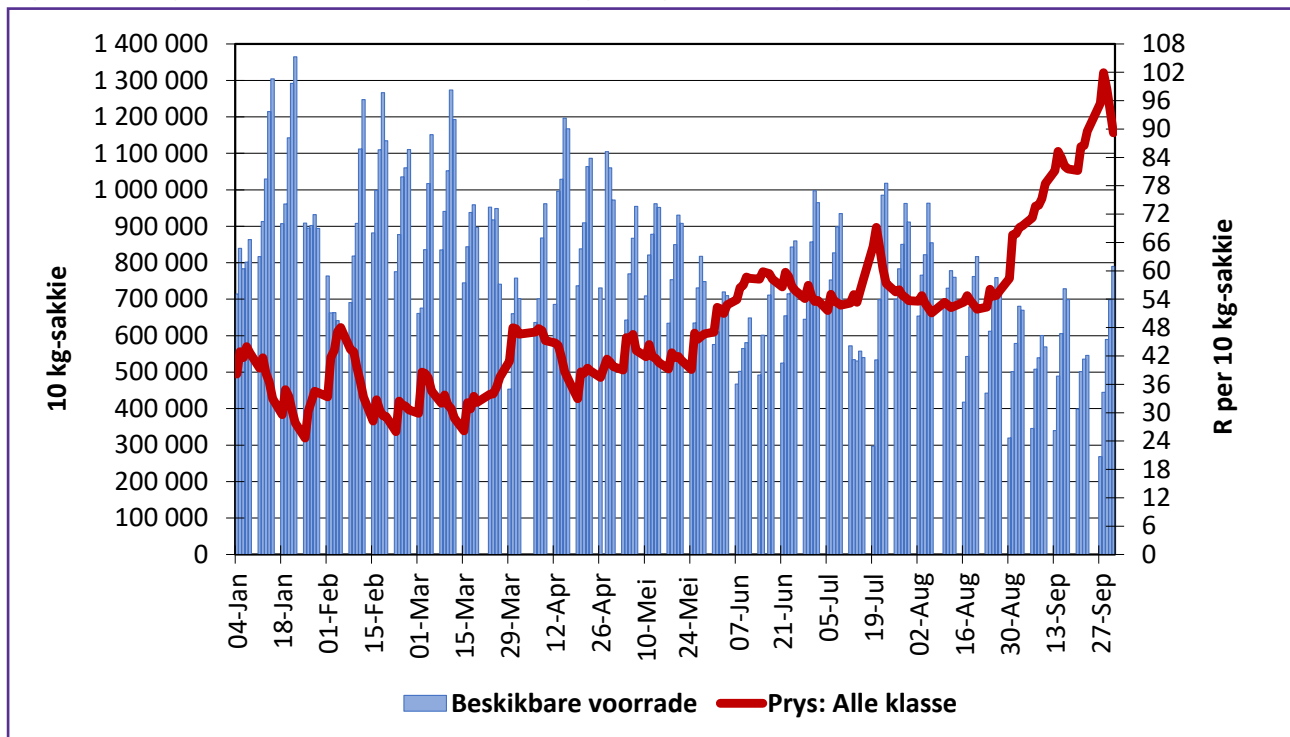


tydens die vroeë oes ervaar. *Figuur 2* dui die daaglikse gemiddelde voorraadvlakke teenoor die daaglikse gemiddelde prys aan.

Verkope op VPM'e

Gedurende die eerste 39 weke van 2021 het verkope op VPM'e met 0.6% verhoog vanaf 2020 se

Figuur 2: Daaglikse beskikbare voorraad vs. daaglikse gemiddelde prys (alle klasse en alle markte).



ooreenstemmende syfer, aldus *Figuur 3*. Let ook op dat 2021 effens hoër is as die vorige jaar, maar dat beide 2020 en 2021 laer is as die vorige drie jaar vir die eerste 39 weke van die jaar. Die verkope op VPM'e is ná die eerste 39 weke van die jaar, 3.9 miljoen 10 kg-sakkies minder as die vyf-jaar gemiddeld.

Figuur 4 illustreer die maandelikse verkope op VPM'e vanaf 2018. Hier kan gesien word dat daar vanaf April 2021 'n afwaartse tendens in maandelikse verkope is. September 2021 se verkope is sover die laagste maandelikse verkope vir 2021. Die vyf-jaar gemiddeld vir September-verkope is 9.2 miljoen 10 kg-sakkies, wat beteken dat September 2021 se verkope 2.5 miljoen 10 kg-sakkies onder die vyf-jaar gemiddeld is.

September 2021 toon ook die laagste verkope vir die maand sedert 2010. Hou in gedagte dat die beskikbare voorraadvlakke gedurende September 2021 gedaal het. Die gemiddelde daaglikse beskikbare voorraad vanaf Augustus 2021 het met 20% gedaal, waar die gemiddelde daaglikse verkope vir September 2021 slegs met 15% sedert Augustus 2021 gedaal het.

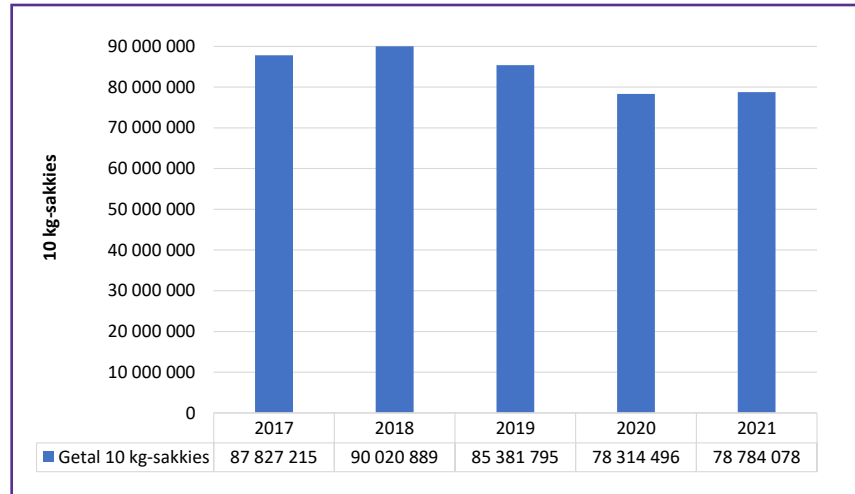
Tabel 1 bevat die aantal sakkies wat gedurende die eerste 39 weke van 2021 op die verskeie markte verkoop is. Die vyf grootste markte gedurende hierdie tydperk was gesamentlik verantwoordelik vir 82% van die land se verkope. Die gemiddelde prys (alle klasse en groottes) vir elke mark verskyn ook in *Tabel 1*. Die gemiddelde prys het met 15% gestyg na R47.37 per 10 kg-sakkie jaar-op-jaar vir die eerste 39 weke.

Uit die vyf grootste markte was Tshwane- en Springs-mark se gemiddelde pryse laer as die land se gemiddelde prys. Johannesburg-mark se totale verkope het uit 79% Klas 1-sakkies bestaan, wat die hoogste van alle markte was. Hierdie is ook in die vorige twee *Markmonitor*-artikels waargeneem.

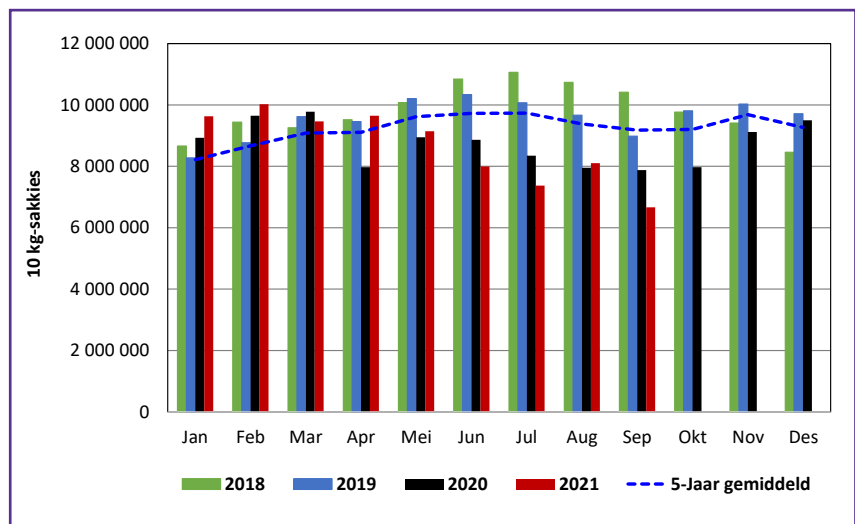
Topstreke vir eerste 39 weke

Die drie grootste streke wat gedurende hierdie tydperk (eerste 39 weke) in die mark was, het 61% van die aartappels op markte verkoop, aldus *Tabel 2*. Limpopo en die Oos-Kaap het van die hoogste

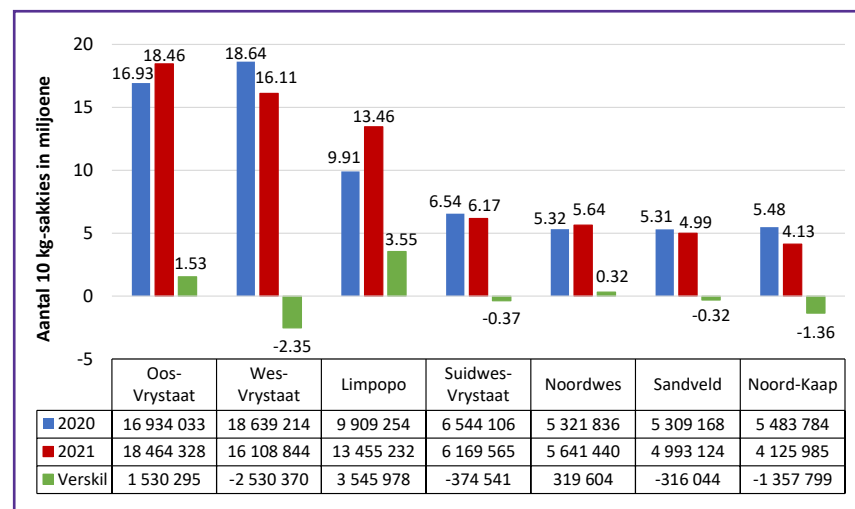
Figuur 3: Kumulatiewe hoeveelheid 10 kg-sakkies verkoop op VPM'e tot week 39 van elke jaar.



Figuur 4: Maandelikse verkope op VPM'e vanaf 2018 tot 2021 (alle verpakkings omskakel na 10 kg-sakkies).



Figuur 5: Aantal 10 kg-sakkies verkoop (eerste 39 weke) per streek in 2021 vs. 2020.



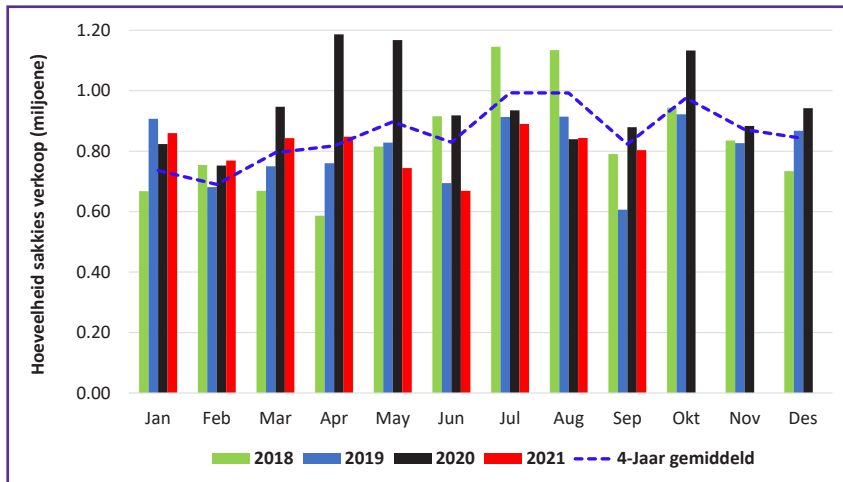
Tabel 1: Verkope (%) op VPM'e tot week 39 van 2021.

Mark	Aantal 10 kg-sakkies	% van totaal	Gem. prys (R/10 kg)	% van verkope op VPM'e			
				Klas 1	Klas 2	Klas 3 en 4	Klas 1 M
Johannesburg	31 441 303	39.9%	47.45	79%	15%	6%	19%
Tshwane	15 080 884	19.1%	47.32	70%	22%	8%	17%
Durban	7 163 549	9.1%	47.66	74%	16%	11%	24%
Kaapstad	6 538 110	8.3%	50.97	74%	21%	5%	22%
Springs	3 996 206	5.1%	44.74	67%	22%	10%	15%
Klerksdorp	2 486 682	3.2%	43.61	63%	24%	12%	15%
Oos-Londen	2 297 790	2.9%	51.04	72%	19%	10%	23%
Bloemfontein	2 050 101	2.6%	47.97	63%	24%	13%	16%
Port Elizabeth	1 981 636	2.5%	45.21	69%	21%	11%	25%
Pietermaritzburg	1 957 593	2.5%	42.95	58%	24%	17%	16%
Welkom	1 572 356	2.0%	46.28	67%	19%	14%	15%
Vereeniging	753 769	1.0%	42.9	74%	17%	9%	15%
Witbank	470 592	0.6%	49.37	72%	20%	8%	13%
Mpumalanga	352 362	0.4%	48.73	68%	24%	8%	7%
Nelspruit	244 398	0.3%	52.7	68%	21%	12%	8%
George	218 974	0.3%	46.43	62%	23%	14%	14%
Kimberley	94 428	0.1%	42.17	70%	17%	13%	16%
Kei-mark (Umtata)	83 406	0.1%	34.91	34%	30%	36%	5%
Totaal	78 784 139	100%	47.37	73%	18%	8%	19%

Tabel 2: Verkope (%) per streek op VPM'e tot week 39 van 2021.

Streek	Aantal 10 kg-sakkies	% van totaal	Gem. prys (R/10 kg)	% van verkope op VPM'e			
				Klas 1	Klas 2	Klas 3 en 4	Klas 1 M
Oos-Vrystaat	18 464 328	23%	42.49	67%	21%	12%	14%
Wes-Vrystaat	16 108 844	20%	48.71	69%	22%	9%	22%
Limpopo	13 455 232	17%	64.41	85%	12%	3%	18%
Suidwes-Vrystaat	6 169 565	8%	37.58	77%	14%	9%	23%
Noordwes	5 641 440	7%	38.57	81%	12%	8%	17%
Sandveld	4 993 124	6%	51.38	75%	22%	2%	22%
Noord-Kaap	4 125 985	5%	49.14	60%	22%	18%	18%
KwaZulu-Natal	3 896 268	5%	41	74%	19%	7%	16%
Gauteng	2 443 138	3%	35.06	84%	13%	4%	26%
Noordoos-Kaap	1 550 272	2%	40.91	67%	24%	9%	22%
Mpumalanga	864 302	1%	34.11	70%	25%	5%	14%
Ceres	785 581	1%	44.53	85%	8%	7%	29%
Oos-Kaap	200 392	0.25%	52.52	74%	16%	10%	25%
Suidwes-Kaap	45 039	0.06%	41.11	83%	16%	1%	23%
Suid-Kaap	40 629	0.05%	44.49	49%	44%	6%	18%
Totaal	78 784 139	100%	47.37	73%	18%	8%	19%

Figuur 6: Maandelikse verkope van 7 kg-sakkies (alle markte, klasse en kultivars) vanaf 2018 tot 2021.



gemiddelde pryse (alle klasse en groottes) vir hierdie tydperk gerealiseer. Tabel 2 illustreer ook die persentasie samestelling van elke streek se Klas 1, 2, 3 en 4 wat gedurende hierdie tydperk voorsien is.

Vyf van die produksiestreke – Limpopo, Noordwes, Gauteng, Ceres en die Suidwes-Kaap –

se persentasie Klas 1-verkope is almal bo 80%. Indien ons die sewe grootste streke se verkope vir 2021 vergelyk met 2020, sal gesien word dat drie streke meer 10 kg-sakkies verkoop het en die ander het minder verkoop as die vorige jaar gedurende die eerste 39 weke (Figuur 5). Die Oos-Vrystaat het

vanjaar tot dusver 1.53 miljoen 10 kg-sakkies meer verkoop as verlede jaar dieselfde tyd, en Limpopo ongeveer 3.55 miljoen 10 kg-sakkies meer, aldus Figuur 5.

Figuur 6 dui die maandelikse verkope van 7 kg-sakkies sedert 2018 aan. In die eerste drie maande van 2021 was die aantal 7 kg-sakkies se verkope meer as die vier-jaar gemiddelde syfer. Vanaf April 2021 het die markte minder 7 kg-sakkies begin verkoop en het die verkope onder die vier-jaar gemiddeld inbeweeg. Gedurende Junie het die verkope van 7 kg-sakkies steeds verlaag, maar in Julie 2021 het die verkope van 7 kg-sakkies verhoog. Vanaf Julie 2021 het die hoeveelheid 7 kg-sakkies wat verkoop is steeds afgeneem, maar gedurende September 2021 het verkope nader aan die vier-jaar gemiddeld begin beweeg.

Vir meer inligting, kontak Janó Bezuidenhout by jano@potatoes.co.za.

GEORGINA | JELLY | RUMBA | VALOR





AARTAPPELSAAD BEURS^{BK}
POTATO SEED EXCHANGE^{CC}

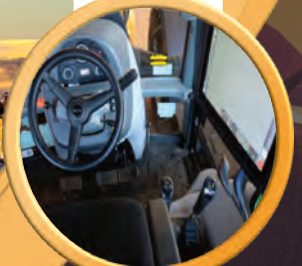
Landswye Verskaffers Van : Gesertifiseerde Moere | Aartappelsakkies | Plakkers | Paletnet | Polipropsakke

Countrywide Suppliers Of : Certified Seed Potatoes | Potato Pockets | Labels | Pallet Netting | Polyprop Bags

T +27 12 809 4000 | F +27 12 809 4003 | www.rsaseeds.co.za | admin@rsaseeds.co.za



**YOUR
WORKING
MACHINE**



BH4 HiTech

115kW to 155kW

3 Speed automatic power shift

170 Litres per minute closed hydraulic with separate oil tank

AGCO Power engine

HiComfort Cab

NOW AVAILABLE

VALTRAC
TRACTORS • IMPLEMENTS • SERVICE • PARTS

☎ 0861 VALTRA ATTIE: 083 261 9863
🌐 www.valtrac.co.za 📱 Valtrac South Africa 📺 Valtrac

Parys: **Johan** 071 671 8080
KZN North: **Joe** 082 303 2391
KZN South: **Billy** 082 667 7764
Harrismith: **Jaap** 082 824 6440
North West: **Ciel** 082 921 6321
Mpumalanga: **Pierre** 082 543 4146
Namibia and Botswana: **Tom** 082 928 1775

Independent dealers:
Southern Cape: **Theunis** 071 435 0735
Eastern Cape: **Johan** 060 923 4659
Hartswater: **De Wet** 082 613 8394
Hopetown: **Rudi** 082 771 9906
KZN Ladysmith: **Johan** 084 442 7838
Bethlehem: **Koos** 082 940 1696

Die GeoFarmer-platform maak monitoring maklik

Deur FP Coetzee, Aartappels SA, en Fanie Ferreira, Geo Terra Image

Aartappels Suid-Afrika (ASA) het onlangs Geo Terra Image (GTI) se GeoFarmer-platform aan produsente beskikbaar gestel. Hierdie platform bevat inligting wat vanaf satellietbeeldwaarnemings afgelei word.

GeoFarmer bied aan produsente die geleentheid om hul lande op die platform te laai, en aanplan-

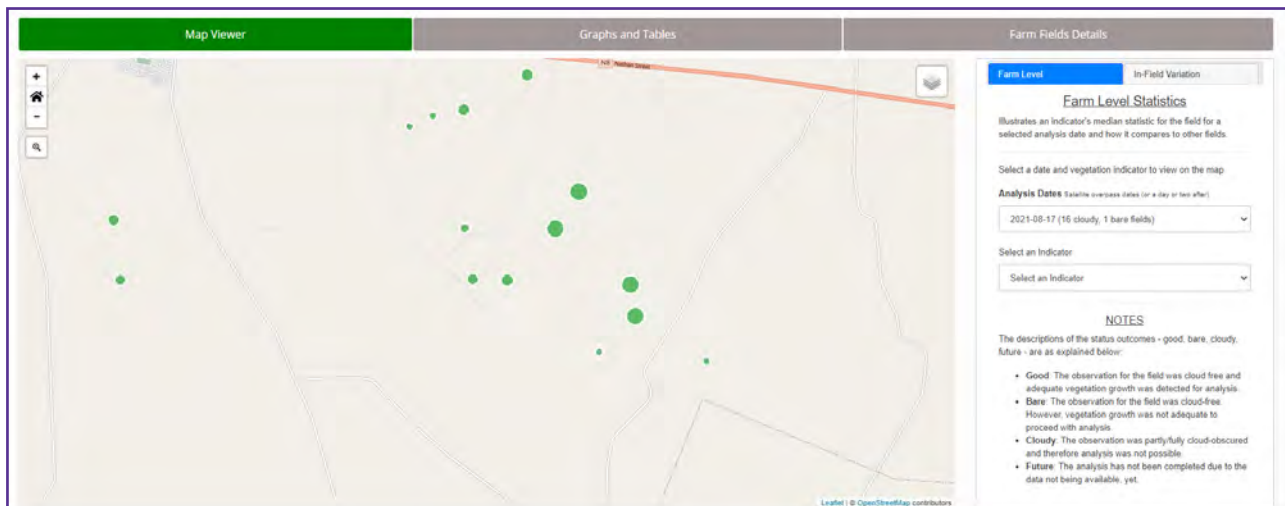
tings dan op verskeie basisse te monitor. GeoFarmer bevat tans vyf gewasaanduiders, naamlik NDVI (gewasgroeiagtigheid), LAI (gewasbiomassa), MSI (vogstres), SOI (siektestres) en PAI (fotosintese-aktiwiteit), wat afgelei word van satellietbeeldwaarnemings. Elke aanduider is 'n stukkie gereedskap wat die produsent kan help om beter bestuursbesluite te neem

en bestaande bestuurspraktyke te vergemaklik.

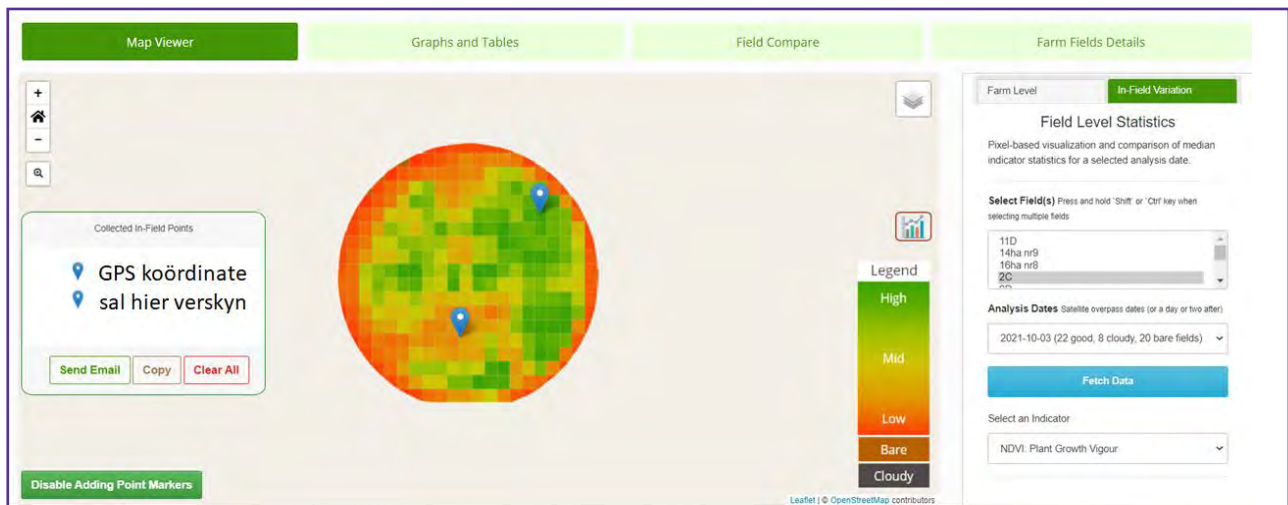
Laai van lande

Figuur 1 toon die verskeie lande wat 'n produsent op die platform gelaai het. Regs in die figuur kan gesien word waar die datum van die satellietvlug asook die verlangde gewasaanduiders van 'n afteklyk gekies kan word. Links bo is 'n funksionaliteit

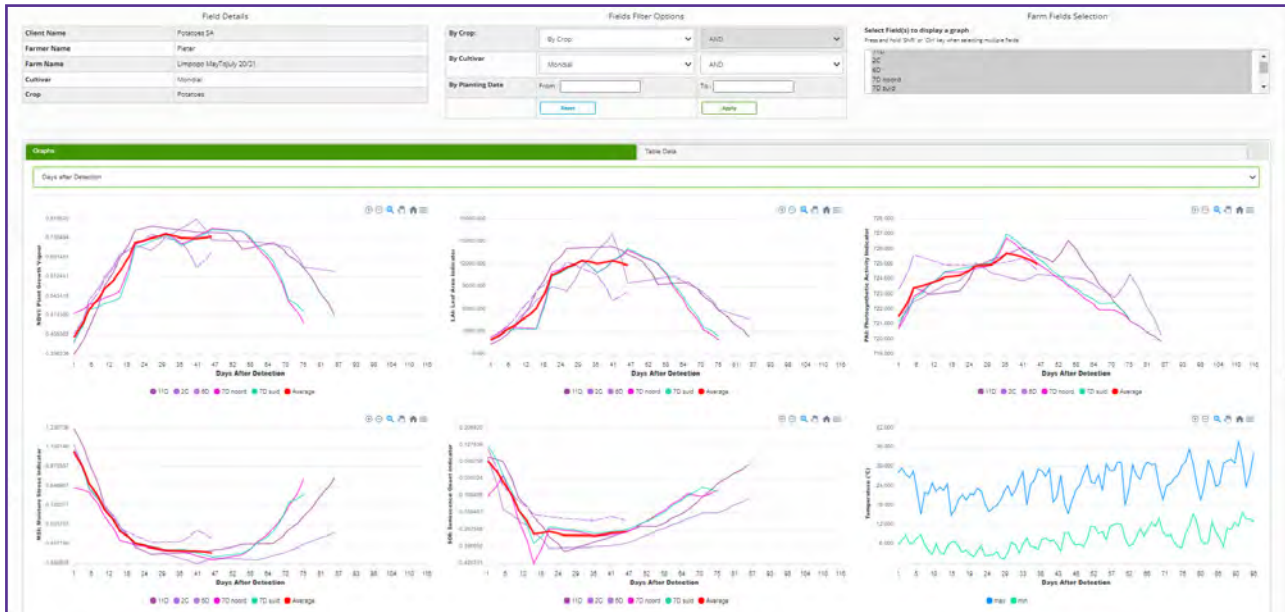
Figuur 1: GeoFarmer-platform, aansig van hele plaas.



Figuur 2: Satellietbeelde van 'n land op die GeoFarmer-platform.



Figuur 3: Indeksgrafieke op die GeoFarmer-platform.



wat die gebruiker toelaat om op die verlangde land in te zoom, sodat dit van nader bekyk kan word.

Figuur 2 dui die spesifieke land aan wat die verbruiker kies om te ondersoek. In die beeld kan gesien word dat daar verskeie kleure en blokkies is – elke blokkie verteenwoordig 'n 20 x 20 m gedeelte. Regs in die figuur is 'n legende wat die status van elke kleur aandui.

Vir elke land wat op die platform opgelaa is, is daar so 'n beeld beskikbaar vir elk van die vyf gewesaanduiders. Groen dui op hoë waarde, terwyl oranje op 'n lae waarde dui. Indien dit bewolk was terwyl die satellietfoto geneem is, sal die deel van die land wat opgelaa is, 'n donkergrys beeld vertoon.

Maklike monitering

Links onderaan Figuur 2 verskyn die woorde *Disable* (of *Enable*) *Adding Point Makers*. Hierdie funksie stel die gebruiker in staat om 'n plekkerk op die verlangde 20 x 20 m blokkie in die lande te los, wat hom of haar presies na daardie plek in die land sal neem. Hierdie koördinate kan oorgedra word na Google Maps sodat daar na spesifieke verwysingspunte in die land genavigeer kan word. Dit kan ook per epos na iemand anders gestuur word vir verdere ondersoek. Die landboukundige of produsent kan dus elke 400 m² van sy lande op hierdie basis monitor en bestuur.

GeoFarmer het ook 'n paneelbord waar bykomende inligting met een oogopslag vertoon word. Hierdie paneelbord (of *dashboard*) bied 'n oorsigtelike prentjie, deurdat dit elke land se gemiddelde data op 'n grafiek plot, wat dan vir die gebruiker 'n groeikurve trek.

Sinvolle vergelykings

Figuur 3 toon hoedat 'n klomp lande met dieselfde plantmaand of kultivar of op dieselfde plaas, geselekteer en vergelyk kan word volgens plantmaand, plantdatum of datum van eerste groei gewaar (*date of detection*). Die dik rooi lyn verteenwoordig die gemiddelde vir die geselekteerde lande; sodoende kan die lande wat gekies is, met die gemiddelde vergelyk word.

Om te meet is om te weet – elke boer wil weet of hy voor of agter, onder of bo is. Hierdie tipe vergelykings stel die gebruiker in staat om die omvang van ooglopende probleme in die land, te bepaal. Produsente met plase wat ver van mekaar geleë is, kan byvoorbeeld MSI (vogstremmingsindeks) gebruik om te bepaal of die plante onder enige mate van vogstremming (te veel of te min water) verkeer.

So dui elke indeks bepaalde vorme van verandering of stres aan. Indekse moet verkieslik in samehang gelees word en nie geïsoleer nie. Soms dui een indeks aan dat daar 'n probleem

is, terwyl die ander aandui wat die moontlike probleem kan wees.

Aanduiders-handleiding

ASA ontwikkel tans 'n handleiding wat verduidelik wat elke aanduiders meet en beïnvloed. Dit sal die gebruiker, in samewerking met sy insetverskaffers en bestuurspan, help met besluitneming.

GTI het onlangs 'n nuwe funksie bekendgestel (Figuur 4). Dit stel die gebruiker in staat om die persentasie-verandering van een satellietbeeld na 'n volgende vas te stel, en veranderinge te monitor. Indien 'n land byvoorbeeld rypskade opgedoen het, kan hierdie funksie help om te bepaal wat die afwaartse persentasie verandering as gevolg van die ryp is, en wat die opwaartse (indien wel) persentasie-verandering na afloop van die ryp is (die sogenaamde herstelkoers).

Saam met hierdie nuwe vrystelling is daar ook vyf klimaataanduiders op die paneelbord beskikbaar (Figuur 5). Hierdie aanduiders kan met 'n enkele oogopslag met die vyf gewesaanduiders vergelyk word.

Die klimaataanduiders sluit maksimum- en minimumtemperatuur asook reënval in, en word daagliks vanaf die *National Oceanic and Atmospheric Administration: Climate Forecast System* in die Verenigde State opgedateer. Al tien aanduiders op die paneelbord word

Figuur 4: Verandering van 'n land se beeld.



Figuur 5: Klimaataanduiders op die GeoFarmer-platform.



deur middel van 'n datumlyn met mekaar gekoppel, sodat ontledings op dieselfde dag gedoen kan word.

'n Een-stop-platform

ASA se doelwit is die daarstelling van 'n enkele databasis en platform waarop die produsent moeiteloos, elke aspek van sy aartappelboerdery met die nuutste intydse data kan bestuur. Hierdie is egter 'n langtermynproses en daarom is die samewerking van elke produsent en belanghebbende nodig om genoeg lande op die platform in te sluit, sodat 'n beter datastel ontwikkel kan word. Die platform is gratis vir elke aartappelprodusent wat sy aartappellande wil oplaai. Medewerkers wat belangstel om lande op die platform te laai, moet ASA voorsien van die inligting vervat in *Tabel 1*.

Tabel 1: Inligting nodig vir GeoFarmer-subskripsie.

Besproeiing	Droëland
Land se naam	Land se naam
GPS-koördinate	Land se grense (hoe die aartappels geplant is)
Kultivar	Kultivar
Plantdatum	Plantdatum
Halwe land / volle land	

Vir verdere inligting of hulp,
kontak gerus vir FP Coetzee of
Janó Bezuidenhout by 012 349 1906.

Vergelyking van verskillende besproeiingstelsels vir optimale aartappelproduksie in Limpopo: Deel 1

Prof Martin Steyn, Departement Plant- en Grondwetenskappe, Universiteit van Pretoria, en Isobel van der Stoep, Isowat Consulting

Die koste van aartappelproduksie het die afgelope dekade skerp gestyg, terwyl aartappelpryse oor dieselfde tydperk feitlik konstant gebly het. Dit plaas produsente onder geweldige kostedruk en gevolglik is hulle voortdurend op soek na maniere om insetkoste te verlaag en sodoende produksie meer winsgewend te maak.

Besproeiing is een van die grootste kostekomponente in aartappelproduksie, wat in die meeste streke hoogs afhanklik van besproeiing is. Elektrisiteitstariewe het veral oor die afgelope vyf jaar dramaties gestyg, wat 'n direkte invloed op pompkoste vir besproeiing het. Produsente

kan op pompkoste bespaar deur minder te besproei (verbeterde waterbestuur), deur slegs op spesifieke tye van die dag te besproei (in goedkoper Ruraflex-tye), of om na besproeiingstelsels wat minder energie vereis, oor te skakel.

Produsente in Limpopo het die afgelope paar jaar inisiatief geneem en spilpuntstelsels met laer drukbehoefte begin ondersoek. Een so 'n stelsel is die sogenaamde LEPA-stelsel (Low Energy Precision Application, Foto 1), wat met kleiner spuite toegerus is en wat volgens beskikbare inligting, laer werkdruk vereis (40 tot 70 kPa vs. die 100 kPa van meeste konvensionele spuite), nader aan die grond hang en groter druppels lewer. Dit toon dus potensiaal vir 'n hoër toedieningsdoeltreffendheid vanweë groter druppels wat nader aan die grond gelewer word, met gevolglike minder wind- en verdampingsverliese.

'n Ander stelsel wat ondersoek word, is die sogenaamde Dragon-Line-spilpuntstelsel (Figuur 1). By hierdie stelsel word die spuite met druplyne vervang, wat aan die struktuur van die spilpunt monteer en dan saamgesleep word wanneer die stelsel besproei. Hierdie stelsel het ook 'n laer werkdruk en aansprake van hoër doeltreffendheid word gemaak.

Evaluasie van stelsels en bestuur

Indien die aansprake op hoër doeltreffendheid en laer energievereistes van die alternatiewe stelsels geldig is, toon hulle nie net potensiaal om energie te bespaar nie, maar kan hulle moontlik bydra tot waterbesparing, wat baie belangrik is in gebiede met beperkte waterbronne, soos Limpopo.

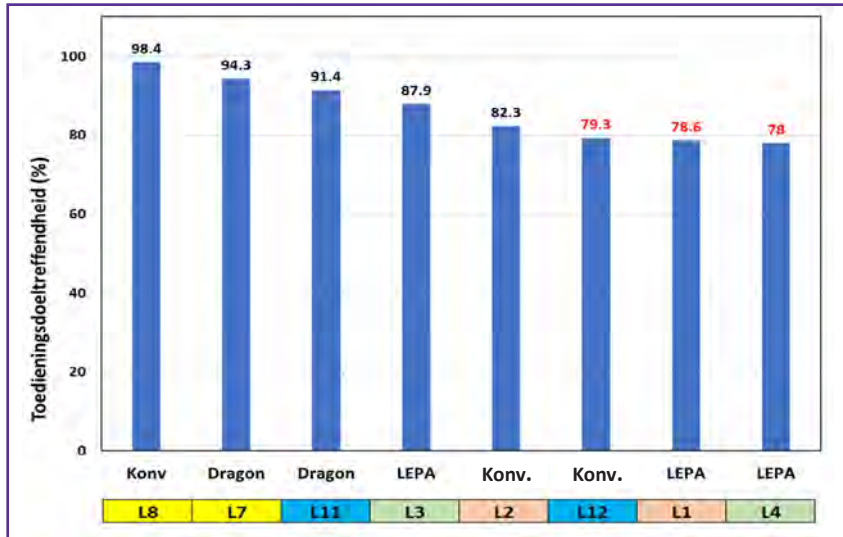
'n Studie is derhalwe gedurende die 2020-seisoen in Limpopo uitgevoer, om die doeltreffendheid van die verskillende stelsels asook die rol van bestuur op produksie onder die verskillende stelsels te ondersoek. Elke aanplanting is volgens die volgende kriteria geëvalueer:

- Stelseldoeltreffendheid.
- Hoeveel mm besproei is vs. die behoefte.
- Opbrengs vs. opbrengspotensiaal.
- Waterverbruiksdoeltreffendheid.
- Energiekoste.



'n Spilpunt wat na 'n LEPA-stelsel omgeskakel is.

Figuur 1: Toedieningsdoeltreffendhede van die agt spilpunte wat in Limpopo geëvalueer is.



Lande met dieselfde kleurkodes was op dieselfde plaas.

Die einddoel was om moontlike produksiebeperkings te identifiseer en te bepaal watter aspekte aangespreek kan word om aartappelproduksie verder te optimaliseer.

Oorsig van medewerkers

Ses medewerkers in die Waterpoort/Alldays-, Vivo- en Dendrongebiede het aan die studie deelgeneem. Dit het twaalf lande en die volgende drie tipes stelsels ingesluit: vyf konvensionele spilpunte, vier LEPA-stelsels, en drie Dragon-Line-stelsels.

Daar is gepoog om op dieselfde plaas telkens 'n konvensionele spil-

punt (as kontrole) en een of meer van die alternatiewe stelsels met mekaar te vergelyk, maar dit was nie altyd moontlik nie. Die lande se plantdatums het van 27 April tot 27 Julie 2020 gestrek, en oppervlaktes het tussen 7.15 en 29.4 ha gewissel. Die kultivar Mondial was op nege van die lande verbou, terwyl drie lande met Valor beplant is. Tabel 1 bevat 'n opsomming van die nege lande se spilpuntbesonderhede, planttye en loofdooddatums.

Prosedure vir evaluasies

Besproeiingstelsel-evaluasies is by sewe van die twaalf spilpunte uitgevoer om die doeltreffendheid

en uniformiteit waarmee water deur die spilpunte toegedien word, te bepaal. Die toedieningsdoeltreffendheid (TD) van 'n spilpunt kwantifiseer watter fraksie van die water wat die spuite verlaat, die grondoppervlakte onder die spuite bereik. Dit gee dus 'n aanduiding van waterverliese wat plaasvind as gevolg van verdamping en wind.

Ander verliese kan ook voorkom wat verhoed dat die besproeiingswater die wortelsone bereik, soos die onderskepping van water deur die blare, afloop vanaf die grondoppervlakte, en dreineringsverliese.

Die hoeveelheid verliese wat plaasvind is afhanklik van die korrekte spilpuntontwerp, insluitend die spuittype en -pakket, sowel as die korrekte bestuur van die stelsel in terme van die hoeveelheid water wat per besproeiing toegedien word, en onderhoud wat tydig uitgevoer word.

Tweedens word daar tydens stelsevaluasie gekyk na die uniformiteit, of eweredigheid, waarmee water oor die lengte van die spilpunt toegedien word. Aangesien die masjien water op 'n sirkelvormige land toedien, neem die lewering per spuit toe vanaf die spil na die buitepunt van die masjien. Die kombinasie van tuitgroottes (nozzles) oor die lengte van die masjien, moet korrek wees om te verseker dat dieselfde hoeveelheid water (mm) oor die hele sirkel tydens een omwenteling toegedien word.

Tabel 1: Opsomming van Limpopo-medewerkers se spilpuntbesonderhede.

Parameter	Spilpuntnommer											
	L1	L2	L3	L4	L5	L6	L7	L8	L10	L11	L12	L13
Area (ha)	13.15	13.24	7.18	7.15	10	8	7.98	14.68	29.38	20.14	15.37	10
Stelsel	LEPA	Konv.	LEPA	LEPA	Konv.	LEPA	Dragon	Konv.	Dragon	Dragon	Konv.	Konv.
Kultivar	Mondial	Mondial	Mondial	Mondial	Mondial	Mondial	Mondial	Mondial	Valor	Valor	Valor	Mondial
Plantdatum	28 Mei	20 Mei	27 Apr	7 Mei	20 Jul	27 Jul	18 Mei	7 Mei	25 Jun	2 Jun	15 Jun	26 Mei
Loofdooddatum	7 Okt	23 Sep	21 Aug	2 Okt	16 Nov	23 Nov	17 Sep	14 Sep	27 Aug	9 Sep	1 Okt	15 Okt

OUTPERFORM THE NORM WITH SCIENCE-DRIVEN
FOLIAR NUTRIENTS



Introlab is committed to develop and supply innovative world class products and solutions, backed by professional support.

For more information contact:
INTROLAB (PTY) LTD (Reg. No.: 2005/039779/07)
T +27 21 864 2145/6 E info@introlab.co.za
W www.introlab.co.za



Die meet van uniformiteit behels die uitpak van reën timers oor die lengte van die spilpunt, en die neem van reën timerlesings nadat die spilpunt daarvoor beweeg het. Om die TD van die masjien te bepaal, word die vloeitempo by die spil gemeet en vergelyk met die hoeveelheid water wat die grondoppervlakte bereik (gemeet in die reën timers).

In die geval van die Dragon-Line-stelsels, is die evaluasiemethode aangepas om die vloei wat deur individuele druplyne gelewer word, met behulp van meetbakke te meet (Foto 2).



Aangepaste meetmetode om lewering van Dragon-Line-stelsels te meet.

Besproeiingsbehoefte

Om die seisoenale besproeiingshoeveelhede te bepaal, is die vloeitempo van elke stelsel by die spil gemeet en elektriese druksensors geïnstalleer

om die daaglikse besproeiingsure te monitor. Hierdie inligting word dan gebruik om die daaglikse en totale besproeiingshoeveelhede oor die groeiseisoen te bereken.

Aan die einde van die groeiseisoen is 'n simulasie-model gebruik om die besproeiingsbehoefte van elke land te bereken, gebaseer op die gemete daaglikse

Tabel 2: Opsomming van Limpopo-medewerker se spilpuntbesonderhede en evaluasie-resultate.

Parameter	Spilpuntnummer							
	L1	L2	L3	L4	L7	L8	L11	L12
Grootte van spilpunt (ha)	13.15	13.24	7.18	7.15	7.98	14.68	20.14	15.37
Waterbron	Boorgat, dam	Rivier, dam	Boorgat, dam	Boorgat, dam	Boorgat, dam	Boorgat, dam	Boorgat, dam	Boorgat, dam
Tipe stelsel	LEPA	Konv.	LEPA	LEPA	Dragon-Line	Konv.	Dragon-Line	Konv.
Spuitpakket (mm/24h)	9.12	15.3	9.1	8.7	5.4	13.5	4.8	14.9
Tipe spuite	Staties (Span 1, geen reguleerders)	Staties	Span 1 – wankel, res – staties	0.5 x Span 1 – wankel, res – staties	Dragon-Line	Staties	Span 1 – wankel, res – Dragon-Line	Wankel
Druk by die spil (kPa)	197	236	108	130	115	148	170	142
Vloeitempo by die spil (m ³ /h)	50.5	83.5	27.5	24.5	17.9	79	41	94.5
Gemiddelde bruto toediening (mm)	8.1	11.8	11.5	10.7	1.7	21	1.2	7.9
Gemiddelde netto toediening (mm)	6.3	9.7	10.1	8.3	1.6	20.6	1.1	6.3
Maksimum-toedieningstempo onder die oorhang (mm/h)	46	58	195	179	NVT	88	NVT	79
Toedienings-doeltreffendheid (%) – norm >80%	78.6	82.3	87.9	78	94.3	98.4	91.4	79.3
Uniformiteitskoëffisiënt (%). CU – norm >85%	86.9	89.5	66.9	45.9	81	85.3	78.3	88.8
Verspreidingsuniformiteit (%). DU _{lq} – norm >75%	78.4	81.7	51.9	19.7	67.5	75.2	60.7	84.2
Vloeitempo per ha (l/s/ha)	1.1	1.8	1.1	1.0	0.6	1.5	0.6	1.7
Windspoed (km/h) Ideaal <18	8	10	10	17	NVT	15	NVT	10
Temperatuur (°C)	20	15	19	22	NVT	17	NVT	11.8

Syfers in rooi voldoen nie aan die norm nie.

weerdata en plantdatum vir die land. In gevalle waar weerstasies nie op die plaas beskikbaar was nie, is data van die naaste beskikbare weerstasie in die omgewing verkry.

Die inligting is dan gebruik om die volgende aspekte te evalueer:

- Daaglikse en seisoenale waterverbruik (mm).
- Waterverbruiksdoeltreffendheid (kg/ha/mm).
- Werklike opbrengs vs. haalbare (of potensiele) opbrengs vir die omgewing.
- Werklike besproeiing vs. besproeiingsbehoefte.

Weens die toenemende koste van energie wat produsente gewoonlik in die vorm van elektrisiteit van die nasionale verskaffer, Eskom, verkry, is die totale elektrisiteitskoste van elke stelsel in hierdie studie bereken en vergelyk.

Die energiekoste van 'n besproeiingstelsel waar die waterpomp met 'n elektriese motor aangedryf word, is die produk van die drywingsbehoefte van die

motor (kW), die aantal ure wat die motor werk gedurende die seisoen (ure) en die eenheidskoste van die elektrisiteit (R per kW-uur):
 $k_p = P \times t \times k_e$ (sien *Berekening 1*).

In hierdie studie is die werksure van die besproeiingstelsels gemonitor en kon dit dus gebruik word om die energiekoste te bereken. Die eenheidskoste van elektrisiteit is geneem as die veranderlike komponent (*energy charge*) van Eskom se Landrate-tariefplan om die verskillende stelsels se inligting vergelykbaar te maak. Dit is die hoofkomponent van die tariefplan en word betaal vir die hoeveelheid elektrisiteitseenhede wat verbruik word.

Die drywingsbehoefte van die motors is bepaal op grond van inligting wat vir elke stelsel beskikbaar was, en kon óf van 'n hidrouliese benadering, waar die pomp se druk en vloeitempo bekend was, óf met 'n elektriese benadering, waar die elektriese stroom en arbeidsfaktor bekend was, bereken word, met een van die volgende die twee vergelykings in *Berekening 2*.

Berekening 1: Energiekoste van 'n besproeiingstelsel

k_p = energiekoste om water te pomp (R per seisoen).

P = drywingsbehoefte van motor (kW).

t = pomp-ure per seisoen (ure).

k_e = eenheidskoste van elektrisiteit (R per kW-uur).

Berekening 2: Berekening van drywingsbehoefte

Hidrouliese berekening van drywingsbehoefte:

$$P = \frac{Q \times H}{0.036 \times \eta_p \times \eta_m}$$

waar P = drywingsbehoefte van motor (kW).

Q = vloeitempo van die pomp (m^3/h).

H = totale pompdruk vir spilpunt wat gemoniteer is (m).

= stelseldruk by spil + hoogteverskil en wrywingsverlies vanaf pomp tot by spil.

η_p = doeltreffendheid van die pomp (%).

η_m = doeltreffendheid van die motor (%).

Elektriese berekening van drywingsbehoefte:

$$P = \frac{I \times \sqrt{3} \times V \times \cos \phi}{1\,000}$$

waar P = drywingsbehoefte van motor [(kW).

I = stroom (A).

V = spanning (V).

$\cos \phi$ = arbeidsfaktor van die motor (fraksie).

Weens die uiteenlopende eien-skappe van die verskillende stelsels wat gemonitor is, is die volgende aannames gebruik om die inligting te verwerk:

- Die drywing is slegs bereken vir watervoorsiening vanaf die dam na die spilpunt (kragverbruik deur boorgate of rivierpompe om die dam vol te maak, is buite rekening gelaat).
- Die wrywingsverlies in hooflyne is bereken as 1.2% van die pylengte, omdat inligting oor hooflynroetes en -groottes nie vir alle stelsels beskikbaar was nie.
- Indien geen stuwerdiameter vir 'n pomp gegee was nie, is daar aangeneem dat die pomp toegerus was met 'n volgrootte stuurer om die dienspunt op die pompkurve te bepaal.
- Motordoeltreffendheid is vir alle stelsels as 90% aanvaar.

Resultate

Die stelsel-evaluasieresultate word in *Tabel 2* opgesom. Slegs twee van die agt spilpunte (L2 en L8 – beide konvensionele stelsels) het voldoen aan al die vereistes soos bepaal deur die norme vir doeltreffendheid en uniformiteit. Dit was duidelik dat produsente nog eksperimenteer met aanpassings aan werksdruk en spuitpakkette op die LEPA- en Dragon-Line-spilpunte.

Toedieningsdoeltreffendheid

Slegs drie van die stelsels het nie aan die minimumnorm van 80% vir toedieningsdoeltreffendheid (TD) voldoen nie, soos in *Figuur 1* getoon. In die geval van konvensionele spilpunt L12, was dit 'n relatiewe ou masjien met 'n beduidende lekkasie by die spil (*Foto 3*). Hierdie lekkasie, tesame met 'n afname in lewering oor die lengte van die masjien weens die stygende helling van die terrein, het tot die effense lae TD-waarde van 79.3% bygedra.

By LEPA-stelsel L1 was die eerste span van die spilpunt met statiese spuite sonder drukreguleerders toegerus, en die res van die masjien met LEPA-spuite met 68 kPa-drukreguleerders. Die gebrek aan drukreguleerders op die eerste span se spuite het veroorsaak dat oormatige



Lekkasje by die spil van stelsel L12 het tot laer toedieningsdoeltreffendheid bygedra.



Opbreek van druppels in fyn mis onder die eerste span van LEPA-spilpunt L1. lei tot hoër verdampingsverliese.

hoë vloei deur die spuite voorgekom het, en die klein tuite wat tipies op die eerste span van 'n spilpunt geïnstalleer word, het die water in fyn druppels opgebreek (Foto 4), wat tot hoër verdampingsverliese kon lei.

In Foto 4 kan daar duidelik gesien word dat fynsproei nie by die LEPA-spuite in die voorgrond voorkom nie, maar slegs by die statiese spuite naby die spil.

In die geval van LEPA-stelsel L4, kan die lae TD-waarde toegeskryf word aan die gebrek aan oorvleueling tussen die benattingspatrone van die naasliggende spuite,

wat veroorsaak dat daar nie 100% benatting van die grond (en dus die gewas) plaasgevind het nie (Foto 5).

Hierdie stelsel was toegerus met enkellynspuite met 'n baie nou benattingspatroon, en gevolglik het die reënmeterlesings aansienlik gewissel. Verder het daar 'n windspoed van 17 km/h tydens die toets geheers, wat baie naby aan die toelaatbare maksimum vir toetsomstandighede van 18 km/h is, en moontlik tot die laer TD bygedra het.

Toedieningsuniformiteit

Die lesings van 'n reeks reënimeters of meetbakke wat onder die spilpunte

uitgepak was, is ontleed om twee indikaturs van stelseluniformiteit te verkry, naamlik:

- Die uniformiteitskoëffisiënt van Heermannen & Hein (CUHH): Gee 'n aanduiding van hoeveel die lesings van verskillende reënimeters afwyk van die gemiddeld van al die reënmeterlesings saam, en moet 85% of hoër wees.
- Die verspreidingsuniformiteit van die laagste kwart (DULq): Gee 'n aanduiding van die mate waarin onderbesproei word op dele van 'n spilpunt, deur die verhouding tussen die gemiddeld van die laagste 25% van metings en die gemiddeld van al die metings onder die spilpunt, te bereken. Dit moet 75% of hoër wees.

Die uniformiteitswaardes vir die agt spilpunte word in *Figuur 2* aangedui. Vier van die agt stelsels het nie aan die minimumnorme voldoen nie.

Om die uniformiteitswaardes beter te interpreteer, is na elk van die sewe spilpunte se individuele verspreidingspatrone gekyk, soos aangedui in *Figuur 3 a-d* en *Figuur 3 e-h*. Let daarop dat die eerste reënmeter op 'n afstand gelykstaande aan 20% van die spilpunt se lengte, vanaf die



Droë kolle onder stelsel L4 weens spuite se benattingspatrone wat nie oorvleuel nie.



Ons rugsteun jou deur
GEWASBESKERMING

VELUM®
PRIME 400 SC
is 'n aalwurm- en
swamdoder geregistreer
op sitrus, aartappels,
tabak en tamaties.
Vir meer inligting laai die
Bayer Toepassing af,
BayerCropSA.

- // Betroubare aalwurm en vroeë roes beheer.
- // Verhoogde opbrengs.
- // Beter kwaliteit en bemerkbare aartappels.
- // Kragtige groei.
- // Gunstige omgewingsprofiel.
- // Verhoogde winsgewendheid.

Jou trots
ons passie

Kom ons gesels ...

 | @Bayer4Crops

Bayer (Edms) Bpk. Reg. Nr. 1968/011192/07
Wrenchweg 27, Isando, 1601.
Posbus 143, Isando, 1600.
Tel: +27 11 921 5002
www.cropscience.bayer.co.za // www.bayer.co.za

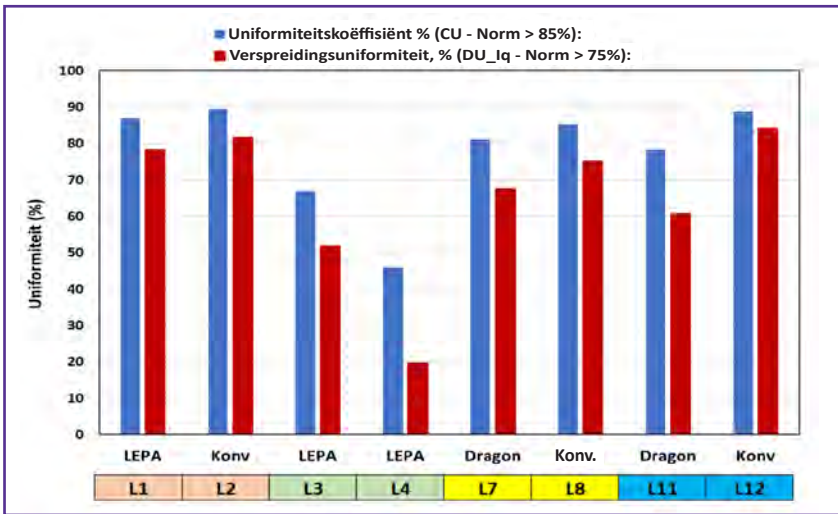
Velum® Prime 400 SC Reg. Nr. L9565 (Wet Nr. 36 van 1947).
Velum® Prime 400 SC bevat Fluopyram (Versigtig).
Velum® Prime 400 SC is 'n geregistreerde handelsmerk van
Bayer AG, Duitsland. Gebruik slegs volgens etiketaanwysings.

VELUM®
PRIME 400 SC

die
Evolusie
in aartappelgesondheid



Figuur 2: Toedieningsuniformiteit (C_{UH} en D_{Uq}) van die agt spilpunte wat in Limpopo geëvalueer is. Lande met dieselfde kleurkode was op dieselfde plaas.



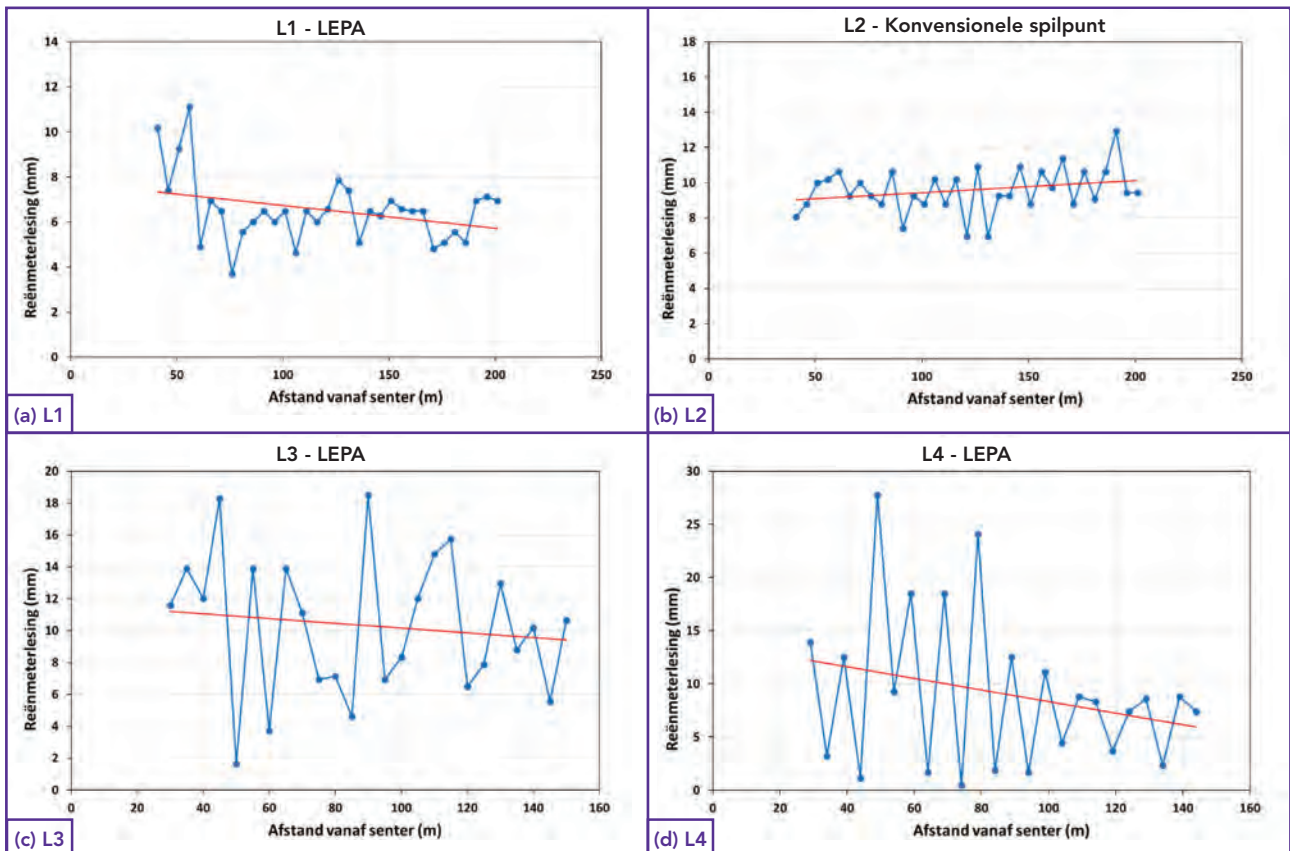
spil geplaas was (byvoorbeeld, in die geval van L1, was die spilpunt 200 m lank en die eerste reënmeter is 40 m vanaf die spil geplaas). Die volgende kommentaar kan oor elkeen van die spilpunte gelewer word:

- **L1:** Hoewel die DU- en CU-waardes van hierdie LEPA-spilpunt aan die vereistes voldoen het, was die uniformiteit onder die eerste span se spuite waarskynlik nie in lyn met die res van die spilpunt nie, soos reeds gemeld is in die

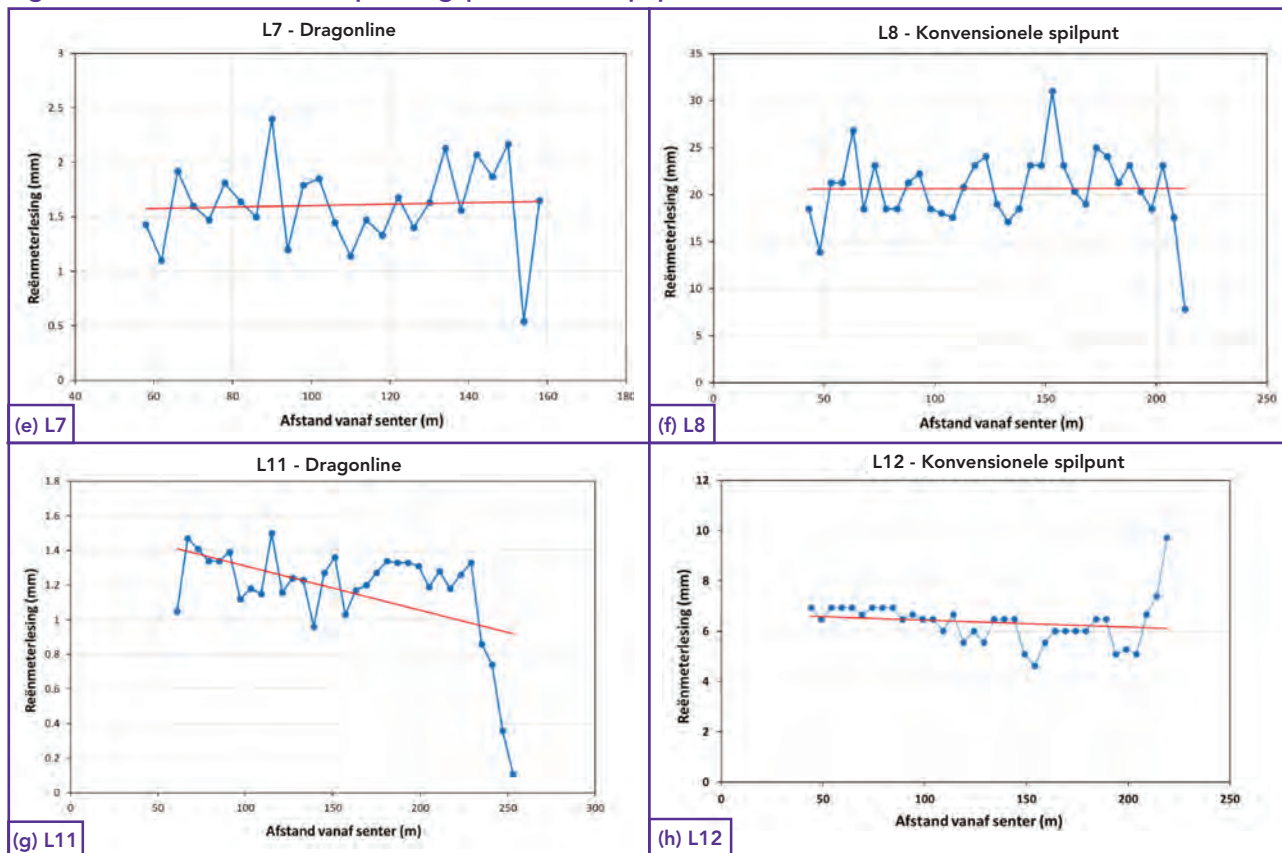
bespreking van die TD-resultate. Daar is slegs drie reënmeteers onder die eerste toring uitgepak (weens die standaardpraktyk om die eerste 20% van die spilpunt nie te meet nie), maar die drie lesings aan die begin van die grafiek toon die oormatige hoë toediening (Figuur 3a). Die spuite op die eerste toring moet verkieslik ook met drukreguleerders toegerus word.

- **L2:** Goeie werksverrigting deur 'n konvensionele spilpunt.
- **L3:** By hierdie LEPA-stelsel is oormatige afloop waargeneem en dit het nie aan die uniformiteitsnorme voldoen nie. Die verspreidingsgrafiek toon groot variasie in toediening, wat veroorsaak is deur die benattingspatrone wat nie oorvleuel het nie. Sommige reënmeteers het dus 'n groot volume water ontvang en ander weer baie minder. Spuite is in 'n enkel-ry op die spilpunt geïnstalleer (Foto 6), wat tot baie hoë

Figuur 3 a-d: Individuele verspreidingspatrone van spilpunte L1 tot L4.



Figuur 3 e-h: Individuele verspreidingspatrone van spilpunte L7 tot L12.



toedieningstempo's gelei het en die grond se infiltrasievermoë oorskry het. Die spuite moet eerder in twee rye geplaas word (Foto 4) om die benatte area te verbreed en sodoende die

toedieningstempo te verlaag en afloop te verminder.

- **L4:** Hierdie LEPA-spilpunt het die swakste presteer. Die oorsaak is ook spuite wat in 'n enkel-ry hang, soos by L3,

met benattingspatrone wat nie oorvleuel nie en 'n baie hoë toedieningstempo tot gevolg het. In hierdie geval was daar ook 'n windspoed van 17 km/h tydens die toets, wat omstandighede vererger het.

- **L7:** Hierdie Dragon-Line-stelsel se uniformiteit was swakker as die minimumvereiste. Met 'n spuitpakket van slegs 5.4 mm/24 h, is slegs 1.6 mm toegedien tydens die besproeiing wat geëvalueer is. Dit is te laag om doeltreffend te besproei, en met die meetmetode wat gevolg is, kon 'n klein variasie in volume, gemeet in die bakke, tot 'n groot persentasiefout lei. Verstoppings is ook op die druplyne naby aan die buiterand van die spilpunt waargeneem, wat die grootste area van die land bedien.
- **L8:** Hierdie konvensionele spilpunt het voldoen aan die minimumvereistes in terme van uniformiteit.



Enkel-ry spuite met 'n nou benattingspatroon op LEPA-spilpunt L3, het tot oormatige afloop gelei.



Die Dragon-Line-stelsels het lae kapasiteit gehad, wat nie aan plante se behoeftes tydens piekseisoen kon voldoen nie.

- **L11:** Die tweede Dragon-Line-stelsel wat geëvalueer is, het ook nie aan die minimumnorm vir uniformiteit voldoen nie, en het 'n kapasiteit van slegs 4.8 mm/24 h gehad, wat te laag is om aan die besproeiingsbehoefte van die omgewing te voldoen. Slegs 1.1 mm is toegedien tydens die evaluasie, en verstopping van die druppers is ook waargeneem.
- **L12:** Hierdie konvensionele spilpunt was toegegerus met wankelspuite en het aan die minimumvereistes van die uniformiteitsnorme voldoen. ©

In die volgende uitgawe van *CHIPS*, kyk ons verder na die resultate van hierdie vergelykende proef. Vir enige navrae, kontak prof Martin Steyn by martin.steyn@up.co.za.



BIO-FORGE®: A PATENTED AND PROVEN SOLUTION FOR CROP STRESS

BENEFITS OF BIO-FORGE®

- Increases plant respiration and metabolism, reactivating its growth.
- Boosts the overexpression of plant stress resistance genes.
- Eliminates the effects of stress and the resulting blockage due to the excessive levels of ethylene produced in stress situations.
- Quickens recovery from plant stresses.
- Assists plant growth during dry periods.
- Increases the natural vigorous growth of young plants.

Contact us on +27 (0) 13 007 1678 or at info_africa@stoller-africa.com

EMPOWERING PLANTS EMPOWERING PEOPLE



Bio-Forge® reinforces the plant's natural ability to withstand stresses, resulting in a healthier plant.



TradeAlerts



Your Direct Online Agricultural Marketplace

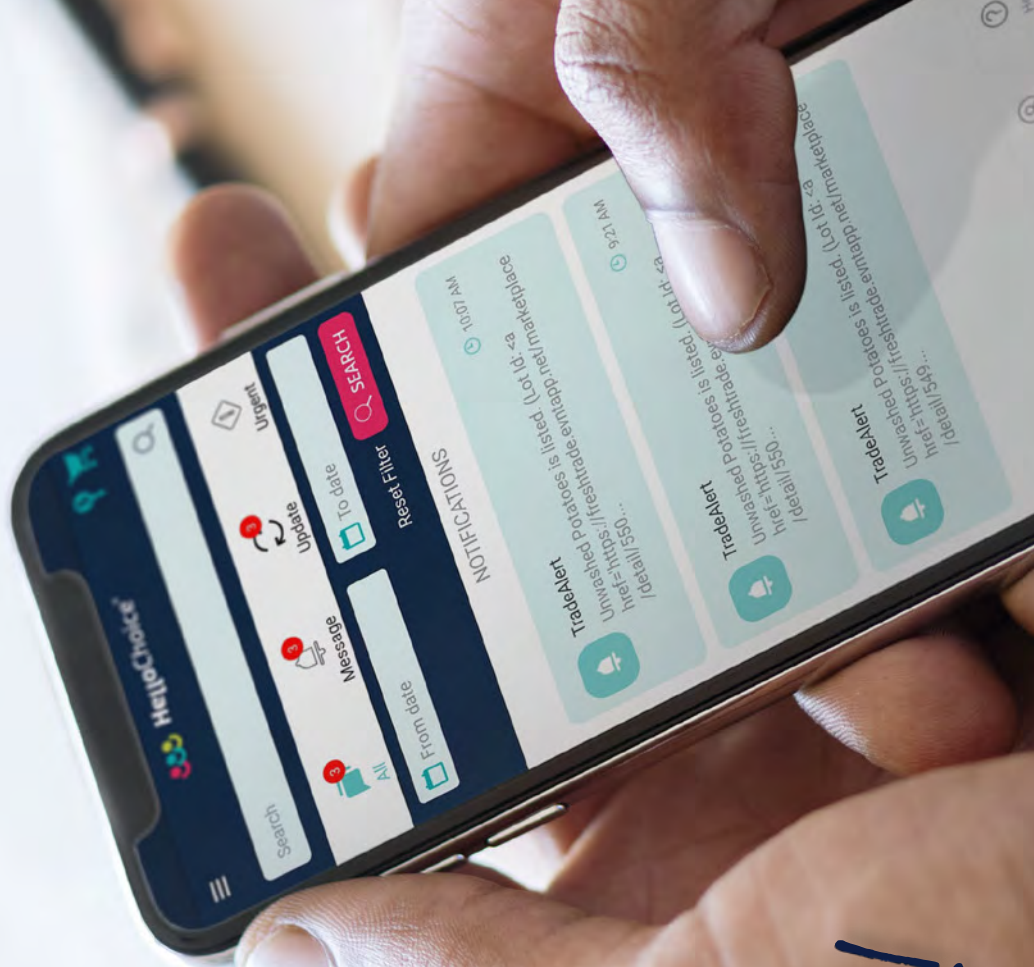
Let the freshest produce, find you!

Receive instant In-App & email notifications

Access a world of freshly listed produce

Customise notifications to your needs

Start Trading Today!



Download Our Mobile App



connect@hellochoice.co.za

www.hellochoice.co.za

033 815 1036



HelloChoice mobile app: Enhanced features respond to market needs

HelloChoice is a proudly South African success story with a vision to modernise the traditional way of agricultural produce through its wholesale online marketplace, available on the Internet and its mobile app.

Fresh produce and agricultural buyers and sellers are taking to HelloChoice's digital marketplace. Over 2 300 users have joined the platform thus far and traded over R150 million within the first three years. The HelloChoice mobile app has been specifically designed for South African market conditions, as it instantly connects buyers in their stores and warehouses with sellers in their fields and packhouses.

New features

HelloChoice is excited to announce an upgraded and enhanced version of the mobile app, to bring complete on-the-go functionality and new features to both buyers and sellers. Responding to the needs of farmers to list while on the move, and similarly responding to the needs of buyers to get the latest real-time offers as they become available, the updated HelloChoice mobile app frees users up to list, bid, buy and sell from anywhere, anytime. This new version of the HelloChoice mobile app will ensure better market access and prices for farmers, as well as faster product access and lower prices for buyers.

HelloChoice's Grant Jacobs explains further: "HelloChoice is digitising agricultural trade to make buying and selling effective and efficient. Our TradeAlerts feature on the new mobile app is a great example of this, as the user can set their own individual trade preferences and get specific in-app messages when trade opportunities that meet their requirements, are available.

"They can immediately find and buy according to their needs with all relevant information immediately available on their phone, and better still, conclude the trade right there and then."

TradeAlerts that use geolocation and customer profiles to better connect buyers and sellers, are brand new and one of the game-changing features that will for the first time, enable farmers to list new offers in real-time via the mobile app, with instant notifications to interested buyers. These instant alerts will speed up the buying and selling process, while the Auction and Buy-it-Now marketplace features will also be available on the mobile app.

What our customers say

Existing HelloChoice users are extremely excited about these new features.

"HelloChoice is a great platform on which to find produce. The TradeAlerts feature is extremely exciting for us because we will now be able to find produce as and when farmers have it available, rather than having to manually search for what we are looking for." **Mohammed Mangesh from Superb, Stanger, KwaZulu-Natal.**



"Thanks to the power of HelloChoice, I was able to source cabbages and potatoes in my area when all my local suppliers and farmers were out of stock. They were able to get what I needed delivered to my shop, as per my order. They continue to improve their service offering and platform, and consistently deliver." **Daniel Verdann from Mr Potato, Umtata, Eastern Cape.**

Download the new HelloChoice app here:



<https://apps.apple.com/us/app/hellochoice/id1481178736>



<https://play.google.com/store/apps/details?id=za.co.hellochoice>

SOUTH AFRICAN AGRICULTURE ON THE FOREFRONT OF SUSTAINABILITY

BENEFITS OF THE SIZA DIGITAL RECORDKEEPING TOOL



**IMPROVING
WATER USE
EFFICIENCY**



**IMPROVING
ENERGY USE
EFFICIENCY**



**REDUCING
WASTE TO
LANDFILL**



**REDUCING
EMISSIONS
TO AIR**



In August this year, PSA hosted a follow-up practical irrigation course for enterprise development farmers in Limpopo.

Practical irrigation course: Water smarter

By Chantel du Raan, Potatoes SA, Prof Martin Steyn, University of Pretoria, and Chris Barnard, Fertigation Academy

Water is a critical input for agricultural production and plays an important role in food security. Proper irrigation is therefore vital to our country's food security, and measures are needed to protect our limited water resources. It is thus important that producers make use of the best available irrigation practices and tools to supply optimal amounts of water to their crops, while minimising the impact on the environment.

The Research and Development as well as the Transformation departments of Potatoes SA (PSA), recently joined forces and arranged a follow-up practical irrigation course for PSA's enterprise development farmers in Limpopo. Twenty-seven delegates gathered at Chinaka Game Lodge near Vivo, Limpopo, in August this year. Chris Barnard from the Fertigation Academy and Prof Martin Steyn from the University of Pretoria acted as expert facilitators, with the aim to

address irrigation-related issues faced by these producers.

This practical irrigation course not only highlighted that water is a scarce and precious resource, but also exposed the producers to tools that will help minimise wasteful nutrient losses. In addition, the aim to maximise transpiration was underscored, along with the beneficial loss of water due to its direct link with photosynthesis, and thus final yield and quality affecting profitability.

Potatoes are shallow-rooted plants with a network of finely branched roots and a fairly large leaf canopy. This makes the crop very sensitive to even small deficiencies in irrigation water, which can negatively affect growth rate, quality and yields.

The effect of water stress on crop performance depends on the crop's growth stage. It is therefore important to understand the water requirements during each stage, and how a shortage or excess of water can affect the crop.



The practical irrigation course provided producers with tools to help minimise wasteful losses of water and nutrients.

Farming roots, not potatoes

Roots are out of sight and therefore usually out of mind, but they remain the lifeline of a plant. Barnard compared the roots of a plant to

an engine. They take up water and nutrients from the soil, and move these up into the leaves, which can be referred to as the factory of the plant. There they interact with sunlight to produce sugars and energy, which in turn affect the yield.

Stronger, healthier roots will ensure better absorption of water and nutrients, enhancing crop development throughout all stages and under all environmental conditions, and producing stronger stems and foliage. When a crop has a good root system, critical resources are easily absorbed, leading to a healthy plant that can better withstand environmental stress conditions, especially in a challenging climate. A healthy root system therefore ultimately helps to ensure good yields.

To illustrate the importance of farming roots, Barnard used an example of a tobacco production practice used in the past. Farmers would plant a tobacco seedling, add 20 litres of water to it, and not irrigate it again. This would force the plant to develop deep roots in search of water, which ensured a well-developed root system.

Oxygen – the forgotten element

Oxygen is a forgotten, yet essential element that affects the uptake of nutrients as well as the occurrence of soilborne diseases. Barnard explained this by asking the audience whether a person could eat a hamburger under water. No, you cannot, and plants work the same way. They cannot take up nutrients if there is no oxygen in the soil (Table 1).

Table 1: The effect of oxygen in the soil on the uptake of nutrients.

% O ₂	K uptake (%)	P uptake (%)
20	100	100
5	75	50
0.5	37	30

A balance should therefore be established between oxygen and soil moisture, since saturated soil contains little to no oxygen.

Soil as a retainer of water

Prof Steyn stated that soil acts as a sponge that can take up and retain water. Just like soil, a sponge consists of solid parts, air, and water. The movement of water into the soil is referred to as infiltration, and the downward movement of water out of the crop’s root zone is called percolation. Pores in the soil form the conduit that allows water to infiltrate and percolate. It also serves as a storage compartment for water. In the following

discussion, soil will be compared to and referred to as a sponge.

Frost and irrigation management

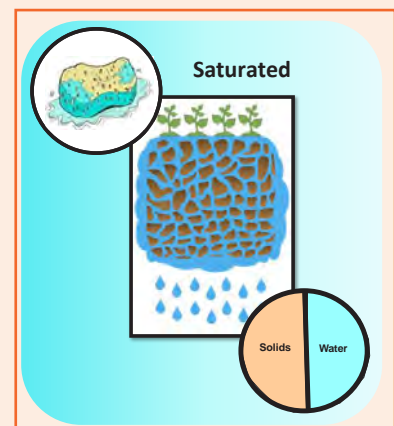
Following the recent frost experienced in Limpopo, one participant asked whether it is recommended to irrigate when a cold period is expected. When soils are dry, more soil pores are filled with air, which will reduce heat transfer and storage within the soil. Therefore, in dry years, frost protection is improved by wetting dry soils.

Saturation

When water (rain or irrigated water) is poured slowly over the sponge (representing the soil), it will soak into the sponge. When the sponge has been saturated, water will start dripping from the bottom – this represents the process of percolation, whereby gravity pulls excess water out of the soil (Figure 1). All pores are thus filled with water, with no air present, and water is lost by percolation.

This typically occurs with over-irrigation, which can have multiple negative effects on yield and quality. Potato yields are sensitive to water stress during all growth stages from tuber initiation onwards. Prof Steyn advised producers to avoid very wet soils, especially late in the

Figure 1: An illustration of the saturation of soil, using the sponge as reference.



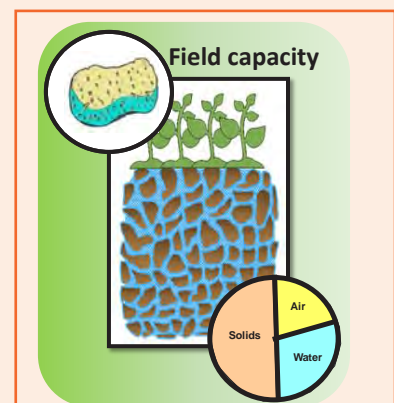
season (the last month before harvest), as tuber quality will especially be hampered.

Field capacity

When discontinuing the pouring of water onto the sponge and allowing the excess gravitational water to drain out, the soil will reach field capacity (Figure 2). The soil (sponge) retains some water that is available for plants to take up for growth, as well as for soil microbes to live in. The pores are now balanced with air and water, two crucial elements for plant growth.

To obtain optimal growing conditions for the crop, it is important to establish uniformity. This is done by avoiding large soil deficits and water stress periods, while maintaining optimal soil water content in the root zone. Water should therefore be distributed

Figure 2: An illustration of the field capacity of soil, using the sponge as reference.



evenly throughout the growing season.

DORMAS

GRIMME

PLANT GRIMME

UITHAAL GRIMME

PAK DORMAS

KONTAK ONS GERUS
 Hannes van Aarde
 082 559 8501
 hannes@dormas.co.za
 Kantoor 011 496 2800

YouTube
 Dormas Implements,
 Dormas Vegetable Handling

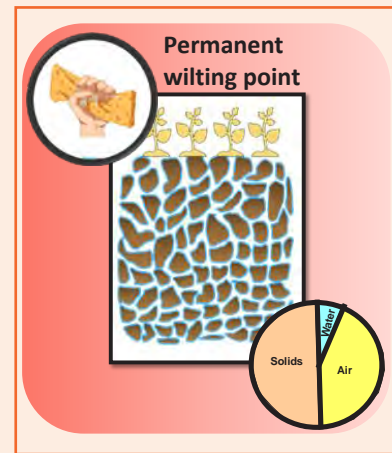
Ontwerp deur Plass Media RW0121

Permanent wilting point

When the sponge is squeezed, it reaches a point where it stops dripping. Although most of the water has been squeezed out of the sponge, it still feels slightly wet, which means a very small amount of water remains in the soil but is held so tightly, that it is not available to plants (Figure 3). This is referred to as the wilting point.

The pores are mainly filled with air and a very small amount of water. Depleting the soil to this point should be avoided, since potatoes are very drought sensitive and will experience stress, which may negatively impact the yield and quality.

Figure 3: An illustration of permanent wilting of soil, using the sponge as reference.



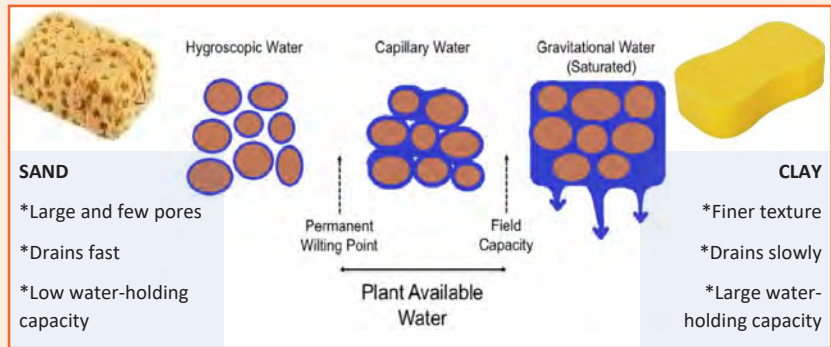
Soil type and soil reservoir

The amount of water soil can hold depends on the soil texture. Soil texture is the ratio of sand, silt and clay particles in soil. Soil type determines how many and how big the pores in the 'sponge' are, which in turn regulate how much water the sponge can hold. Generally, the finer the texture, the greater the water-holding capacity.

This means that clay-like soils can hold more water but drain slower than silty and sandy soils (with fewer and larger pores). Soil type therefore determines the field capacity, permanent wilting point and plant available water (PAW) of a soil (Figure 4).

This means that sands need more frequent irrigation, but with smaller amounts. Loamy and clay soils can be irrigated less frequently with larger amounts of water.

Figure 4: Plant available water, field capacity and permanent wilting point of various soil types.



The goal is to maintain the soil water content near field capacity. It is not necessary to wet the soil deeply because most of the daily heat transfer and storage occur within the top 30 cm. It is best to wet dry soils well in advance

of a frost event, so that the sun can warm up the soil. It is also very important not to irrigate the night before the cold is expected. Ample time needs to be allowed for the plants to dry off before the cold arrives. ☺

In the next issue of *CHIPS*, we will be summarising the negative effects of both over- and under-irrigation on yield and quality. For more information, contact Chantel du Raan at chantel@potatoes.co.za or Prof Martin Steyn at martin.steyn@up.co.za.

NEW TECHNOLOGY COMING SOON

LET'S FIGHT THE BLIGHT



THIS CHANGES EVERYTHING

Better disease management
for less stress

 [CortevaZA on Facebook](#)  [CortevaAME on Twitter](#)  [@Corteva on Instagram](#)

FOR MORE INFORMATION CONTACT THE REGISTRATION HOLDER: Dow AgroSciences Southern Africa (Pty) Ltd Reg. No. 1967/007147/07 • Paarl +27 (0) 21 860 3620 • Centurion +27 (0) 12 683 5700 Local Emergency No +27 (0) 82 895 0621 (SA only) • 24 Hour Emergency No +32 3 575 5555 • Maxwell Office Park, Magwa Building, Ground Floor, Magwa Crescent, Waterfall City, Midrand, 1686, South Africa.

-  Tried and tested locally
-  NEW mode of action
-  Rainfast in 20min
-  3-4 Days more disease control
-  Protects new growth after application

Stuit Alfalfa-mosaïekvirus in sy spore

Deur Jamie Jansen van Vuuren: Douglas-streeksbestuurder, Aartappelsertifiseringsdiens

Alfalfa-mosaïekvirus (AMV) is seker een van die aartappelvirusse in Suid-Afrika waaraan die minste aandag gegee word. 'n Tipiese simptome wat met AMV verband hou, is die skouspelagtige *calico*-simptome wat as 'n heldergeel en -groen mosaïek manifesteer. Dit is waarom daar in die volksmond na AMV as die *calico*-virus verwys word.

Donkergroen 'eilande' en groen bande kan op die blare rondom die primêre en sekondêre are gesien word. Blaarnekrose en -vervorming kom gereeld voor – die blare is gekreukel en om die primêre aar gevou. Nekrose kan tot by die blaarstele strek, in welke geval die blare langs die stingels hang.

Volgens die Franse Navorsingsinstituut vir Landbou, Voedsel en die Omgewing (INRAE) se e-phytia-portaal vir plantgesondheidstoepassings (www.ephytia.inra.fr), kan nekrose reg onder die skil op knolle aan die stolon-ent begin, en dan na die hele knol versprei in die vorm van

kurkagtige letsels, soortgelyk aan dié wat deur die tabakratelvirus (TRV) en die aartappel-moptopvirus (PMTV) veroorsaak word. Hierdie nekrose kan tydens oestyd waargeneem word.

Oordrag van AMV

AMV word op 'n nie-blywende wyse (*non-persistent mode*) deur plantluise oorgedra, soortgelyk aan aartappelvirus Y (PVY). Dit is oordraagbaar deur aartappels, maar die algemene mening is dat die virus nie na die volgende geslag oorgedra word nie. Dit kan deur die ELISA-toets opgespoor word.

Die aartappel is nie 'n algemene gasheer vir hierdie virus nie, maar kan deur vatbare gewasse soos lusern en klawer vanaf aangrensende lande besmet word. Dit is waarom daar ook na AMV as lusernmosaïekvirus verwys word.

Die artikel, "A tuber-damaging strain of alfalfa mosaic virus" wat in Januarie 2017 op www.spudsmart.com gepubliseer is, verduidelik dat indien AMV by aartappels voorkom, dit normaalweg duidelike geel

vlekke op blare veroorsaak. Navorsers het egter nou 'n ongewone ras geïdentifiseer wat nekrose in knolle veroorsaak. Dit is die eerste AMV-ras wat in Kanada gevind is.

Navorsers kon met roetine-monstername in Kanada vasstel dat 'n ongewone AMV-ras nekrose en/of bruin, dooie kolle in die knolle veroorsaak. Die besmette knolle is in 2012 in 'n kommersiële aanplanting ontdek. Dié knolle is na dr. Xianzhou Nie, 'n navorser by die Fredericton-navorsingsentrum van die Kanadese departement van landbou en agri-voedsel, gestuur om die oorsaak van die simptome te bepaal. Ná verskeie toetse is daar gevind dat die letsels deur AMV veroorsaak is.

ASD stel ondersoek in

Na aanleiding van dié bevindings, het die Aartappelsertifiseringsdiens (ASD) besluit om 'n informele (nie-statistiese) proef uit te voer, om te bepaal of AMV moontlik oordraagbaar is na dogterknolle, deur besmette knolle te plant. 'n



'n Tipiese AMV-simptome wat as 'n heldergeel en -groen mosaïek manifesteer. (Bron: www.gardening-knowhow.com)



Die lusernland (links) en geregistreerde moeraanplanting (regs) wat vir 'n informele proef deur ASD gebruik is.

Figuur 1: Besmette plante op die aartappelland wat op verskillende datums geïdentifiseer is.



Blok D, 6 Februarie 2020.



Blok D, 21 Februarie 2020.



Blok E, 6 Februarie 2020.



Blok E, 21 Februarie 2020.

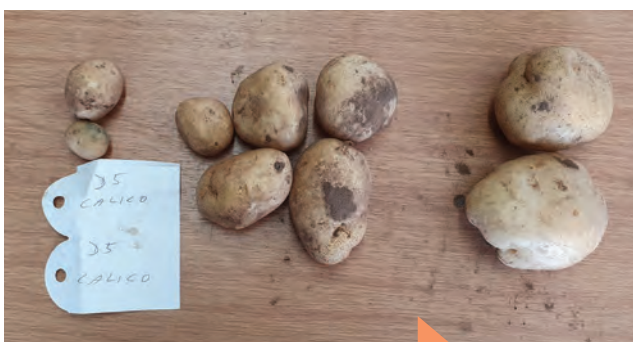
Aartappelland wat direk langs 'n lusernland geleë is, is geïdentifiseer. Op 6 Februarie 2020 is 20 plante op Blok D en tien plante op Blok E – wat sigbare AMV-besmetting getoon het – geïdentifiseer, gemerk en genommer (Figuur 1).

Die simptome op die blare van duidelik besmette AMV-plante het oor die tydperk vanaf 6 tot 21 Februarie 2020 ligter geword, soos in *Figuur 1* gesien kan word. Dit is dus belangrik om dadelik te begin suiwer (*rouguing* in Engels) sodra die AMV-simptome waargeneem word, om te verhoed dat besmette plante wat later nie duidelik sigbaar is nie, misgekyk word.

Halmtellings van die besmette plante is op 21 Februarie 2020 gedoen, terwyl dié van die onbesmette naburige plante net voor loofafsterwe gedoen is. Beide die besmette en onbesmette plante se opbrengs is vóór monsterneming met vurke uitgehaal, om vir die teenwoordigheid van bakteriese verwelk te toets en om die persentasie besmetting met PVY en aartappelrolbladvirus (PLRV) te bepaal.

Die knolle van die opbrengste is in drie kategorieë gesorteer, getel en geweeg, naamlik té klein vir moere, moergrootte, en dié wat vir die tafemark geskik is. Geen nekrotiese letsels is op die knolle afkomstig van die AMV-besmette plante waargeneem nie.

Nadat knolle van die geïdentifiseerde plante deurgesny is, is waargeneem dat knolle van die AMV-besmette plante interne bruin-vlekletsels gehad het, terwyl geen letsels in die knolle van die onbesmette plante voorgekom het nie.



Opbrengs van 'n AMV-besmette plant.



Opbrengs van 'n onbesmette plant.

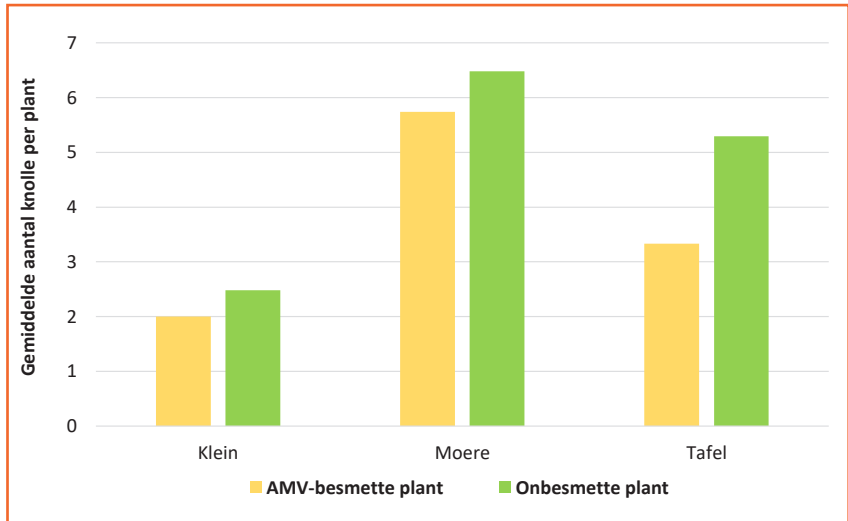


Deurgesnyde knolle van die AMV-besmette plante.

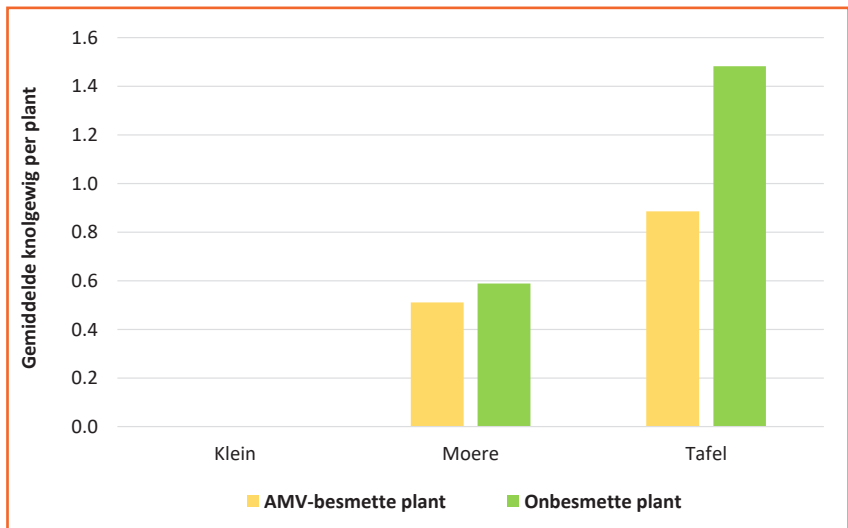


Deurgesnyde knolle van die onbesmette plante.

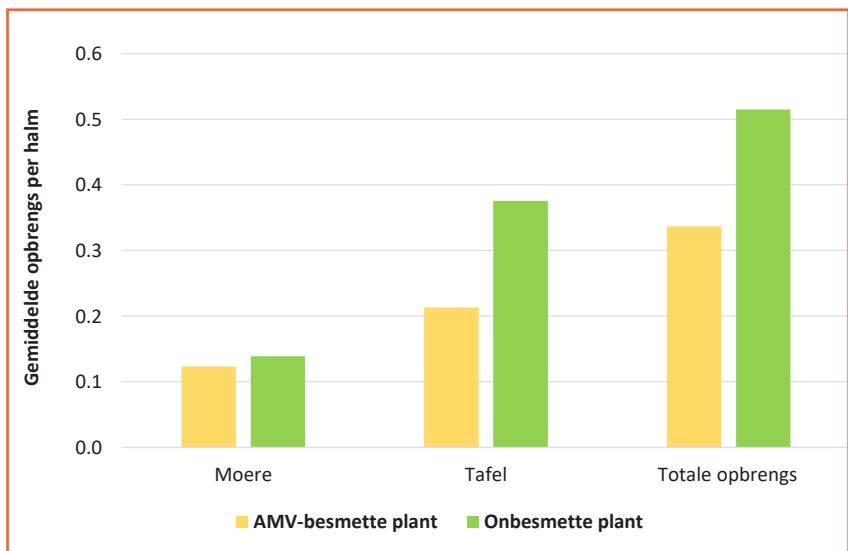
Figuur 2: Gemiddelde aantal knolle per plant.



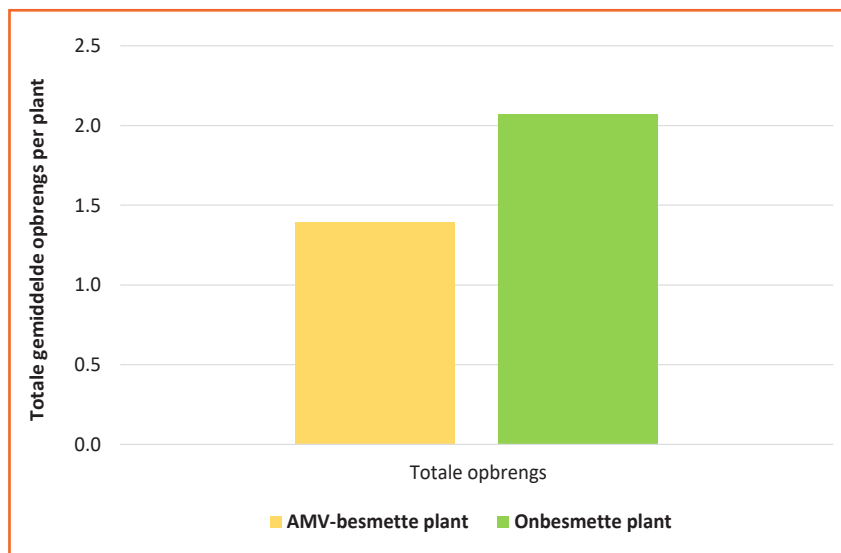
Figuur 3: Gemiddelde knolgewig per plant.



Figuur 4: Gemiddelde opbrengs per halm.



Figuur 5: Totale gemiddelde opbrengs per plant.



Plante wat op 3 Maart 2021 reeds AMV-simptome getoon het.



AMV-besmette plante wat op 12 Maart op die proefperseel waargeneem is.

Die opbrengs van al die AMV-besmette plante van Blok D en E is saamgegroeper, en dié van die onbesmette plante van Blok D en E saam. In *Figure 2 tot 5* kan telkens gesien word dat die onbesmette plante se opbrengs hoër as dié van die AMV-besmette plante was.

Die moergroote-opbrengs (102 dogterknolle) van die AMV-besmette plante is op 2 Februarie 2021 saam met die Noord-Kaap Werksgroep se proef geplant.

Op 3 Maart 2021 het Leon Zietsman, sertifiseringsbeampte van ASD, die proefperseel besoek. Van die plante wat op daardie stadium opgekom het, het reeds AMV-simptome getoon.

Op 12 Maart 2021 is die proefperseel weer besoek. Van die 102 knolle wat opgekom het, het 53 knolle AMV-simptome getoon wat op sekondêre infeksie gedui het.

Die moere van die besmette plante is na 'n Plantovita-toetslaboratorium gestuur om 'n toetstegniek te ontwikkel vir die identifisering van AMV. Die res is deurgesny, en soos met die moere wat in 2020 geoes is, is interne bruinvlekletsels in die gesnyde moere waargeneem.

Samevatting

Die volgende moontlike gevolgtrekkings kan vanuit die resultate gemaak word:

- AMV is oordraagbaar na dogterknolle.
- AMV-besmetting het 'n negatiewe impak op opbrengs.

Dit is belangrik dat, sodra AMV-simptome op 'n aanplanting waargeneem word, suiwering (*rougieing*) so gou as moontlik gedoen moet word. Die besmette plante, tesame met die moere en enige knolle wat al ontwikkel het, moet uitgehaal en verwyder word om te keer dat dít wat oorbly, 'n bron van verdere besmetting word.

Dit is verder belangrik om daarop te let dat dieselfde plantluis wat PVY oordra, ook AMV oordra. Plantluisbeheer moet vanuit die staanspoor



Interne bruinvlekletsels is in 'n aantal moere van besmette plante waargeneem.

van die aanplanting tot reg aan die einde toegepas word. Indien primêre AMV-simptome (seisoensbesmetting) in 'n aanplanting waargeneem word, dui dit op plantluis-aktiwiteit en moet plantluisbeheer dus opgeskerp word.

Die resultate is op 1 Junie 2021 aan die Nasionale Moerekomitee voorgehou. Daar is besluit dat, aangesien dit nie voorheen be-

kend was dat die virus na dogterknolle oorgedra kan word nie, en hierdie nie 'n statistiese proef was nie, Aartappels SA se navorsingskomitee versoek word dat die bevindings van hierdie proef, ondersoek moet word. Die versoek is goedgekeur en 'n 'uitnodiging vir voorstelle' is teen die einde van Oktober aan navorsingsinstansies gestuur. Die hoop is dat ASA se

navorsingskomitee 'n projek sal kan befonds om te ondersoek of AMV na dogterknolle oorgedra word wanneer AMV-besmette knolle geplant word. 📍

Vir meer inligting, kontak Sanette Thiert, besturende direkteur van ASD, by 060 716 2607 of epos sanette@potatocertification.co.za of besoek die webwerf by www.potatocertification.co.za.



MARKIES SOUND HERTHA

"FPD markets potato cultivars with characteristics that are in very high demand. Our cultivars develop a chain of advantages for all involved – from the farmer producing the potato to the final consumer."

CONTACT US:

Theuns 082 775 1787 • Morkel 079 884 9341
admin@fpd.co.za • www.fpd.co.za

AGENTS OF:



good chemistry



BARRIER 450 SC

DIE OPLOSSING VIR SWAMSIKTES OP AARTAPPELS EN TAMATIES

○ PRODUKBESKRYWING

'n Suspensiekonsentraat kontak- en sistemiese swamdoder vir die beheer van swamsiektes op aartappels en tamaties.

○ WAT MAAK BARRIER 450 SC EFFEKTIEF?

- Dit is beide 'n kontak- en sistemiese produk wat voorkomende- sowel as genesende siektebeheer bied
- Bevat twee aktiewe bestanddele met baie uiteenlopende metodes van werking om siektebeheer te verseker
- Bied 'n anti-weerstand strategie deur twee aktiewe bestanddele uit verskillende FRAC (*Fungicide Resistance Action Committee*) groepe te kombineer
- Is 'n oplosbare konsentraat vloeibare formulاسie wat veiliger en makliker vermenging verseker
- Bied 'n breë spektrum van siektebeheer - met spesifiek goeie beheer van *Alternaria spp*
- Dit is 'n blouband swamdoder (lae toksisiteit) wat 'n minimale impak op die omgewing, mens en dier verseker
- Is 'n ideale pasmaatproduk vir enige IPM (*Integrated Pest Management*) program

Barrier 450 SC Reg. Nr. L7604, Wet Nr. 36 van 1947

Bevat: Maneb (ditiokarbamaat), Prosimidoon (dikarboksimid), Sinkoksied. (VERSIGTIG)

AECI Chem Park, 200 Bergrivier Drive, Chloorkop, Kempton Park, 1619

T: +27 11 823 8000 E: planthealth@aeciworld.com W: aeci.com



Die gebruik van grondorganismes as aanwysers van grondgesondheid

Deur dr Jacques van Zyl, Wes-Kaapse Departement van Landbou

Groundgesondheid is die vermoë van grond om as 'n noodsaaklike, lewensonderhoudende stelsel te dien – binne 'n bepaalde ekostelsel en grondgebruiksgrense – om plante en diere se produktiwiteit te ondersteun, water- en luggehalte te onderhou of te verbeter, en om plant- en dieregesondheid te bevorder.

Groeiende belangstelling in die evaluering van grondgesondheid spruit uit die verhoogde bewustheid dat grond 'n noodsaaklike komponent van die aarde se biosfeer is, en dat dit nie net 'n belangrike

rol by voedsel- en veselproduksie speel nie, maar ook 'n sentrale rol in die instandhouding van plaaslike, streeks- en wêreldomgewingsgehalte het.

Grond vorm die basis van alle natuurlike en landboukundige produksie, en bykans alle landgebaseerde lewe is daarom afhanklik van hierdie dun lagie wat die oppervlak van die aarde bedek. Opnames het bevind dat mensgeïnduseerde agteruitgang van grond op ongeveer 40% van die wêreld se landboukundige gebiede plaasvind as gevolg van gronderosie, atmosferiese besoedeling, oormatige grondbewerking,

oorbeweidings, versouting, en die uitbreiding van ariede gebiede.

Gesonde mikrobiologiese stelsel

Gesonde of goed gebalanseerde en funksionerende grond ondersteun die funksies van ekostelsels deur die gesondheid van plante en diere te bevorder. 'n Gesonde mikrobiologiese gemeenskap is noodsaaklik vir die vrugbaarheid, produktiwiteit en volhoubaarheid van 'n ekostelsel, maar tans kan daar nog nie met sekerheid omskryf word presies waaruit 'n gesonde mikrobiologiese ekostelsel bestaan nie.

Grondgesondheid word deur verstourings en afwykings van die natuurlike toestand van grond beïnvloed. Dit het tot gevolg dat die fisiese, chemiese en biologiese komponente verskillend beïnvloed word, afhangend van die vlak van of tipe verstouring of afwyking wat voorkom. Die mikrobiologiese diversiteit wat in grond voorkom moet by grondgesondheidsbepalings ingesluit word, aangesien dit 'n belangrike rol in grondgesondheid speel.

Grondbiota is moeilik om te bestudeer vanweë hul mikroskopiese grootte, hoë getalle en diversiteit. Die grond-mikrobiologiese gemeenskap word sterk deur erosie, versouting, oormatige natrium en ander grondkontaminante beïnvloed.

Die dinamika van organiese materiaal, elementkringloop en grondstruktuur word alles deur mikrobiologiese prosesse beïnvloed, wat op hul beurt sterk deur bestuurspraktyke beïnvloed word. As gevolg van hierdie sensitiwiteit is grondorganismes dus goeie aanwysers van grondgesondheid.



Foto deur Carmen Muller.

Die meerderheid van mikroörganismes in die grond is voordelig vir plantgroei. Grondgedraagde bakterieë bevorder plantontwikkeling deurdat dit mineraaloplosbaarheid en stikstofbinding bevorder, hormone en antibiotika produseer, en patogene onderdruk.

Translokasie en ontbinding

Die samestelling van die mikrobiële gemeenskap het 'n invloed op die tempo van residu-afbraak en element-kringloop. Swamme en bakterieë ontbind materiaal in die grond en is noodsaaklik vir die mineralisasie van elemente, en dus die vrystelling daarvan vir plante en ander organismes.

Mikorisa speel 'n sleutelrol in die grond en is by die translokasie van elemente betrokke, veral fosfaat, wat element- en wateropname bevorder. Dié verbondenheid met mikorisa – veral onder droogte- en stresstoestande – het 'n baie positiewe invloed op grondgesondheid. Die teenwoordigheid, al dan nie, van mikorisa het 'n uitwerking op plantgroei, veral onder stresstoestande of grond wat laag is in voedingstowwe, en kan dus as 'n aanwyser van grondgesondheid gebruik word.

Bakterieë bevorder die afbraak van minerale in die grond, ondersteun grondvorming en skei polisakkariede af om grondpartikels saam te bind en het dus 'n positiewe impak op aggregeerbaarheid.

Die kriteria vir die aanwysers van grondgesondheid hou verband met hul vermoë om die ekostelselprosesse te definieer en die fisiese, chemiese en biologiese eienskappe te integreer. Dit hou ook verband met hul sensitiwiteit tot bestuurspraktyke, klimatologiese variasies, en hul toepaslikheid en bruikbaarheid vir wetenskaplikes, produsente, omgewingsbewustes en beleidmakers.

Die metodes wat tans toegepas word om grondorganismes te bepaal, voldoen nie almal aan die voornoemde kriteria om as aanwysers van volhoubare grondbestuur te dien nie. In sekere gevalle sal 'n kombinasie van aanwysers 'n beter geheelbeeld van die grondgesondheid gee as net een aanwyser op sy eie. Enige aanwyser moet, wat grondgesondheid betref,

aan vyf kriteria voldoen om van enige waarde te wees. Dit word vervolgens bespreek.

1 Voordelige grondfunksie

Die kwantifisering van grondgesondheid is noodsaaklik, aangesien gronde en hul biota ekostelselfunksies daarstel wat die mensdom bevoordeel. Hierdie ekostelselfunksies kan van hoë waarde wees en sluit in die opberging en beskikbaarstelling van water, dekompostering van plante en diere, hersirkulasie van voedingstowwe, sekwestering en detoksifikasie van toksiese organiese materiaal, en die bevordering van plantgesondheid deur die onderdrukking van plantparasitiese mikrobies en fitofage fauna.

Grondfunksie kan onder sekere omstandighede relatief goedkoop direk gemeet word, soos met kompostering, waar 'n spesiale tipe papier begrawe en dan op 'n gereelde basis ondersoek word om die komposteringsvlak te bepaal. Dit kan benut word waar daar nie presiese waardes benodig word nie.

In ander gevalle kan direkte meting, byvoorbeeld voedingstofomsettings, baie duur wees en in verdere gevalle mag metings oor 'n langer tydperk nodig wees om sinvolle waardes te kry. In sulke gevalle is dit verkieslik om 'n plaasvervanger wat sterk met grondfunksie verband hou te meet, eerder as om laasgenoemde direk te meet.

Grondorganismes voldoen aan hierdie vereiste weens hul hoë getalle en diversiteit, wat daartoe lei dat hulle goed met voordelige grondfunksies korreleer. Die seleksie van 'n grondorganisme om as verteenwoordiging van 'n grondfunksie te dien, moet baie versigtig gedoen word, aangesien baie interaksies in grond plaasvind.

2 Verklaring van ekostelselprosesse

Om prakties bruikbaar vir wetenskaplikes, produsente en ander belanghebbendes te wees, moet die aanwyser ten opsigte van grondgesondheid nie slegs 'n voorspelling gee van die voordelige funksie van die grond nie, maar ook verklaar waarom die grond voordelig sal funksioneer, al dan nie.

Gewasproduktiwiteit en plantgesondheid is van onskatbare waarde,

aangesien dit baie nou met 'n reeks grondfunksies verband hou. Maar, as dit gemeet word en daar word gevind dat dit laer is as wat verwag word, is daar nie noodwendig 'n voor-die-hand-liggende remediërende aksie nie, aangesien dit die invloed van verskeie faktore op die plant meet.

Dit is dus van uiterste belang dat die aanwysers wat gebruik word, aan belanghebbendes dié interaksies moet kan verklaar en dit in verband bring met bestuursstappe om optimale plantgroei en opbrengs daar te stel, tesame met goeie grondgesondheid.

Grondorganismes voldoen aan hierdie vereiste, omdat hulle 'n direkte rol in verskeie ekostelselprosesse speel, insluitend die omskakeling van voedingstowwe in 'n opneembare vorm vir plante, asook die onderdrukking van sekere skadelike organismes. Aangesien grondorganismes ook die grondstruktuur beïnvloed, speel dit 'n belangrike, indirekte rol by prosesse soos waterinsypeling.

3 Variasie in grondbestuurspraktyke

Die aanwyser wat gebruik word om die volhoubaarheid van grondbestuurspraktyke te bepaal, moet sensitief genoeg wees om te kan reageer op veranderinge in die bestuur van gronde. Die aanwyser moet ook sensitief genoeg wees om die invloed van bestuur en klimaat op langtermynveranderinge in grondgehalte te weerspieël, maar nie só sensitief dat dit deur korttermynweerpatrone beïnvloed word nie.

Grondorganismes voldoen aan hierdie vereiste, aangesien hulle baie sensitief is vir die invloed van die mens op die natuur. Die verandering in grondbestuurspraktyke word sterk weerspieël in die verandering en diversiteit van bakterieë, swamme en aalwurms.

4 Bruikbaar vir grondbestuurders

Die grondbestuurder is die primêre bepaler van grondgesondheid, aangesien hy/sy alles bestuur wat op die grond toegepas word. Derhalwe is dit die grondbestuurder wat uiteindelik sal besluit watter aanwysers gebruik sal word om die bepaling te doen. Baie tyd en kreatiwiteit is

nodig om metings van grondorganismes wat toepaslik vir grondbestuurders is, te versamel.

In werksinkels met produsentewerksgroepe in die buiteland, is gevind dat erdwurmgetalle 'n praktiese aanduiding was van die sukses van hul grondbestuurspraktyke en is dit as 'n aanwyser aanvaar.

Die meting van die voorkoms en diversiteit van aalwurms, myte en bakterieë lewer 'n magdom inligting oor grondfunksies, maar in die werksinkels is besluit dat hierdie bepalinge té gespesialiseerd vir grondbestuurders is, en dat dit op 'n wetenskaplike basis oorkoepelend deur navorsing bepaal kan word indien die nodige fondse beskikbaar sou wees. Grondbestuurders beskik nie oor die nodige kundigheid en tyd om hierdie metings self te onderneem nie.

5 Maklik en goedkoop om te bepaal
In hierdie stadium is die meeste van die ontledings op grondorganismes


relatief duur en ingewikkeld, maar in die nabye toekoms sal tegnieke ontwikkel word wat goedkoper is en ook die resultate vinniger sal kan weergee om by die produksiebestuursplan ingesluit te word.

Grondorganismes as aanwyser van grondgesondheid is dus hoogs toepaslik, aangesien grondorganismes baie sensitief is vir enige natuurlike of geïnduseerde verstourings en wanbalanse wat in die grond voorkom. Dit hou ook grootliks verband met voordelige prosesse en interaksies wat in die grond plaasvind. Hierdie aanwysers sal ook kan aandui waar moontlike probleme met bestuur voorkom en hoe dié probleme aangespreek behoort te word, sodat die grond meer volhoubaar benut kan word.

In die vorige seisoen is daar by 'n langtermyn-aartappelproef in die Sandveld van grondorganismes as aanwyser gebruik gemaak, om te bepaal hoe bewerking die grond se gesondheid beïnvloed het. Daar is

bevind dat hierdie aanwyser resultate gelewer het wat ooreenstem met wat in die praktyk waargeneem word.

Die waarnemingsvermoë van die mens ten opsigte van plantgroei moet nie onderskat word nie. Indien die sigbare plantgroei in verband gebring word met 'n gewenste grondgesondheidsuitslag, sal dit nie nodig wees om hierdie ontledings op 'n gereelde basis te doen nie. Die produsent neem gewoonlik eerste enige probleme met sy aanplanting waar en kan dan 'n ontleding laat doen om dit in die toekoms reg te stel.

Daar is uitstekende laboratoriums in Suid-Afrika wat van hierdie ontledings kan doen en aanbevelings kan maak ten opsigte van die nodige stappe wat geneem moet word. 

Vir enige navrae, kontak
dr Jacques van Zyl by
jacquesvz@elsenburg.com, of
die Wes-Kaapse Departement
van Landbou by 021 808 5302.

DIE WORTEL VAN ALLE GOEIE OPBRENGSTE

1000 mg/kg Duksien · 84 mg/kg Sitokinien · 8 g/kg Betaine · 0.4 % Aminosure



ALGAE ROOTA BEVORDER DIE ONTWIKKELING VAN WORTELS

Algae Roota is 'n gekonsentreerde ekstrakt van die seewier *Ascophyllum nodosum*, vervaardig deur hidrolise om die aktiewe bestandele se effektiwiteit te bewaar. Dit bevat ook die plantgroeihormone, Indool-3-buteriensuur (IBS), Indool-3-asynsuur (IAS) en Zeatien vir addisionele produkdoeltreffendheid tydens wortelontwikkeling.

Algae Roota is beskikbaar in gerieflike pak groottes van 1 L, wat genoeg is om 10 - 20 ha te behandel. Dien toe as 'n blaarbespuiting of direk in die wortelsone tydens plant, of deur besproeiing.

www.nutrico.co.za 011 392 4072
Laai ons Nutrico App vandag af!



What does research mean to the potato producer (Part 5): Proactive research into *Tuta absoluta* to reduce risk

By Dr Fienie Niederwieser, Potatoes SA

Tuta absoluta (the tomato leafminer) is a devastating pest on tomatoes and can lead to an entire yield loss if not controlled. This insect is also known to develop resistance to reliable insecticides in a relatively short period of time (Table 1).

Perhaps because potatoes and tomatoes are generally not grown in the same area or at the same time, no in-depth research was carried out on the host status of potatoes with regard to Tuta, until

recently. Potato was mentioned as a host for Tuta, but it was not known whether the larvae feed on leaves and stems, as well as tubers.

The migration of *T. absoluta* from Europe and the Middle East to Africa, and then southwards towards South Africa, was therefore cause for concern for the tomato and potato industries.

Research project launched

Studies under local conditions could not start until the insect was present in South Africa. In

the meantime, Potatoes South Africa (PSA) proactively approved funding for a research project, and potato producers were sensitised about the possible risk associated with *T. absoluta*.

In 2016, the presence of Tuta in the northern parts of South Africa was confirmed and PSA's plan was put into action:

- Pheromone traps were distributed to most production regions to determine the spread of the new pest. It was surprising how fast the insect migrated to all potato production regions.
- Information regarding the new pest was circulated to create awareness of the possible risk.
- Dr Diedrich Visser of the Agricultural Research Council started researching the host status of potato for Tuta.
- Prof Hannalene du Plessis of North-West University, conducted a study to determine whether Tuta entered the country with resistance to insecticides and, if so, to which products.

Findings and management

Only five years after *T. absoluta* entered South Africa, research has addressed uncertainties, generated information to manage the new pest, and established expertise in sensitivity testing and management of resistance:

- Tuta larvae do in fact mine in potato leaves and this can lead to damage, especially if the insect's primary host plant, tomato, is not readily available and the infestation pressure is high.

Table 1: Insecticides with IRAC mode of action group for which *Tuta absoluta* has developed resistance, as well as country and date of reported resistance.

Insecticide and IRAC mode of action group	Country where resistance was reported	Year of reporting
Cartap (14)	Brazil	2000
Abamectin (6)	Brazil	2001
Deltamethrin (3A)	Argentina	2005
Bifenthrin (3A)	Brazil	2011
Diflubenzuron (15)	Brazil	2011
* Indoxacarb (22A)	Brazil	2011
Permethrin (3A)	Brazil	2011, 2014
Teflubenzuron (15)	Brazil	2011
Triflumuron (15)	Brazil	2011
Cyfluthrin-beta (3A)	Brazil	2014
Etofenprox (3A)	Brazil	2014
Cypermethrin-alpha (3A)	Brazil	2015
* Spinosad (5)	Brazil	2015, 2016
Metaflumizone (22B)	Brazil	2016
* Spinosad (5)	Chili	2012
* Flubendiamide and * Chlorantraniliprole (28)	Italy and Greece	2014
* Chlorantraniliprole (28)	UK	2019
* Spinosad (5)	UK	2019

* Insecticides in red were tested in the local project carried out at North-West University.



Tuta larvae do in fact mine in potato leaves and this can lead to substantial damage.

- Under normal circumstances, both Tuta and potato tuber moth can occur in a field and mine in leaves, with potato tuber moth occurring in greater numbers.
- Unlike the potato tuber moth, Tuta larvae do not enter tubers through the skin. They reach tubers by entering through sprouts to cause damage. Thus, seed that is prepared for planting can be at risk of infestation and needs to be

protected by application of a registered product.

- *T. absoluta* did not enter the country with resistance to insecticides registered for use on the insect. By applying an internationally recognised testing method, valuable baseline information has been established for testing, should evidence point to the possibility of a loss of sensitivity in the years to come.
- The importance of this insect and how to manage it in order

to avoid or postpone the loss of sensitivity to insecticides, is emphasised through knowledge transfer sessions. Thus, producers and agents are becoming more sensitised and this will contribute to improved management.

- Funding from the potato industry has allowed for the development of scarce skills, expertise and infrastructure at North-West University, where two students obtained post-graduate qualifications based on the research. The expertise and infrastructure that was established can now be applied in a new project to test the potato tuber moth's sensitivity to the most popular insecticides registered for use on this pest. 🍅

For more information, contact Dr Fienie Niedermieser at fienie@potatoes.co.za or on 083 634 4848.

Aartappelmot kan 'n nagmerrie wees indien dit nie reg bestuur word nie. 'n Geïntegreerde benadering tot aartappelmotbestuur begin met effektiewe monitering. Moniteringsdata wat reg geïnterpreteer word, help met intydse besluitneming en koste doeltreffende aanwending van die beskikbare gewasbeskeringsprodukte.

InteliGro ondersteun aartappel produsente reeds vir die afgelope 4 jaar met effektiewe moniteringsdata en hierdie data maak 'n verskil!

Kontak InteliGro om ook op jou plaas betrokke te raak.

INGELIGTE BESLUITNEMING:

- Regte oplossing
- Regte produkte
- Regte tyd



info@inteligro.co.za | www.inteligro.co.za

TARGET

PRODUCT

WHEN TO SPRAY

INSECTICIDE



Aphids

Closer® 240 SC

Isoclast active

INSECTICIDE



Potato leaf miner

Delegate® 250 WG

Jemvelva active

INSECTICIDE

Tracer® 480 SC

Galcova active

INSECTICIDE



Potato tuber moth

Delegate® 250 WG

Jemvelva active

INSECTICIDE

Tracer® 480 SC

Galcova active

INSECTICIDE



Tomato leaf miner moth
(*Tuta absoluta*)

Delegate® 250 WG

Jemvelva active

INSECTICIDE

Tracer® 480 SC

Galcova active

INSECTICIDE



African bollworm

Tracer® 480 SC

Galcova active

INSECTICIDE

FUNGICIDE



Early blight

****Acanto**® 250 SC

FUNGICIDE

Dithane® M45 800 WP NT

FUNGICIDE

Hit® 500 SC

FUNGICIDE

***Tanos**® 50 WG

FUNGICIDE



Late blight

Dithane® M45 800 WP NT

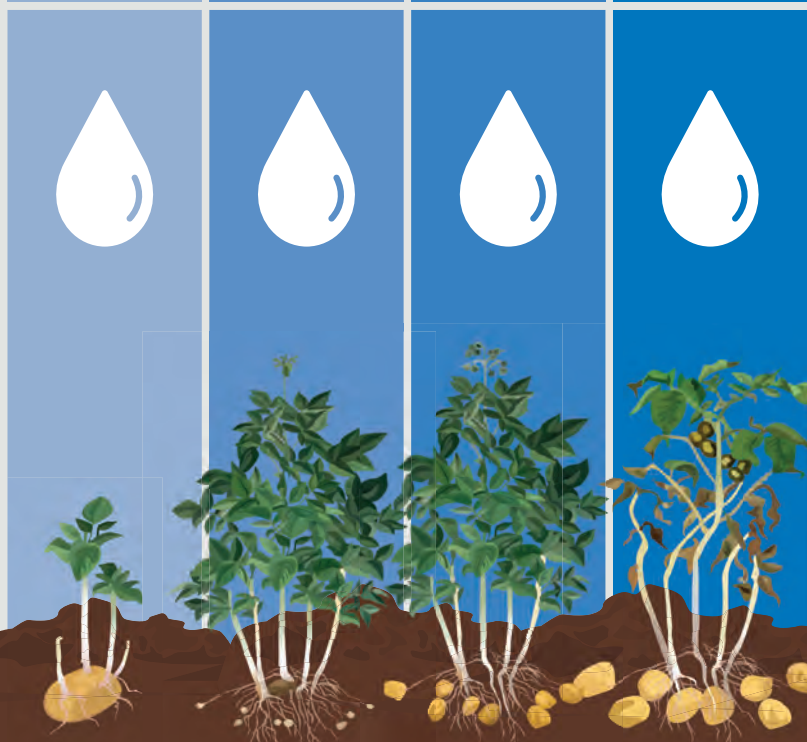
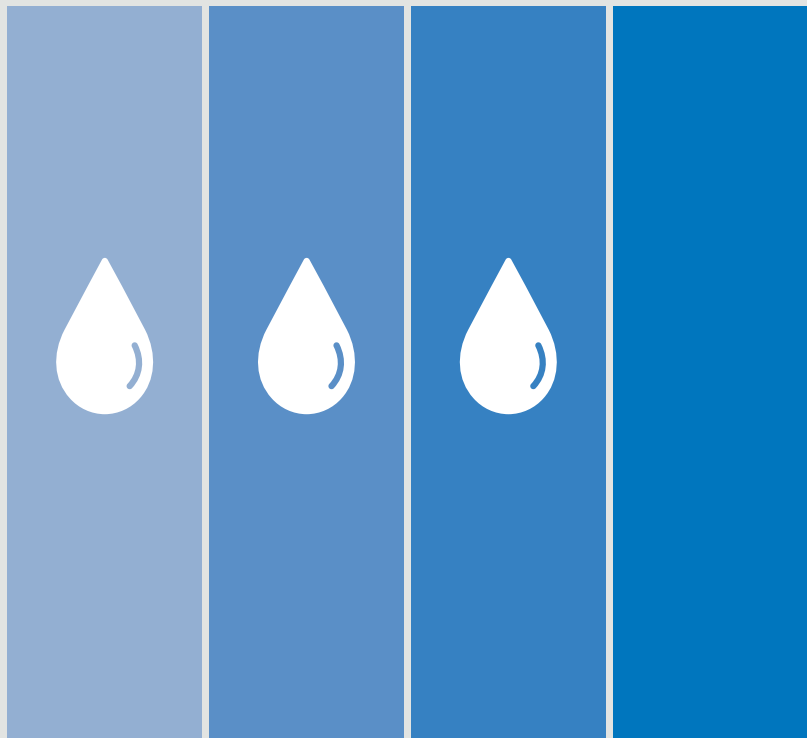
FUNGICIDE

Curzate® 600 WG

FUNGICIDE

Tanos® 50 WG

FUNGICIDE



VEGETATIVE DEVELOPMENT

TUBER INITIATION

TUBER BULKING

MATURATION

TAKE A CLOSER LOOK

POTATO SPRAY CALENDAR

GROUP 4C

Closer® 240 SC

Isoclast® active

INSECTICIDE

Closer® 240 SC gives lightning fast knock-out of aphids in potatoes. Seed potato growers rely on Closer to keep their crop clean and free of viruses transmitted by aphids. There is no cross-resistance between Closer® and neonicotinoids (Group 4A).

GROUP 27

Curzate® 600 WG

FUNGICIDE

*Curzate® 600 WG delivers exceptional control of late blight in potatoes. The active ingredient is cymoxanil, providing curative and preventative action against late blight.

*EARLY BLIGHT IS CONTROLLED BY THE REGISTERED TANK MIX WITH DITHANE® M45 800 WP NT.

GROUP 5A

Delegate® 250 WG

Jemvelva™ active

INSECTICIDE

Delegate® 250 WG with Jemvelva™ active provides exceptional control of Potato Tuber Moth larvae, Potato Leaf Miner and Tomato Leaf Miner moth (*Tuta absoluta*). Its translaminar activity combined with high efficacy through ingestion knocks these pests out cold.

GROUP M03

Dithane® M45 800 WP NT

FUNGICIDE

The class leading rainfastness of Dithane® M45 800 WP NT contributes to excellent early and late blight control, whilst also serving as the backbone of many resistance management programs.

GROUP 5A

Tracer® 480 SC

Qalcova™ active

INSECTICIDE

Tracer® 480 SC, with Qalcova™ active, is a naturally derived insecticide that provides excellent control of potato tuber moth larvae, African Bollworm, Potato leaf miner and Tomato leaf miner moth.

GROUP 2

Hit® 500 SC

FUNGICIDE

*Hit® 500 SC delivers exceptional control of early blight in potatoes. The active ingredient is procymidone, providing curative and preventative action against early blight.

*EARLY BLIGHT IS CONTROLLED BY THE REGISTERED TANK MIX WITH DITHANE® M45 800 WP NT.

GROUP 11

Acanto® 250 SC

FUNGICIDE

*Acanto® 250 SC delivers exceptional control of early blight in potatoes. The active ingredient is picoxystrobin, providing preventative and curative action against early blight. Translaminar and xylem systemic movement, coupled with diffusion in cuticular waxes and redistribution via vapour action, results in uniform coverage and resistance to wash-off.

GROUPS 27 AND 11

Tanos® 50 WG

FUNGICIDE

*Tanos® 50 WG provides excellent control of both early and late blight in potatoes. The combination of two unrelated active ingredients provides curative as well as preventative protection and helps to prevent the development of fungicide resistance.

*EARLY BLIGHT IS CONTROLLED BY THE REGISTERED TANK MIX WITH A CONTACT FUNGICIDE.

*APPLY ACANTO® 250 SC EVERY 14 DAYS AS A PART OF A WEEKLY ALTERNATING SPRAY PROGRAMME WITH THE MAXIMUM REGISTERED DOSAGE OF THE CONTACT FUNGICIDES MANCOZEB OR CHLOROTHALONIL 720 SC.

PRE-HARVEST INTERVAL IN POTATOES

**Acanto® 250 SC	7 days	Dithane® M45 800 WP	3 days
Closer® 240 SC	21 days	Hit 500® SC	35 days
Curzate® 600 WG	14 days	*Tanos® 50 WG	7 days
Delegate® 250 WG	3 days	Tracer® 480 SC	7 days

*EARLY BLIGHT IS CONTROLLED BY THE REGISTERED TANK MIX WITH A CONTACT FUNGICIDE. **APPLY ACANTO® 250 SC EVERY 14 DAYS AS A PART OF A WEEKLY ALTERNATING SPRAY PROGRAMME WITH THE MAXIMUM REGISTERED DOSAGE OF THE CONTACT FUNGICIDES MANCOZEB OR CHLOROTHALONIL 720 SC.

FOR MORE INFORMATION CONTACT THE REGISTRATION HOLDER: Dow AgroSciences Southern Africa (Pty) Ltd Reg. No. 1967/007147/07 • Paarl +27 (0) 21 860 3620 • Centurion +27 (0) 12 683 5700
Local Emergency No +27 (0) 82 895 0621 (SA only) • 24 Hour Emergency No +32 3 575 5555 • Maxwell Office Park, Magwa Building, Ground Floor, Magwa Crescent, Waterfall City, Midrand, 1686, South Africa • DuPont de Nemours South Africa (PTY) Ltd • Block B, 1st Floor, 34 Whiteley Road, Melrose Arch, South Africa.

ALWAYS USE ACCORDING TO LABEL RECOMMENDATIONS: Acanto® 250 SC contains picoxystrobin (Caution) | Reg. No. L8233 | Act No. 36 of 1947 • Closer® 240 SC contains Isoclast® (sulfoxafior) (Caution) | Reg. No. L9694 | Act No. 36 of 1947 • Curzate® 600 WG contains cymoxanil (Caution) | Reg. No. L10150 | Act No. 36 of 1947 • Delegate® 250 WG contains Jemvelva™ (spinetoram) (Caution) | Reg. No. L8392 | Act No. 36 of 1947 • Dithane® M45 800 WP NT contains mancozeb (Caution) | Reg. No. L7484 | Act No. 36 of 1947 • Hit® 500 SC contains procymidone (Caution) | Reg. No. L7575 | Act No. 36 of 1947 • Tanos® 50 WG contains cymoxanil and famoxadone (Caution) | Reg. No. L6564 | Act No. 36 of 1947 • Tracer® 480 SC contains Qalcova™ (spinosad) (Caution) | Reg. No. L6557 | Act No. 36 of 1947 • ** Trademarks of Corteva Agriscience and its affiliated companies. © 2021 Corteva.

 CortevaZA on Facebook

 CortevaAME on Twitter

 @Corteva on Instagram

For the Love of Potatoes

Sporekill®



FRAC: NC
Application: 100 mL/
100 L water
Minimum of 500 mL/ha
Pathogen: Grey mould
(*Botrytis cinerea*)

Tutor 500 SC



FRAC: 9 & 12
Application: 150 mL/
100 L water
Minimum of 750 mL/ha
Pathogen: Grey mould
(*Botrytis cinerea*)

Obstructo 250 SC



FRAC: 11
Application: 300 mL/ha
Pathogen: Early blight
(*Alternaria* sp)

**PREVENT
RESISTANCE
AGAINST GREY
MOULD & EARLY
BLIGHT WITH AN
EFFECTIVE FOLIAR
FUNGICIDE
PROGRAMME**

Iproflo 500 SC



FRAC: 2
Application: 200 mL/
100 L water
Pathogen: Grey mould
(*Botrytis cinerea*)

TebuCure 250 EW



FRAC: 3
Application: 75 mL/
100 L water
Minimum of 375 mL/ha
Pathogen: Early blight
(*Alternaria* sp)

Protector 400 SC



FRAC: 9
Application: 150 mL/
100 L water
Minimum of 750 mL/ha
Pathogen: Grey mould
(*Botrytis cinerea*)

Tutor 500 SC (Pyrimethanil 400 g/L & Fludioxonil 100 g/L). Reg. No. L9948 (Act 36 of 1947) Caution | Iproflo 500 SC (Iprodione 500 g/L). Reg. No. L8213 (Act 36 of 1947) Caution | Protector 400 SC (Pyrimethanil 400 g/L). Reg. No. L8606 (Act 36 of 1947) Caution | TebuCure 250 EW (Tebuconazole 250 g/L). Reg. No. L7992 (Act 36 of 1947) Caution | Obstructo 250 SC (Azoxystrobin 250 g/L). Reg. No. L9323 (Act 36 of 1947) Caution | Sporekill® (Didecyldimethylammonium chloride 120 g/L). Reg. No. L7115 (Act 36 of 1947) Caution.

ICA International Chemicals (Pty) Ltd. Reg No: 2001/013319/07
Tel: +27-21-886-9812
28 Planken Street, Plankenbrug Industrial, Stellenbosch, 7600, South Africa

 ICA International Chemicals

 www.icaonline.co.za

ICA
INTERNATIONAL
CHEMICALS



Ceres/Koue Bokkeveld-kultivarproef onder besproeiing op Donkerbos in 2020/2021

Deur Chantel du Raan, Aartappels SA

Die Ceres-produksiegebied produseer sowat 1.4% (gebaseer op die 2020-oesjaar) van die totale aartappelproduksie in Suid-Afrika. Hierdie streek plant hoofsaaklik vir die gebruik van tafel- en verwerkingsaartappels onder besproeiing (737 ha vir die 2021-seisoen), terwyl 73 ha vir moerdoeleindes geplant word. Die hoofkultivars vir tafel- en ver-

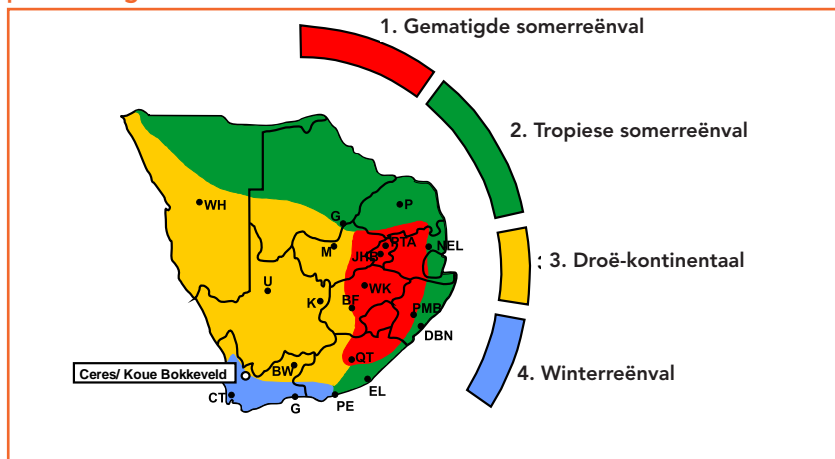
werkingsaartappels sluit in FL2108 (33%), Avalanche (20%) en Sifra (14%), terwyl kultivars vir moere FL2108 (56%), FL2006 (30%) en Fasen (14%) insluit.

Proewe is op Donkerbos in die Koue Bokkeveld uitgevoer, wat in 'n winterreënvalgebied met 'n jaarlikse gemiddelde reënval van 599 tot 700 mm/jaar geleë is (Figuur 1). Warm somers kom voor aangesien dit in die binneland geleë is, terwyl die

winters weer baie koud en nat is, met gereelde sneeu op die omliggende berge.

Die hoof aanplantingstydperk vir die produksiegebied is tussen Oktober en November. Aanplantings wat vroeër of later geplant word, het 'n hoër risiko vir reën-skade. Die proefperseel bestaan uit sandleemgrond en die proef is in 'n ewekansige blokontwerp met drie herhalings geplant. Verdere tegniese inligting rakende die proefperseel en -uitleg word in Tabel 1 opgesom.

Figuur 1: Ligging van Ceres/Koue Bokkeveld in die Wes-Kaapse produksiegebied.



Groeytydperke en abiotiese faktore

Dit is belangrik om daarop te let dat groeytydperke die opbrengs van kultivars kan beïnvloed. Groeytydperke word omskryf as die aantal dae vanaf opkoms tot natuurlike loofafsterwe, afhangend van die seisoen.

Die presiese tydsberekening van die vyf groeifases (spruitontwikkeling, vegetatiewe groei, knoliniasie, knolvulling en volwassenheid) hang van die omgewing af, asook

die bestuurspraktyke wat wissel tussen liggings en kultivars, onder andere as gevolg van verskillende groeitydperke. Die kultivars, plantgereedheid van moere, stand (%) en halmtelling van hierdie proef word in Tabel 2 aangedui.

















Temperatuur, dagliglengte en water is die belangrikste abiotiese faktore wat die groeipatroon, opbrengs en gehalte van aartappels beïnvloed. Om te bepaal wat die aanpassingsvermoë van nuwe kultivars in die Ceres/Koue Bokkeveld-omgewing is, is dit belangrik om hierdie faktore in aanmerking te neem wanneer die prestasie van verskillende kultivars geëvalueer word. Dit is ook belangrik dat die kultivars vir 'n aantal seisoene geëvalueer word, omdat klimaat van seisoen tot seisoen verskil.

Die daaglikse weerdata was verkry vanaf 'n weerstasie wat op die perseel geleë is. Regdeur die groeiseisoen het dit aansienlik

Tabel 1: Opsomming van tegniese inligting rakende die proefperseel en -uitleg.

Plaas	Donkerbos – 865 m bo seevlak		
Medewerkers	Hano Dreyer, Inus Oosthuizen, Bennie Visagie en Gerard Mostert		
Plantdatum	4 November 2020		
Oesdatum	30 Maart 2021		
Besproeiing/droëland	Besproeiing		
Dubbel- of enkelrye	Dubbelrye		
Loofafsterwe	Natuurlik		
Tussenry-spasiëring	0.9 m		
Inry-spasiëring	0.215 m trapsgewys		
Proefperseel per eenheid	18 m ²		
Plantestand	51 680 plante/ha		
Bemestingsprogram			
	Voedingswaarde		
	N (kg/ha)	P (kg/ha)	K (kg/ha)
Totaal	360	155	460

Tabel 2: Karaktereïenskappe rakende groeitydperk, plantgereedheid, stand (%) en halmtellings vir elke kultivar in 2020/2021.

Eienaar	Kultivar	Groeitydperk (Dae) ¹		Stand (%)	Halms per plant	Halms per ha
	Allison	Medium tot lank	(110-115)	100	6	308 905
	Alverstone Russet	Medium tot lank	(110-115)	95	4.7	231 897
	Avalanche	Kort tot medium	(100)	100	4.7	244 188
	Belmonda	Kort tot medium	(100)	100	5.7	292 853
	Connect	Medium tot lank	(120)	100	3.4	178 243
	Kingsman	Medium tot lank	(100-110)	100	3.3	169 252
	Lanorma	Kort	(80-90)	100	5.1	265 447
	Mondial	Medium tot lank	(110-115)	100	4.7	244 865
	Noya	Medium tot lank	(120)	92	2.9	139 138
	Panamera	Lank	(120-125)	100	4.2	218 646
	Prada	Kort	(70)	100	4.7	241 173
	Sababa	Medium tot lank	(110-115)	100	4.3	224 338
	7 Four 7	Kort	(80)	64	3.2	106 010
	Sifra	Kort tot medium	(90-100)	100	3.9	200 711
	Sound	Medium	(100)	92	3.1	145 764
	Taisiya	Kort tot medium	(90)	74	3.7	140 464
	Tyson	Kort tot medium	(90-100)	100	2.7	140 274

¹Algemene riglyne en kategorieë (dae vanaf opkoms tot natuurlike loofafsterwe, afhangend van die seisoen): Kort: 70 tot 90 dae; kort tot medium: 80 tot 100 dae; medium: 90 tot 110 dae; medium tot lank: 90 tot 120 dae; lank: 90 tot 140 dae.

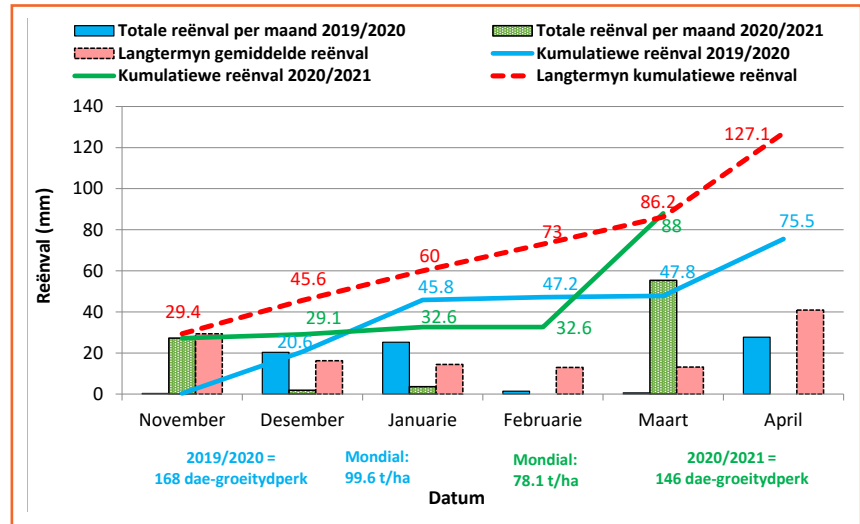
minder gereën in vergelyking met die langtermyn gemiddeld, tot en met einde Februarie. Gedurende Maart het dit egter 55 mm gereën. Hierdie groot hoeveelheid reën het veroorsaak dat die kumulatiewe langtermyn data, wat deurentyd ondergemiddeld was, ingehaal het (86.2 mm), soos in *Figuur 2* gesien kan word.

Temperatuur tendense

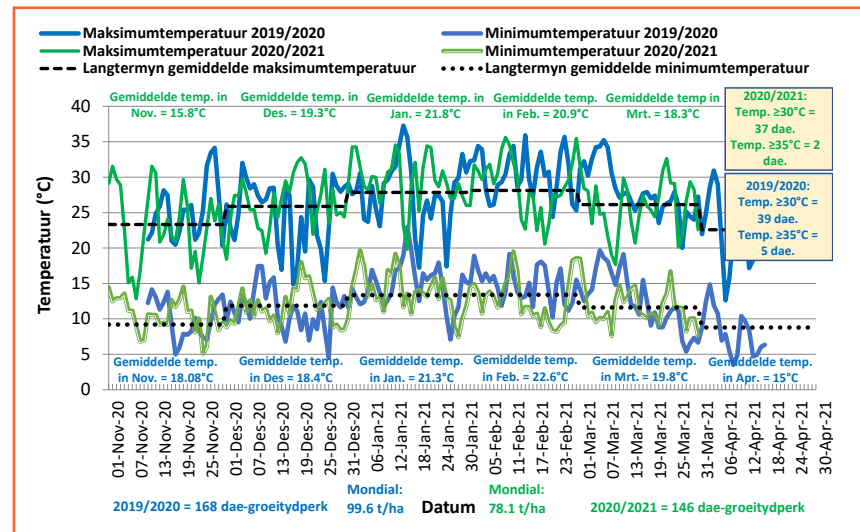
Die minimum- en maksimumtemperatuur (*Figuur 3*) vir die 2020/2021-groei seisoen het dieselfde patroon as vorige jare gevolg, met die volgende uitsonderings:

- Gedurende die eerste maand (November 2020) vandat die moere vir die seisoen (2020/2021) geplant is, was die maksimumtemperatuur aansienlik laer. Op 8 November is 'n temperatuur van 12.84°C gemeet, met 'n tweede daling op 22 November (17.15°C), en 'n opvolgende daling op 24 November (15.07°C). Dit is in vergelyking met verlede jaar se data asook die langtermyn data.
- Die gemiddelde temperatuur in November vir die 2020/2021-seisoen was 15.8°C, wat laer as die vorige jaar asook die langtermyn data is. Die optimale gemiddelde temperatuur vir opkoms wissel tussen 16 en 24°C. Hierdie lae temperature kon moontlik die opkomsydeperk vertraag het.
- Die optimale temperatuur vir knol-inisiasie wissel tussen 15 en 20°C. Hoewel die gemiddelde temperature in November (15.8°C) en Desember (19.3°C) geskik was vir knol-inisiasie, was daar steeds 'n aansienlike daling wat opbrengs betref, vergeleke met die vorige jaar. Knol-inisiasie kan egter slegs plaasvind as 'n doeltreffende blaredak met die vermoë om koolhidrate deur fotosintese te produseer, teenwoordig is. Hierdie koolhidrate dien as 'n bron van energie wat vir ontwikkeling van die gewas nodig is. Wanneer die plante oortollige koolhidrate produseer, word dit na die stolons getrans-

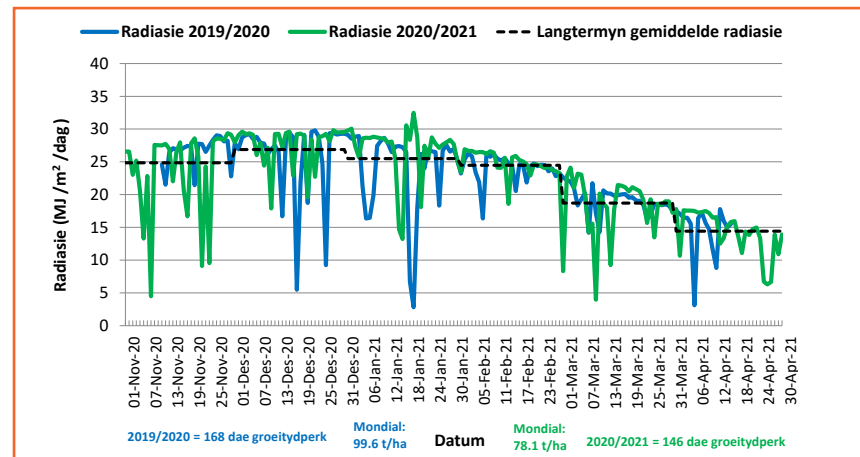
Figuur 2: Reënval gedurende die groeiseisoen (2020/2021) asook die langtermyn gemiddelde reënval.



Figuur 3: Minimum- en maksimumtemperatuur (°C) gedurende die groeiseisoen (2020/2021) asook die langtermyn gemiddeld.



Figuur 4: Radiasie (MJ/m²/dag) gedurende die groeiseisoen (2020/2021) asook die langtermyn gemiddeld.



lokeer vir knol-inisiasie, en die koolhidrate word in die knolle vasgelê. Die vegetatiewe groei verloop optimaal tussen 25 en 27°C. Die gemiddelde temperatuur van 15.8°C in November kon die vegetatiewe groei vertraag het, en daarom het dit langer geneem om 'n doeltreffende blaredak vroeg in die seisoen te vestig. Dit kon tot gevolg gehad het dat knolle later geïnisieer het en die vullingsperiode van die knolle aansienlik korter was. Dit het bygedra tot 'n aansienlike laer persentasie groot knolle.

- Gedurende Februarie en Maart was die maksimum- én minimum-temperatuur laer as die langtermyn gemiddelde minimum- en maksimumtemperatuur.
- Die groeitydperk vir die 2020/2021-seisoen was ook aansienlik korter (146 dae) as die vorige jaar (168 dae).

Radiasie is 'n belangrike faktor wat die beskikbaarheid van voe-

dingstowwe, opneem en benutting in die plant reguleer, aangesien dit fotosintese beïnvloed. Wanneer die temperatuur (*Figuur 3*) en radiasie (*Figuur 4*) vergelyk word, is dit opvallend dat die radiasie verlaag wanneer daar 'n skerp daling in maksimumtemperatuur is.

In *Figuur 4* kan ons waarneem dat daar gedurende die eerste twee maande van die groeiseisoen (opkoms, knol-inisiasie en vegetatiewe groei), asook gedurende Maart tydens die vullingstydperk, aansienlik laer, aaneenlopende radiasie ondervind is.

Hitte-eenhede is ook 'n belangrike faktor om in ag te neem, aangesien die ontwikkeling van die plant hoofsaaklik op die versameling van hitte-eenhede gebaseer is. Daar word dus aanvaar dat die plant 'n sekere aantal hitte-eenhede moet versamel om 'n ontwikkelingsfase te voltooi.

Die hitte-eenhede van die 2020/2021-groeiseisoen het tot en met Januarie dieselfde patroon as vorige jare gevolg. Gedurende die

laaste twee maande (Februarie en Maart) was die hitte-eenhede van die 2020/2021-seisoen aansienlik laer in vergelyking met die vorige jare se gemiddelde hitte-eenhede (*Figuur 5*).

Opbrengsdata

Die opbrengsdata is statisties verwerk met behulp van die GenStat®-program, en die gemiddelde is geskei deur gebruik te maak van die Tukey-toets van kleinste betekenisvolle verskille (KBV).

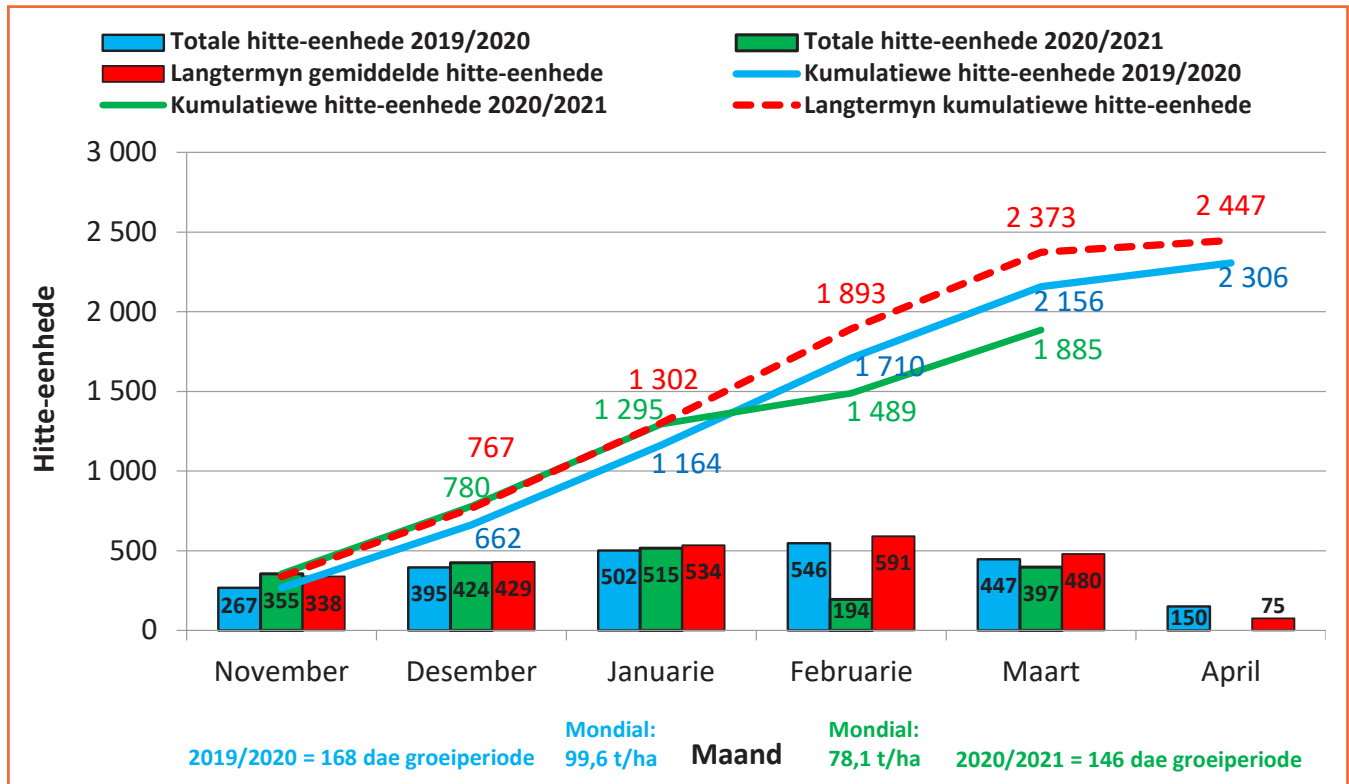
Die kultivareffek gedurende die 2020/2021-proef (*Figuur 6*) was statisties beduidend ten opsigte van opbrengs, terwyl die koëffisiënt van variasie (KV) laag (13.4%) was. Dit dui daarop dat die proewe uitstekend uitgevoer is en die resultate betroubaar is.

Die gemiddelde opbrengs (75.1 t/ha) vir die 2020/2021-groeiseisoen was 19.5 t/ha laer as die proefgemiddeld van die vorige drie jaar (94.6 t/ha). Die laer opbrengs kan aan klimaatsomstandighede soos vroeër genoem, toege-

Tabel 3: Hoofredes vir afgradering tydens die 2020/2021-oes op Ceres/Koue Bokkeveld.

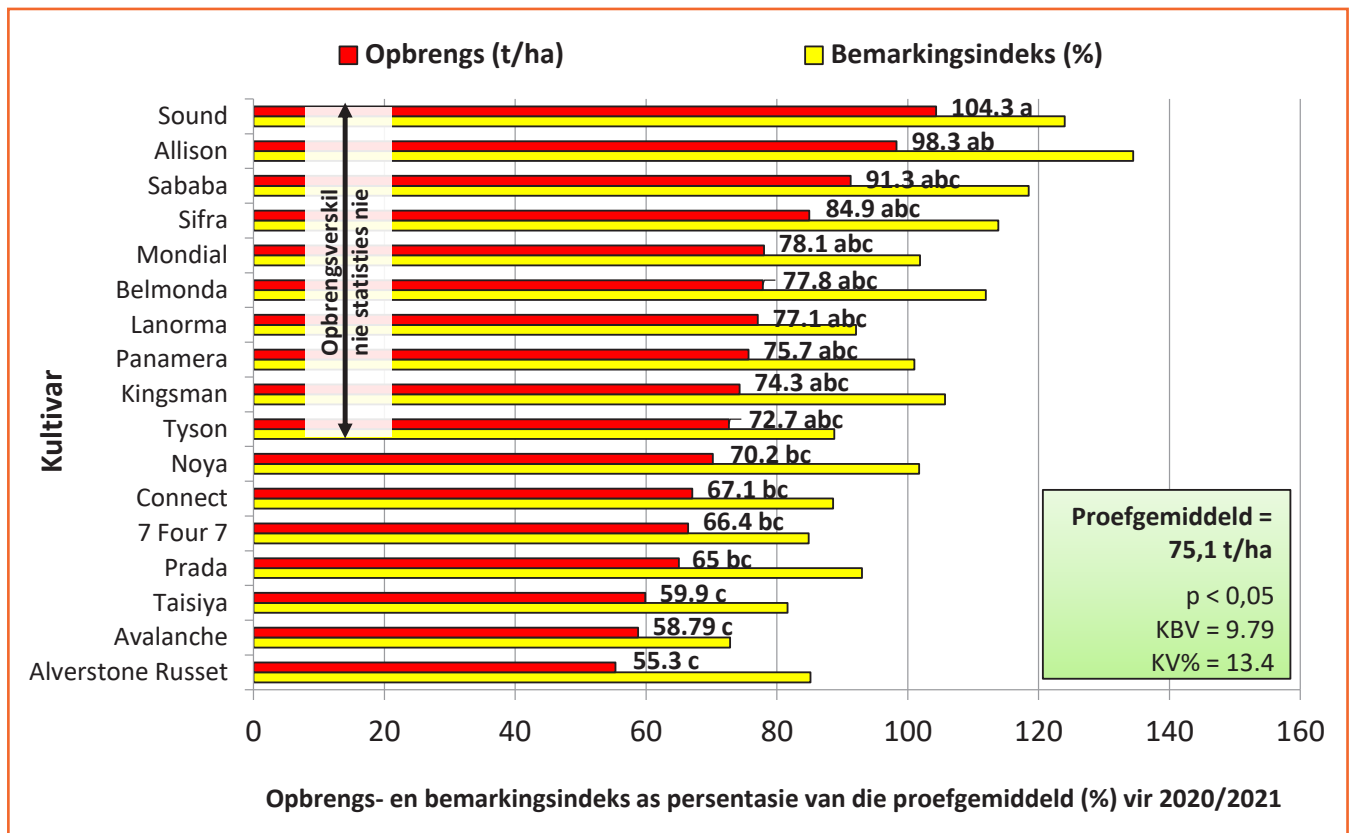
Kultivar	Bruinskurf	Misvorming	Sandspleet	Vergroening	Hergroei	Stingelentverrotting
Allison	X					
Alverstone Russet	X					
Avalanche	X	X				
Belmonda		X		X		
Connect		X				
Kingsman				X		
Lanorma		X				X
Mondial	X		X			
Noya				X	X	
Panamera		X				
Prada		X				X
Sababa		X				
7 Four 7				X	X	X
Sifra			X			
Sound			X	X		
Taisiya	X		X			X
Tyson	X	X				

Figuur 5: Hitte-eenhede gedurende die groeiseisoen (2020/2021) asook die langtermyn gemiddeld.



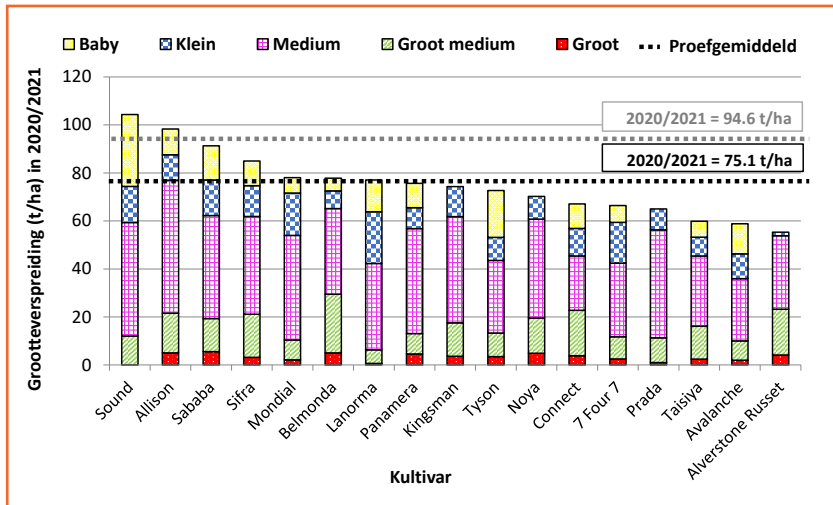
*Totale hitte-eenhede spesifiek bepaal vir aartappels as gewas (drumpeltemperatuur = 5°C). Bereken vanaf uurlikse data.

Figuur 6: Totale opbrengs en bemarkingsindeks per kultivar as persentasie van die proefgemiddeld.



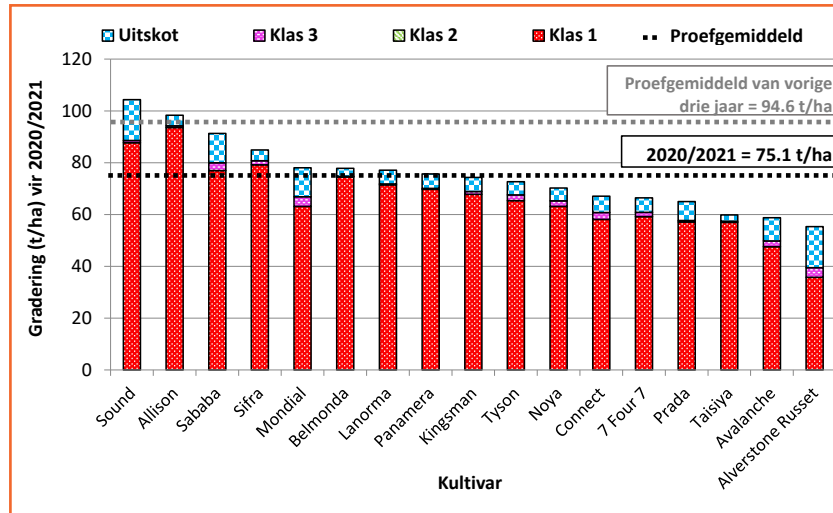
*Waardes gevolg deur dieselfde letter is nie beduidend verskillend van mekaar nie.

Figuur 7: Groottegroepverspreiding van elke kultivar tydens finale oes.

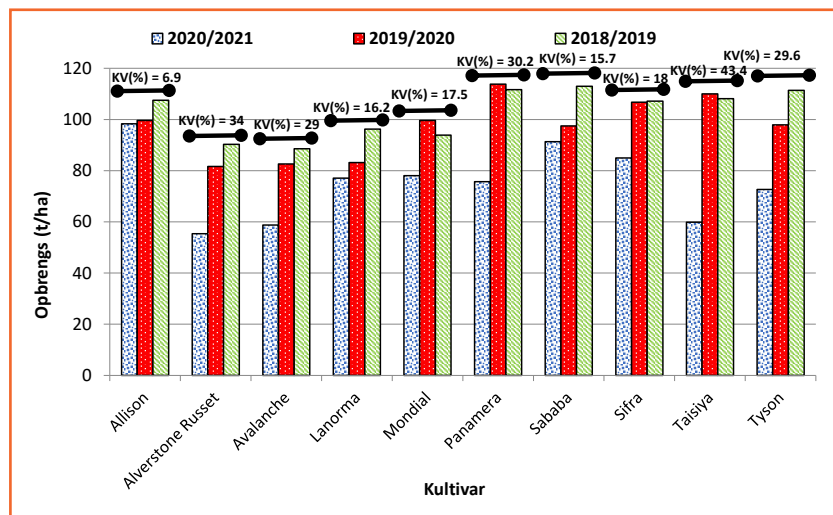


*Groottegroepverspreiding is op een herhaling gedoen.

Figuur 8: Gradering van elke kultivar tydens finale oes.



Figuur 9: Prestasie van kultivars oor drie jaar, uitgedruk as persentasie van die proefgemiddeld.



skryf word.

Ten opsigte van die 2020/2021-proef (Figuur 6) het die kultivars Sound, Allison, Sababa, Sifra, Mondial, Belmonda, Lanorma, Panamera, Kingsman en Tyson die hoogste opbrengste gelewer. Opbrengste hoër as die proefgemiddeld is deur die kultivars Sound, Allison, Sababa, Sifra, Mondial, Belmonda, Lanorma, Panamera behaal.

Ten einde die prestasie van die kultivars in terme van opbrengs en gehalte te bepaal, is die opbrengs, groottegroepverspreiding en klas gebruik om volgens die gemiddelde markpryse vir die betrokke dag, 'n bemarkingsindeks te bereken.

Die opbrengs, vermenigvuldig met die heersende prys wat bepaal word deur die groottegroepverspreiding en gradering, gee die bemarkingsindeks (Figuur 6).







Allison het die hoogste bemarkingsindeks behaal weens 'n hoë persentasie Groot-, Groot tot medium- en Medium-gradering. Die persentasie afgraderings vir hierdie proef in die Ceres/Koue Bokkeveld-gebied was minimaal.

Groottegroepverspreiding en gradering word ook gebruik om aartappels te klas, en is daarom belangrike faktore om in ag te neem ten einde 'n optimale ekonomies-bemerkbare opbrengs te verseker. In Figuur 7 word die groottegroepverspreiding aangedui, in Figuur 8 die gradering van die opbrengs, en in Tabel 3 die hoofredes vir afgradering van die onderskeie kultivars.

Dit is ook belangrik om op die kultivars se vermoë om konsekwent te presteer te let, ongeag fluktuasies in die klimaat oor tyd. In Figuur 9 word die drie-jaar data vir die kultivarproewe in die Ceres/Koue Bokkeveld-produksiegebied getoon. Bo elke kultivar word die KV oor die drie jaar aangedui. Dit blyk dat die kultivars Allison en Sababa die minste variasie toon vir die Ceres/Koue Bokkeveld-gebied.

Voorts is dit ook belangrik om op die interne gehalte van aartappels te fokus om 'n optimale ekonomies-bemerkbare opbrengs, en dus winsgewendheid, te verseker. Dit sluit

Tabel 4: Vleeskleur en interne gehalte van die opbrengs vir 2020/2021 in Ceres/Koue Bokkeveld.

 <p>Allison *Opbrengs (t/ha): 93.3</p> <p>Allison</p>	 <p>Alverstone Russet *Opbrengs (t/ha):</p> <p>Alverstone Russet</p>	 <p>Avalanche *Opbrengs (t/ha): 58.8</p> <p>Avalanche</p>	 <p>Belmonda *Opbrengs (t/ha): 71.8</p> <p>Belmonda</p>	 <p>Connect *Opbrengs (t/ha): 67.1</p> <p>Connect</p>
 <p>Kingsman *Opbrengs (t/ha): 74.3</p> <p>Kingsman</p>	 <p>Lanorma *Opbrengs (t/ha): 77.1</p> <p>Lanorma</p>	 <p>Mondial *Opbrengs (t/ha): 73.1</p> <p>Mondial</p>	 <p>Noya *Opbrengs (t/ha): 70.2</p> <p>Noya</p>	 <p>Panamera *Opbrengs (t/ha): 75.7</p> <p>Panamera</p>
 <p>Prada *Opbrengs (t/ha): 65.0</p> <p>Prada</p>	 <p>Sababa *Opbrengs (t/ha): 91.3</p> <p>Sababa</p>	 <p>7 Four 7 *Opbrengs (t/ha): 66.4</p> <p>7 Four 7</p>	 <p>Sifra *Opbrengs (t/ha): 84.9</p> <p>Sifra</p>	 <p>Sound *Opbrengs (t/ha): 104.3</p> <p>Sound</p>
 <p>Taisiya *Opbrengs (t/ha): 59.9</p> <p>Taisiya</p>		 <p>Tyson *Opbrengs (t/ha): 72.7</p> <p>Tyson</p>		



SQM

Ultrasol[®] **Calci-K 90**

***Ensure you invest wisely,
Make the right nutritional choice!***



***Ultrasol[®] Calci-K 90 contains 13.5% N
(as nitrate), 34.2% K and 1.95% Ca.***

***A product of the highest purity and quality, this formulation is highly soluble in water
and thus suitable for centre pivot application.***

From a grower view-point, potassium nitrate and calcium nitrate are “quality” assurers. Potato has a high requirement for potassium.

- Potassium’s role as a nutrient in the plant is unique in that it is solely involved in plant function regulation. Most importantly, potassium regulates the movement of carbohydrates, organic acids, nutrients and other organic compounds into the tubers.
- The challenge is to ensure potassium sufficiency in the soil and plant before and during tuber filling, once the rapid period of tuber bulking has commenced.
- Potassium nitrate pivot applications in particular bolster plant potassium levels, and in this way increase size and improve harvest quality.
- Nitrate (NO₃⁻) nutrition also synergistically optimizes the uptake of the Cations K⁺, Ca⁺⁺ and Mg⁺⁺.

- Calci-K 90 maximizes nitrate nutrition of the crop. Nitrate nutrition has been shown to increase tuber weight due to enhanced plant energy efficiencies in the metabolism of nitrate N vs. ammonium N.
- Calcium is often stated to be essential to ensure a “good finish”.
- Calcium and potassium levels are strongly correlated with disease tolerance.

Potato growers who regularly apply potassium and calcium after tuber initiation, especially in the nitrate form, not only attest to greater yields and improved quality but also improved shelf life of the potato. Calci K-90 will supply Nitrate, Potassium and some additional Calcium in a fully water soluble form with topdressing applications through your centre pivot.



Opbrengs, groottegroepverspreiding en klas is gebruik om 'n bemarkingsindeks volgens die gemiddelde markpryse vir die betrokke dag te bereken.

Tabel 5: Prosesseringseienskappe van kultivars (uitgevoer deur die LNR-Roodeplaat).

Kultivar	Skyfiekleur ¹	SG ²	Droëmateriaal (%) ³
Allison	56	1.086	21.45
Alverstone Russet	56	1.086	21.40
Avalanche	60	1.074	18.95
Belmonda	63	1.078	19.75
Connect	63	1.079	20.07
Kingsman	63	1.086	21.42
Lanorma	65	1.081	20.42
Mondial	59	1.072	18.45
Noya	68	1.084	21.07
Panamera	64	1.089	22.09
Prada	67	1.071	18.27
Sababa	63	1.079	20.07
7 Four 7	59	1.059	15.8
Sifra	65	1.077	19.52
Sound	61	1.073	18.64
Taisiya	52	1.070	18.18
Tyson	66	1.076	19.42
≥ Norm (Aanvaarbaar vir prosessering)		< Norm (Onaanvaarbaar vir prosessering)	

¹Skyfiekleur met waarde >50 en sonder defekte is aanvaarbaar vir die droëskyfiebedryf.

²Soortlike gewig van >1.075 is aanvaarbaar vir die prosesseringsbedryf.

³Die persentasie droëmateriaal is 'n berekende waarde: $DM\% = 24.182 + 211.04 * (SG - 1.0988)$. Die werklike persentasiewaarde sal effens verskil tussen kultivars uit hierdie berekeningswaarde.

belangrike faktore in soos kook- en prosesseringseienskappe, soortlike gewig (SG) asook inwendige defekte (holhart, bruinvlek en vaatbun- delverkleuring) wat in Tabel 3 opgesom word.

Voldoende skyfiekleur

Dit is opvallend dat, gedurende die 2020/2021-groei- seisoen, al die kultivars aan die skyfiekleurnorm van >50 voldoen het. Wat SG betref, het al die kultivars behalwe Avalanche, Mondial, Prada, 7 Four 7, Sound en Taisiya aan die norm van ≥1.075 vir prosessering voldoen. In Tabel 4 kan die vlees- kleur en interne gehalte van die opbrengs vir 2020/2021 in Ceres/ Koue Bokkeveld, en in Tabel 5 kan die prosesseringseienskappe van elke kultivar gesien word. ©

Met dank aan die volgende medewerkers:

Terence Brown, Aartappels SA (ASA), Soreen Gouws, ASA, Inus Oosthuizen, Ceres- werksgroep en voorsitter van Donkerbos, Van Zyl du Toit, Weggrow, Martin Smith, GWK, Daan du Plessis, First Potato Dynamics, en Hano Dreyer, Gerard Mostert en Bennie Visagie, almal van Donkerbos.

Vir meer inligting, kontak Chantel du Raan by by chantelr@potatoes.co.za.

INTEGRITY, QUALITY, INNOVATION

CULTIVATED CHOICES

MANAGING DIRECTOR:

Gerhard Posthumus - 082 375 1870 - gerhard@wesgrow.co.za

NATIONAL & EXPORTS:

Marketing Manager: Charl Nel - 082 388 0522 - cnel@wesgrow.co.za

Sandveld & Ceres:

Van Zyl du Toit - 082 316 2839 - vanzyl@wesgrow.co.za
Charl de Kock - 082 929 4591 - cdecock@wesgrow.co.za

Eastern & North Eastern Cape:

Ettienne Groenewald - 082 948 2821 - ettienne@wesgrow.co.za

Gauteng, South Western Free State & Mpumalanga:

Eon Cordier - 082 330 5800 - eon@wesgrow.co.za

Western & Eastern Free State:

Dirk Pretorius - 082 579 1841 - dirk@wesgrow.co.za
Lauwrens Steyn - 083 387 7339 - lauwrens@wesgrow.co.za

KwaZulu-Natal:

Gavin Hill - 082 490 9489 - gavin@wesgrow.co.za

Limpopo:

Chris Prinsloo - 082 572 4403 - chris@wesgrow.co.za

Northern Cape & North West:

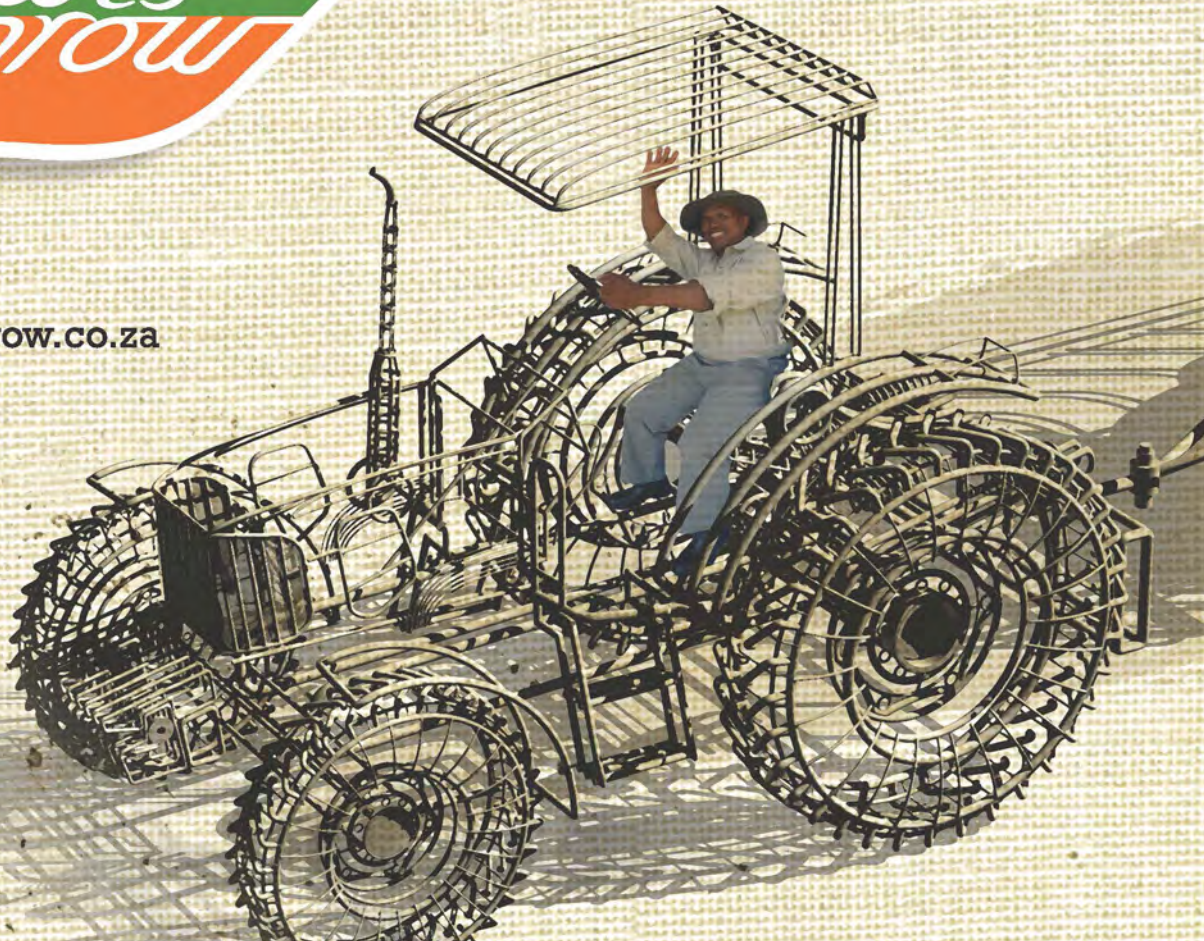
Charl Nel - 082 388 0522 - cnel@wesgrow.co.za

Southern Cape:

Charl de Kock - 082 929 4591 - cdecock@wesgrow.co.za



www.wesgrow.co.za



VARIETY

of

SOLUTIONS

SABABA

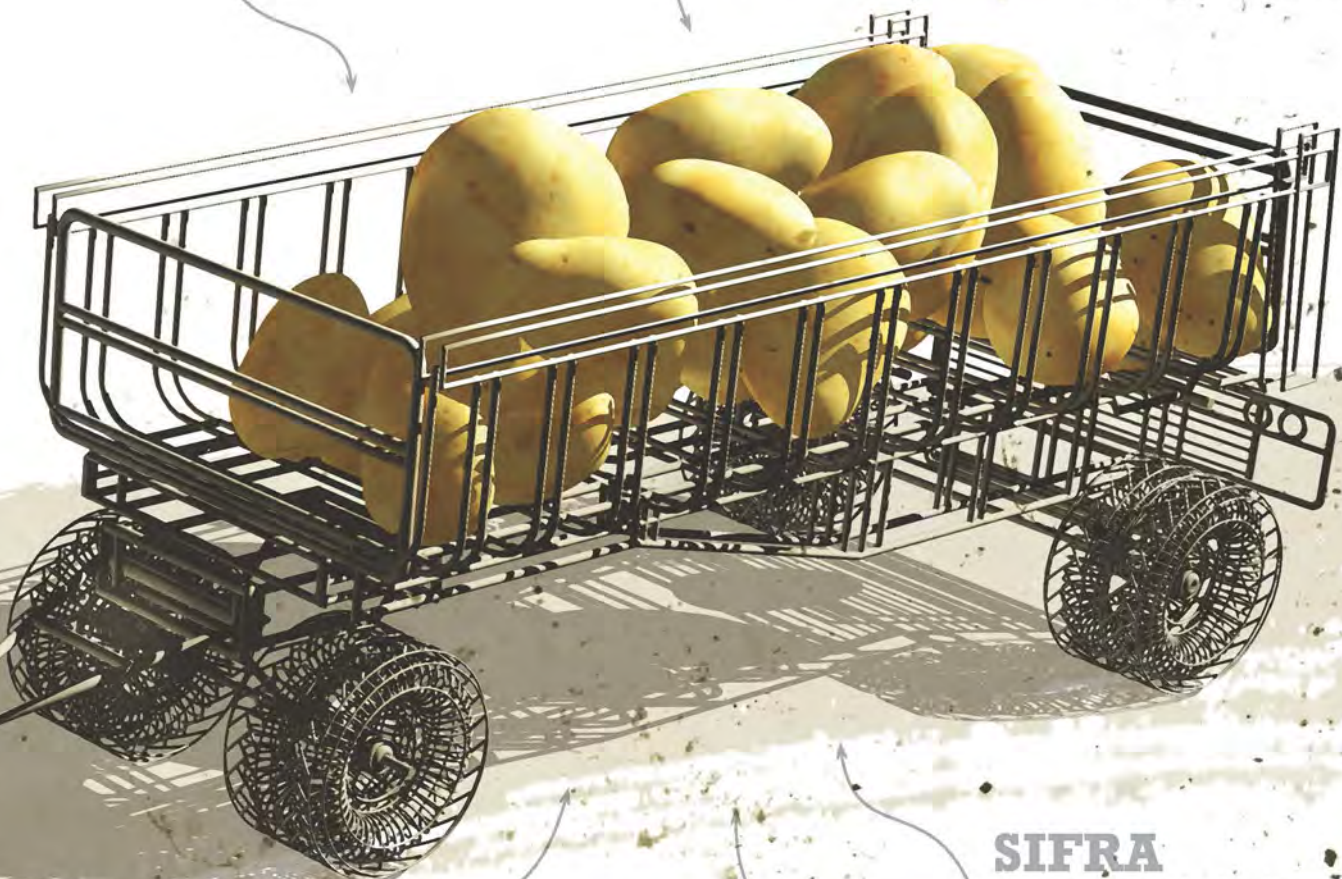
- * big size tubers
- * powdery scab resistant
- * very strong foliage
- * blight resistance

TYSON

- * early bulking
- * powdery scab resistance
- * even tuber set, big sizes

ALLISON

- * very high yield
- * strong emerge
- * drought tolerance



PANAMERA

- * high yield
- * bright smooth skin
- * blight resistance

SIFRA

- * bright smooth skin (prepacker)
- * high yield
- * high percentage first grade

MONDIAL

- * we still aim to supply the best quality seed all year round

Oos-Vrystaatse kultivarproef onder besproeiing op Oranjeville in 2020/2021

Deur Enrike Verster en Herman Haak, Aartappels SA, en Stephan Fourie, produsent

Die Oos-Vrystaat is 'n groot aartappelproduksiestreek waar sowat 22% van die land se kommersiële aartappels deur 68 produsente op nagenoeg 11 703 ha geproduseer word. Die mees prominente kultivars wat vir tafel- en verwerkingsdoeleindes in dié streek geproduseer word, is Mondial, FL2108 en Lanorma.

Oranjeville val in Suid-Afrika se gematigde somerreënvalgebied (*Figuur 1*) en ontvang die afgelope 17 jaar 'n gemiddelde jaarlikse reënval van 558 mm vanaf September tot Mei.

Hierdie streek ervaar baie warm somers en baie koue winters, met ryp wat vanaf middel-Mei tot vroeg in September kan voorkom. Die kultivarproef in Oranjeville

is in 'n ewekansige blokontwerp uitgelê, met drie herhalings per kultivar. In *Tabel 1* word bykomende tegniese inligting rakende die proef gegee.

Grondmonsters is vóór plant geneem om die grondvoedingstatus van die proefperseel te bepaal (*Tabel 2*).

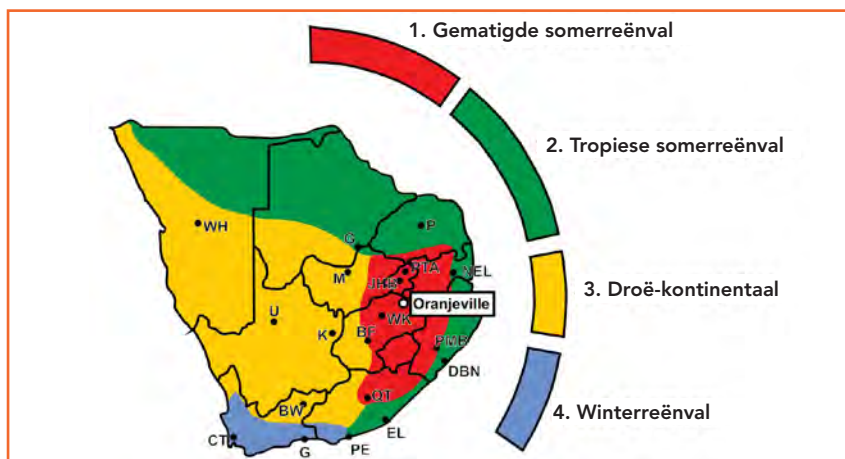
Groeitydperke

Kultivars met kort én lang groeitydperke is by die kultivarproef ingesluit, en daarom kan groeitydperke die uiteindelijke opbrengs van sekere kultivars beïnvloed.

Die lengte van groeitydperke is onderhewig aan die aard van die seisoen, maar word gesien as die hoeveelheid tyd wat verloop vanaf opkoms tot natuurlike loofafsterwe. *Tabel 3* toon hoedat hierdie groeitydperke van kultivar tot kultivar verskil.

Plantgereedheid van moere ten tye van die plant van die proef, sowel as standpersentasie en halm-telling wat later in die groeitydperk waargeneem is, word ook in *Tabel 3* aangedui.

Figuur 1: Ligging van Oranjeville in die Oos-Vrystaatse produksiegebied.



Die evaluering van nuwe kultivars soos in die Oranjeville-kultivarproef, verskaf resultate vir onder meer die opbrengs- en bemarkingsindeks. Die bemarkingsindeks van die betrokke kultivars word bereken deur elke kultivar te klas en sorteer volgens gehalte en groottegroeppe (byvoorbeeld, Klas 1 Groot of Klas 2 Groot tot medium). Dienooreenkomstige prysvergelykings word dan gemaak met markpryse soos verkry ten tye van oes.

Omdat klimaat van een jaar na die volgende wissel, kan die prestasie van nuwe kultivars nie net op die resultate van een bepaalde seisoen geskoei word nie. Juis daarom word kultivars verkieslik oor 'n aantal seisoene getoets.

Soos met enige gewas is temperatuur, beskikbaarheid van water (hetsy goeie besproeiingskedulering of reënval), sowel as hitte-eenhede belangrike faktore wat 'n wesenlike invloed tydens die aartappelplant se groeitydperk uitoefen. Hierdie faktore word dus in aanmerking geneem wanneer die prestasie van kultivars geëvalueer word.

Toepaslike daaglikse en langtermynweerde data word verkry vanaf 'n bepaalde Landbounavorsingsraad (LNR)-weerstasie, wat so na as moontlik aan die proefperseel geleë is. Die 2020/2021-seisoen (Figuur 2) word deur bogemiddelde en genoegsame reënval in die eerste vier maande ná plant gekenmerk, waarna die aangetekende reënval tydens die laaste drie maande voor uithaal, afgeplat het.

Vanaf Februarie het die langtermyn gemiddelde reënvaltendens die jaarlikse reënval vir die huidige seisoen ver oorskry. Hierdie waarnemings word weerspieël in die gehalteprobleme wat in die betrokke seisoen ervaar is.

Temperatuurwisselinge

Minimum- en maksimumtemperatuur word in Figuur 3 uiteengesit. Saam met die maande van goeie reënval, het die betrokke seisoen groot fluktuasies in maksimumtemperatuur ervaar, en vanaf einde Februarie is lang tydperke met

Tabel 1: Opsomming van tegniese inligting rakende die proefperseel en -uitleg.

Plaas	Potato Pride, Leeubank		
Boer	Stephan Fourie		
Plantdatum	27 Oktober 2020		
Oesdatum	20 April 2021		
Besproeiing/droëland	Besproeiing		
Dubbel- of enkelrye	Enkelrye		
Loofafsterwe	Chemies		
Tussenry-spasiëring	0.9 m		
Inry-spasiëring	40 cm		
Proefperseel	18 m ²		
Plantestand	42 500 plante/ha		
Bemestingsprogram			
	Voedingswaarde		
	N (kg/ha)	P (kg/ha)	K (kg/ha)
Totaal	350	50	140

Tabel 2: Grondvoedingstatus van die proefperseel vóór plant.

Organiese materiaal	pH (H ₂ O)	P	K	Ca	Mg	S	B	Fe	Mn	Na	Ca/Mg
		(ppm) Mehlich III	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	Verhouding
0.84%	5.6	122	138	454	64	7	0.28	130	43	6	7.1

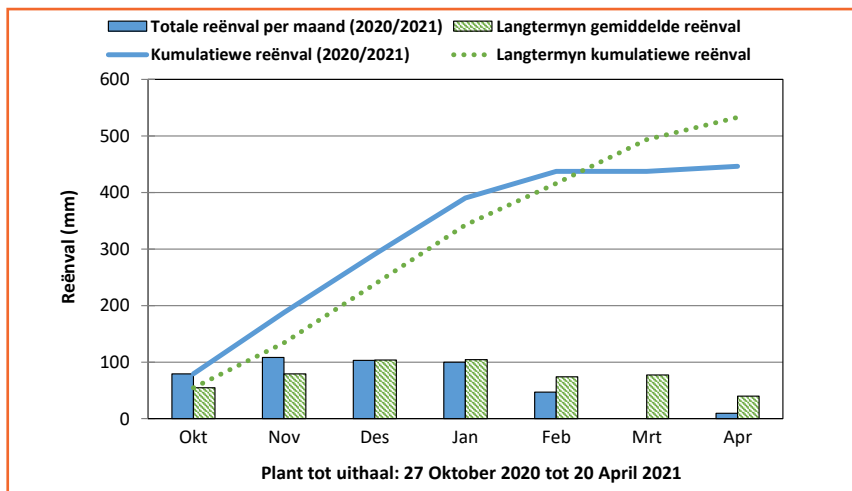
Tabel 3: Karaktereienskappe rakende groeitydperk, plantgereedheid, stand (%) en halmtelling van kultivars.

Kultivar	Groeitydperk (dae) ¹	Plantgereedheid ²	Stand (%)	Halms per plant	Halms per ha
7 Four 7	Kort (80)	3	76	4.3	138 890
Allison	Medium tot lank (120)	3	76	3.6	116 280
Belmonda	Medium (100-110)	3	74	3.6	113 220
Connect	Lank (120)	2	84	4.6	164 220
Lanorma	Kort (80-90)	3	71	2.4	72 420
Mondial	Kort tot medium (95-100)	3	82	2.8	97 580
Noya	Kort (80-90)	3	58	3.9	96 135
Panamera	Kort tot medium (95-100)	4	63	2.8	74 970
Prada	Kort (80-90)	2	71	3.2	96 560
Sifra	Kort tot medium (90-100)	3	79	4.7	157 803
Sound	Medium (110)	4	52	3.2	70 720
Taisiya	Kort tot medium (100)	3	47	4.1	81 898
Tyson	Kort tot medium (90-100)	4	66	2.8	78 540

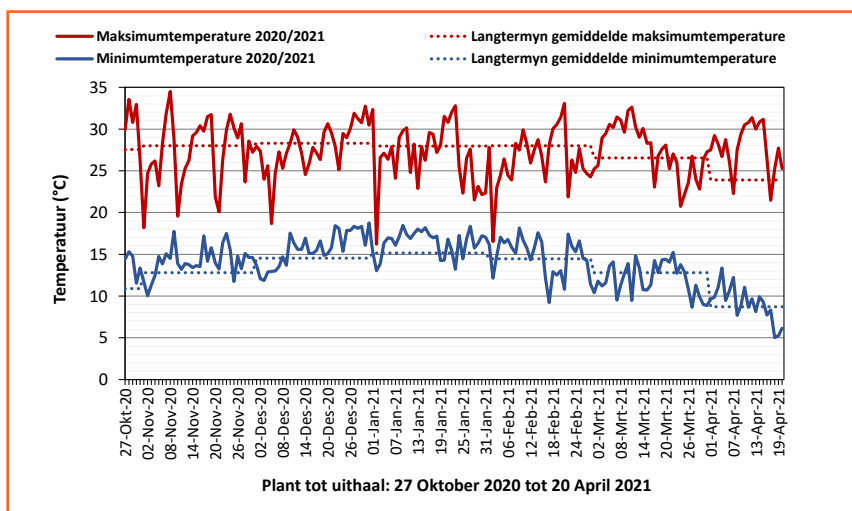
¹Algemene riglyne en kategorieë (dae vanaf opkoms tot natuurlike loofafsterwe, afhangend van die seisoen): Kort: 70 tot 90 dae, kort tot medium: 80 tot 100 dae, medium: 90 tot 110 dae, medium tot lank: 90 tot 120, lank: 90 tot 140 dae.

²Plantgereedheid van moere: 1 - vars, 2 - effens vars, 3 - plantgereed, 4 - effens oud, 5 - oud.

Figuur 2: Reënval vir die 2020/2021-seisoen en die langtermyn gemiddelde reënval.



Figuur 3: Minimum- en maksimumtemperature vir die 2020/2021-seisoen, sowel as langtermyn temperature.



bogemiddelde langtermyn temperature aangeteken.

Die versameling van hitte-eenhede gedurende die groeitydperk is 'n belangrike faktor in die ontwikkeling van 'n aartappelplant. Die tendens van beskikbare hitte-eenhede vir die Oranjeville-kultivarproef van hierdie seisoen, blyk konstant effens hoër as die langtermyn datatendens van hitte-eenhede te wees (Figuur 4). In April-maand voor oes, is daar egter 'n opmerklige styging in die versameling van hitte-eenhede aangeteken, in vergelyking met die langtermyn-data.

Opbrengsdata wat tydens oes versamel is, is aan statistiese verwerking met behulp van die GenStat®-program onderwerp. Die Tukey-toets van kleinste betekenisvolle verskille (KBV) is gebruik om die gemiddelde te skei.

Resultate en kultivarprestasie

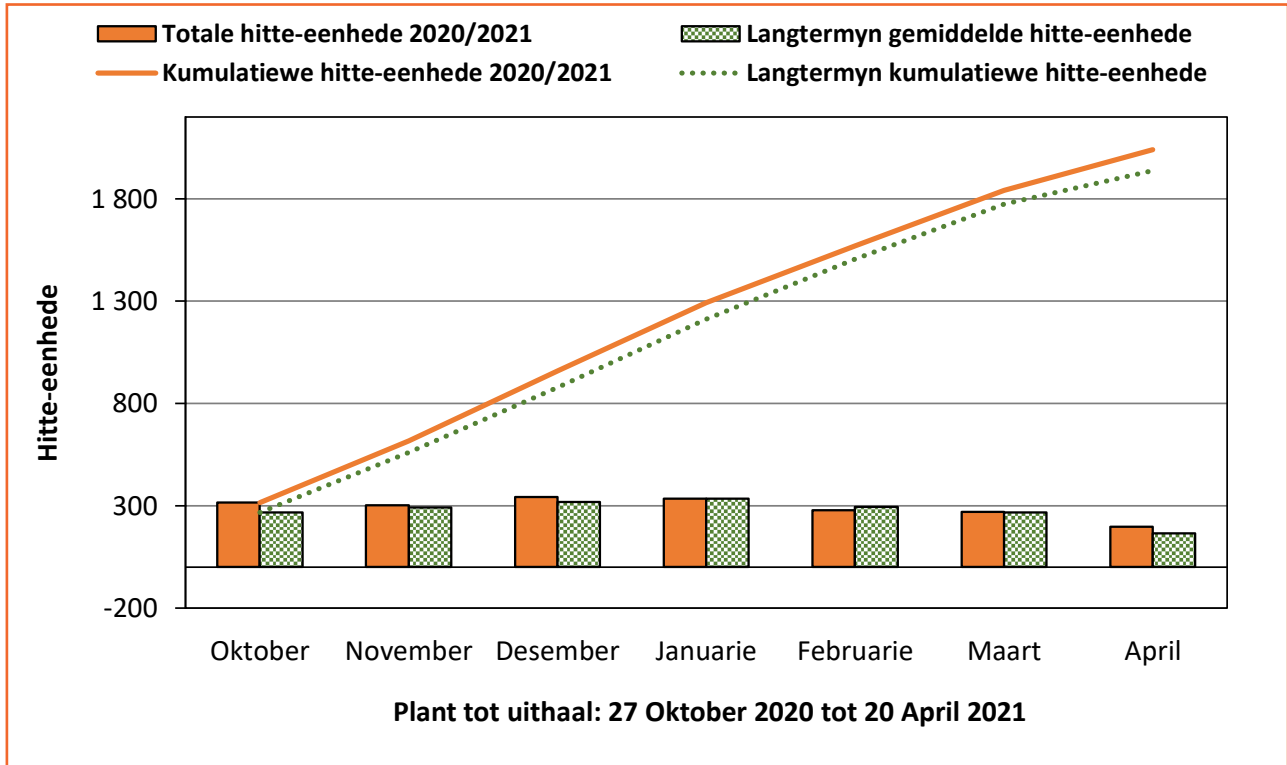
Die kultivareffek gedurende hierdie betrokke proef (Figuur 5) was statisties beduidend ($p < 0.05$) en die koëffisiënt van variasie (KV) was bevredigend (16.9%). Hierdie faktore dui daarop dat die proef goed uitgevoer is en die resultate dus betroubaar is.

Die opbrengs van elkeen van die kultivars word deur die proefgemiddeld gedeel (die proefgemiddeld van al die kultivars word as 100% geneem). Hierdeur word 'n opbrengs-indeks bepaal en word elke kultivar



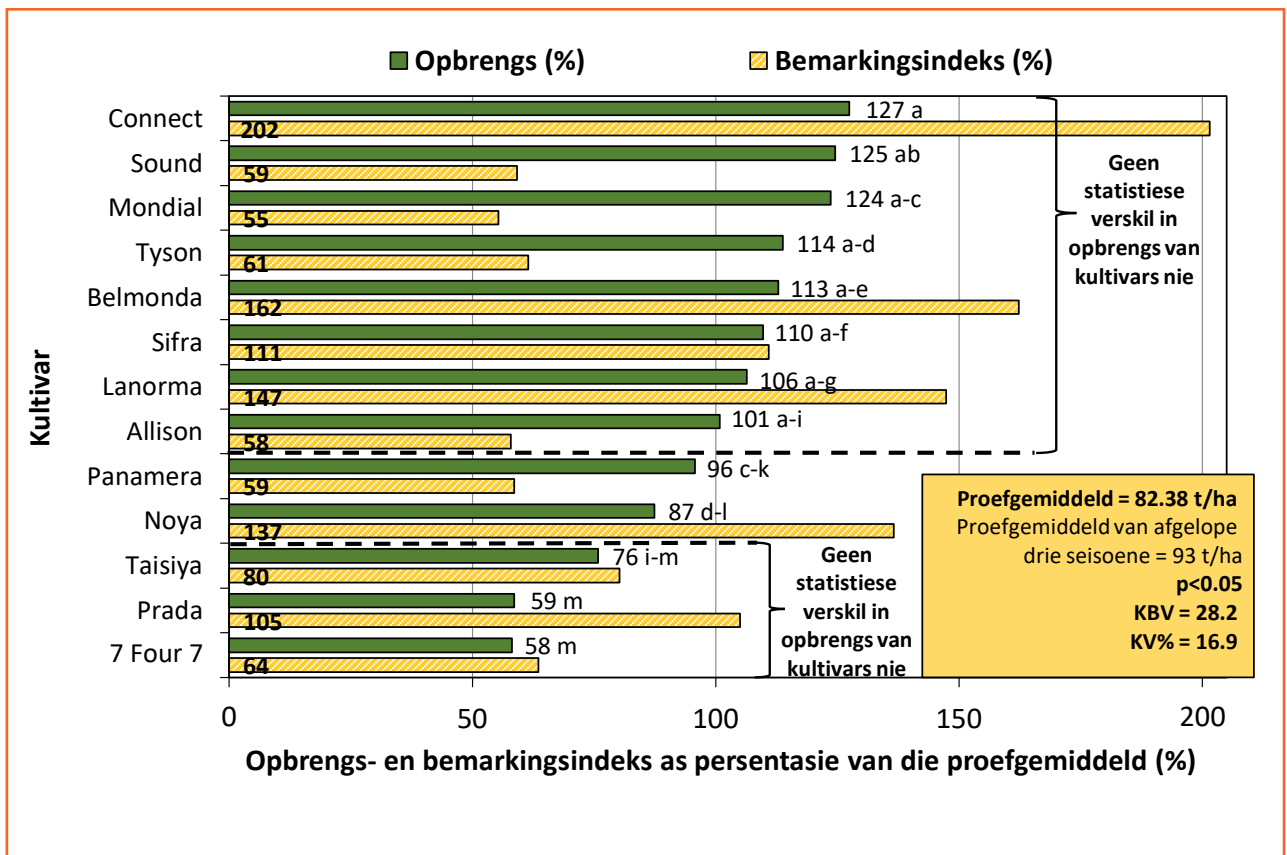
Oranjeville val in Suid-Afrika se gematigde somerreënvalgebied en ervaar die afgelope 17 jaar 'n gemiddelde jaarlikse reënval van 558 mm vanaf September tot Mei.

Figuur 4: Hitte-eenhede vir die 2020/2021-seisoen asook die langtermyn gemiddelde hitte-eenhede.



*Totale hitte-eenhede spesifiek bepaal vir aartappels as gewas (drumpeltemperatuur = 5°C). Bereken vanaf uurlikse data.

Figuur 5: Totale opbrengs per kultivar as persentasie van die proefgemiddeld.



*Waardes gevolg deur dieselfde letter is nie beduidend verskillend van mekaar nie.

Tabel 4: Hoofredes vir afgradering.

Kultivar	Aalwurm	Bruinskurf	Mot	Vergroening	Misvorming	Poeierskurf	Fusarium	Sandspleet
7 Four 7								
Allison		x				x	x	
Belmonda		x		x				
Connect	x	x	x			x		
Lanorma			x					
Mondial		x	x		x	x		
Noya		x	x					
Panamera		x	x	x	x			
Prada			x			x		
Sifra	x	x	x				x	
Sound		x	x		x			
Taisiya		x						
Tyson		x	x	x				x

Tabel 5: Prosseringseienskappe van kultivars. (Uitgevoer deur LNR Roodeplaat)

Kultivar	SG ¹	DM ²	Skyfiekleur ³
7 Four 7	1.054	14.73	49
Allison	1.067	17.53	53
Belmonda	1.068	17.72	48
Connect	1.077	19.57	49
Lanorma	1.066	17.31	50
Mondial	1.063	16.55	51
Noya	1.068	17.71	52
Panamera	1.074	18.84	56
Prada	1.056	15.08	51
Sifra	1.066	17.21	49
Sound	1.061	16.11	54
Taisiya	1.063	16.53	46
Tyson	1.064	16.92	52

¹Soortlike gewig van >1.075 is aanvaarbaar vir die prosseringsbedryf.

²Die persentasie droëmateriaal is 'n berekende waarde: $DM\% = 24.182 + 211.04 * (SG - 1.0988)$.

Die werklike persentasiewaarde sal effens verskil tussen variëteite uit hierdie berekeningswaarde.

³Skyfiekleur met 'n waarde van >50 en sonder defekte, is aanvaarbaar vir die droëskyfiebedryf.

se prestasie in terme van opbrengs as 'n persentasie van die proefgemiddeld gelees.

Die gemiddelde opbrengs van die proef vir die 2020/2021-seisoen is 82.38 t/ha. Die eerste agt uit 13 kultivars in die proef het die beste opbrengs gelewer, met

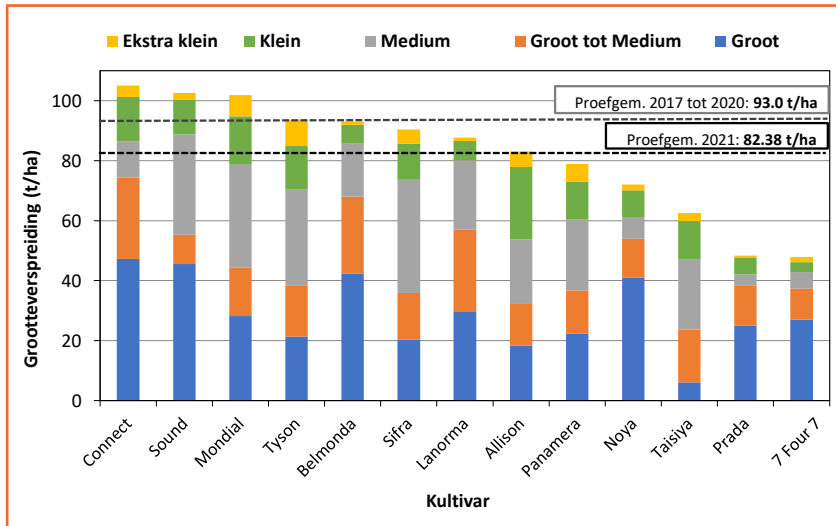
geen statistiese verskil in opbrengs nie.

Die kultivar Connect het by uitstek die beste bemarkingsindeks behaal, terwyl Belmonda, Lanorma en Noya ook goed presteer. 'n Goeie bemarkingsindeks word toegeskryf aan 'n hoër opbrengs

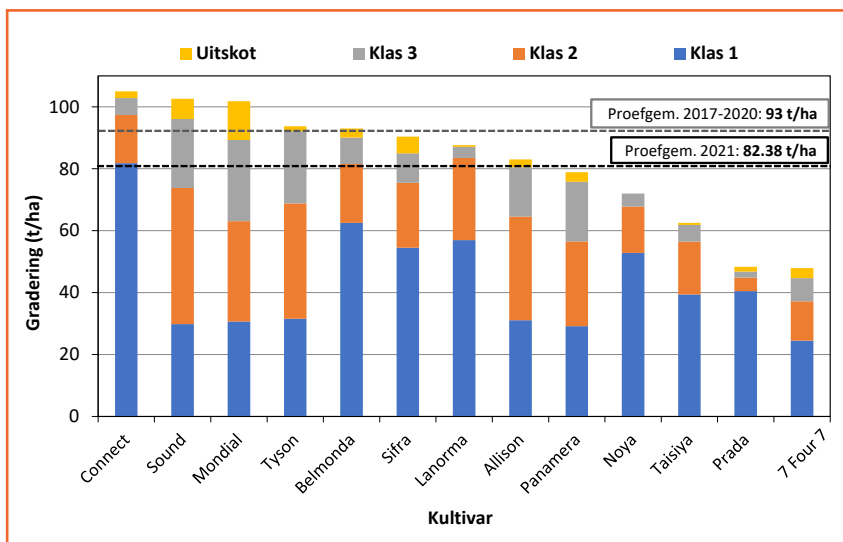


Die gemiddelde opbrengs van die proef vir die 2020/2021-seisoen is 82.38 t/ha. Die eerste agt uit 13 kultivars in die proef het die beste opbrengs gelewer, met geen statistiese verskil in opbrengs nie.

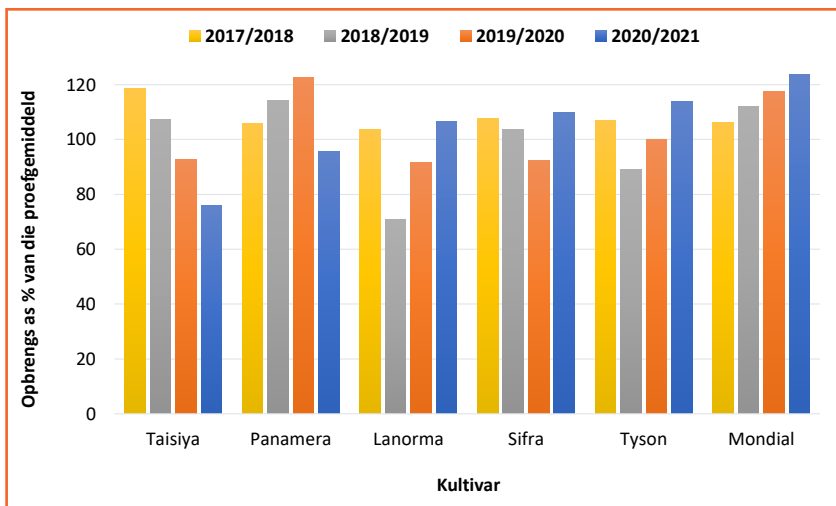
Figuur 6: Groottegroepverspreiding van elke betrokke kultivar.



Figuur 7: Gradering van elke betrokke kultivar.



Figuur 8: Prestasie van kultivars wat vir vier jaar in die proef ingesluit was (uitgedruk as persentasie van die proefgemiddeld).



van groot aartappels en/of 'n beduidende persentasie met goeie gehalte.


Groottegroepverspreiding en gradering is onontbeerlike evaluasies wanneer daar na 'n kultivar se bemarkbaarheid (Figuur 6 en 7) gekyk word. Die hoofredes vir afgradering word in Tabel 3 aangedui.

Motskade sowel as bruinskurf het die gehalte van die kultivars in hierdie proef beïnvloed. Hoë motdruk en -skade weens bruinskurf, wat tipies weens warm en droë seisoene ontstaan, word moontlik in hierdie proef weerspieël as gevolg van die omgewingstoestande van die laaste gedeelte van die seisoen, soos vroeër genoem.

Die feit dat die eerste gedeelte van die seisoen aan baie nat toestande onderhewig was, kan ook beteken dat die aartappelplante vlakker gedra het en knolle dus meer toeganklik vir aartappel-motskade was.

Sifra en Mondial presteer

Soos die aard van seisoene is, fluktureer die prestasie van kultivars van seisoen tot seisoen, bloot omdat klimaat van een seisoen na 'n volgende wissel. Derhalwe is dit belangrik om die prestasie van kultivars oor 'n aantal seisoene in ag te neem. Sifra en Mondial toon tans die minste variasie vir die laaste vier jaar in die Oranjeville-kultivarproef (Figuur 8).

Laastens, wanneer die interne gehalte van aartappels oorweeg word, kan prosesseringsvereistes te voldoen, moet kultivars aan 'n skyfiekleurnorm van <50 en 'n soortlike gewig (SG) van ≥ 1.075 voldoen (Tabel 4). Slegs die kultivar Connect het aan die SG-vereiste voldoen, hoewel verskeie kultivars die vereiste skyfiekleur getoon het. 

Vir meer inligting, kontak Enrike Verster by enrike@potatoes.co.za of Herman Haak by herman@potatoes.co.za

Biostimulants: It's in the genes

By Johan Janse van Rensburg, Oro Agri, and Ida Wilson, Biorevolution



B iostimulants are products known to increase plant growth and resistance to both biotic and abiotic stresses. These products support the performance of plants' natural processes and reduce the need for fertilisers. Biostimulants are known to increase the yield and quality of crops, mainly by enhancing the uptake of nutrients by plants. Various substances are used in biostimulant products, including humic acids, algae extracts, and plant growth-promoting bacteria.

Mitigating salt stress

In a study conducted at the University of Stellenbosch, the effects of Crop4Life (C4L), a commercially available biostimulant, was evaluated on a molecular level to determine the changes it induced in the model plant, *Arabidopsis thaliana*, when watered with normal or saline water. The effect of C4L on biomass, chlorophyll, stress response metabolites, and stomatal conductivity was assessed.

The study provided evidence that C4L mitigated salt stress in the plants evaluated (Figure 1). Chlorophyll content and biomass increased, and metabolites induced under stress conditions were altered. In addition, the stomatal conductance was reduced, which points to more efficient water use by the salt-stressed plants.

It is possible that this stress mitigation is not only restricted to salt stress. Research shows that many of the genes activated by salt stress also respond to cold or drought stress, indicating that C4L may be a valuable stress-alleviating treatment in crop production systems experiencing other kinds of stress, although this needs to be confirmed with follow-up studies.

Augment crop yield and quality

It is known that C4L elicits physiological responses in plants, which increase crop yield and quality. This study also evaluated the plants' responses to the biostimulant on a molecular level, via RNA sequencing. C4L, when applied as

a soil drench at 0.01% (v/v), stimulated above-ground biomass and altered genes across several biochemical pathways.

The transcriptome of an organism gives information on the molecules that are synthesised, as well as the underlying genes involved. Transcriptomics evaluates the transcriptome, revealing how the genes are expressed and how resultant metabolites are influenced.

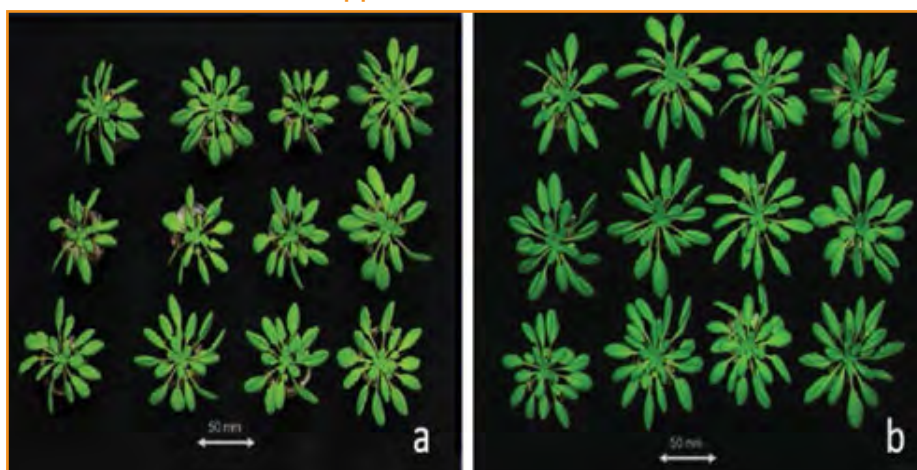
When the transcriptomic profile of C4L-treated plants was compared to those of untreated plants, 8% of genes were expressed differently from the control plants. Approximately 5% of genes were upregulated, meaning that the expression of a certain protein was increased. Notably, genes involved in photosynthesis, cell wall formation, carbohydrate metabolism, secondary metabolism, and signalling were upregulated, which could explain increases in plant growth.

Step into the future with C4L

Future agricultural production faces many challenges, most notably crop production in stress environments and greater yields required to feed the growing world population amid the rising effects of climate change. C4L has proven to enhance the yield and quality of crops. Moreover, a recent study on the effects of C4L on *Arabidopsis* and other plants revealed that C4L induces metabolic pathways involved in plant growth and functioning, including stress responses.

As our knowledge of the underlying mechanisms of resistance and stress alleviation pathways in plants expand, the potential uses of C4L will become even clearer. Undoubtedly, C4L should be a necessity in the toolbox for sustainable crop production in a challenging future environment.

Figure 1: Above-ground biomass production of *Arabidopsis thaliana* in a salt-stressed environment. Plants were treated with (a) saline water, and (b) saline water after C4L application to soil.



For more information or bibliographic references, contact Johan Janse van Rensburg at 082 327 1959 or Johan.JanseVanRensburg@oroagri.rovensa.com.

Filled with greatness

CROP4LIFE™



Increases tuber initiation



Increases yield



Enables the plant to handle more tubers



Maintains plant energy levels throughout the growing season

ACT / WET 36 / 1947 REG. No M195 FERTILIZER GROUP II • CROP4LIFE™ is a registered trademark of The Bio Consulting t/a Bio Revolution | Unit 9, Oosterland Street Hugenot, Paarl, 7646 | +27 21 863 4888 • ALL RIGHTS RESERVED | **ORO AGRI** is a registered trademark of Oro Agri SA (Pty) Ltd. 1 Henry Vos Close, ASLA Park, Strand | TEL + 27 21 850 0667 | GRIFFON POISON CENTRE +27 82 446 8946

 oroagri.co.za

 [@oroagrisa](https://www.facebook.com/oroagrisa)

 [@oroagrisa](https://www.instagram.com/oroagrisa)


— A ROVENSA COMPANY —

Resistance management in the control of potato tuber moth in potato production

By Roleen la Grange, principal author, and Desirée van Heerden, Dr Gerhard Verdoorn, and Dr Fienie Niederwieser, contributors

Insecticide resistance is the phenomenon whereby insect populations evolve to become less responsive to insecticides (also called sensitivity shift), and can no longer be controlled by the dosage of insecticide normally used to provide effective control.

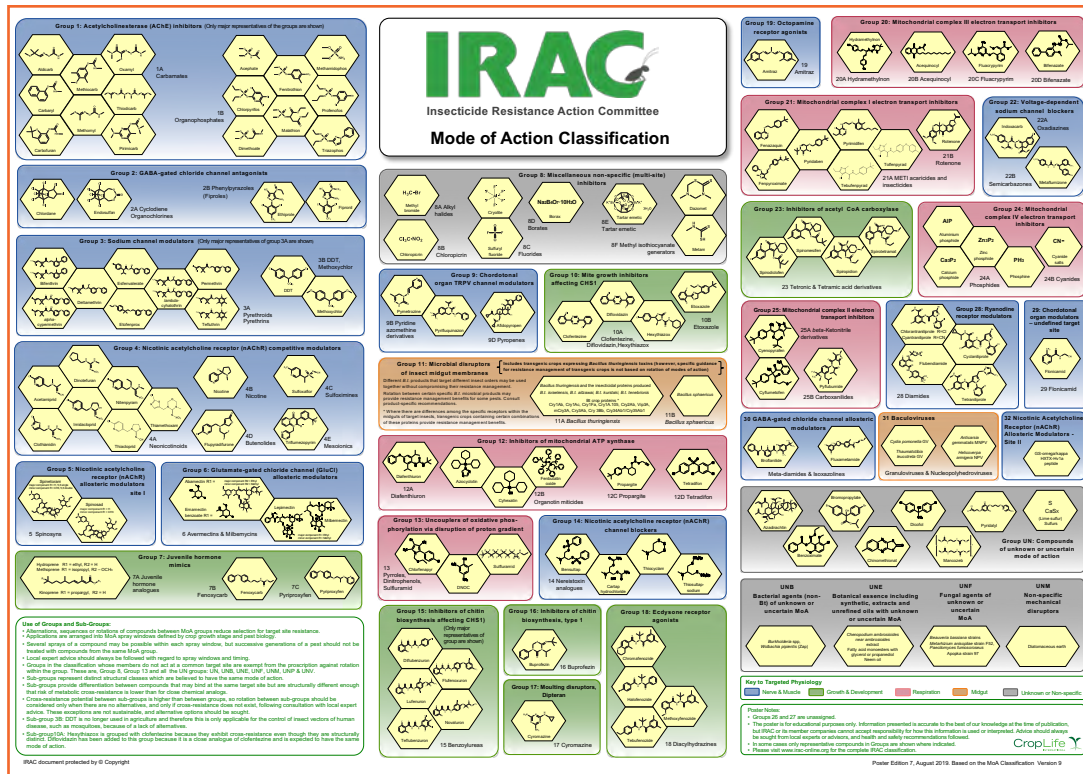
A sensitivity shift that leads to resistance, develops through mutations in the genetic coding of the insect. Mutations usually occur randomly, with most of the mutations having no impact on the insect's physiology or biochemistry. However, on occasion, a mutation confers resistance to an insecticide, resulting in a competitive advantage for the insect and its offspring if the same insecticide is used repeatedly.

When insecticides with different modes of action (MoAs) are not rotated or used interchangeably, insects that carry the resistance mutation will survive and become more representative within the population, increasing the pace of sensitivity shifts and ultimately resulting in an entire population developing resistance within a few generations.

Pest management and MoAs

To stop insects with resistance mutations from becoming dominant in the population, insecticides with different MoAs should be alternated

Figure 1: The IRAC MoA classification. A high-resolution version of the figure is available at www.irac.com.



in sequence or rotated to ensure that consecutive pest generations are not exposed to insecticides with the same MoA. This will decrease selection pressure on these insecticides and slow the pace of sensitivity shifts significantly.

However, cross-resistance may occur when resistance to one insecticide confers resistance to another, even when the insect has not been exposed to the latter product.

The Insecticide Resistance Action Committee (IRAC) categorises insecticides into groups according to their MoA (Figure 1). These groups are easy to find on the IRAC website (www.irac.com) or the IRAC application for smart devices. This is a valuable tool for producers and crop

advisors to understand the different groups and their respective MoAs.

The pest management practices required to delay the pace of sensitivity shifts and resistance development, are as follows:

- Identify the MoA of the insecticide used and alternate with insecticides that have a different MoA. In South Africa, the MoA of the insecticide is displayed on the front panel of the label, for example: Group 1A. In this example, the compound falls within MoA Group 1 (acetylcholinesterase inhibitors) and in sub-group A (carbamates). Sub-groups represent distinct classes of insecticides that have the same MoA but are

different in structure or mode of interaction with the target protein. This sub-categorisation differentiates between closely related insecticides and reduces selection for either the metabolic or target site cross resistance. The cross-resistance potential between sub-groups is much higher than between groups, thus rotation between sub-groups should be avoided.

- Apply insecticides during the correct application windows to avoid consecutive pest generations being exposed to the same MoA. An application window refers to a period of residual activity provided by a single application, or several applications of the same MoA applied in sequence, generally coinciding with the timeframe of one pest generation (approximately 30 days, depending on local conditions).

- Multiple successive applications of the same MoA are acceptable when treating a single insect generation.
- Following a treatment window, rotate to a different window of application with a different MoA.
- Never apply insecticides at reduced or higher dosage rates or reduced water volumes. Apply insecticides only at the label-instructed timing and dosage.
- When making use of insecticide mixtures according to label instructions, always apply active ingredients at their individually registered dosage rates.

Practical guidelines

To reduce the number of insecticidal treatments required and optimise application timing, pest populations should be monitored throughout the season by means of regular scouting, which includes using pheromone traps.

If weather conditions are conducive to high pest populations, the shortest spray interval and the highest recommended rates on the label should be used. Systemic and translaminar pesticides (such as cyantraniliprole or acetamiprid) should only be used at the beginning of the season, when plants are actively growing, to allow the chemicals to sufficiently translocate within the potato plants.

When developing a spray programme for the control of potato tuber moth specifically, ensure that chemicals with the same MoA are not repeated in the programme for the control of a different pest on potato crops, especially if the presence of these species overlap (e.g., potato leafminer).

Where two pests are present simultaneously, the higher recommended rate for the pest that is more difficult to control, should be used. Similarly, if other crops in the vicinity are also hosts of potato tuber moth (e.g., tomatoes), ensure that the spray programmes are aligned in terms of the MoA applied against a specific generation of the pest.

In South Africa, approximately 26 different active ingredients representing twelve different MoAs are registered for the control of potato tuber moth on potatoes, providing

adequate variety for insecticidal rotation during and between seasons. When making use of agrochemicals, good agricultural practices should always be followed. This includes using spray equipment that is properly calibrated and in good working order, only using spray equipment and application methods as stipulated on the product label, ensuring good penetration into the crop canopy and sufficient wetting of the leaf surface by using a registered surfactant for optimal coverage (if recommended as such on the label), and not spraying during unfavourable conditions (e.g. during the hottest time of the day or in windy conditions).

Integrated pest management

Minimising selection pressures and delaying the onset of resistance for insecticides can also be achieved by making use of integrated pest management, which considers all available techniques to reduce pest populations. These methods include crop rotation, cultivar selection, planting of genetically modified crops (which are not currently available in potatoes), monitoring pest populations, biological control, releasing sterile insects, and mating disruption.

When chemicals are used, they should always be used selectively and as part of an integrated resistance management programme. 📍



The Insecticide Resistance Action Committee (IRAC) categorises insecticides into groups according to their MoA. These can be found on the IRAC website (www.ircac.com) or the IRAC application for smart devices.

This article is Monograph 4 of the Potato Production Stewardship Programme – a collaborative initiative of Potatoes South Africa, CropLife South Africa, and the Insecticide Resistance Action Committee. For more information, contact Dr Gerhard Verdoorn at gerhard@CropLife.co.za.



Evaluation of various treatments for the management of diseases caused by *Spongospora subterranea* f. sp. *subterranea* in potato fields in South Africa

By Carmen Rensburg and Jacque van der Waals,
Department of Plant and Soil Sciences, University of Pretoria

Powdery scab is caused by a plasmodiophorid plant pathogen, *Spongospora subterranea* f. sp. *subterranea* (Sss). Powdery scab disease is cosmetically unappealing due to the lesions on the tuber surface. The presence of these lesions reduces tuber quality and marketability.

The pathogen is also responsible for causing two other diseases, namely root infection and root gall formation. These two diseases disrupt water and nutrient uptake, which reduces plant growth and tuber yields.

Economically significant

Sss has become an economically important pathogen in the South

African potato industry due to the increase in powdery scab disease outbreaks reported over the last decade in many potato production regions of the country. The recent escalation in the importance of powdery scab disease has been attributed to the increased use of irrigation, intensified potato production, use of susceptible potato cultivars and discontinuation of various seed tuber pesticide treatments exhibiting broad-spectrum activity.

Sss produces resistant resting spores, contributing to soil inoculum levels and long-term survival. The persistent nature of the pathogen makes it difficult to manage and an integrated approach must therefore be

adopted. Methods such as avoidance of fields known to be heavily infested with Sss, planting resistant or tolerant potato cultivars, application of chemicals to seed tubers and/or soil treatments, post-planting crop management practices, harvesting when dry to reduce transmission of the pathogen to other fields, and post-harvest hygiene, should be combined to manage diseases caused by Sss.

The main objective of this study was to evaluate various treatments (applied to the soil, seed tubers or foliage) for their efficacy in suppressing diseases caused by Sss on potatoes (root gall formation and powdery scab) in three different potato growing regions in South

Table 1: Details of the field trials conducted in 2018 and 2019 in three potato-growing regions in South Africa.

Potato growing region and trial number	Planting date	Number of treatments	Number of replicates per treatment	Plot sizes	Total area of the field trial
Limpopo 1	11 June 2018	8	4	15 x 6 m	± 3 429 m ²
Limpopo 2	16 April 2019	19	4	15 x 6 m	± 8 181 m ²
Sandveld 1	25 June 2018	9	3	24 x 3 m	± 1 944 m ²
Sandveld 2	25 June 2019	20	3	15 x 3 m	± 3 450 m ²
KwaZulu-Natal 1	27 September 2018	5	4	10 x 4 m	± 800 m ²
KwaZulu-Natal 2	16 July 2019	15	4	10 x 4 m	± 2 400 m ²



Galls caused by Sss on sampled potato roots. (Photograph by C Rensburg)

Africa. This was done to determine which product/s could be incorporated in an integrated Sss management programme for potato growers.

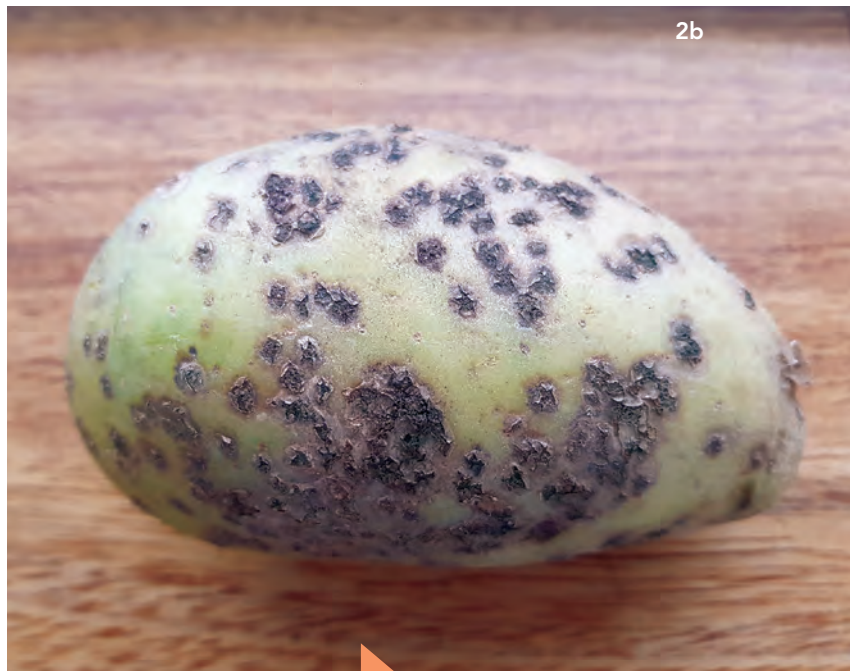
Field trials

Six field trials were conducted over two consecutive years (2018 and 2019) during the potato growing seasons. The fields that were selected and used for the field trials were known to be infested with Sss. Various companies supplied chemicals, biological control agents (BCAs) or fertilisers for use as in-furrow, foliar or seed treatments, to determine the efficacy thereof in suppressing diseases caused by Sss on potatoes.

The field trials took place in three different potato production regions, namely KwaZulu-Natal, Limpopo and the Sandveld. Each trial consisted of between five and 20 treatments, including a chemical standard (Mancozeb 800 WP), an untreated control, and three to four replicates of each treatment (Table 1). All field trials were laid out in a randomised complete block design (RCBD).

Disease assessment

Root gall assessment was conducted by the careful removal (ensuring roots remain intact) of three to five plants per plot from the soil, at approximately six weeks post-emergence. The roots were washed with tap water and visually assessed for root galling (Photo 1). Both the incidence and severity of gall formation were determined.



Potato harvest (a) and powdery scab disease (b) on tubers. (Photographs: C Rensburg)

Table 2: Products that significantly reduced or increased root gall or powdery scab disease expression in field trials conducted in three different potato growing regions in South Africa during 2018 and 2019.

Limpopo field trial 1 (2018)		
Effect on disease	Root gall index	Powdery scab index
Reduced	<ul style="list-style-type: none"> Calcium cyanamide (pre-plant fertiliser) 	<ul style="list-style-type: none"> Calcium cyanamide (pre-plant fertiliser) <i>Bacillus amyloliquefaciens</i> subsp. <i>plantarum</i> and <i>B. subtilis</i> (seed treatment)
Increased	<ul style="list-style-type: none"> <i>Trichoderma harzianum</i> (seed treatment) 	<ul style="list-style-type: none"> <i>Bacillus amyloliquefaciens</i> subsp. <i>plantarum</i> and <i>B. subtilis</i> (foliar treatment)
Limpopo field trial 2 (2019)		
Effect on disease	Root gall index	Powdery scab index
Reduced	<ul style="list-style-type: none"> <i>Bacillus amyloliquefaciens</i> subsp. <i>plantarum</i> and <i>B. subtilis</i> (seed treatment) Fluazinam (500 g/L) (in-furrow treatment) Dichlorophen (200 g/L) (in-furrow, drench treatment) <i>Trichoderma</i> isolates (0.5x) (in-furrow, drench treatment) 	<ul style="list-style-type: none"> Calcium cyanamide (pre-plant fertiliser) <i>Trichoderma harzianum</i> (in-furrow, drench treatment)
Increased	<ul style="list-style-type: none"> <i>Bacillus amyloliquefaciens</i> subsp. <i>plantarum</i> and <i>B. subtilis</i> (seed treatment) <i>Trichoderma asperellum</i> (2x) (in-furrow, drench treatment) 	<ul style="list-style-type: none"> <i>Trichoderma asperellum</i> (0.5x) (in-furrow, drench treatment)
Sandveld field trial 1(2018)		
Effect on disease	Root gall index	Powdery scab index
Reduced	<ul style="list-style-type: none"> No disease expressed 	<ul style="list-style-type: none"> Azoxystrobin (250 g/L) (in-furrow treatment)
Increased	<ul style="list-style-type: none"> No disease expressed 	<ul style="list-style-type: none"> Dichlorophen (200 g/L) (in-furrow, drench treatment)
Sandveld field trial 2 (2019)		
Effect on disease	Root gall index	Powdery scab index
Reduced	<ul style="list-style-type: none"> Fluazinam (500 g/L) (in-furrow treatment) Dichlorophen (200 g/L) (in-furrow, drench treatment) 	<ul style="list-style-type: none"> Potato pack (seed tuber treatment) Mancozeb (800 g/kg) (seed tuber treatment) <i>Trichoderma asperellum</i> (1x) (in furrow, drench treatment) <i>Mycorrhiza</i> spp. (in furrow, drench treatment)
Increased	<ul style="list-style-type: none"> <i>Trichoderma</i> spp. 500 g/ha (in-furrow treatment) <i>Trichoderma</i> spp. 1 kg/ha (in-furrow treatment) <i>Trichoderma asperellum</i> (2x) (in-furrow, drench treatment) 	<ul style="list-style-type: none"> <i>Trichoderma asperellum</i> (0.5x) (in-furrow, drench treatment) <i>Trichoderma harzianum</i> (in-furrow, drench treatment)
KwaZulu-Natal field trial 1 (2018)		
Effect on disease	Root gall index	Powdery scab index
Reduced	<ul style="list-style-type: none"> <i>Bacillus amyloliquefaciens</i> subsp. <i>plantarum</i> and <i>B. subtilis</i> (foliar treatment) Calcium nitrate (soil drench treatment) 	<ul style="list-style-type: none"> Calcium nitrate (soil-drench treatment)
Increased	<ul style="list-style-type: none"> <i>Trichoderma harzianum</i> (seed tuber treatment) 	<ul style="list-style-type: none"> <i>Bacillus amyloliquefaciens</i> subsp. <i>plantarum</i> and <i>B. subtilis</i> (seed tuber and foliar treatment) <i>Trichoderma harzianum</i> (seed tuber treatment)
KwaZulu-Natal field trial 2 (2019)		
Effect on disease	Root gall index	Powdery scab index
Reduced	<ul style="list-style-type: none"> <i>Bacillus amyloliquefaciens</i> subsp. <i>plantarum</i> and <i>B. subtilis</i> (seed tuber treatment) 	<ul style="list-style-type: none"> Fluazinam (500 g/L) (in-furrow treatment) <i>Trichoderma asperellum</i> (2x) (in-furrow, drench treatment)
Increased	<ul style="list-style-type: none"> <i>Mycorrhiza</i> spp. (1x & 2x) (in-furrow, drench treatment) 	<ul style="list-style-type: none"> <i>Trichoderma asperellum</i> (1x) (in-furrow, drench treatment)

Severity was assessed using a published root gall scoring scale (www.spongospora.ethz.ch/LaFretaz/scoringtablegalls.htm), where 0 = no galls, 1 = 1 to 2 galls, 2 = 3 to 10 galls, 3 = > 10 galls mostly in clusters, and 4 = many galls regularly distributed. A root gall disease index was calculated for each treatment by multiplying mean disease severity by mean disease incidence.

Powdery scab incidence and severity were determined by assessing progeny tubers at harvest (Photo 2a and 2b). Twenty tubers were randomly sampled from each plot, washed in tap water and air dried. Severity was assessed using a modification of the rating scale developed by

Falloon et al. (1995) where 0 = absence of powdery scab lesions; 1 = 1 to 5 %; 2 = 6 to 25 %; 3 = 26 to 75 %; and 4 = 76 to 100 % of the total surface covered with lesions. The powdery scab disease index was calculated for each treatment by multiplying mean disease severity by mean disease incidence.

Results

Analyses of the results showed that none of the tested products completely controlled root galling or powdery scab in any of the field trials; however, certain products reduced or increased these diseases. Products that significantly reduced or increased either of these diseases compared

to the untreated control are listed in Table 2.

Calcium cyanamide (pre-plant fertiliser), calcium nitrite (soil-drench treatment) and fluazinam (in-furrow treatment) slightly reduced both root galling and powdery scab. The performance of various biological control agents containing *Bacillus* and *Trichoderma* spp. was inconsistent. Dichlorophen (in-furrow drench treatment) reduced root galling, while azoxystrobin reduced powdery scab in the Sandveld field trials.

Discussion and conclusion

Over the past decade, there has been an increase in the number of powdery scab disease outbreaks in South African potato growing regions. Since then, efforts have gone into assessing various management strategies. Until recently, no chemicals were registered against Sss on potatoes in South Africa. Fluazinam and flusulfamide are fungicides currently registered against powdery scab disease in South Africa. This study showed that certain products have the potential to reduce root galling and/or powdery scab disease incidence and severity.

Products containing calcium cyanamide, calcium nitrate, fluazinam and certain formulations of *Bacillus* and *Trichoderma* spp. as active ingredients caused slight reductions in root gall and powdery scab disease. Although some products reduced root gall and powdery scab disease, no single control strategy is completely effective against Sss. Further studies to specifically evaluate the modes of action, dosage and application of BCAs for management of Sss are required. **C**

PSA bids farewell to a stalwart

Prof Jacquie van der Waals has been well-known in potato circles since her potato research career started in 1998. Jacquie also completed her PhD in potatoes. Her work on potato diseases gained momentum soon after, and her work on powdery scab has been challenging, but highly satisfying, she says.

Her work on the *Rhizoctonia* project also yielded satisfying results when the research team was able to confirm symptoms not usually associated with the pathogen. A smaller project was the research into brown spot, in which Jacquie and her team were tasked with looking into this new disease in the early 2000s and were able to identify *Alternaria alternata* as the disease-causing organism.

"Our ability to assist producers in improving their crops by identifying diseases, is certainly a satisfying endeavour and I will miss working with all the role-players in the potato industry – from Potatoes SA to the producers." Jacquie will be leaving the industry soon, and will join Citrus Research International in January 2022.

"I am sad to leave my potato family, but I am very excited about the new opportunity offered to me. I truly hope that my contribution to the potato industry has assisted producers in improving their production management practices, and that my students will continue to hone their skills and contribute to the industry."

Potatoes SA would like to congratulate Jacquie on her new appointment and wish her well with her new endeavours. We will remember her for her dedication and huge contribution to our industry.



Prof Jacquie van der Waals

For more information or references, send an email to Prof Jacquie van der Waals at jacquie.vdwaals@up.ac.za.


Deel 5: Donker kurkagtige letsels

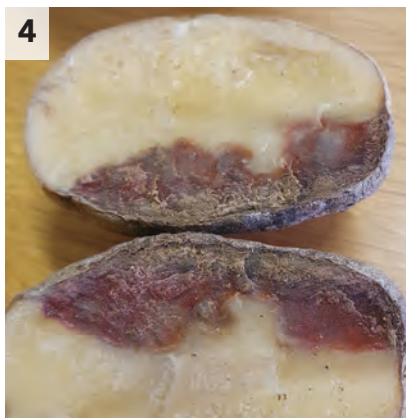
Deur dr Fienie Niederwieser, Aartappels Suid-Afrika

Knolle met ongewone donkerkleurige kurkagtige letsels (Foto 1 en 2) is sedert 2016 in verskillende produksiestreke opgemerk, telkens na 'n warm groeiseisoen.

Wanneer aangetaste knolle gewas word, vertoon die letsels donkerbruin tot byna swart (Foto 3). In een geval is knolle deurgesny en vir 'n rukkie gelaat. Die aangetaste interne weefsel het verkleur van bruin na 'n rooibruin kleur (Foto 4).

In 'n ander geval is knolle weke na plantafsterwe geoes en kon die donker besmette weefsel maklik van die onderliggende weefsel geskei word (Foto 5 en 6). Die onderliggende weefsel het onaangetas vertoon.

Dié simptome is op knolle van verskillende kultivars waargeneem en die letsels kan sekondêr besmet word met ander patogene. 



Om die oorsake van hierdie ongewone simptome te identifiseer, moet verdere monsters ondersoek word.

Kontak my by
fienie@potatoes.co.za
of 083 634 4848 om te reël
vir die afhaal van knolle.

PHILAGRO



Aartappelprodukte wat werk

Die beproefde sukses van die Philagro produkreeks verseker dat ons produkte kop en skouers uitstaan in 'n koste-doeltreffende aardappelprogram!

- Verbeter die uitloop van moere met **ProGibb® 4%** en **ProGibb® 40 WG**.

Beheer:

- Laatroes met **Leimay® 200 SC – NUWE EN UNIEKE CHEMIE IN S.A.**
- Swartskurf en Stamkanker met **Rizolex® WP**
- Aartappelmot en *Tuta absoluta* met **SumiPleo®**
- Aartappelmot, Snywurm en Afrika (Amerikaanse) bolwurm (in die Wes Kaap) met **Sumi-Alpha® 200 EC** en **Sumi-Alpha® 200 EW**
- Plusia landmeters met **DiPel® DF** en **Florbac® WG**
- Vroeëroes met **Sumisclex® SC**

Praat gerus met jou naaste Philagro-agent oor betroubare aardappelprodukte wat werk.

RAADPLEEG DIE ONDERSKEIE PRODUKETIKETTE VIR VOLLEDIGE GEBRUIKSAANWYSINGS & -BEPERKINGS.

DiPel® DF (Reg. nr. L6441, Wet nr. 36 van 1947) bevat *Bacillus thuringiensis var kurstaki*, versigtig. Florbac® WG (Reg. nr. L5531, Wet nr. 36 van 1947) bevat *Bacillus thuringiensis var aizawai*, versigtig. Leimay® 200 SC (Reg. nr. L10884, Wet nr. 36 van 1947) bevat Amisulbrom (sulfoamied), versigtig. ProGibb® 4% (Reg. nr. L5118, Wet nr. 36 van 1947) bevat gibberelliene. ProGibb® 40WG (Reg. nr. L6777, Wet nr. 36 van 1947) bevat gibberelliene. Rizolex® WP (Reg. nr. L6376, Wet nr. 36 van 1947) bevat tolklofosmetiel, versigtig. Sumi-Alpha® 200 EC (Reg. nr. L6452, Wet nr. 36 van 1947) bevat esfenvaleraat, giftig. Sumi-Alpha® 200 EW (Reg. nr. L8821, Wet nr. 36 van 1947) bevat esfenvaleraat, skadelik. Sumisclex® SC (Reg. nr. L6377, Wet nr. 36 van 1947) bevat prosimidoon. SumiPleo® (Reg. nr. L8377, Wet nr. 36 van 1947) bevat piradaleel dichloropropreen derivaat, versigtig. SumiPleo®, Rizolex®, Sumi-Alpha® en Sumisclex® is geregistreerde handelsmerke van Sumitomo Chemical Company, Tokyo, Japan. ProGibb®, DiPel® en Florbac® is geregistreerde handelsmerke van Valent BioSciences, VSA. Leimay® 200 SC is die geregistreerde handelsmerk van Nissan Chemical Industries LTD, Tokyo, Japan.



Why settle for almost when you can get the real Haifa?



Haifa

VS



Almost

Best Quality only

For us, perfection is the only way to grow. We feel blessed that for more than 6 decades the leading farmers worldwide choosing the benefits of Multi-K season after season as their only way to grow and get the perfect results.

Haifa South Africa | Head office: 021 982 0309 | Brackenfell, South Africa
Gerrit Burger | 082 800 8766 | gerrit.burger@haifa-group.com
Nico Neethling | 072 038 3380 | nico.neethling@haifa-group.com
www.haifa-group.com

TEL: +27 21 9813516 | FAX: +27 21 9810800 | INDUSTRIAL ROAD & FERROUS CRESENT BRACKENFELL 7560

PLANTERS

TIPWAENS

UITHALERS

SORTEERDERS



UNIEKUM

Uniekum Landbou Masjiene (Edms) Bpk

AARTAPPELHANTERINGSTOERJSTING



WWW.UNIEKUM.CO.ZA | INFO@UNIEKUM.CO.ZA



Haifa Duo™

Balanced to yield perfection



Pioneering the Future

When growing top-quality potatoes in the open field, you have to be sure that the fertiliser you are using, is of the highest grade. Accurate nitrogen (N) management is vital to obtain high yields of excellent quality. An adequate early-season N supply is crucial to support vegetative growth. Excessive soil N that is applied late in the season often delays maturity of the tubers and results in poor skin set, which harms the tuber quality and storage properties.

Different soil conditions often make water and N management challenging, since nitrate is susceptible to leaching. In such cases, it is recommended that potatoes receive split applications of N during the growing season. This involves applying some of the N requirement prior to or at planting, and the remainder during the season, with side-dressing applications or through the irrigation system via Nutrigation™ (Fertigation).

Balanced nutrition with K⁺ and Ca²⁺

Potato plants take up large quantities of both potassium (K⁺) and calcium (Ca²⁺) throughout the growing season. K⁺ plays an important role in the control of the plant water status and internal ionic concentration of plant tissues, with a special focus on stomatal functioning.

Potatoes require large quantities of soil K, as this nutrient is crucial to metabolic functions such as the movement of sugars from the leaves to the tubers and the transformation of sugar into potato

starch. K⁺ deficiencies reduce the yield size and quality of the potato crop in association with low specific gravity in potatoes. Excessive K⁺ levels can lead to reduced Ca²⁺ and/or lowered magnesium uptake.

Ca²⁺ is a key component of cell walls, helping to build a strong structure and ensuring cell stability. Cell walls that are enriched with Ca²⁺ are often also more resistant to bacterial or fungal attacks. Ca²⁺ also helps the plant regulate the active transport of K⁺ through stomatal opening and closing. Deficiencies in Ca²⁺ interfere with root growth, cause deformation of foliage growth tips, and could result in reduced yields and poor quality.

The benefits of Nutrigation™

Nutrigation™ (Fertigation) delivers pure plant nutrients through the irrigation system, precisely supplying nutrients to the area with the most intensive root activity. Haifa's well-balanced Nutrigation™ programme meets the plant's exact needs in accordance with seasonal changes.

Decades of experience in production and application of specialty fertiliser for Nutrigation™ have made Haifa a leading company in this field. Haifa remains at the forefront of contemporary scientific and agricultural research, to continuously broaden its product line and better meet the requirements of potato crops in all cropping environments.

Soluble fertilisers for Nutrigation™ by centre pivot or drip irrigation

Haifa Duo™ is an innovative range of plant nutrition formulations

that provide balanced nutrition supply for maximum efficiency and optimal plant development, while minimising losses to the environment. The nitrate (NO₃⁻) facilitates synergistic uptake and improves K⁺ as well as Ca²⁺ absorption by the plant.

Extra convenience and enhanced performance

Haifa Group has developed and currently produces a wide range of Haifa Duo™ products based on fully water-soluble K⁺ and Ca²⁺ containing nitrate fertiliser. Since a healthily growing and high-yielding crop requires large quantities of these macronutrients (N, K, Ca), Haifa Duo™ should be applied to the soil regularly.

All products contain only pure plant nutrients, are fully water-soluble, and are low in sodium and chloride. These products are:

- Haifa Duo™ 14-0-19 + 9 Ca.
- Haifa Duo™ 14-0-11 + 13 Ca.
- Haifa Duo™ 15-0-7 + 15 Ca.

For more information about the Haifa water-soluble product range or recommended application rates, consult a local Haifa agronomist or visit www.haifa-group.com. Alternatively, contact Gerrit Burger on 082 800 8766, Michael Koch on 083 231 4516, or Haifa South Africa on 021 982 0309.



Invest in Transforming South Africa from the Ground Up



Progression's **New Venture Creation** training upskills **Emerging Farmers** with the business know how required for managing their new farming business

Invest in Emerging Farmers

Our AgriProgress initiative presents an opportunity to invest in the establishment of emerging farmers in South Africa.

This initiative allows the investor to leverage the various elements of the B-BBEE Scorecard to again points under the Skill Development and/or Enterprise and Supplier Development

For the Emerging Farmer

We offer accredited training in New Venture Creation which include:

Writing your business plan, marketing, research, finance management, costing, pricing, funding opportunities, implementation, leadership skills, negotiation skills, managing contracts.



Partner with us to achieve **real economic transformation.**

PSA bursary recipient reaches for new heights

By Rotondwa Raligidima, Potatoes SA

Xola Ngceni's life started out in the humble village of Qhiba in the Eastern Cape, later relocating to Sterkspruit. Xola attributes his success to role-models such as his grandmother and uncle, who played a fundamental role in his upbringing and development.

He describes his journey to Potatoes SA (PSA) using the metaphor of a life-giving tree springing forth from a tiny seed. Even when covered, the seed has the potential to emerge and grow, despite hardship. This is the kind of person Xola is: refusing to surrender, no matter the storms.

Deeply rooted

On the surface, one might regard this soft-spoken, humble and smart postgraduate as seemingly ordinary. What sets him apart, though, is his deep connection to nature – from hunting and cultivating various crops, to herding cattle.

Like the life-giving tree, Xola's roots dug deep and because of his passion for agriculture and sustainability, he decided to follow a career path that would play an active role in contributing to food security and job creation.

A tree bears fruit

In 2013 he enrolled for a BSc Agric (crop and horticultural sciences) degree at the University of Fort Hare. During his third year, he was introduced to the PSA bursary programme by a fellow student, and was successfully selected as a recipient. His love of agriculture saw him excelling in his studies and graduating with distinction.

After completing his undergraduate studies, he enrolled

for a postgraduate degree. The PSA bursary programme continued to fund him, and he completed a BSc Agric (Hons) in horticultural science in 2017. He then set out to complete a master's degree in horticulture in 2019. All his degrees were obtained with distinction.

His master's thesis, *The effect of storage temperatures on the postharvest performance and sprouting of selected potato cultivars*, investigated the effect of storage temperature on sprouting incidence, processing attributes, as well as nutritional quality parameters of potatoes.

The study also sought to develop prediction models using near-infrared spectroscopy (NIRS), which could be used to determine the quality attributes of potatoes. While the prediction models were developed for some of the quality parameters, more improvements are needed to develop models that are more stable and suitable for all applications and storage conditions.

Powered by potatoes

"My experience with the PSA bursary programme was one of a kind. It helped me to excel in my academic career and presented me with an opportunity to interact with other students in the field of agriculture, specifically in the potato industry," says Xola.

He has since visited various interesting places including a potato farm in Mpumalanga, where he gained valuable knowledge regarding potato production. He speaks enthusiastically about the Joburg Market, where he learned about the requirements for selling potatoes.



Potatoes SA bursary recipient, Xola Ngceni.

In 2021 Xola was awarded an opportunity to gain work experience through PSA at the Tshwane Market under Prokon. "I encourage students in the programme to study hard, so that they can be exposed to the same opportunities I had," he adds.

Xola thanks PSA for the support he received and will forever cherish the knowledge he gained from their symposiums and bursary induction programme. He looks forward to being an agricultural consultant and wishes to close the gap between research and small-scale farmers through participatory programmes. He also aims to encourage rural communities to branch out into agriculture through the lens of entrepreneurship, and help to alleviate poverty in rural South Africa.

Xola continues to upskill himself through online courses and intends to return to university in 2022 to further his studies. PSA wishes him the very best. 🍌

For enquiries, email
Rotondwa Raligidima at
rotondwa@potatoes.co.za.



Empangeni information day a spud-tacular learning experience

By Louis Pretorius

Food security is one of the more important issues for Potatoes South Africa's (PSA) small farmer development projects. The project has moved far beyond food security alone and is now focussed on creating job opportunities and much-needed sources of income.

The theme of PSA's Empangeni Small Farmer Development project held early in October, centred on potatoes. Even the after-meeting lunch consisted of various potato dishes made from each cultivar, such as chips, baked potatoes, mashed potatoes and roasted potatoes. But before attendees could dig into the delicious lunch, the day kicked off with harvesting and determining the yield of various cultivars at Empangeni.

More than 50 people, most of whom are small farmers and members of PSA or the Department of Agriculture's extension offices, took part in this activity. Afterwards, everyone gathered for the main meeting, where PSA's Louis Pretorius explained the purpose and extent of the small

farmer development project. Price formation as well as supply and demand were also discussed.

Now is the time to harvest

Empangeni falls in a winter production region, which means the harvest can reach markets at a favourable time of the year (September/October).

According to Pretorius, the yield of various cultivars achieved on the 0.4 ha planting was 62.3 t/ha for Sababa, 55.8 t/ha for Mondial, 65.4 t/ha for Panamera, 51.4 t/ha for El Mundo, 46 t/ha for Connect and 44.8 t/ha Sifra.

The following activities contributed to achieving these results:

- The producer prepared the soil well, and followed the recommendations of the planting team.
- Certified seed potatoes were used, which sprouted optimally at planting.
- Fertiliser was used according to the soil sample



The day at Empangeni started with harvesting and determining the yield of various cultivars.



PSA's Louis Pretorius explaining the purpose of the small farmer development project, as well as price formation and supply and demand.



The producer of the project, Qinisan Mzimela (front), being assisted by other small farmers to determine the yield of the project.

recommendations from Cedara Agricultural Training Institute for targeted production.

- Optimal irrigation was administered using rain gauges.
- The producer diligently followed the spray recommendations and correctly used all herbicides, pesticides and fungicides provided by PSA.
- Good management on behalf of the producer, who followed all recommendations and personally tended to his crop.

Taslos Magubane, an extension officer from Cedara Agricultural Training Institute, elaborated on disease management, highlighting the producer's important role in this regard. Magubane played a pivotal part in aiding the producer to achieve a favourable yield. Next, Dr Suzette Bezuidenhout, research manager at Cedara Agricultural Training Institute, spoke about the valuable contribution the research conducted by the Department of Agriculture, is making to potato production.

Marketing and quality assurance


Following Dr Bezuidenhout's discussion, Sakhile Mtembu from HelloChoice spoke about the value that HelloChoice can add by providing an additional market



The post-meeting lunch consisted of various potato dishes made from each cultivar, such as chips, baked potatoes, mashed potatoes, and roasted potatoes.

option to small farmers. Marketing options often pose a challenge for these farmers, since they mostly market unwashed potatoes. Judging by the questions posed to Mtembu, producers showed great interest in this option.

Next to address the meeting was Dorothy Mbele, regional manager of Prokon KwaZulu-Natal. She explained the importance of potato quality assurance and went on to discuss the quality standards and tolerances of each class of potatoes. The producers welcomed this information as they were in the process of sorting and packaging their products.

The meeting ended with the producer of the development project, Qinisan Mzimela, thanking all role-players for investing in the knowledge and development of small farmers. 



Sakhile Mtembu from HelloChoice explaining the value of HelloChoice as an additional market option to small farmers.

For more information, contact Louis Pretorius at louis@potatoes.co.za.

Developing farmer experiences true transformation with PSA

By Nomvula Xaba and Masabatha Motsoeneng, Potatoes SA

The Potatoes South Africa (PSA) Enterprise Development Programme (EDP) facilitates the participation of previously disadvantaged groups and promotes the development of emerging farmers for a sustainable potato industry. One of the programme participants, Andrew Nekgotha, recently walked us through his journey with PSA.

Small beginnings

Andrew credits the PSA EDP for helping him reach the next level of success in his potato production enterprise. He was born and raised in the village of Devrede, also known as Ga-Mabelele, situated in the Blouberg Local Municipality in Limpopo.

The municipality is known for its favourable climate, as well as its vast arable land and water resources for farming purposes. Andrew had been involved in livestock production for several years, but felt inspired to venture into potato production after witnessing the success of sub-commercial and commercial black farmers. He began learning about the management of potatoes in 2012, when he switched from full-time employment to full-time farming.

From livestock to potatoes

Andrew rented a piece of land in Dendron for his cattle and received potato seed from a commercial farmer to plant on a two-hectare field. "The two hectares delivered a good

yield and made me realise that this is the only crop that will give me high returns compared to other vegetables I have planted. Today, I even practice crop rotation with watermelon, but the returns I get can't be compared to that of potatoes."

"The two hectares delivered a good yield and made me realise that this is the only crop that will give me high returns compared to other vegetables I have planted."

He says the input costs of potatoes are high, but at the end of the season he manages to make good net profit, which he reinvests in farm infrastructure or machinery to improve his operation.

While Andrew was planning to expand his potato production in 2013, he sadly had to vacate the farm he was renting, because it lacked sufficient water resources. He decided to plant two hectares at his homestead in Devrede. It was during this time that he formed a solid friendship with commercial farmer, Phophi Raletjena, who was participating in PSA's development programme.

Through this friendship, Phophi supported him by providing seed, machinery for land preparation, as well as planting, harvesting and technical advice before Andrew



Andrew Nekgotha scouting potatoes planted in June 2021.



From left is Alex Jandrell, a PSA mentor, Andrew Nekgotha, producer, and Josh Jandrell, also a PSA mentor.

himself joined the EDP. For this, he required a bigger piece of land as his backyard was very small.

He approached the Ga-Kibi Tribal Authority to request a piece of land to produce potatoes, and presented his business proposal to the chief and council. The tribal authority granted him permission to occupy 50 ha to produce potatoes, seeing that the farming enterprise would add value to the community by creating jobs and contributing to the local economy.

A helping hand from PSA

Phophi introduced Andrew to the EDP in 2017. To be eligible for the programme, Andrew needed the following:

- Access to enough arable land for rotating fields and expropriation for the duration of the programme.
- His business to be a registered entity with a business bank account.
- Access to sufficient quality water.
- A centre-pivot irrigation system.
- Access to machinery for land preparation, planting and harvesting.
- Access to funding for

purchasing fertilisers and chemicals, and to contribute to the purchase of potato seed in the second year.

Andrew was very eager to join the programme. He decided to sell his cattle and used the money to install electricity and purchase a 7-ha centre-pivot irrigation system. He completed and submitted an application form to PSA, after which the organisation conducted a pre-feasibility study.

Andrew was fortunate to also receive a farmer support grant from the Limpopo Department of Agriculture, Land Reform and Rural Development, which he used to purchase an additional 10-ha centre pivot, a 950 000-litre reservoir, a tractor, potato planter, two additional boreholes, and fertilisers and chemicals.

In 2019, PSA approved his application, and with the water infrastructure he had secured, he received a seed grant for 7 ha. The development programme played a vital role in helping him achieve a good yield of 60 t/ha. Unfortunately, he had no washing and sorting facility,

and therefore relied on selling unwashed potatoes in bulk to local Mozambicans, street vendors and supermarkets.


Facing challenges head-on

The following season, in 2020, Andrew experienced delays with development of the 10-ha centre-pivot system and installing two additional boreholes. This resulted in him planting late and harvesting during the rain season. He realised a yield of 48 t/ha which was lower than the previous year. "That did not discourage me. Farming is what I love, and it is my full-time job. Giving up was not an option," says Andrew.

Alex Jandrell, a mentor appointed by PSA with over 50 years' experience in potato production, helped Andrew to plan in advance for the 2021 season. Alex guided him in terms of land preparation, seed inspection upon delivery, and monitoring the crop throughout the season.

This season, Andrew expanded by 10 ha, making the total planted area 17 ha planted with the cultivar Mondial. He has since arranged with a commercial farmer to wash, sort and pack potatoes to sell at national fresh produce markets.

"I appreciate PSA because the seed grant support makes a huge difference in my cash flow. The technical advice and mentorship ensure good quality potatoes and yield. The training ensures that I improve my farming practices with a view to sustainable crop production.

"The accounts management training has helped me to better manage my finances, and soon my business will be VAT registered. All the support I get from PSA adds value and creates a credible image for my business," he adds. 

For more information, contact Nomvula Xaba at nomvula@potatoes.co.za.

Potato product exports: A twelve-month snapshot

By Immaculate Zinde

South Africa has a dual agricultural sector comprising of highly developed commercial producers as well as small-scale or subsistence-based producers. The gross value of agriculture in South Africa was reported at US\$21.6 million in 2018, which translates to around R30,8 billion using current dollar-to-rand exchange rates.

This value is indicative of the significance of farming which, at its core, provides access to food and other necessities for many South Africans. Potato production in South Africa has been on the rise, with total hectares averaging 52 407 between 2010 and 2020, and an estimated average total crop of 2.3 million tons during the same period.

The South African potato industry boasts 16 production regions with the capacity to supply potatoes year-round. The primary potato sector is valued at R8 billion, while the secondary sector is valued at R25 billion. This makes the sector a positive and powerful contributor to the country's gross domestic product (GDP), as well as a potent

alternative to addressing issues of poverty, hunger and ever-increasing unemployment.

When considering the economic performance of South Africa in 2020, which is reported to be the biggest annual drop in economic activity since the early 1940s, it is encouraging to know that agriculture is among two out of ten industries that showed growth. This growth was driven by increased production of food, beverages and motor vehicles, reports Statistics SA.

A look at the export market

Potatoes South Africa (PSA) monitors the exportation of fresh potatoes, frozen potatoes, and prepared or preserved potatoes. In the case of fresh potatoes, Mozambique is South Africa's main export country, followed by Namibia. The third spot varies from month to month with Eswatini remaining a firm contender. The data that was monitored also revealed small volumes exported to the Seychelles, Canada and the United Arab Emirates (UAE). Between January and June 2021, South Africa exported 105 161 535 kg of potatoes.

In respect of frozen French fries, Zambia and Namibia are South Africa's main export destinations. Between January and June 2021, a total of 5 182 302 kg was exported.

"On a global scale, the European market accounts for two-thirds of the frozen potatoes exported worldwide, making it the largest processed exporter in the world. According to the latest research, the European market for French fries, chips, flakes and mashed potatoes is expected to grow steadily. The European market has been holding strong in the face of the Covid-19 pandemic, with chips proving to be the best performing category.

"In terms of market segmentation, research shows that Western European countries, which include some of the largest potato producers and processors in the world, are consolidating their leading position. However, there is great potential for growth in Eastern European countries, from Poland to Romania, Hungary and the Russian Federation," reports *Potatoes News*.

The following section focusses on South African potato product line exports from July 2020 to July 2021.

Fresh potatoes

The top five export countries for fresh potatoes in the year under review, were Mozambique, Namibia, Eswatini, Lesotho and Angola. Mozambique has taken the lead for 2019, 2020 and 2021 by a huge margin. It was noted that, during certain months, small volumes of fresh potatoes were exported to the Seychelles, Canada and the UAE. The biggest volumes were exported between November 2020 and April 2021, with volumes for the months of February, March and April representing the highest volumes compared to the same period in 2019 and 2020. The total volume exported between July 2020 and July 2021 was 174 889 112 kg.

Seed potatoes

In the year under review, Zambia was consistently the number one export country for seed potatoes, with the exception of November 2020, when it was surpassed by Namibia in November. The total volume exported between July 2020 and July 2021 was 20 373 328 kg.

As depicted in Figure 2, between February and May 2021, South Africa exported the highest volumes compared to other months. Small volumes of potato seed to Great Britain, Italy and the United States were observed during certain months of the year under review.

Frozen chips/French fries

In the year under review, Zambia was consistently the number one export country for frozen French fries. The total volume exported between July 2020 and July 2021 is 11 077 603 kg.

PSA is considering conducting a full-scale study of export opportunities, focussing on Angola, Congo, Mozambique,

Figure 1: Export of fresh or chilled potatoes, 2020/2021. (Source: Agri-Inspecc)

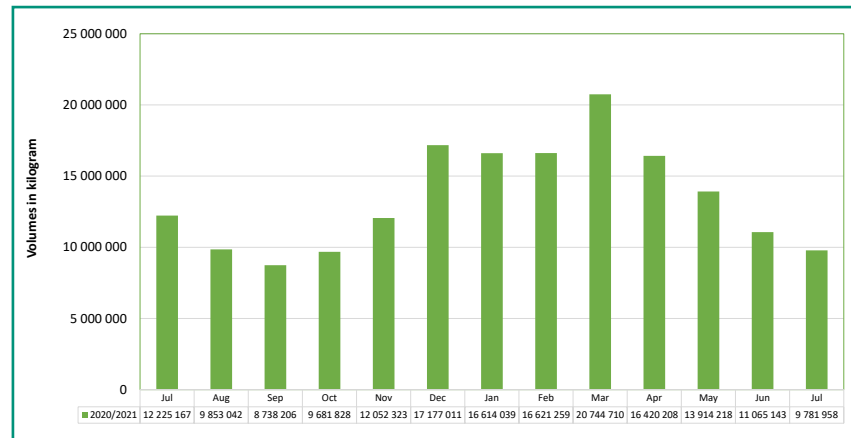


Figure 2: Export of seed potatoes, 2020/2021. (Source: Agri-Inspecc)

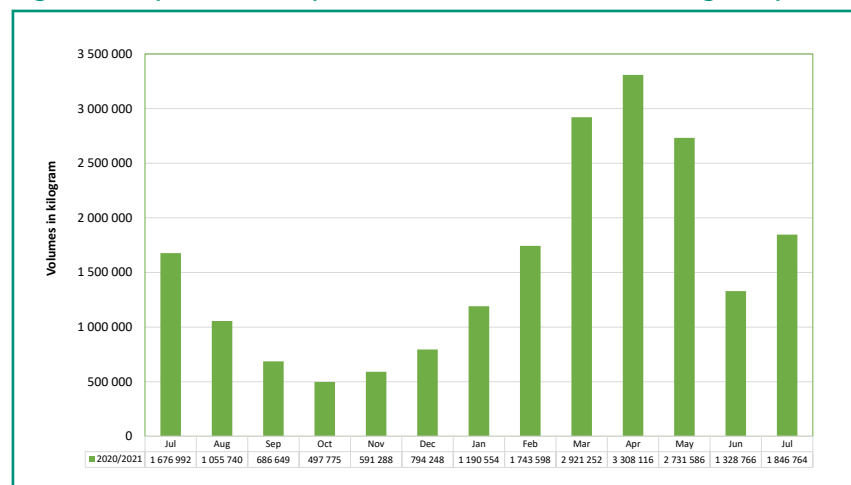
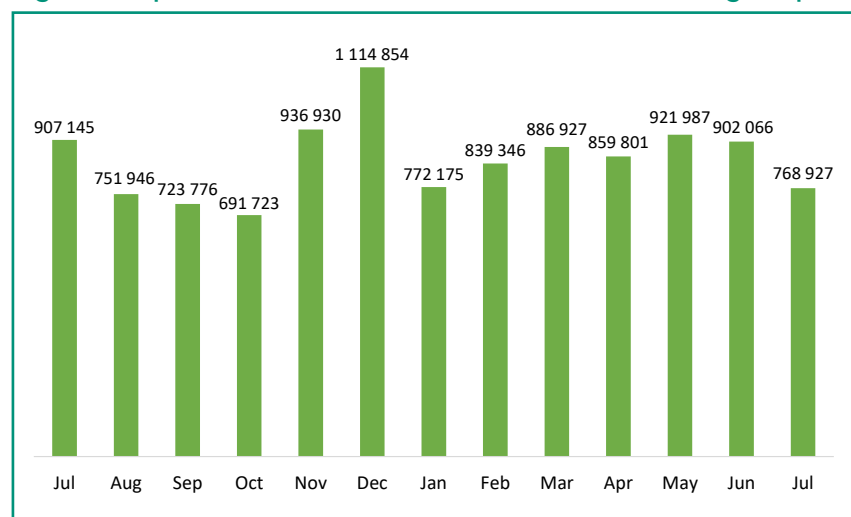


Figure 3: Export of frozen French fries, 2020/2021. (Source: Agri-Inspecc)



Zambia and Zimbabwe. The results of the study will be used to draft an industry strategy for market access and foreign market development.

For more information, send an email to Immaculate Zinde at immaculate@potatoes.co.za.

Heart-healthy habits with potatoes

By Claire Julsing Strydom, registered dietitian, and Immaculate Zinde, contributor (Photographs by Rikki Hibbert)

Wouldn't it be convenient if only a few foods were needed to eat your way to a perfectly healthy heart? Unfortunately, optimal nutrition is not that simple and there is no 'magic food' to ensure perfect health.

What we do know is that when we provide the body with nutrients

found in a wide variety of foods, they work together to support optimal functioning of all the organs and complex systems. So, let's focus on the five food categories that will boost your heart health.

Splendid veggies

It's no surprise that vegetables top the list. We've been taught from a young age that veggies are vital for good health, but how do they support heart health?

Vegetables are rich in natural compounds called phytonutrients, which are not only anti-inflammatory, but also prevent damage to the cells in your body. Over 4 000 different phytonutrients have been identified. The different colours of vegetables indicate the different phytonutrients they contain. For example, pink- or red-coloured veggies, such as tomatoes or beetroot, are rich in lycopene, which protects against heart disease. Potatoes, on the other hand, are rich in protective phytonutrients called carotenoids and flavonoids, and have shown to reduce the risk of certain diseases.

Moreover, vegetables provide a rich source of essential vitamins and minerals. Magnesium has shown to help maintain a stable heart rhythm and muscle contraction, while zinc acts as an antioxidant which enhances heart health. Did you know that potatoes contain vitamin B6, niacin, folate, copper, iodine, iron, phosphorous, manganese, magnesium, zinc, and calcium?

The bottom line is that by eating a kaleidoscope of veggies every

day, we can power our hearts with phytonutrients.

Fantastic fibre

It is said that South Africans do not consume enough fibre to meet the recommended intake. Fibre plays an important role in the digestive tract and research has shown that it positively influences both blood sugar and lipid levels. Diets that are high in fibre also contribute to more optimal weight management. In this way, filling up on fibre protects your heart.

So, what are some high-fibre foods? Legumes, oats, and wholegrains such as barley and brown rice, and naturally, fruit and vegetables. A medium-sized potato (180 g) contains almost 3 g fibre, which is about 10% of the recommended daily intake. Don't forget to love the skin they're in – removing the skins from your potatoes more or less halves their fibre content.

Phenomenal fruit

Research shows that your body requires all essential vitamins and minerals to ward off illness. It is therefore vital that you eat a variety of foods to nourish your body with the right quantity of vitamins and minerals, from A to Z.

As with vegetables, there are no specific fruits that you should or should not eat. They all offer valuable nutrients that can help to protect your health and keep your heart in shape. The same rule applies – stick to the colours of the rainbow.



One of the major benefits of potatoes is their versatility when it comes to preparation and cooking methods.



A lot of the fibre in a potato is locked up in its skin. A medium-sized potato contains almost 3 g of fibre, which is about 10% of the recommended daily intake.

Remember, however, that fruit is rich in natural sugars, so portion control is important. Enjoy 100 to 250 g of fruit per serving, which is about the size of your fist. The sugar found in fruit is trapped in a fibre matrix which helps to release the sugars into your blood more gradually over time and can be enjoyed as part of a healthy diet.

Pick your proteins


When choosing protein-rich foods to protect your heart, replace high-fat meat with more heart-healthy proteins such as fish, beans, lean chicken (breast meat without skin), and low-fat dairy. These protein sources can help to keep your cholesterol stable, and to maintain optimal blood pressure and a healthy weight.

Don't forget about fats

It is easy to think that a low-fat diet is best for heart health, but did you know fat is actually good for your

heart? The trick is to focus on the right types of fat.

Monounsaturated and polyunsaturated fats help to lower cholesterol and reduce the risk of heart disease and strokes. Monounsaturated fats are found in avocados, olives and olive oil, canola oil, and nuts, while polyunsaturated fats are found in fatty fish (sardines, pilchards, trout, salmon, and mackerel) and seeds.

Saturated fats found in butter, cream, coconut oil, and animal fats can increase cholesterol and work against optimal functioning of the heart. In short, 'no fat' is not the answer, but fats that provide the right fuel for your heart are! 

For references and more information on Potatoes SA's marketing projects, send an email to Immaculate Zinde at immaculate@potatoes.co.za

FEEL THE POWER OF THE OCEAN

AFRIKELP™ BIOSTIMULANTS
promoting growth, yield and quality.

Where the water meets the land ... there lies an ocean of benefits.

A28452



Have you harnessed the power of nature?
Speak to us to find out more:
+27 21 551 3556
www.afrikelp.com



Elim is an exclusive distributor of **Afrikelp** products. Contact your sales representative at
+27 12 252 4455



Potatoes, beef and mixed vegetables potjie

Preparation time: 20 minutes

Cooking time: 2 hours and 10 minutes


Servings: 4

Ingredients:

- 45 ml (3 tbsp) sunflower oil.
- 1.5 kg stewing beef, preferably on the bone.
- 2 onions, roughly chopped.
- 45 ml (3 tbsp) grated fresh ginger.
- 45 ml (3 tbsp) crushed fresh garlic.
- 2 x 400 g tins chopped tomatoes.
- 4 bay leaves.
- 1.5 kg baby potatoes, with the skin on, roughly chopped.
- 2 kg mixed potjie vegetables.
- Salt to taste.



Preparation:

1. Place the potjie on a fire and heat the oil. Add the beef and brown the meat on all sides. Remove and set aside.
2. Add the onions and fry until soft and translucent.
3. Add the ginger and garlic, and cook for a few more minutes before adding the meat again. If the potjie is extremely hot and you feel that the meat is burning, add some red wine or stock.
4. Season to taste.
5. Add the tomatoes and bay leaves, cover and gently simmer (+/- 1 hour).
6. Put the potatoes and any hardy vegetables in first and cook (+/- 30 minutes), then add the vegetables that will cook the quickest.
7. Taste and add more seasoning if needed.
8. Do not stir the contents of the potjie, but very gently shake it to ensure there is enough liquid in the bottom to avoid burning the meat.
9. Cover and simmer for another 30 minutes.
10. Serve hot with creamy spinach or any other side dish of your choice. 

Important dates on the labour law calendar

By Anneline Scriven, senior legal advisor, LWO

Labour legislation stipulates important events and/or dates that employers must adhere to in order to limit risks and be in line with legislation.

National minimum wage

The national minimum wage is adjusted annually and producers must budget in advance for this increase. The trend is for the National Minimum Wage Commission to increase the wage by adding 1% to the consumer price index (CPI) percentage. This increase usually takes effect **on 1 March each year**. Permanent and temporary (seasonal) employees may not receive less than the national minimum wage.

Seasonal work

Employees appointed for a specific season or period must also sign an employment contract to confirm the terms and conditions of employment. These contracts are commonly referred to as temporary, seasonal or fixed-term contracts. Finalise these employment contracts on the **first day of employment** to avoid disputes. This type of employment contract usually cannot exceed a period longer than three months, unless a valid reason is stipulated in the contract. The contract gives the employee the same rights as a permanent employee.

Unemployment insurance

The *Unemployment Insurance Act, 2001 (Act 63 of 2001)* applies to all employers and employees, except those who work less than 24 hours per month, pupils, and members of parliament (national and provincial). An amount equal to 1% of the employee's salary is deducted (the employee's contribution) and a further 1% is paid by the employer. It is the employer's duty to pay the 2% to the Unemployment Insurance Fund. These contributions must be paid within **seven days after month end**.

Table 1: Total annual turnover of designated employers by industry.

Agriculture	R6 million
Mining and quarries	R22.5 million
Manufacturing	R30 million
Electricity, gas and water	R30 million
Construction	R15 million
Retail, motor trade and repair services	R45 million
Wholesale, commercial agents and allied trade	R75 million
Catering, accommodation and other trade	R15 million
Transport, storage and communication	R30 million
Finance and business services	R30 million
Community, special and personal services	R15 million

Employment equity

The purpose of the *Employment Equity Act, 1998 (Act 55 of 1998)* is to eliminate unfair discrimination in the workplace by promoting equal opportunities and fair treatment, and by implementing affirmative action. Designated employers are obligated to comply with this Act. A 'designated employer' is an employer with 50 or more employees or who has a certain total annual turnover (*Table 1*).

Such an employer is obligated to submit employment equity reports annually. The reports (EEA2 and EEA4) must be submitted electronically on the Department of Employment and Labour's website by **15 January each year**.

The COIDA Act

According to the *Compensation for Occupational Injuries and Diseases Act, 1993 (Act 130 of 1993)*, or *COIDA*, all employers must register with the Compensation Commissioner. When an employee is injured or dies while on duty, this Act provides for disability compensation. Employers must submit a return in **May each year** for the fee payable to be calculated. Domestic workers must now also be registered with the Compensation Commissioner. ☺



Die LWO help *boere as werkgewers* om aan arbeidswetgewing te voldoen.



Geniet 'n stresvrye
arbeidsomgewing

Word lid:
 ➔ beskerm jou boerdery
 ➔ beskerm jou regte as werkgewer

Ons dienste as geregistreerde werkgewersorganisasie:

Arbeidsoudit | Gratis 24/7 regsadvies hulplyn |
 Gratis arbeidsreg dokumentasie & **dienskontrakte** |
Dissipline in die werksplek - konsultasies,
 waarskuwings, dissiplinêre verhore |
KVBA en Arbeidshof verteenwoordiging
 Bystand met stakings | Herstrukturering |
Personeelvermindering | Vakbond onderhandelinge |
 Bystand met Departement van Indiensneming en
 Arbeid **inspeksies** | Billike Werksgeleentheid, ens.

☎ 086 110 1828 ✉ info@lwo.co.za 🌐 www.lwo.co.za f



During August and September 2021, a total of 10 potato producing regions as well as non-producing suppliers delivered potatoes nationally to fresh produce markets.

Average percentage downgraded: **10%.**

Total number of bags delivered from 14 regions and non-producing suppliers and inspected on the fresh produce markets: **13 154 343.**

Figure 1: Classes inspected during August/September 2021 at all fresh produce markets.

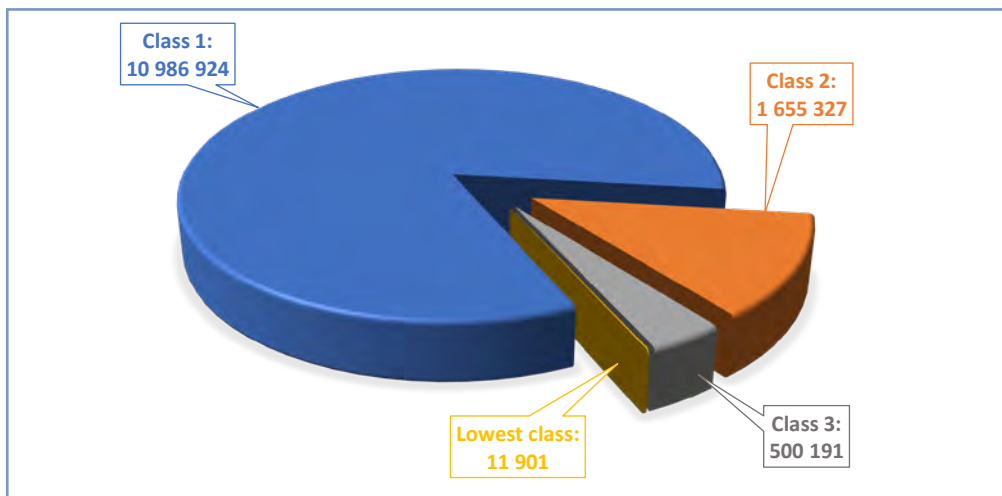


Figure 2: Potatoes downgraded (total bags: 1 315 544) at all fresh produce markets during August/September 2021.

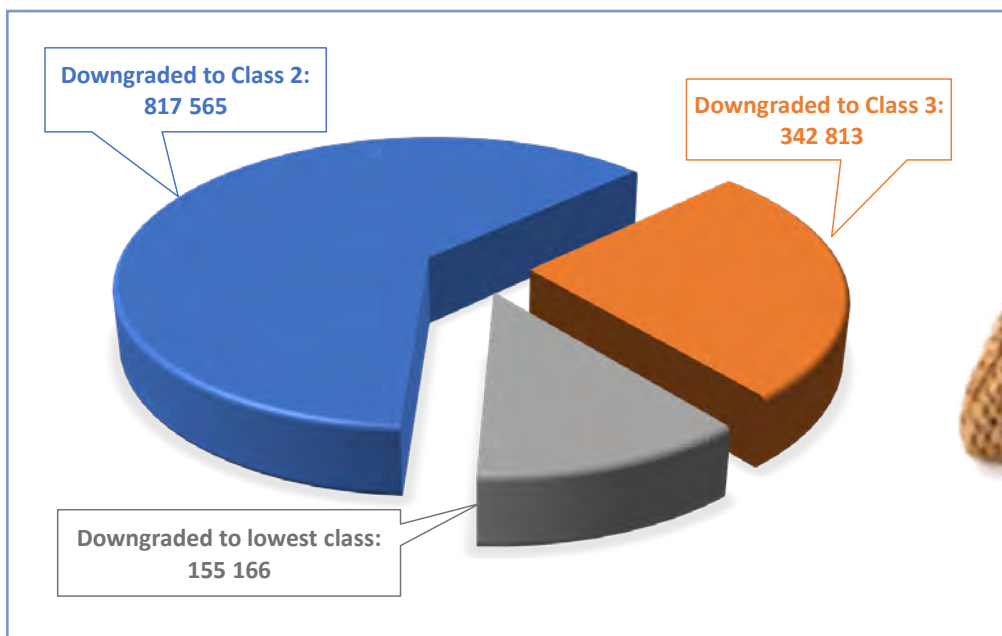


Figure 3: Potatoes downgraded (%) per region at fresh produce markets during August/September 2021.

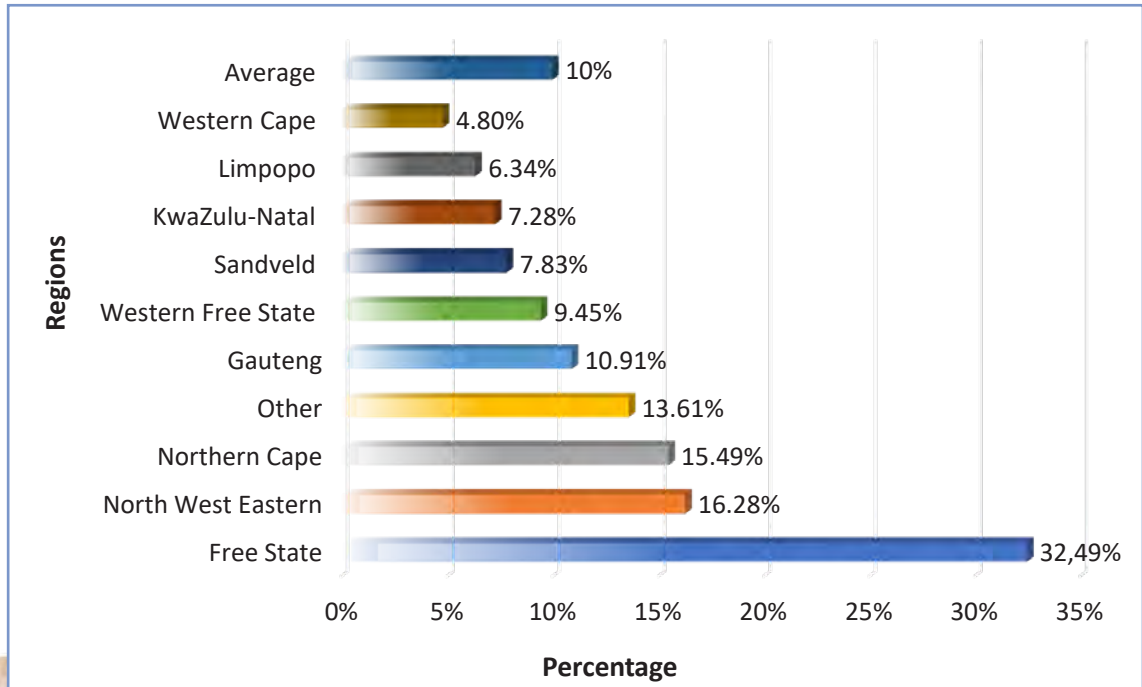
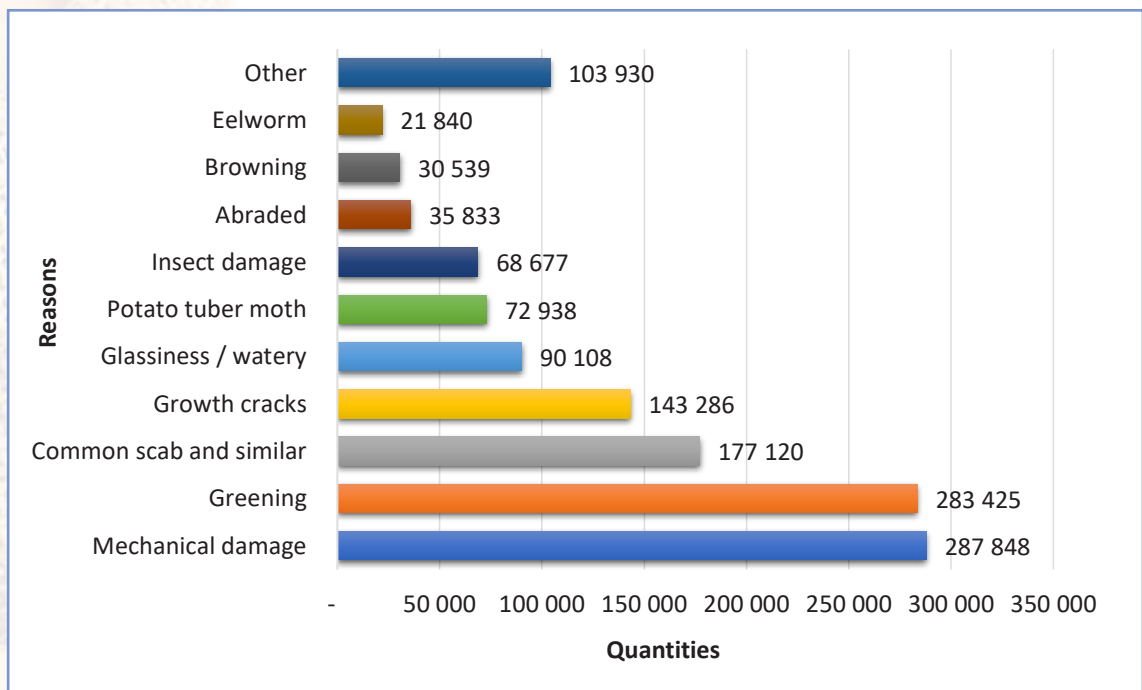


Figure 4: Reasons for downgrading at all fresh produce markets during August/September 2021.



Others include: Wet decay, wilt, broken and cut tubers, malformed, too big, brown fleck, hollow heart, dry stem-end, cold damage, watergrass damage (internal), watergrass damage (external), skin eelworm, tomato spotted wilt virus, Rhizoctonia, wet by decayed tubers, too small, sprouts, heat damage and soiled decay.



REGISTERED FRESH PRODUCE AGENCIES

BLOEMFONTEIN FRESH PRODUCE MARKET

Bloemfontein Market Agency
 Modise Market Agency
 RSA Bloemfontein Market Agency
 Subtropico Bloemfontein Market Agency
 Vrystaat Market Agency

CAPE TOWN FRESH PRODUCE MARKET

Boland Market Agency
 Fine Bros Market Agency
 Rhoda's Market Agency
 RSA Cape Town Market Agency
 Subtropico/Spes Bona Market Agency

DURBAN FRESH PRODUCE MARKET

Delta Market Agency
 Hanly Market Agency
 Port Natal Market Agency
 RSA Coastlands Market Agency

EAST LONDON FRESH PRODUCE MARKET

AA Market Agency
 Border Farmers Market Agency
 Martin & Scheepers Market Agency
 Subtropico East London Market Agency

GEORGE MUNICIPALITY

Maverick Market Agency

JOBURG FRESH PRODUCE MARKET

Botha Roodt Johannesburg Market Agency
 CA-TU Fresh Market Agency
 C L de Villiers Market Agency
 Citi Deep Waatlemoen Market Agency
 Citifresh Market Agency
 Dapper Market Agency
 DW Fresh Produce Johannesburg Market Agency
 Egoly Johannesburg Market Agency
 Exec-U-Fruit Market Agency
 Marco Market Agency
 Matla Market Agency
 Metro Market Agency
 Pula Nala Market Agency
 RSA Johannesburg Market Agency
 Subtropico Johannesburg Market Agency
 Swartberg Market Agency
 Uni Dev Market Agency
 Wenpro Johannesburg Market Agency

KEI FRESH PRODUCE MARKET

Farmers Direct Market Agency

KING WILLIAM'S TOWN FRESH PRODUCE MARKET

King William's Town Market Agency

KIMBERLEY FRESH PRODUCE MARKET

Kimberley Market Agency
 Subtropico Kimberly Market Agency

KLERKSDORP FRESH PRODUCE MARKET

Garfield Market Agency
 J Frances & Son Market Agency
 Matlosana Market Agency
 Subtropico Klerksdorp Market Agency
 W.L. Ochse & Kie Market Agency

LIMPOPO PROVINCE

RSA Limpopo Market Agency
 RSA Mooketsi Market Agency

NELSPRUIT MUNICIPALITY

Nelspruit Market Agency
 RSA Nelspruit Market Agency
 Whoopi Up Nelspruit Market Agency

NOORDEINDE FRESH PRODUCE MARKET

Noordeinde Market Agency

PIETERMARITZBURG FRESH PRODUCE MARKET

G.W. Poole Market Agency
 Natalia Market Agency
 Nkosi Market Agency
 Peter & Co Market Agency
 Subtropico Pietermaritzburg Market Agency

PORT ELIZABETH FRESH PRODUCE MARKET

African Market Agency
 Algoabaai Market Agency
 Gouws & Co Market Agency
 Lansdell Market Agency
 W Finlayson & Co Market Agency

SPRINGS FRESH PRODUCE MARKET

AM Meyer Market Agency
 New Africa Market Agency
 RSA Springs Market Agency
 Springs Vegetable Market Agency
 Subtropico Springs Market Agency

TSHWANE FRESH PRODUCE MARKET

Botha Roodt Pretoria Market Agency
 Du Plessis & Wolmarans Market Agency
 DW Fresh Produce Tshwane Market Agency
 Farmers Trust Market Agency
 Fresh Way Market Agency
 Mabeka Market Agency
 Noordvaal Market Agency
 Prinsloo & Venter Market Agency
 RSA Tshwane Market Agency
 Subtropico/Protea Market Agency
 Tshwane Green Market Agency

VAAL MUNICIPALITY

RSA Vaal Market Agency

VEREENIGING FRESH PRODUCE MARKET

Subtropico Vereeniging Market Agency

WELKOM FRESH PRODUCE MARKET

Botha & Roodt Welkom Market Agency
 Opkoms Market Agency
 Subtropico Welkom Market Agency

WITBANK FRESH PRODUCE MARKET

Subtropico Witbank Market Agency
 Witbank Market Agency

OTHER

Agri Empire Market Agency
 Comfy Fresh
 Core Fruit
 Farm Fresh Direct
 Farm Market
 Federated Farmers
 Fresh Pro
 Fruitways
 Garden Route Fresh Express Market Agency
 Green Network
 Lucerne Fresh
 Multiflora
 RSA Beyond
 RSA Beyond North
 Stargrow
 Subtropico Online
 Westfalia Marketing

VISIT APAC'S WEBSITE REGULARLY

Do you know if your fresh produce agent practise sound financial management? Did your agent received an audit qualification on his last audit report? Does your agent submit their monthly trust reconciliation timeously and has no trust account shortages?

Ensure that you visit our website monthly as it is updated regularly with information on the financial status of agencies.

REGISTRATEUR • REGISTRAR

Francois Knowles

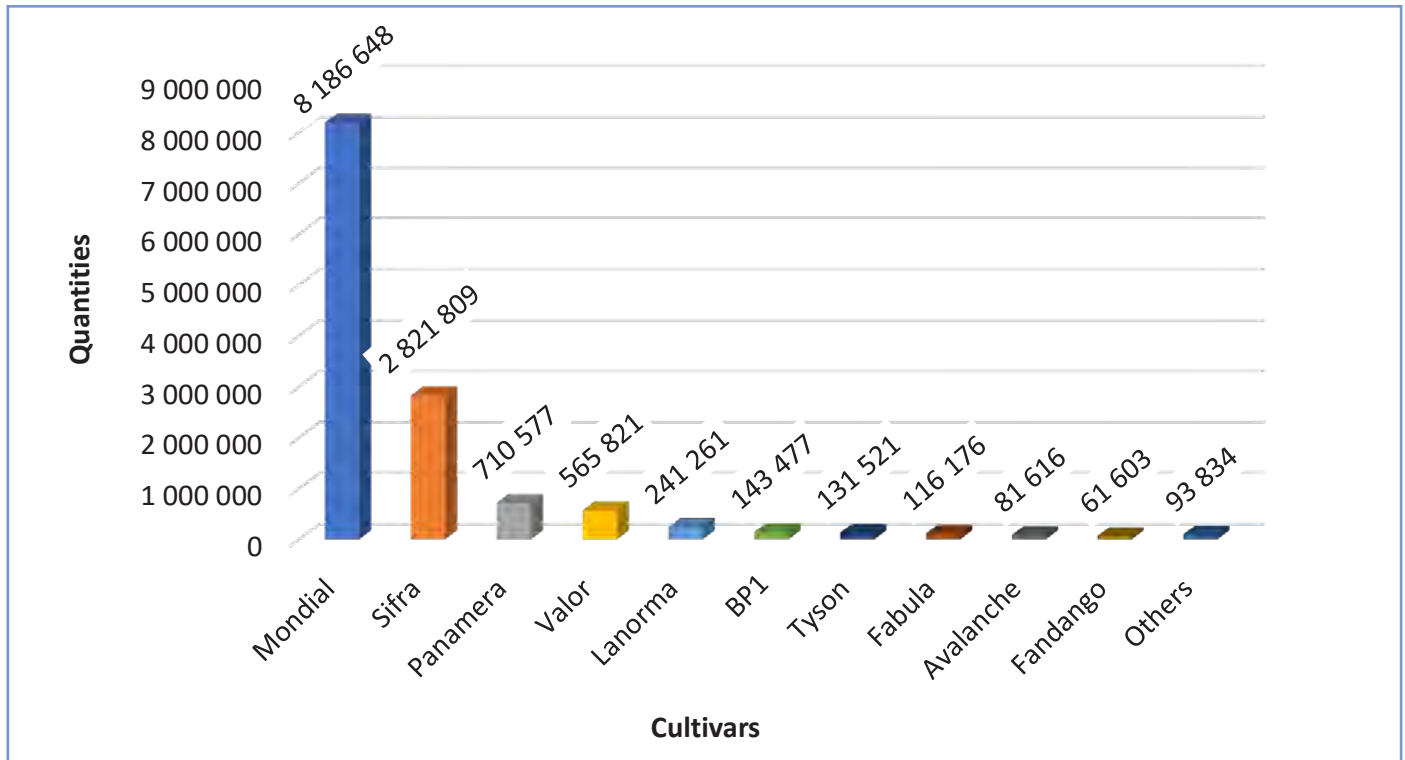
Suite Number 69, Private Bag X 9, East Rand, 1462

Tel: (011) 894-3680, (087) 095 1335

Fax: 086 669 9178

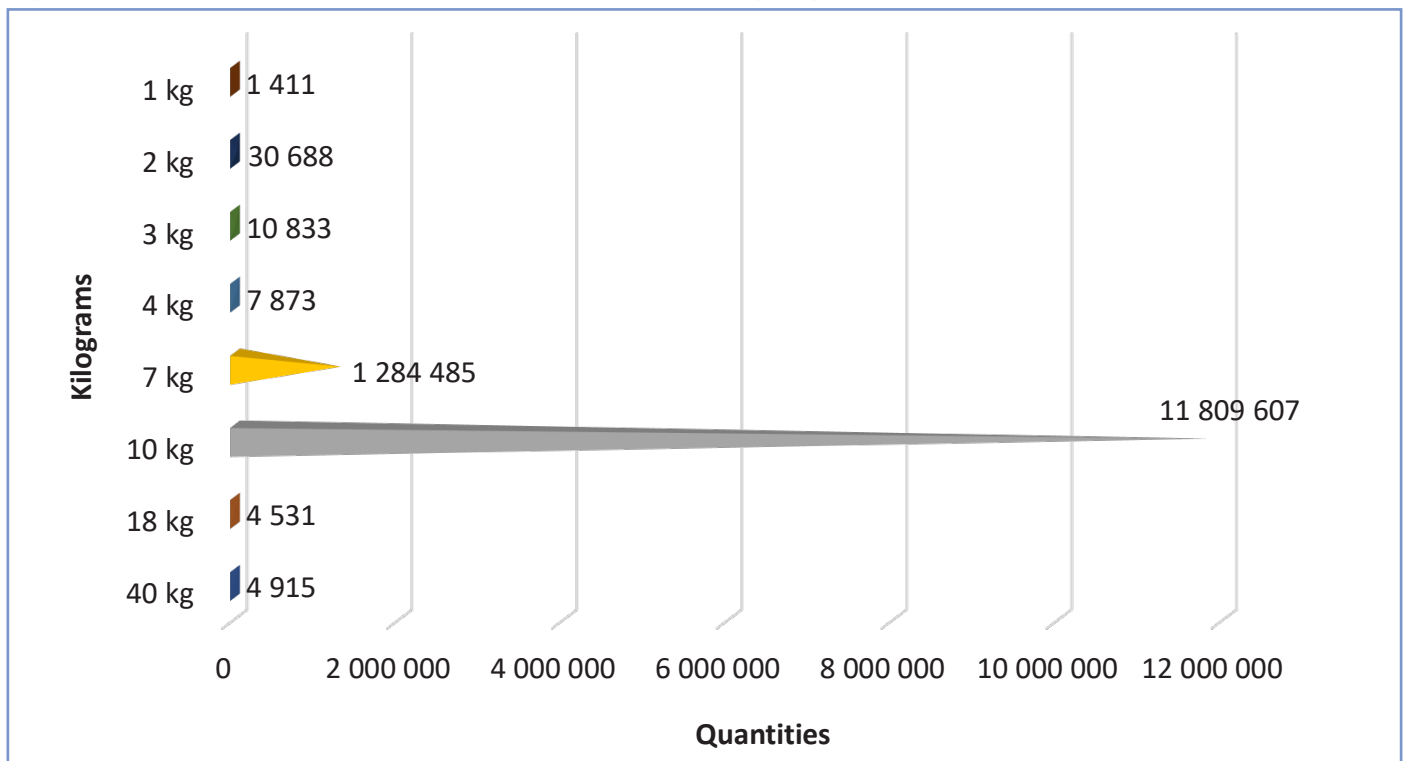
www.apacweb.org.za

Figure 5: Cultivars inspected at all fresh produce markets during August/September 2021.



Others include: Up-to-Date, Markies, Connect, Mondeo, Innovator, Nicola, Apache (POWW) and Abby.

Figure 6: Volumes inspected at all fresh produce markets during August/September 2021.



Overweight bags inspected are included in the 10 kg figure: 10.09 kg (440); 10.12 kg (110); 10.18 kg (110); 10.48 kg (330); 10.66 kg (770); 10.69 kg (110); 10 kg bags that were underweight at 9 kg (6 451 371).

Rights relating to graves on farms

Supplied by VDT Attorneys

The practice of burying someone on a farm, can be a source of underlying tension and uncertainty between farm owners and farm workers. Farm owners are often worried about graves on the farm, as their existence may not only threaten the safety and security of the farm owner and his or her family, but also the security of the land, labour relations and the day-to-day continuation of farming activities.

Requests to visit graves

In terms of Section 6(4) of the *Extension of Security of Tenure Act, 1997 (Act 62 of 1997)* or the *ESTA*, a farm owner cannot deny a request to visit a grave on the farm, as any person has the right to visit and maintain the grave of a family member on land which belongs to someone else. However, such visits are subject to any reasonable conditions imposed by the farm owner in order to protect his or her life and property, or to prevent undue disruption of farming activities on the land.

Reasonable conditions

- Graves may only be visited on Saturdays, Sundays or public holidays.
- Visits may only take place between 9:00 and 15:00.
- Visitors may only visit the graves and should not wander around on the farm.
- All visits should be conducted in a quiet and orderly manner; the farm owner may report any rowdy behaviour or misconduct to the South African Police Service (SAPS).

An access agreement is used to regulate visits to graves and to administer reasonable conditions. Farm owners may require a person to identify him- or herself, and to provide further information regarding their identity, details of the deceased, the person's relationship with the deceased, the deceased's date of death, the location of the grave on the farm, and whether the person can tender any evidence that there are graves on the farm.

The discovery of graves

In terms of Section 36(6) of the *National Heritage Resources Act, 1999 (Act 25 of 1999)*, a farm owner who discovers graves on a farm is required to cease all activity in the immediate vicinity of the graves. It is the farmer's responsibility to contact the South African Heritage Resources Agency (SAHRA) and the SAPS. These organisations must investigate the graves to determine whether they should be protected and whether arrangements for the relocation of the graves should be made.

A farm owner who wilfully ploughs over graves and deliberately ignores their presence is guilty of an infringement in terms of the *National Heritage Resources Act*.

If the farm owner is aware of the fact that the graves are those of victims of conflict or if it is

determined that the graves are older than 60 years and if they fall outside the area of administration of the local authority, the graves may only be disturbed, exhumed or moved with the authorisation and permission of the SAHRA.

The SAHRA will only issue a permit for the relocation of any graves older than 60 years if the applicant has made a deliberate effort to contact the local community who may have an interest in the graves, in order to consult with them about the future of the graves.

A farm owner who wilfully ploughs over graves and deliberately ignores their presence is guilty of an infringement in terms of the *National Heritage Resources Act*. Such an infringement is punishable with a fine, imprisonment of up to three years, or both.

Established practice of burials

Section 6(2)(dA) of the *ESTA* determines that farm workers who reside on a farm, may bury a member of their family, who also resides there, on the farm if it is an established practice. Section 24 determines that any consent given by the previous farm owner, will be binding on a subsequent farm owner. A new owner may not unilaterally put a stop to the practice. 🗳️

This article is intended for information purposes only and is a brief exposition of the aforementioned legal position. It should under no circumstances be construed as formal legal advice. Contact VDT Attorneys at info@vdt.co.za or 012 452 1300 or visit www.vdt.co.za.

Editor

Lynette Louw • 084 580 5120 • lynette@plaasmedia.co.za

Sales manager

Marné Anderson • 072 639 1805 • marne@plaasmedia.co.za

Advertising

Karin Changuion-Duffy • 082 376 6396 • karin@plaasmedia.co.za

Susan Steyn • 082 657 1262 • susan@plaasmedia.co.za

Esmarie Moodie • 076 330 0745 • esmarie@plaasmedia.co.za

Juan de Villiers • 060 508 3188 • juan@plaasmedia.co.za

Rowena Simmons • 079 568 6025 • rowena@plaasmedia.co.za

Advertising packages

- One-year pre-planned booking.
- Discount from 2,5% plus added value.
- 12 easy monthly instalments.
- Guaranteed coverage in news pages.
- Advertisements in Plaas Media's other magazines and/or online and broadcast platforms.

Format: A4, full-colour, glossy

Print run: Minimum 2 000

Readership: Minimum 6 000

LSM: 8-10

Print distribution: Postal database and at events.

Online distribution: www.potatoes.co.za/chips-online

www.agriorbit.com • digimags.agriorbit.com

Frequency: Bimonthly (every second month)

Language: English / Afrikaans

Target audience: Members of Potatoes SA • All commercial and aspiring commercial potato producers • Universities, agricultural colleges, technicians and research institutions • Relevant government departments • Input suppliers to the potato industry

ADVERTISEMENTS

Outside back cover (OBC)	R18 400	280mm (h) x 210mm (w) plus 3mm bleed
Premium page (IFC, P1)	R17 336	280mm (h) x 210mm (w) plus 3mm bleed
Inside back cover (IBC)	R15 335	280mm (h) x 210mm (w) plus 3mm bleed
Right-hand full page	R17 336	280mm (h) x 210mm (w) plus 3mm bleed
Double-page spread (DPS)	R23 675	280mm (h) x 420mm (w) plus 3mm bleed
Left-hand full page	R13 335	280mm (h) x 210mm (w) plus 3mm bleed
Half page (landscape)	R8 001	115mm (h) x 180mm (w); no bleed
Half page (portrait)	R8 001	237mm (h) x 85mm (w); no bleed
Third page (portrait)	R4 890	237mm (h) x 62mm (w); no bleed
Quarter page (portrait)	R4 135	115mm (h) x 85mm (w); no bleed
Banner/strip ad (fifth page landscape)	R2 934	55mm (h) x 180mm (w); no bleed

Rates exclude package discounts, VAT and agency commission.

PAYMENT TERMS:
Existing clients – strictly 30 days after invoice date.
New clients – 14 days prior to placement.

2022 DEADLINES

Advertorials • Ready advertisements (PDF/Jpeg/TIFF)

Edition 1 (Jan/Feb)	Edition 2 (Mar/Apr)	Edition 3 (May/June)	Edition 4 (Jul/Aug)	Edition 5 (Sep/Oct)	Edition 6 (Nov/Dec)	Edition 1 (Jan/Feb'23)
26 November '21 9 December '21	18 February 24 February	21 April 4 May	10 June 22 June	12 Aug 22 Aug	10 October 20 October	5 December 12 December



Kies Lanorma vir...



uitstekende
opbrengspotensiaal,



hoë bemarkingsindeks,



en sy lekker smaak.

**Veeldoelig op die plaas en in die kombuis.
Gesels met ons verteenwoordigers om Lanorma deel
van jou boerdery te maak:**

Renier Fourie | Limpopo | 083 281 0378
Fanus van Zyl | Wes-Vrystaat/Noordwes | 082 554 7652
Attie van den Berg | Oos-Vrystaat/Kwazulu Natal | 082 878 9490
Birtie Myburgh | Suidwes-Vrystaat | 082 372 7875
Danie van Heerden | Oos-Kaap/Suid-Kaap | 082 415 3666
Johann Botes | Noord-Kaap/Direkte verkope | 082 865 7813
C.P. Smit | Sandveld | 082 555 4833
Petrus Slabber | Ceres/Suidwes-Kaap | 083 306 6153

GWK



innoveer landbou

gwk.co.za   