

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

CHIPS

VOL 36 NO 1 • JANUARY / FEBRUARY 2022

**OOS-VRYSTAATSE STANDPROEF
ONDER AANVULLENDE
BESPROEING IN REITZ**

**THE POTATO LEAF MINER:
ORIGIN OF THE FIRST FLY
INFESTATIONS OF THE SEASON**

Tegnologiese ontwikkeling: | Effect of fungicide application | Engagement with New Era
Gebruik van QR-kodes | on potato cultivars at Cedara | farmers in Limpopo

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Pitkos vir die nuwe jaar

Deur Willie Jacobs, HUB van Aartappels SA

Teen die tyd dat lesers hierdie uitgawe van *CHIPS* in hulle hande vashou, het almal hopelik 'n wonderlike feesseisoen en rustyd saam met familie en vriende geniet. Ek hoop ook van harte dat dit 'n tyd van blydschap en wonderlike herinneringe was, en nie een van kommer oor die afgelope twee jaar en die jaar wat voorlê nie.

Ons stap 2022 in met die hoop dat dinge net beter kan raak. Ek glo dat die meeste produsente ietwat vuisvoos is, ten spyte van die feit dat die aartappelbedryf geseën is met goeie oeste, goeie produsentepryse en die wil om te transformeer. Dit is ongelukkig so dat dinge soos politiek, pandemies en pestilensies enige produsent se spreekwoordelike appelkar kan omgooi. Die geheim is om dinge te sien vir wat dit is, en nie vir hóé ons dit sien nie.

Hou by die reëls

Die afgelope twee jaar se pandemie-drama is byvoorbeeld dikwels aangevuur deur mediaberigte wat paniek gesaai het, waninligting oorgedra het en onmin gestook het. Kyk 'n mens verby die sensasie, dan besef jy dat 'n koelkop die enigste manier is om 'n krisis te hanteer. En om by die reëls te hou, natuurlik. Reëls bring nie net orde nie, maar meestal ook kalmte en uiteindelik insig.

Daar is 'n paar sake op die aartappelagenda wat menige produsent en bedryfsrolspeler in 2021 rooi onder die kraag gehad het. Dink maar aan die storting

van bevrore aartappelprodukte. Dis 'n saak van erns en dit krap ons om. Dikwels voel dit of die bedryf se hande afgekap is as dit kom by mededinging met groot lande wat produkte goedkoop kan stort. Ons werk immers hard en lewer 'n topgehalte produk.

Maar as die emosie eers gaan lê en rede tree in, besef 'n mens vinnig dat dit besigheid is – en besigheid is 'n harde wêreld. Terselfdertyd draai die regulatoriese wiele net te stadig na ons sin. Soms is dit dan nodig om diep asem te haal en te kies waar jy hierdie veldslag gaan veg.

Hou jou oog op die bal

Een so 'n geveg wat ons verseker kan wen, is om lojaliteit in ons eie land te skep. Beweeg naby aan die boorlinge van jou land en maak seker hulle weet hoe hard hierdie bedryf werk, en hoe uitstekend die produk is wat gelewer word. Daarom sal Aartappels SA in 2022 weer sy moue oprol en sorg dat elke verbruiker in ons land weet hoe gesond en goed ons produk is.

Ons hoop ook om ons inligtingstoere in 2022 voort te sit en voortdurend met produsente in kommunikasie te bly. Die gesprekke met produsente tydens 2021 se vergaderings was werklik insiggewend en die samesyn was kosbaar. Om te 'praat' op eposse en deur aanlyn-mediums is maklik en vinnig, maar niks kom by die waarde van 'n stewige handdruk en die geleentheid om iemand in die oë te kyk nie.

Intussen maak ons steeds mildelik gebruik van geleenthede

wat ons kry deur op televisie, radio en natuurlik in *CHIPS* en ander tydskrifte, met ons produsente te gesels. Ek glo dat ons dit in 2021 op 'n verantwoordelike wyse gedoen het en dat ons vanjaar op daardie trant sal voortbou. Enige produsent wat meen ons stem is nie hard genoeg nie, moet verseker sy of haar stem dik maak en ons laat weet.

Maak die reis ligter

As die afgelope twee jaar vir ons 'n aanduiding moet wees van die toekoms, dan het ons 'n bietjie huiswerk om te doen. Ek laat julle met 'n paar gedagtes en hoop dat dit inspirasie sal bied vir die talle nuwe uitdagings, hekkies en veldslae wat wag:

- Reis ligter – hoe minder aardse dinge jy het om saam met jou te dra, hoe makliker kan jy van roete verander en hoe vinniger kan jy by 'n nuwe rigting aanpas.
- Vryheid is 'n konsep wat vir ons elkeen uniek is. Vryheid is selfs binne 'n inperking te vinde. Vind jou passie en vryheid sal volg.
- Min dinge in die lewe gee soveel genot en tevredenheid as harde werk. 'n Ou Ierse gesegde lui: *You will never plough a field if you only turn it over in your mind.* Maak werk van jou planne.

Mag jy, jou gesin en familie, kollegas en besigheidskennisse 'n wonderlike en vrugbare 2022 beleef. Leef met oorgawe en moenie dat vrees vir die onbekende jou vryheid steel nie. **©**

A potato-perfect 2022

The year 2021 is behind us and ended on a good note, with a relatively normal December compared to 2020. This is certainly something to be thankful for. All endings precede new beginnings, and every new year brings with it new hope, revised challenges, and fresh resolutions.

I am sure everyone will share in my wish that 2022 will be better than the previous two years, and that things will be looking up for all of us.

Of course, it isn't enough to accept that a new year means a new beginning. A new year doesn't automatically present us with perfect conditions for new projects. It is, after all, just a number that has changed on the calendar and a clock that keeps ticking.

It is the act of beginning with something, that creates perfect conditions for it to grow and flourish. Don't wait for the calendar to change its digits.

PSA is raring to go

In the potato industry, it is certainly going to be a busy year and Potatoes SA (PSA) is getting ready to continue giving effect to its numerous cultivar trials,

marketing efforts, transformation projects and plans to improve communication with producers.

This first issue of *CHIPS* in 2022 is a loaded plate of fries – from the very first article on PSA's information days to the latest market information and updates on transformation successes.

The research and technical section in this issue sets the table for a number of challenges that potato producers will have to face this year, notably that of the devastating effects of the potato leaf miner and potato early die complex. In addition, there is the fine balance between too much rain and too little rain – both harmful in their own way and something that producers cannot control, other than sharpening their management tools.

It is in our power

Whatever the case, we cannot predict the future and beyond; we can only plan, manage to the best of our ability, and live our best life. It is in our power, for instance, to pre-empt and plan. It is in our power to overcome challenges and learn from them, rather than dwell on them and allow them to misguide our lives. It is in our power to stop saying "why me?" and replace it with "why not me?".

It is in our power to be alive and well today, rather than being fatalistic about tomorrow. May 2022 bring good fortune to those who work hard at making good fortune a reality.

Lynette Louw, editor
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US potato exports continue to improve

Exports of frozen potato products in the United States (US) increased by 30% for July to September 2021 compared to 2020. This was led by a 63% increase to Mexico, continuing exceptionally strong sales to this market throughout 2021. Exports to Canada and Central America were up 52% and 55%, respectively, with all countries in Central America posting growth.

Exports to Asian markets were up 18%, led by increases of 28% to China and 176% to the Philippines. Both markets were severely impacted by Covid-19, resulting in serious declines in 2020. Exports to Japan were up 14%, but due to problems with shipping and tight US supplies, restaurant chains in Japan are switching to products from Canada.

The only two markets to decline were Korea, down 14%, and Taiwan, down 3%. Both countries had limited impacts from Covid-19, with exports remaining strong in 2020. – *Potato Grower*

Water rights case heads to Concourt

The Department of Water and Sanitation (DWS) has filed an appeal to the Constitutional Court against a recent decision by the Supreme Court of Appeal (SCA), which held that water rights holders are entitled to transfer such rights. The ruling held that trading in such rights is not unlawful.

The SCA judgement followed three appeals in the Lötter, Wiid and South African Association of Water Users Associations cases relating to the correctness of a circular by the DWS in January 2018, in which the DWS determined that water use entitlements could not be transferred.

"The decision of the DWS to appeal to the Constitutional Court is not entirely unsurprising, given the fact that the SCA itself was divided on the matter," says Janse Rabie, head of Agri SA's Natural Resources Centre of Excellence. – *Press release, Agri SA*

PSA positive about process against dumping

The International Trade Administration Commission of South Africa (Itac) has initiated its own investigation into the alleged dumping of frozen potato chips from Belgium, the Netherlands and Germany onto the South African market. This is part of the process of renewing anti-dumping duties.

The commission failed to complete a sunset review application to retain anti-dumping duties for another five years in the prescribed time. This led to the dumping of cheap imported frozen chips in the local market.

Willie Jacobs, chief executive officer of Potatoes SA, says they are excited that Itac has been quick to take control of the situation. He says this is a positive indication as Itac is prioritising the renewal process. – *Ursula Human, CHIPS*

SABI elects youngest ever president

Michael Esmeraldo, Netafim South Africa's sales manager for the northern regions of the country, was elected as president of the South African Irrigation Institute (SABI). "We are incredibly proud of Michael and wish him well as president of SABI," says Etienne Erasmus, MD of Netafim South Africa and past president of SABI.

At 30, Michael is the youngest ever president of SABI. "I want to encourage younger players in the irrigation industry to be actively involved in organised industry activities. I also want to make young people who are still considering their career options aware of the many amazing opportunities in the irrigation industry.

"My message to the irrigation industry is to stay positive. We can and have a responsibility to make a massive impact in the agricultural industry and the country." – *Press release, Netafim SA*



Michael Esmeraldo.

CIP conserves potato genetics in cryobank

The International Potato Center (CIP) is conserving the future of potato genetic diversity in the world's largest potato cryobank and setting new standards to transform the way other priority clonal crops are safely stored. Like potato, many priority food security crops are clonal crops, meaning they cannot be conserved by seed.

One way is by conserving them as in vitro plantlets. The CIP maintains the world's most diverse in vitro collection in its gene bank. In addition to its in vitro collection, CIP has built the world's largest and most diverse potato cryobank collection where 3 600 accessions are held in safe long-term storage.

Cryopreservation uses liquid nitrogen to rapidly freeze tiny tissue samples taken from sterile in vitro plantlets. Once frozen, the samples can stay suspended in time until they are needed. – *Potato Grower*

New Zealand potato likely world's biggest

Colin and Donna Craig-Brown were weeding their garden near Hamilton, New Zealand, when they found something unusual beneath the soil's surface. Excavating the object, they were surprised by its size. When Colin tasted a piece, he realised it was a giant potato.

Their unusual discovery may be the largest potato on record, weighing a whopping 7.8 kg. The Guinness World Records entry for the heaviest potato was in 2011 for a potato weighing just under 5 kg. The couple has applied to Guinness to have theirs officially recognised.

Colin, an amateur brewer, hopes to give the potato a second life as a vodka. – *Smithsonian Magazine*



New Zealand potato industry faces challenges

The New Zealand potato industry saw supply chain disruptions, changing protocols for health and safety, and a polarisation of political and health ideologies during the pandemic. According to Potatoes New Zealand (PNZ), potato growers have been under immense pressure throughout 2021.

This was caused by ongoing pest challenges, weather events, the threat to the processing sector due to price-cut European imports (deemed not of enough material threat for government response), and massive disruption due to ongoing lockdowns and the spread of Covid-19.

However, data from 2020, presented in the PNZ's annual report, shows continued value growth despite pandemic setbacks in the export market, thanks to a strong domestic market. – *Potato News Today*

USDA grant for climate resistant potatoes

A recent United States Department of Agriculture (USDA) grant will provide \$500 000 for developing potato varieties that are more resistant to changing weather that could cause smaller potato crops, defects in the potatoes, or potato decay.

To research and develop these new varieties, traditional cross-pollination will be done in greenhouses at the University of Maine.

Dr Gregory Porter, a professor of agronomy at the university, expects some new climate change-toughened tubers could be ready for consumption within the next few years. – *Potato Business*

UK retailers commit to sustainable potatoes

The United Kingdom (UK) Robust Potato Pledge 2021 has been launched to help growers move away from potatoes that are susceptible to blight. Signees have agreed to favour organic spuds bred to be blight resistant, rather than selling more well-known varieties, helping the organic potato sector transition to 100% robust potato breeds over the next five years.

Waitrose, Riverford, Abel and Cole, Agrico, Sarpò, Skea Organics, RBOrganic, and Produce World have all signed up to the pledge at the Organic Grower's Alliance's Organic Matters Horticulture Conference. The pledge agreement builds on research from Organic-PLUS, a European Union project which aims to reduce the use of contentious inputs in organic and non-organic agriculture. – *Fresh Plaza*




Nigeria aims to be a top global producer

Nigerian minister of state for agriculture and rural development, Mustapha Baba Shehuri, said Nigeria will be among the world's top-three potato producing countries by 2025. He said this at the first International Potato Value-Chain and Root Crops Conference held in Jos, Plateau State capital.

The ministry had identified yield challenges in the industry, such as poor seed, diseases, inadequate storage facilities and mechanisation. The challenges, he said, should be addressed at both federal and state level.

Shehuri explained that some of the measures taken include the establishment of a tissue culture centre at the National Root Crop Research Institute's sub-station in Jos to solve seed problems. Others include a 20-ha irrigated land to support seed multiplication, and a 10-ton cold storage facility currently being built.

– *The Cable* 

ASA-inligtingsdae maak kommunikasiekanale oop

Deur Christal-Lize Muller, Koos du Pisanie en Hugo Lochner

Aartappels SA (ASA) het vroeër vanjaar 'n inligtingstoer in die land se aartappelproduksiestreke geloods. Ons het in die November/Desember-uitgawe van *CHIPS* oor die eerste been van dié toer in die Suid- en Oos-Kaap gerapporteer.

'n Rits vergaderings het daarna in die weste en noorde van die land gevolg waartydens produsente geleentheid gegun is om hul menings te gee oor die voortsetting van die statutêre heffing. Ander belangrike bedryfsake soos ingevoerde aartappelprodukte en produksie-aangeleenthede was ook op die agenda.

Wes-Vrystaatse produsente positief oor seisoen

Aartappelprodusente in die Wes-Vrystaat-streek is positief oor

die huidige seisoen, en glo verbruikers kan binnekort ook uitsien na die normalisering van die prys van aartappels. Van dié streek se aartappelprodusente het tydens ASA se inligtingsvergadering naby Welkom, aangedui dat hulle bankvas agter dié produsenteorganisasie staan. Hulle deel ook in ASA se visie.

ASA se hoof uitvoerende bestuurder, Willie Jacobs, het in sy aanbieding oor die strategiese rigting van ASA vir 2022, gesê dat ASA se funksies onder meer kultivarnavorsing wat produksie, volumes en gehalte dryf, insluit. Hierdie navorsing sluit siektetoestande in. Die doeltreffende deurgang van bedryfsinligting, wat 'n sterk komponent van generiese bemaking is, is ook deel van ASA se funksies.

Transformasie en sosiale ontwikkelingsprojekte is ook op dreef, het hy gesê. Daar word sterk gefokus

op bedryfsontwikkeling in 'n poging om die volhoubaarheid van die bedryf uit te brei.

Izak Cronjé, ASA se direkteur vir die Wes-Vrystaat-streek, boer in die Bultfontein-distrik, en het tydens die vergadering gesê geleentheid soos dié is belangrik, want aartappelprodusente word op grondvlak betrek en kry die geleentheid om insae te lewer ten opsigte van ASA se rol. Dit is ook die ideale platform vir produsente om haakplekke wat hulle op grondvlak ondervind, uit te lig.

Die statutêre heffing

Willie het gesê die vergaderings het ook ten doel om vas te stel of produsente tevrede is met die voorstel van die statutêre heffing en die aanwending daarvan. "In hierdie stadium kyk ons na die hersiening van die heffing vir 2023, en omdat ons 'n nuwe bedryfsplan moet opstel vir die aansoek by die Landbou-bemerkingsraad, is dit nodig om 'n duidelike instruksie vanaf ons produsente kry."

'n Statutêre heffing van 3.8% word voorgestel. Willie het gesê die voorgestelde verhoging is onder die inflasiekoers.

Storting van aartappelprodukte

Brandpunte in die bedryf is ook tydens die vergadering deur produsente uitgelig. Een daarvan was die invoer van aartappelprodukte vanaf die buiteland, en die feit dat Suid-Afrika sy invoerbeskerming teen bevrore aartappelskyfies vanaf België en Nederland verloor het. Dit volg nadat die Kommissie vir Internasionale Handelsadministrasie (Itac) sy eie hernuwingsproses van die teenstortingstariewe oorskry het. Willie het verduidelik dat



Betrokkenes by Aartappels SA (ASA) se Welkom-inligtingsdag. Van links is JF van der Merwe, ASA-voorsitter, Herman Haak, streeksbestuurder, Hein Oberholzer, hoof finansiële bestuurder, Willie Jacobs, hoof uitvoerende beampte, Kobus Crous, 'n produsent van Kroonstad, en Erhard en Izak Cronjé, produsente van Bultfontein. Izak is ook ASA se direkteur vir die Wes-Vrystaatstreek.

hierdie kwessie herhalend en soms korttermyn van aard is. "Ons het nou 'n siklus waarin ons beskerming verloor het, maar ons het die vorige vyf jaar wel beskerming geniet."

Cronjé het uit 'n produsente-oogpunt gesê hulle kan nie meeding met Europese produkte wat onder kosprys in Suid-Afrika gestort word nie. Plaaslike aartappelprodusente ontvang nie die finansiële steun wat hul eweknieë in Europa van daardie regerings ontvang nie. Die gesloer met regulatoriese prosesse deur die staat, beteken daar sal in die toekoms nóg vroeër aansoek gedoen moet word, het Cronjé bygevoeg.

Vooruitsigte vir die seisoen

Sowat 33 produsente in die gebiede rondom Kroonstad, Welkom, Theunissen, Bultfontein, Bloemhof en Christiana, het dié seisoen aartappels aangeplant en vooruitsigte lyk goed. Sowat 80% se oeste in dié streek is onder besproeiing, waarvan die grootste gedeelte in Bloemhof en Christiana is. Dit is ook in hierdie gebiede waar die meeste moerkwekers gevestig is, terwyl die res van die streek hoofsaaklik uit tafelprodusente, wat op die varsproduktemark gerig is, bestaan.

Die grootste droëlandgebied is die Oos-Vrystaat. Die streek lewer jaarliks sowat 7 300 ha se aartappels teenoor sowat 1 000 ha wat in die Kroonstad-omgewing gelewer word.

Hoewel die finale syfers eers later bekend sal wees, wil dit voorkom of dié seisoen se aartappelaanplantings in die Wes-Vrystaatstreek



Die Douglas-inligtingsdag was by GWK aangebied. Hier is Willie Jacobs, hoof uitvoerende beampte van ASA, Hein Oberholzer, hoof finansiële bestuurder, Wrench Cilliers, produsent, Herman Haak, streeksbestuurder, Roscoe Lawrence en Ruben Rens, produsente, André Coetzee, ASA-direkteur, en Johan Jacobs.

soortgelyk aan die vorige seisoen s'n sal wees, het Cronjé gesê. Volgens hom was daar wel 'n droëlandprodusent in die Kroonstad-gebied, wat weens nat toestande nie kon plant nie.

"Ek dink almal is redelik positief vir die jaar wat voorlê. Die produsenteprys is tans goed, daar is genoeg besproeiingswater in al die gebiede beskikbaar en wat droëlandaanplantings betref, is die ondergrondse vog ook voldoende vir 'n goeie aartappeloes in ons streek."

Volgens Cronjé was daar al aan die begin van Oktober met enkele aanplantings in die streek begin, met die meeste aanplantings in die Christiana-gebied wat na verwagting in November sou plaasvind, en daarna op 'n maand-tot-maand grondslag tot in Januarie geskied.

Verligting vir verbruikers

Cronjé meen verbruikers het die afgelope tyd behoorlik opgedok vir

aartappels. Dit word aan 'n klompie faktore toegeskryf. Hoë reënval in Januarie vanjaar het oeste in Christiana en selfs in Kroonstad benadeel. In ander streke van die land, soos in die Oos-Vrystaat, was daar produsente wat versuipskade gehad het.

Die koue winter het rypskade in Limpopo veroorsaak. Cronjé glo die verbruikersprys vir aartappels kan in die komende maande weer normaliseer wanneer die streke hul oeste van die landerye begin afhaal.

Wingsgewendheid altyd uitdagend

Volgens Cronjé is die bedryf in hierdie stadium gesond, hoewel wingsgewendheid 'n probleem in sommige streke is, weens die produsenteprys wat steeds laer as aartappelprodusente se insetkoste is. Produsente, veral in die Oos-Vrystaat, was in hul bemarkingstydperk onder druk weens die lae prys wat hulle vir hul produkte ontvang het. Die groot styging in insetkoste bly ook 'n groot uitdaging vir aartappelprodusente, met veral die prys van kunsmis en landbouchemikalieë, wat veral vanjaar 'n groot styging getoon het.

Moerkwekerbedryf in Noord-Kaap gesond

Die meeste moerkwekers in Suid-Afrika word in die Noord-Kaap en Noordwes aangetref omdat dié gebiede redelik siektevry is.



Van links is JF van der Merwe, ASA-voorsitter, Jan van Zyl, voorsitter van die Sandveld Aartappelkwekersorganisasie (Sako) asook ASA-direkteur, en Joos Engelbrecht, 'n produsent van Lambertsbaai.



Drie verteenwoordigers van ASA is, van links, Hein Oberholzer, hoof finansiële bestuurder, Terrence Brown, verteenwoordiger in die Sandveld-omgewing en Willie Jacobs, hoof uitvoerende beampte.

Sowat 40% van die aartappels wat in die gebiede gekweek word, gaan na die mark en 60% word vir moerkweking aangewend. Ruben Rens, produkbestuurder van GWK, is al vir etlike jare by aartappel-produksie in die Noord-Kaap betrokke en sê dit is 'n gesonde bedryf in die provinsie.

“Die moerkwekers is in die gelukkige posisie dat die pryse wat hulle gaan kry, vasstaan en op dié manier kan die kwekers goeie vooruitbeplanning doen,” het Rens tydens die ASA-inligtingsvergadering op Douglas gesê.



Jan van Zyl, voorsitter van die Sandveld Aartappelkwekers-organisasie (Sako) en ASA-direkteur.

Vroeër jare was daar 'n groot aantal moerkwekers in die Noord-Kaap, maar omdat die produksiekoste soveel gestyg het, het baie van die kleiner boere uitgeval en is die aantal kwekers minder. Aan die ander kant het die groter kwekers meer lande geplant en is die aantal moere wat jaarliks gekweek word, voldoende vir die land se behoefte.

Willie het egter gesê dat dit moeilik is om te bepaal wat die werklike behoefte is wat betref die aantal moere wat gekweek moet word. Dit is ASA se ideaal om genoeg markinligting bymekaar te kry om deur die jaar 'n konstante produk op die tafel te kry.

Vooruitsigte vir 'n goeie omset

Volgens Rens is daar in die vorige seisoen minder moere in die Noord-Kaap geplant en hy verwag dat dit die prys van aartappels sal beïnvloed. Willie het saamgestem dat die bedryf vir moerkwekers 'n veilige en winsgewende bedryf is. Hy verwag dat daar in die komende seisoen 'n goeie omset sal wees en dat die vraag en aanbod in die mark vir boere 'n goeie prys vir aartappels sal voorsien.

Willie het ook bygevoeg dat ASA hom daartoe beywer om meer produksie aan te moedig en kwekers te help om die beste waarde uit beperkte beskikbare grond te kry, terwyl hulle terselfdertyd 'n konstante

produk in die mark kan lewer. Volgens hom is die aartappelbedryf in die Noord-Kaap- en Noordwes-provinsies op 'n gesonde voet, maar hy sou graag wou sien dat groter hoeveelhede moere gekweek word in die jare wat voorlê.

Intussen doen ASA moeite om die produk onder verbruikers te bemark, ten einde die marksegment te vergroot en vir die kwekers 'n groter mark te skep. Hy het bygevoeg dat ASA na moontlike uitvoermarkte na buurlande kyk. Dit sal na verwagting egter 'n baie klein segment van die mark wees, aangesien dit moeilik is om aartappels uit te voer. Die moontlikheid word tans ondersoek.

Sandveld-aartappelboere takel uitdagings

ASA het sy inligtingstoer afgesluit vir die jaar met 'n inligtingsvergadering in die Sandveld op die plaas Malkoppan naby Lambertsbaai. Na afloop van die vergadering het die Sandveld Aartappelkwekers-organisasie (Sako) ook sy algemene jaarvergadering gehou. Sako is 'n organisasie wat namens die Sandveld se aartappelprodusente binne die ASA-konstitusie funksioneer.

Jan van Zyl, uittredende voorsitter van Sako, het gesê dié diensorganisasie gaan verder uitgebrei word om produsente by te staan met sake wat buite ASA se mandaat as bedryfsorganisasie is. Dit sluit in die vestiging van 'n kanaal om met verskillende staatsdepartemente te onderhandel oor sake soos die toekenning van waterlisensies.

Sako is ook besig met 'n proses om 'n raamwerk vir omgewingsbestuur (Environmental Management Framework) daar te stel. “Covid-19 rem die proses, maar sodra die geleentheid daar is, sal daar verder met die departemente van landbou en omgewingsake onderhandel word om die raamwerk in plek te kry.”

Jan het gesê dit het tyd geword dat produsente as 'n eenheid verantwoordelikheid vir hul toekoms neem. “Sako kan 'n groot rol hierin speel en baie meer vir sy lede beteken as hulle dit sou verkies, maar dan sal produsente 'n vrywillige

heffing moet betaal om die koste van die addisionele dienste te dek."

'n Goeie jaar vir aartappelpryse

Jan het gesê die afgelope jaar se aartappelpryse was bogemiddeld. Uitsonderlike hoë pryse het in die tweede helfte van die winter voorgekom as gevolg van 'n abnormale koue winter met lae opbrengste en omdat aartappelmoere wat nie in Mei plantgereed was nie, in Junie saam met Junie se beplande aanplantings geplant is.

"Dit het veroorsaak dat die Sandveld en Limpopo Mei en Junie se beplande oeste eers in November kon oes."

Die voordeel van die bogemiddelde pryse word egter ongedaan gemaak deur vinnige stygings in produksiekoste (kunsmiss, chemikalieë, elektrisiteit en brandstof).

Winste onder druk

Jan het ook gesê die koste om 1 ton aartappels in die Sandveld

te produseer, is heelwat hoër as in die res van Suid-Afrika. Met die verwagte verhoging in produksiekoste, wat hoër is as die streek se gemiddelde wins per hektaar oor twaalf maande, sal dit vorentoe nie meer moontlik wees om aartappels winsgewend in die winter in die Sandveld te produseer nie.

"Dit kos regdeur die jaar dieselfde om 'n hektaar aartappels te produseer, maar die tonnemaat in die winter is die helfte as in die somer."

Volgens Jan is poeierskurf, rolblaar en aartappelrot die vernamste siektes in die Sandveld. Die afgelope jaar was tot 80% van die Sandveld-oes met poeierskurf besmet. Dit was die ergste voorkoms nog van die siekte. "Aartappelrot het die vorige somer ongeveer 15% se oesverliese veroorsaak en die plaag is weer voor ons deur."

Kosbaarste hulpbron


Die beskikbaarheid en oordeelkundige aanwending van water bly

'n uitdaging in die Sandveld. Jan het 'n beroep op elke produsent gedoen om water met groot verantwoordelikheid te gebruik.

Hy het gesê boere het reeds verskeie maatreëls ingestel om water te bespaar. "Dit kos nou tussen R12 000 en R16 000 per hektaar aartappels om water te pomp. Boere kan dus nie anders as om water verantwoordelik te gebruik nie."

Hy het 'n beroep op produsente gedoen om op 'n ordelike en georganiseerde wyse alle uitdagings die hoof te bied en nie in onwettige praktyke betrokke raak nie.

"Markte moet nie 'n stortplek vir swak gehalte aartappels word nie. Ons as produsente moet altyd daarna streef om die beste gehalte aartappels bekostigbaar en volhoubaar te produseer. Die verbruiker moet weet ons dra sy belange op die hart," het Jan gesê. 



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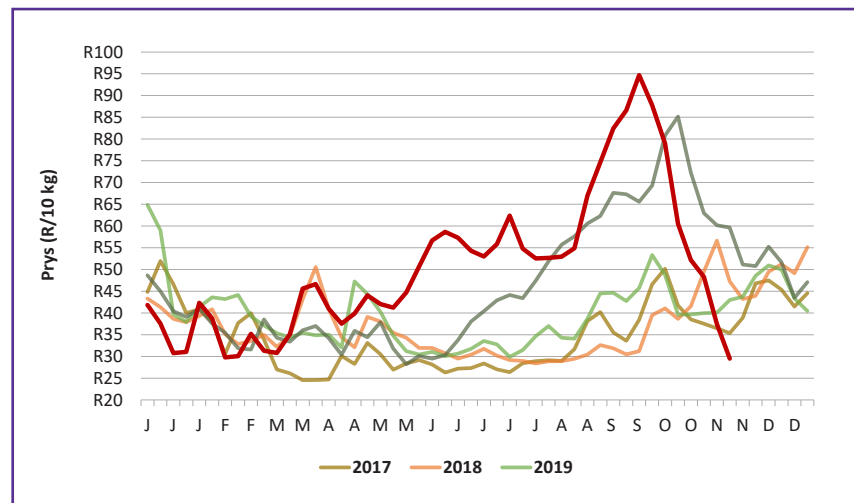
Markmonitor: Die eerste 46 weke van 2021 op varsproduktemarkte

Deur FP Coetzee, Aartappels SA

Gedurende einde September is sterk afwaartse druk ervaar en is daar teen middel November die laagste gemiddelde weekprys van R29.50 per 10 kg-sakkie op varsproduktemarkte (VPM'e) vir Suid-Afrika ervaar. *Figuur 1* dui die weeklikse gemiddelde prys op alle markte vir alle klasse aan. Die dalende effek op die gemiddelde prys is hoofsaaklik as gevolg van hoë volumes uit Limpopo, tans in sy hoof-oes, en gehalte, wat 'n beduidende rol speel.

Die styging in volumes gelewer kan toegeskryf word aan 'n toename in produksie en goeie opbrengste vir die hoof-oes uit Limpopo. Daar is ook ondervind dat boere in die warmer dele van Limpopo vinniger uitgehaal

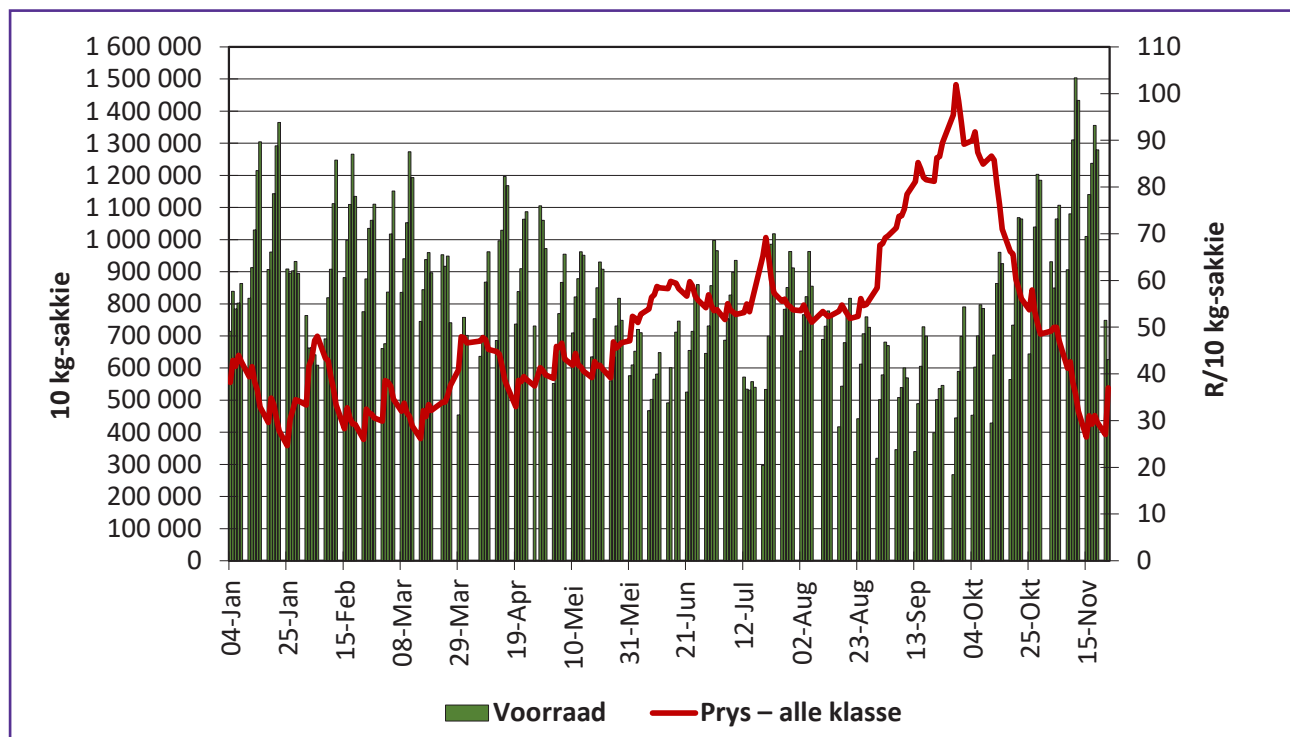
Figuur 1: Weeklikse gemiddelde prys – alle markte en alle klasse.



het om skade te beperk. Hoë temperature en reën veroorsaak probleme met hou vermoë, gehalte en opbrengsverliese.

Figuur 2 dui die daaglikse gemiddelde voorraadvlakke teenoor die daaglikse gemiddelde prys aan.

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



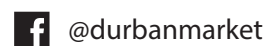
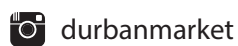


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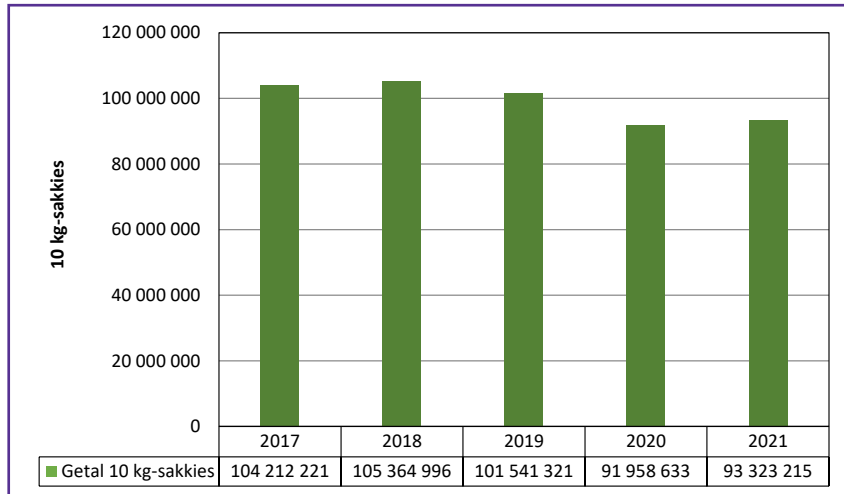


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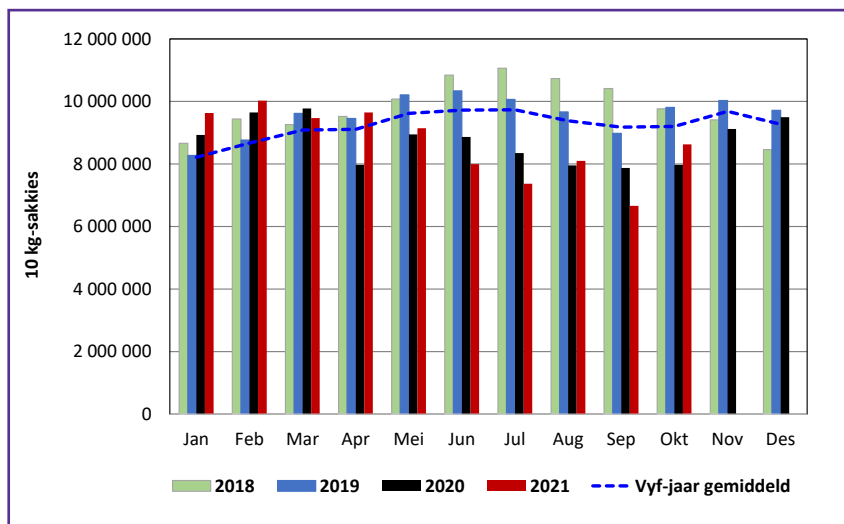
FRESHNESS FOR THE ZULU KINGDOM



Figuur 3: Kumulatiewe getal 10 kg-sakkies verkoop op markte tot week 46 van elke jaar.



Figuur 4: Maandelikse verkope op markte vanaf 2018 tot 2021 (alle verpakings omsgeskakel na 10 kg-sakkies).



Die verkope op VPM'e is ná die eerste 46 weke van die jaar, 7.4 miljoen 10 kg-sakkies minder as die vier-jaar gemiddeld. *Figuur 4* illustreer die maandelikse verkope op die VPM'e vanaf 2018. Hier kan gesien word dat daar 'n afwaartse tendens is in maandelikse verkope vanaf April 2021. September 2021-verkope is sover die laagste maandelikse verkope vir 2021.

Die vyf-jaar gemiddeld vir die maand van September se 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 is ook die laagste verkope vir die maand sedert dieselfde tydperk in 2010.

Hou in gedagte dat die beskikbare voorraadvlakke gedurende September 2021 gedaal het en die gemiddelde daaglikse beskikbare voorraad met 20% vanaf Augustus 2021 gedaal het, waar die gemiddelde daaglikse verkope vir September 2021 met slegs 15% gedaal het vanaf Augustus 2021. Verkope tussen September en Oktober 2021 het met 29% gestyg, terwyl verkope tussen Oktober 2020 en Oktober 2021 met 8% gestyg het, maar steeds onder die vyf-jaar gemiddeld beweeg het.

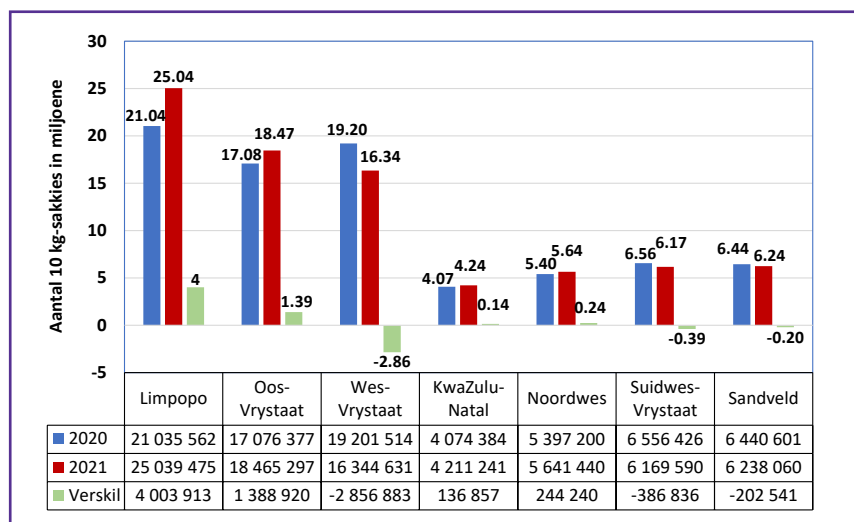
Tabel 1 toon die aantal sakkies wat deur die verskeie markte verkoop is gedurende die eerste 46 weke van 2021. Die vyf grootste markte gedurende hierdie tydperk

Voorraadvlakke skiet die hoogte in

Vanaf einde September tot die tweede week van November het voorraadvlakke met soveel as 238% gestyg. Voorraadvlakke het einde September 'n hoogtepunt van 1.5 miljoen sakkies op VPM'e gehaal, die hoogste tot dusver vir die 2021-kalenderjaar. Pryse het vir dieselfde tydperk negatief reageer en met 186% gedaal.

Gedurende die eerste 46 weke van 2021 het verkope op VPM'e met 1.47% gestyg vanaf 2020 se 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 46 weke van die jaar.

Figuur 5: Aantal 10 kg-sakkies verkoop (eerste 46 weke) per streek in 2021 vs. 2020.



Tabel 1: Verkope op VPM'e tot week 46 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-mark	37 851 292	40.6%	48.16	79%	15%	6%	19%
Tshwane-mark	17 688 501	19%	48.37	70%	22%	8%	17%
Springs-mark	4 829 708	5.2%	45.83	74%	16%	11%	24%
Durban-mark	8 351 583	8.9%	49.54	74%	21%	5%	22%
Kaapstad-mark	7 634 789	8.2%	51.59	67%	22%	10%	15%
Klerksdorp-mark	2 919 315	3.1%	45.51	63%	24%	12%	15%
Bloemfontein-mark	2 421 610	2.6%	50.4	72%	19%	10%	23%
Welkom-mark	1 927 881	2.1%	49.1	63%	24%	13%	16%
Pietermaritzburg-mark	2 284 157	2.4%	44.93	69%	21%	11%	25%
Oos-Londen-mark	2 701 068	2.9%	53.12	58%	24%	17%	16%
Vereeniging-mark	916 973	1%	44.93	67%	19%	14%	15%
Port Elizabeth-mark	2 133 605	2.3%	46.72	74%	17%	9%	15%
Witbank-mark	546 738	0.6%	51.48	72%	20%	8%	13%
Mpumalanga-mark	352 362	0.4%	48.73	68%	24%	8%	7%
Nelspruit-mark	299 730	0.3%	54.91	68%	21%	12%	8%
Kimberley-mark	129 816	0.1%	47.56	62%	23%	14%	14%
George-mark	250 742	0.3%	48.07	70%	17%	13%	16%
Kei-mark (Umtata)	83 406	0.1%	34.91	34%	30%	36%	5%
Totaal	93 323 276	100%	48.51	73%	18%	8%	19%

Tabel 2: Verkope per streek op VPM'e tot week 46 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
Limpopo	25 039 475	27%	60.82	87%	10%	3%	21%
Oos-Vrystaat	18 465 297	20%	42.48	67%	21%	12%	14%
Wes-Vrystaat	16 344 631	18%	49.1	69%	22%	9%	22%
KwaZulu-Natal	4 211 241	5%	41.27	75%	19%	6%	17%
Noordwes	5 641 440	6%	38.57	81%	12%	8%	17%
Suidwes-Vrystaat	6 169 590	7%	37.58	77%	14%	9%	23%
Sandveld	6 238 060	7%	52.08	76%	22%	2%	22%
Gauteng	2 447 538	3%	35.13	84%	13%	4%	26%
Noord-Kaap	4 150 810	4%	49.31	60%	22%	18%	18%
Mpumalanga	890 301	1%	34.63	71%	24%	5%	14%
Noordoos-Kaap	1 585 392	2%	41.29	68%	24%	9%	22%
Ceres	785 581	1%	44.53	85%	8%	7%	29%
Oos-Kaap	283 342	0,31%	56.08	78%	14%	8%	27%
Suidwes-Kaap	45 039	0,05%	41.11	83%	16%	1%	23%
Suid-Kaap	41 565	0,05%	45.57	50%	43%	6%	18%
Totaal	92 339 302	100%	48.73	63%	16%	7%	16%

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 7% gestyg na R48.51 per 10 kg-sakkie jaar-op-jaar vir die eerste 46 weke.

Johannesburg-mark bly die top-verkoper

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

Die drie grootste streke wat gedurende hierdie tydperk (eerste 46 weke) in die mark was, het 64% van die aartappels op markte verkoop (3% styging teenoor die vorige maand van September), aldus *Tabel 2*. Limpopo en die Oos-Kaap het van die hoogste gemiddelde pryse (alle klasse en groottes) vir hierdie tydperk gerealiseer.

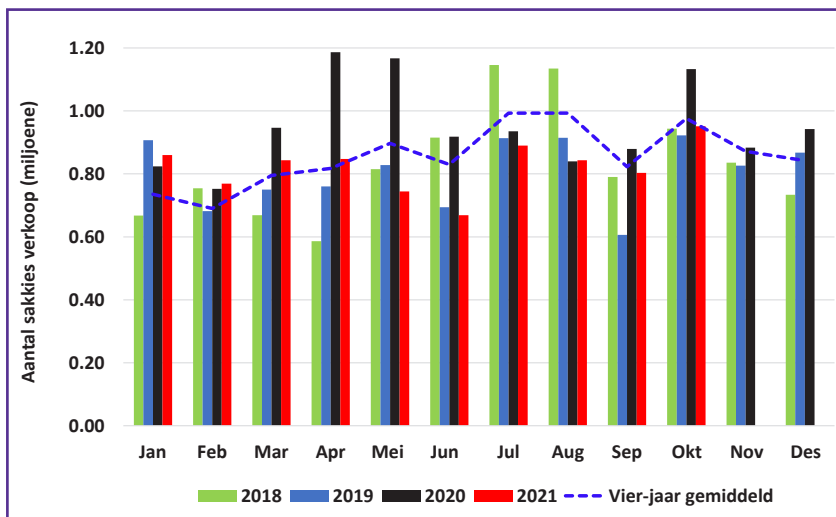
Tabel 2 illustreer ook die persentasiesamestelling van elke streek se Klas 1, 2, 3 en 4 wat gedurende hierdie tydperk voorsien is. Vyf van die produksiestreke, naamlik Limpopo, Noordwes, Gauteng, Ceres en die Suidwes-Kaap se persentasie Klas 1-verkope was almal bo 80%.

Indien ons die sewe grootste streke se verkope vir 2021 met 2020 vergelyk, is dit duidelik dat vier streke meer 10 kg-sakkies verkoop het, terwyl die ander minder as die vorige jaar gedurende die eerste 46 weke (*Figuur 5*) verkoop het. Limpopo het vanjaar tot dusver 4 miljoen 10 kg-sakkies meer verkoop as dieselfde tyd verlede jaar, en die Oos-Vrystaat het ongeveer 1.3 miljoen 10 kg-sakkies meer verkoop, aldus *Figuur 5*.

Figuur 6 dui die maandelikse verkope van 7 kg-sakkies aan sedert 2018. Tydens 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 afgeneem, maar in Julie 2021 het dit verhoog. Vanaf Julie 2021 het die aantal 7 kg-sakkies verkoop steeds afgeneem, maar gedurende September 2021 is daar nader aan die vier-jaar gemiddeld beweeg. In Oktober 2021 het die gemiddelde verkope van 7 kg-sakkies nóg nader aan die vier-jaar gemiddelde syfer beweeg. 🕒

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



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Vergelyking van verskillende besproeiingstelsels vir optimale aartappelproduksie in Limpopo: Deel 2

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

Deel 1 van hierdie artikel is in *CHIPS* se November/Desember 2021-uitgawe gepubliseer en het gefokus op die agtergrond van die besproeiingstelselvergeliking, asook sommige van die resultate van die vergelyking van verskillende besproeiingstelsels vir optimale aartappelproduksie in Limpopo. In hierdie tweede en laaste aflewering, kyk ons verder na die resultate en gevolgtrekkings.

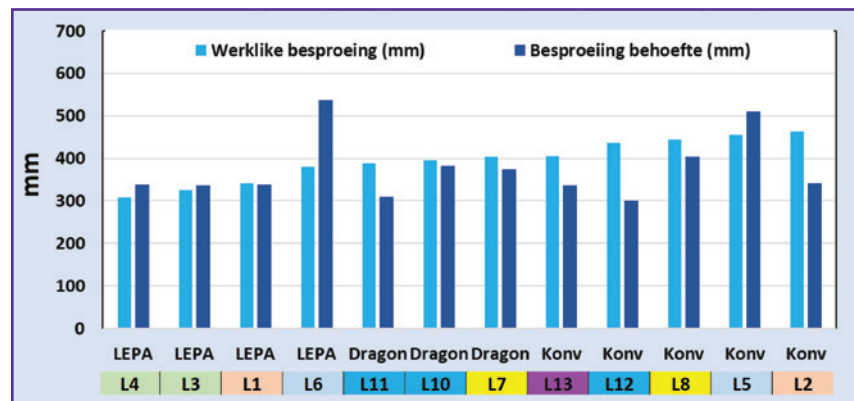
Waterbestuur en opbrengsresultate

Die werklike hoeveelheid besproeiing toegedien en berekende besproeiingsbehoefte vir elke land word in *Tabel 1* en *Figuur 1* aangetoon. Die totale besproeiingshoeveelhede oor die seisoen het tussen 308 en 464 mm gewissel, met 'n gemiddeld van 396 mm.

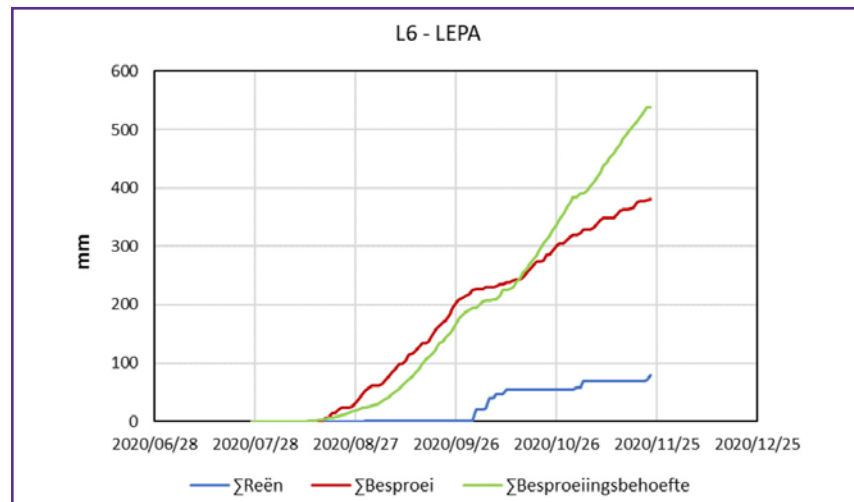
Die gemiddelde berekende besproeiingsbehoefte vir die twaalf lande was 376 mm. By vier van die lande (L3 tot L6) is minder as 100% van die berekende behoefte toegedien (dus onderbesproeiing), wat moontlik tot waterstremming en laer opbrengste kon lei. By sewe van die twaalf lande is meer as 100% van die behoefte besproei.

Werklike besproeiingshoeveelhede van tot 20% bo die berekende besproeiingsbehoefte is aanvaarbaar, aangesien voorsiening vir stelselverliese (toedieningsdoeltreffendheid, of TD) gemaak kan word. Groter afwykings (>120%) dui gewoonlik op oorbesproeiing en 'n

Figuur 1: Die werklike totale besproeiing toegedien in vergelyking met die gesimuleerde behoefte (mm) vir twaalf lande in Limpopo. Lande met dieselfde kleurkode was op dieselfde plaas.



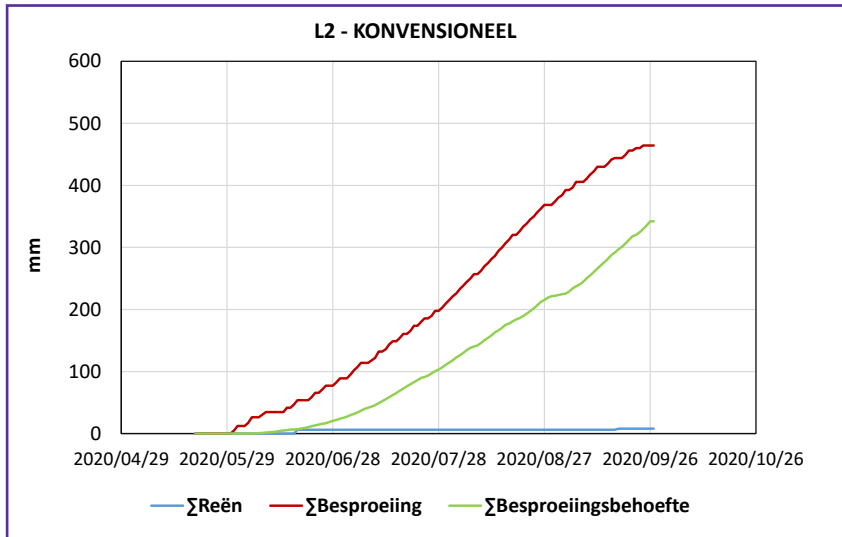
Figuur 2: Die kumulatiewe besproeiing wat by LEPA land L6 toegedien is, was teen die einde van die seisoen heelwat laer as die besproeiingsbehoefte.



geleentheid om op water te bespaar. In drie gevalle (L2, L11 en L12) is meer as 120% van die behoefte besproei en kan aanvaar word dat die lande tot 'n mate oorbesproei is.

Die konvensionele stelsels het oor die algemeen die meeste besproeiing ontvang en die LEPA-stelsels (*Low Energy Precision Application*) die minste (*Figuur 1*).

Figuur 3: Die kumulatiewe besproeiing wat by land L2 toegedien is, het die besproeiingsbehoefte aansienlik oorskry.



In die meeste gevalle is lande egter binne die aanvaarbare grense (100 tot 120% van netto behoefte) besproei en het daar dus waarskynlik min vermorsing van water voorgekom.

Sorg moet gedra word dat werklike besproeiing nie die behoefte ver oorskry nie (>120%), want dan word insette soos water, elektrisiteit en voedingstowwe onnodig vermors. Daar is dus 'n fyn balans tussen onder- of oorbesproeiing, wat moeilik bestuur kan word sonder die gebruik van skedulerings-hulpmiddels.

Figuur 2 illustreer as voorbeeld die kumulatiewe besproeiing vir land L6, tesame met die berekende kumulatiewe behoefte. In hierdie geval was die werklike besproeiingshoeveelhede heelwat

minder as die behoefte, veral laat in die groeiseisoen. By land L1 (Figuur 3), is meer as die behoefte egter deurgaans besproei (>120%) en kan aangeneem word dat oorbesproeiing plaasgevind het.

Opbrengs, potensiaal en behoefte

Tabel 1 en Figuur 4 toon die werklike opbrengste wat vir die verskillende lande behaal is, in vergelyking met die berekende opbrengspotensiaal van elk. Die werklike opbrengste behaal was oor die algemeen aanvaarbaar en het tussen 40 en 71 t/ha gewissel, met 'n gemiddeld van 55 t/ha. Die gemiddelde opbrengspotensiaal vir die groeiseisoen was 71.1 t/ha.

Die gesimuleerde opbrengspotensiaal van 'n land gee 'n

aanduiding van die opbrengs wat haalbaar is vir die spesifieke klimaatstoestand en plantdatum, met die aanname

dat geen beperking aan insette (bv. water, kunsmis en saad) en geen verliese weens peste en plaë voorkom nie. Die werklike opbrengs moet minstens 66% van die potensiaal bereik om aanvaarbaar te wees, en nege uit die twaalf lande het aan hierdie minimum norm voldoen.

Die drie lande wat nie 66% van hul berekende opbrengspotensiaal behaal het nie, was almal LE-PA-stelsels. Hierdie spesifieke lande is 91 tot 101% van hul potensieël netto waterbehoefte besproei, wat daarop dui dat effense onderbesproeiing en waterstremming waarskynlik voorgekom het. Die vyf konvensionele spijlpuntstelsels het die hoogste opbrengste gelewer, en die gaping tussen werklike en potensieël opbrengste was ook die kleinste by hierdie stelsels.

Die waterverbruiksdoeltreffendhede (WVD) van die twaalf lande het tussen 112 en 166 kg/ha/mm gewissel, met 'n gemiddeld van 130 kg/ha/mm (Tabel 1, Figuur 5). WVD-waardes bo 100 kg/ha/mm is aanvaarbaar vir wintergroeiperodes, terwyl waardes bo 120 kg/ha/mm goed is. Al twaalf die lande het dus goeie WVD-waardes gelewer.

Hoër WVD-waardes kan gewoonlik verwag word as daar optimaal of effens onderbesproei word. Daar was nie 'n duidelike tendens dat die alternatiewe stelsels (LEPA of Dragon-Line) beter WVD-waardes as

Tabel 1: Opsomming van waterverbruik, opbrengste en waterverbruiksdoeltreffendhede (WVD) vir die verskillende gevallestudies in Limpopo.

Somer 2019/20-aanplanting	L1	L2	L3	L4	L5	L6	L7	L8	L10	L11	L12	L13	Gemiddeld	Norm
Werklike besproeiing (mm)	341	464	325	308	456	381	403	445	396	388	437	405	396	–
Besproeiingsbehoefte (mm)	338	342	336	338	510	537	374	403	382	310	301	337	376	–
% van behoefte	101	136	97	91	89	71	108	110	104	125	145	120	108	<120
Werklike opbrengs (t/ha)	48	71	40	40	59	54	46	57	56	55	64	69	54.9	–
Opbrengspotensiaal (t/ha)	74.6	75.6	65.3	63.6	68.9	68.6	69.2	75.9	78.8	68.0	69.9	74.3	71.1	–
% van potensiaal	64	94	61	63	86	79	66	75	71	81	92	93	77	>66
Werklike WVD (kg/ha/mm)	136	150	121	130	112	119	114	128	122	139	127	166	130	>100
Potensieël WVD (kg/ha/mm)	214	216	191	188	119	113	184	188	178	214	190	213	184	>120

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konvensionele stelsels gelewer het nie. Potensiële WVD-waardes het van 113 tot 216 kg/mm/ha gewissel (gemiddeld 184 kg/mm/ha). Die koel klimaat gedurende die winter in Limpopo dra grootliks by tot die hoë potensiële WVD-waardes wat hier haalbaar is in vergelyking met die meeste somerproduksiestreke.

Energieverbruik

Die detail van stelselinligting en kosteberekening vir die twaalf stelsels wat gemonitor is, word in *Tabel 2* getoon. Die totale energiekoste per hektaar van die stelsels het van R627 tot R2 663/ha gewissel (*Figuur 6*).

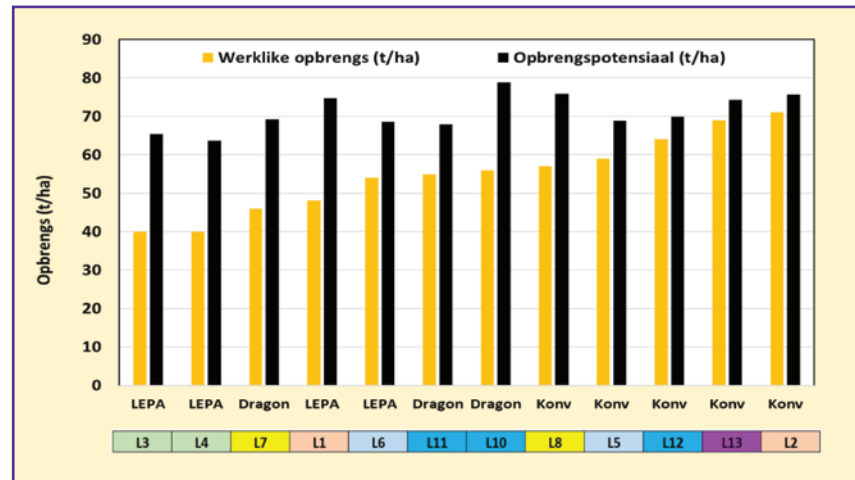
Die konvensionele stelsel L12 het die hoogste energiekoste per hektaar gehad. Die spilpuntstelsel is baie ver vanaf die pompstasie geleë, wat 'n groot wrywingsverlieskomponent in die stelseldruk veroorsaak het, maar die pomp was steeds te groot vir die stelsel en het teen 'n halfgeslote kraan gewerk om die korrekte druk aan die stelsel te voorsien.

Dit veroorsaak hoë energieverbruik en vermorsing as gevolg van die wrywingsverlies deur die kraan. Die korrekte pomp- en motorkombinasie moet vir die toepassing gekies word, of die stelsel kan met 'n veranderlike spoedaandrywingstelsel (*variable speed drive*, of VSD) toegerus word om energie te bespaar.

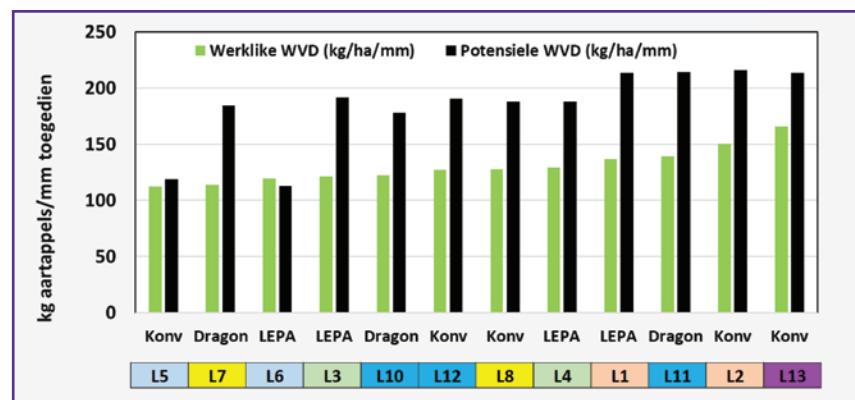
Stelsels L3, L11 en L13 het die laagste energieverbruik per hektaar gehad vir die volgende redes:

- L3 is 'n LEPA-stelsel wat met 'n VSD toegerus is. Die drukbehoefte van die LEPA-stelsel is laer as konvensionele stelsels, en die motor met sy aandrywing is korrek gekies.
- L13 is 'n konvensionele stelsel met 'n hoë pompdoeltreffendheid weens die korrekte pomp- en motorkeuse vir die spesifieke toepassing.
- By L11 kan die koste hoër wees, aangesien daar 'n tweede pomp teenwoordig is wat volgens die produsent soms vir aanvullende druk en/of vloei gebruik word. Hierdie addisionele koste is nie in berekening gebring nie.

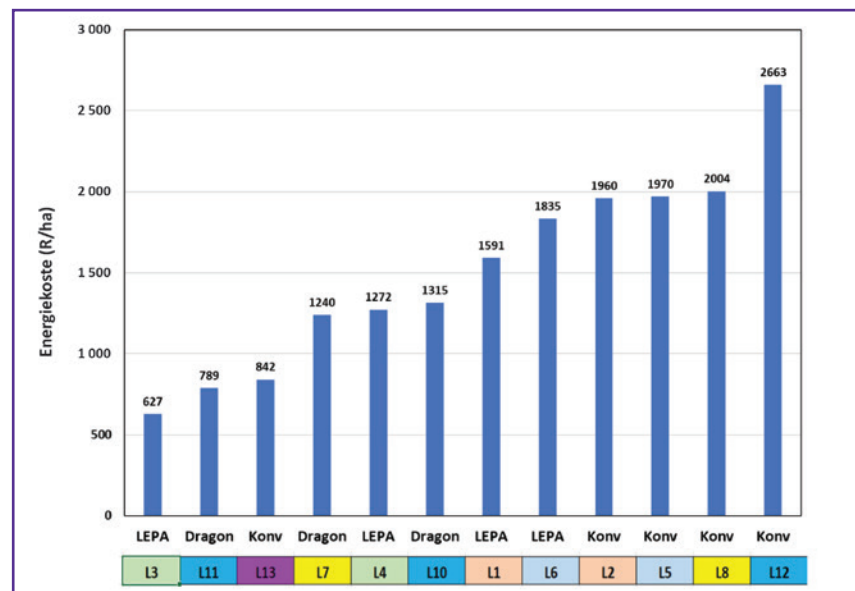
Figuur 4: Werklike opbrengs behaal in vergelyking met opbrengspotensiaal (t/ha) vir twaalf lande in Limpopo. Lande met dieselfde kleurkode was op dieselfde plaas.



Figuur 5: Werklike WVD in vergelyking met die potensiële WVD (kg/ha/mm) vir twaalf lande in Limpopo. Lande met dieselfde kleurkode was op dieselfde plaas.



Figuur 6: Energiekostes (R/ha) vir die twaalf stelsels wat in Limpopo gemonitor is. Lande met dieselfde kleurkode was op dieselfde plaas.



Tabel 2: Inligting rakende die energiekoste vir die twaalf stelsels in Limpopo.

Land #	L1	L2	L3	L4	L5	L6	L7	L8	L10	L11	L12	L13
Tipe stelsel	LEPA	Konv	LEPA 1	LEPA 2	Konv	LEPA	Dragon-L	Konv	Dragon-L	Dragon-L	Konv	Konv
Spilpuntgrootte (ha)	13.15	13.24	7.18	6.75	10.5	8	7.98	14.68	29.38	20.14	15.37	10
Opbrengs (t/ha)	48	71	40	40	59	54	46	57	56	55	64	69
Besproeiing (mm)	341	464	325	308	456	381	403	445	396	388	437	405
Ure besproei	880	736	848	856	837	897	1 798	796	1 175	1 301	711	736
Pomp-spesifikasies	KSB 65-50-200	KSB 100-400 @ 1 450 rpm	KSB 100-80- 200	DAB KDN 65-200	KSB 65-200	KSB 50-200	KSB 50-200	KSB 50-250	KSB 65-200	KSB 65-160	KSB 65-250	KSB 50-160
Stuwerdiameter (mm)	Vol	Vol	194	–	–	–	–	259	–	195	Vol	–
Druk by pomp (kPa)	500	–	–	215	–	–	415	–	–	–	–	–
Motor (kW)	22 kw	45 kW	22 kW	15 kW	15 kw	11 kW	15.4 kw	15 kw	18.5 kW	11 kw	50 kw	11 kw
Vloeiempo by spil (m ³ /h)	50.5	83.5	27.5	24.5	57.2	34	17.9	79	99	41	94.5	55
Druk gemeet by spil (kPa)	197	236	108	130	232	123	115	148	165	170	142	156
Pyplynlengte (m)	2 401	1 039	459	1 973	1 388	891	591	1 014	2553	1 735	3 315	658
Pyplynwrywing (m)	28.812	12.468	5.508	19.73	16.656	10.692	7.092	12.168	30.636	17.35	33.15	6.58
Statiese hoogte-verskil (m)	12	1	3	-8	-1	-4	2	-6	-1	5	9	4
Druk benodig van pomp (m)	60.512	37.068	19.308	24.73	38.856	18.992	20.592	20.968	46.136	39.35	56.35	26.18
Druk wat pomp lewer (m)	68	57	–	21.5	58.5	57	41.5	62	53.5	38.8	88	33.5
Vloeiempo by pomp (m ³ /h)	50.5	83.5	27.5	24.5	57.2	34	17.9	79	99	41	94.5	55
Elektriese stroom (ampère)	–	–	5	10	–	–	–	–	–	–	–	–
Arbeidsfaktor (cos Φ)	–	–	0.99	0.99	–	–	–	–	–	–	–	–
Doeltreffendheid (pomp en motor [%])	61	57	–	–	60	50	57	56	68	55	61	68
Drywingsvereiste (kW)	15.34	22.75	3.43	6.86	15.20	10.56	3.55	23.83	21.22	7.88	37.15	7.38
Energiebehoefte (kWh)	1 3504.7	16 750.6	2 907	5 869.2	12 715.1	9 474.2	6 385.9	18 983.8	24 942.8	10 255.4	26 413.2	5 435.5
Energietarief (Landrate [R/kWh])	1.5494	1.5494	1.5494	1.5494	1.5494	1.5494	1.5494	1.5494	1.5494	1.5494	1.5494	1.5494
Energiekoste (R/seisoen)	20 924	25 953	4 504	9 094	19 701	14 679	9 894	29 413	38 646	15 890	40 925	8 422
R/ha	1 591	1 960	627	1 347	1 876	1 835	1 240	2 004	1 315	789	2 663	842
R/mm	61	56	14	30	43	39	25	66	98	41	94	21
R/ton	33	28	16	34	32	34	27	35	23	14	42	12

Die energiekoste is verder uitgedruk in terme van die R/mm besproeiing toegedien, wat van R14 tot R98/mm gewissel het (Figuur 7).

By hierdie ontleding het stelsel L10 die hoogste koste gehad. Dit was 'n Dragon-Line-stelsel met 'n hoë aantal besproeiingsure oor die seisoen. Dit is die gevolg van die lae stelselkapasiteit wat by die meeste Dragon-Line-stelsels gevind is. Soos reeds genoem, het L12 swak presteer weens die

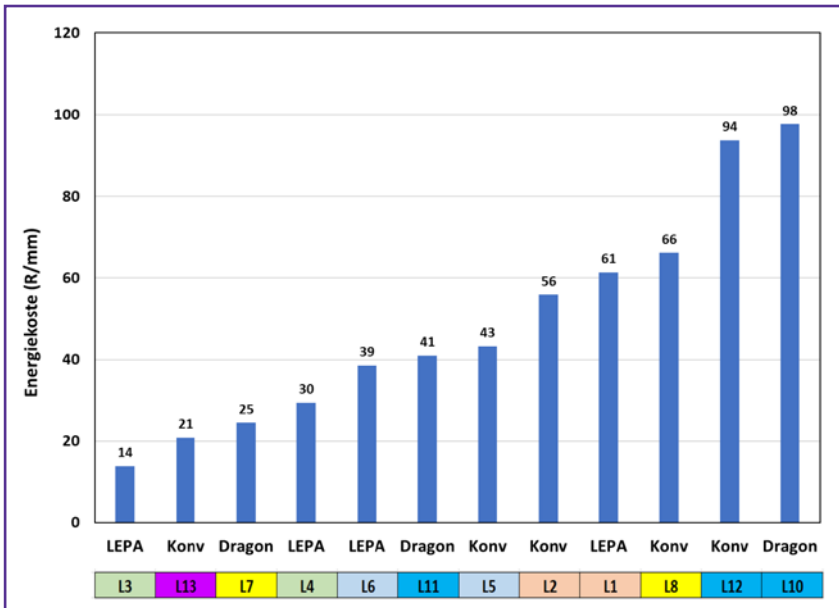
afstand tussen die stelsel en die pomp, sowel as die gebrek aan optimering van die pomp- en motorkombinasie.

LEPA-stelsels het nie in al die gevalle 'n lae energiekoste gehad nie, ten spyte van minder besproeiing (bv. L1). Dit kan toegeskryf word aan die feit dat die pomp- en motorkombinasie dikwels nie by die laer drukbehoefte van die stelsel aangepas is nie. Stelsels L3 en L13 het weereens die beste

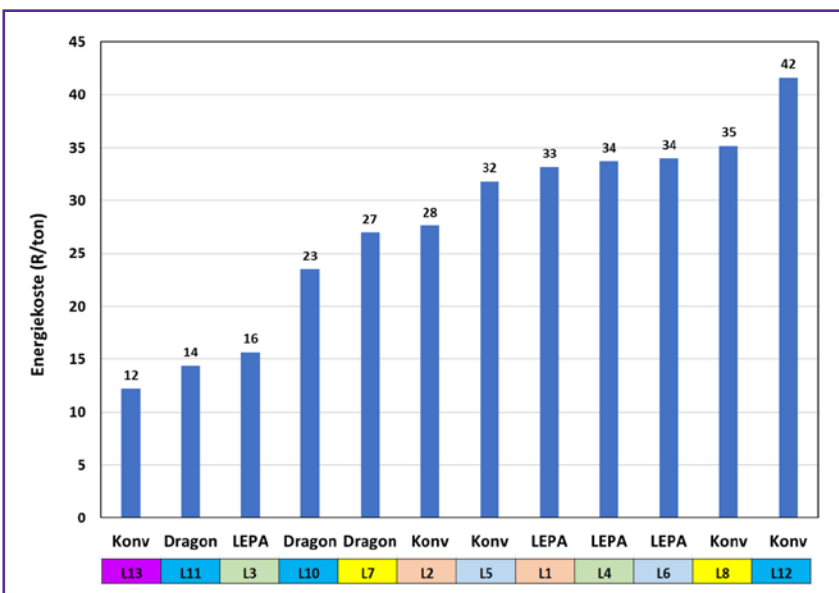
presteer, met die laagste koste per mm besproei.

By die derde analise is die energiekoste per eenheid-opbrengs oorweeg (Figuur 8). Stelsel L12 het weereens die swakste presteer, terwyl L13, met sy korrekte pomp- en motorkeuse vir toepassing op die konvensionele spilpunt, die laagste koste-per-ton-opbrengs getoon het. Dit bevestig weer die argument dat energiebesparings met alternatiewe stelsels slegs moontlik is wanneer motors en pompe ook aangepas word vir die laer energiebehoefte van die nuwe stelsel.

Figuur 7: Energiekoste (R/mm) vir stelsels gemonitor in Limpopo. Lande met dieselfde kleurkode was op dieselfde plaas.



Figuur 8: Energiekoste (R/ton) vir stelsels gemonitor in Limpopo. Lande met dieselfde kleurkode was op dieselfde plaas.



Opsomming en gevolgtrekkings

Die agt spilpunte wat geëvalueer is, het uit 'n verskeidenheid stelsels bestaan, waarvan die LEPA- en Dragon-Line-stelsels as eksperimenteel in die Limpopo-gebied beskryf kan word. Die konvensionele stelsels wat geëvalueer is, het oor die algemeen die beste resultate gelewer, maar die oorsake van die swakker prestasie van die LEPA- en Dragon-Line-stelsels is grootliks te wyte aan ontwerpsoorwegings wat nie behoorlik in ag geneem is nie. Dit kan soos volg opgesom word:

LEPA-stelsels:

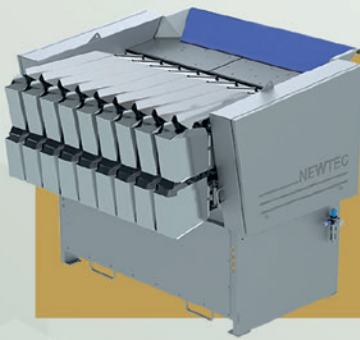
- **Spuitkeuse en benattingspatrone:** Indien daar nie in sirkels geplant word en water deur een toegewyde spuit per plantry toegedien word nie, moet die besproeiingsontwerper, soos met 'n konvensionele spilpunt, spuite met verspreiders kies waarvan die benattingspatrone oorvleuel, en waarvan die toedieningstempo nie die infiltrasievermoë van die grond oorskry nie. Dit sal verseker dat water teen die gewenste eenvormigheid en toedieningstempo aan die gewas gelewer kan word.
- **Evaluasiemetodes:** Indien spuitpatrone nie oorvleuel nie, kan die konvensionele meetmetode met die uitpak van reënmeters nie gebruik word om stelseluniformiteit te evalueer nie.



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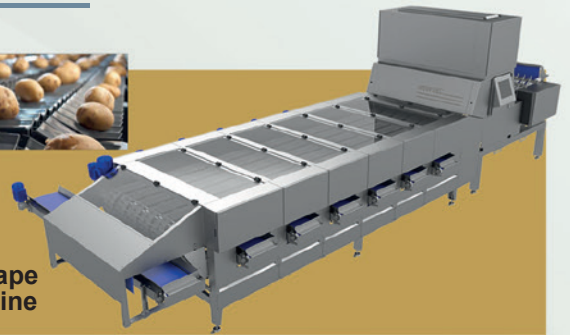
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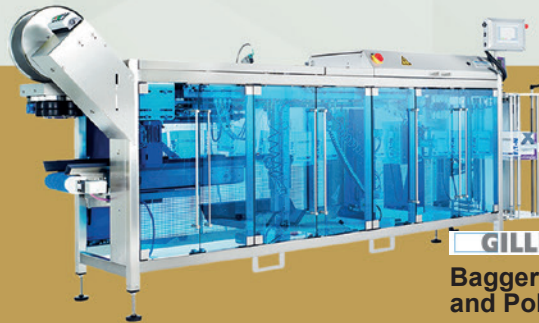
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Alternatiewe metodes, soos die gebruik van lang opvangbakke, moet ondersoek word.

- **Drukregulering:** Hoewel die LEPA-spilpunte tipies by laer drukke werk as konvensionele spilpunte, is drukregulering net so belangrik en moet alle spuite of aftappunte na spuite, met drukreguleerders toegerus word. Daar moet ook seker gemaak word dat genoeg druk beskikbaar is tot by die laaste spuit of aftap vir die hoogste geografiese posisie van die spilpunt op die land.
- LEPA-stelsels wat by laer drukke funksioneer, toon potensiaal vir laer verdampingsverliese en energiebehoefes, maar dan moet stelsels behoorlik ontwerp word sodat eenvoudige benutting sonder afloop verseker word. Verder moet pomp- en motorkombinasies aangepas word om optimaal by die laer drukbehoefes te funksioneer.

Dragon-Line-stelsels:

- **Stelselkapasiteit:** Dragon-Line-stelsels moet 'n kapasiteit hê (mm/24h) van minstens dieselfde as 'n konvensionele spilpunt, met inagneming van die ure wat die stelsel sal gebruik. Weens die kleiner benatbare area onder 'n drupstelsel in vergelyking met oorhoofse spuite, kan hoë toedieningstempo's onder die druppers voorkom wat tot afloop kan lei, en moet die grond se infiltrasievermoë in ag geneem word. Dit kan die grootte van die stelsels wat geïmplementeer kan word, beperk.
- **Filtrasie:** Weens die veel kleiner uitlaat-opening van druppers in vergelyking met spilpunttuite, moet meer aandag aan die filtrering van water vir Dragon-Line-stelsels gegee word om verstoppings te voorkom.
- **Arbeidsbehoefte:** Die afgelope seisoen is waargeneem dat Dragon-Line-stelsels hoë arbeidsbehoefes het om te verseker dat drupperlyne in hul

korrekte sleepposisies bly (ten opsigte van die plantrye), asook om drupperlyne te spoel vir blokkasies.

Die hoeveelheid besproeiing wat werklik op al twaalf lande toegevoeg is, was gemiddeld 396 mm, in vergelyking met 'n berekende behoefte van 376 mm. Die vier LEPA-stelsels het die minste besproeiing ontvang, gevolg deur die Dragon-Line-stelsels. Die vyf konvensionele spilpuntstelsels het die meeste besproeiingswater ontvang.

By drie van die konvensionele stelsels het 'n mate van oorbesproeiing voorgekom, terwyl onderbesproeiing, wat waarskynlik tot waterstremming gelei het, by van die LEPA-stelsels waargeneem is.

Die werklike opbrengste behaal was oor die algemeen goed (gemiddeld 54.2 t/ha), hoewel enkele LEPA-lande se opbrengste laag (± 40 t/ha) was. Producente het 'n gemiddeld van 77% van die opbrengspotensiaal vir die spesifieke plantdatums en klimaatstoestand behaal, wat heelwat beter as die minimum aanvaarde norm van 66% is.

Konvensionele stelsels het oor die algemeen die hoogste opbrengste gelewer, terwyl LEPA-stelsels die laagste opbrengste gehad het. Hoewel daar dus oor die algemeen minder by die LEPA-lande besproei is, was die opbrengste ook laer, wat die moontlikheid bevestig dat waterstremming wel by laasgenoemde stelsels voorgekom het. Sorg moet dus geneem word dat die ontwerp kapasiteite van LEPA-stelsels voldoen aan die piek waterbehoefes van plante.

Goeie WVD is vir al die lande aangeteken (gemiddeld 130 kg/ha/mm) en min verskille het tussen stelseltipes voorgekom. Die winterklimaat van Limpopo beperk opbrengspotensiaal as gevolg van min sonlig, maar die koel toestande is bevorderlik vir hoër WVD in vergelyking met die meeste somerproduksiegebiede in die land.

Metings kon nie uitgevoer word om die werklike energiekostes van stelsels te evalueer nie, en die beperkte beskikbare inligting wat as deel van die evaluasies ingesamel is, het die interpretasie bemoeilik. Met die beperkte inligting beskikbaar, was dit egter duidelik dat om energiekoste te bespaar, daar geen alternatief vir goeie basiese ontwerp van watervoorsieningstelsels is nie.

Die regte keuse van pompe en motors bly belangrik vir enige tipe spilpuntstelsel om te verseker dat energie nie vermors word nie. Wanneer LEPA, Dragon-Line of ander tipe stelsels gebruik word, het dit 'n effek op die stelsel se vloeï en druk, en moet pompe en motors ook aangepas word, anders sal die voordeel van die belegging in die hidrouliese infrastruktuur beperk wees.

VSD's op die voorheen-geïnstalleerde pompstelsels kan as oorgangsmatreeël gebruik word, maar die korrekte oplossing is om die regte pomp- en motorkombinasie vir die opstelling te installeer. Goeie holistiese plaasbeplanning het ook 'n effek op energiekoste, en lang afstande vanaf die pompstasie na die besproeiingstelsel moet sover moontlik vermy word.

Laastens kan die omskakeling na nie-konvensionele stelsels tot langer besproeiingsure lei indien stelselkapasiteite nie korrek bereken word nie. Dit kan tot hoër energiekoste lei.

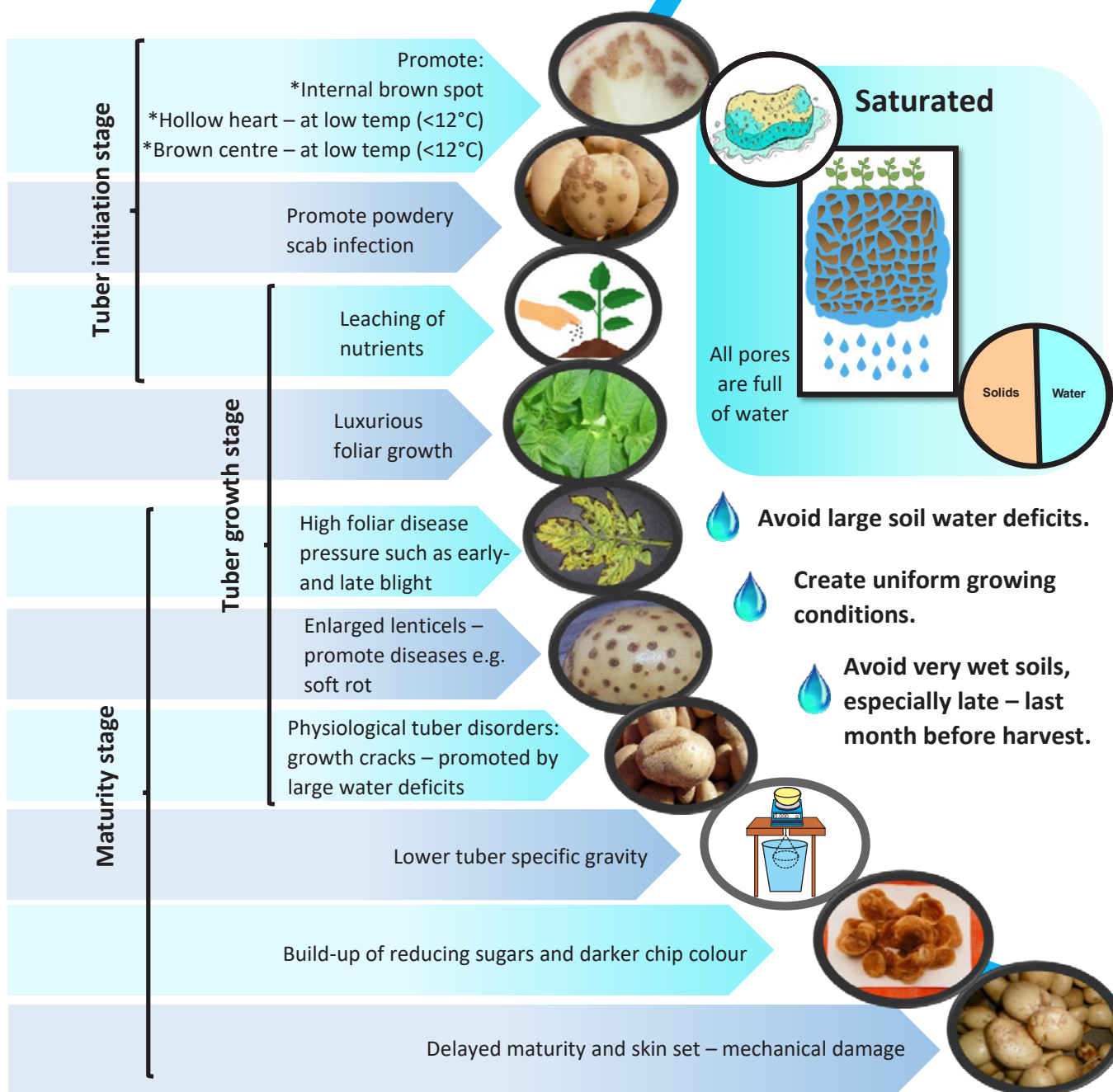
Hierdie studie word gedurende die 2021-groeiseisoen in Limpopo herhaal. ©

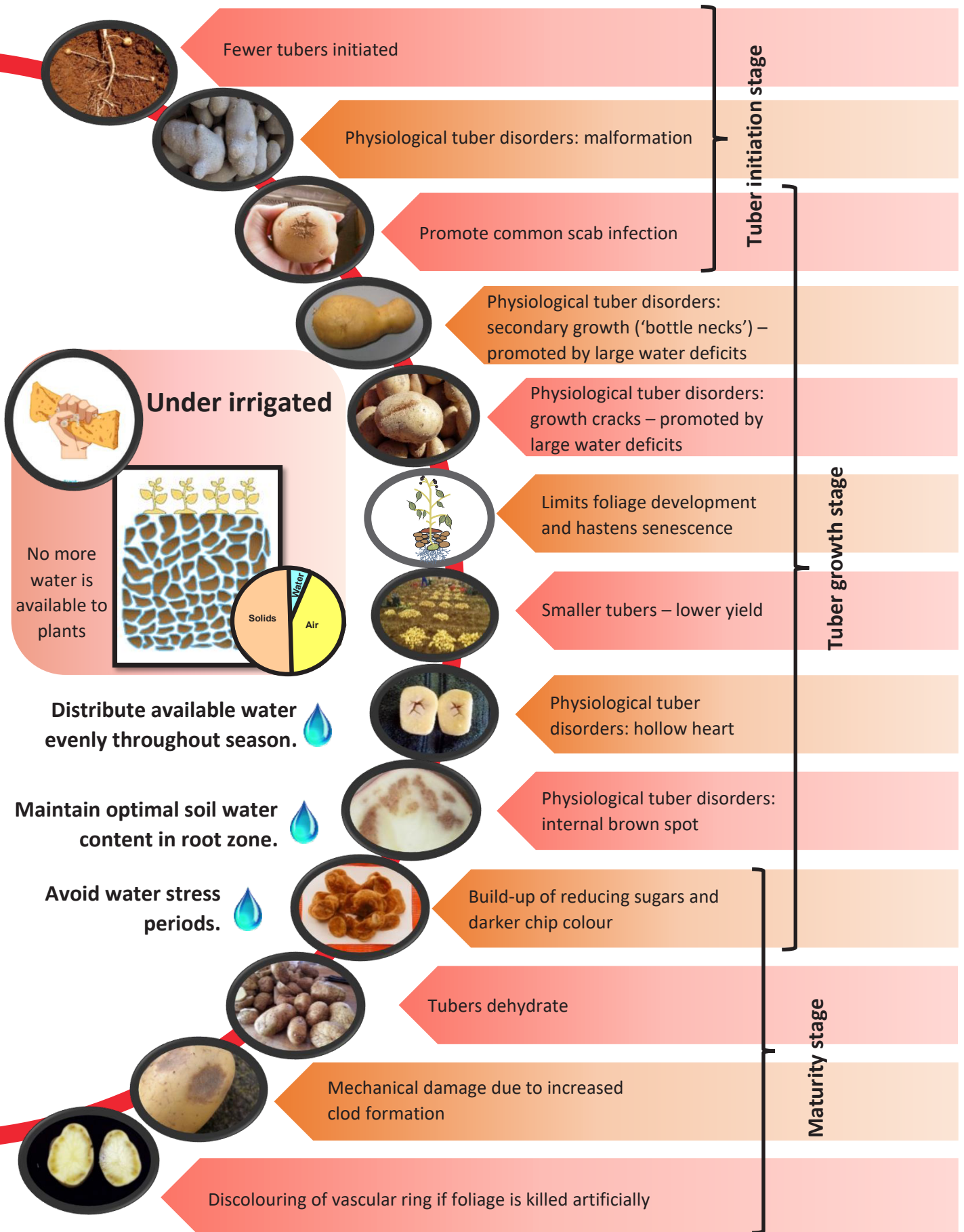
Met dank aan die volgende bydraers: Producente in Limpopo wat as medewerkers aan die studie deelgeneem het, Aartappels SA vir befondsing, Pieter van Zyl vir projekteiding, en FP Coetzee vir hulp met data-insameling. Vir verdere inligting, kontak prof Martin Steyn by martin.steyn@up.ac.za.

Irrigation: A balancing act

By Chantel du Raan, Potatoes SA, and Prof Martin Steyn, University of Pretoria

Potatoes are shallow-rooted plants with a network of finely branched roots and a fairly large leaf area. This makes the crop very sensitive to even small deficiencies of water, which can negatively affect growth rate, quality and yields. Therefore, it is of utmost importance to understand the requirements during each stage and how an excess or deficiency in moisture can affect your crop. This illustration gives a brief summary of the negative impacts of **over-irrigation (blue)** and **under-irrigation (red)** on yield and quality of the potato crop.





Designed by Chantel du Raan

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Kernmateriaal van oop kommersiële kultivars

Deur dr Fienie Niederwieser, Aartappels Suid-Afrika (Foto's: P Brink, Yara)

Tot so onlangs as 20 jaar gelede, was die oorgrote meerderheid (sowat 70%) van aartappels wat op die varsprouktemarkte verkoop is, afkomstig van kultivars waarvoor planttelersregte nie geregistreer was nie – die sogenaamde 'oop' kultivars.

Drie kultivars, naamlik BP1, Vanderplank en Up-to-date, het vir jare die mark oorheers. Enige persoon kon die oop kultivars vermeerder sonder dat die oorspronklike telers enige inkomste daaruit verdien het. Dit was nie 'n probleem nie, omdat daardie kultivars oor die algemeen deur staatsondersteunde teelprogramme ontwikkel is.

Verandering is onafwendbaar

Soos wat in die meeste ander lande gebeur het, is die mark later oorheers deur kultivars waarvoor planttelersregte uitgeneem is en wat deur kommersiële teelprogramme ontwikkel is – die sogenaamde beskermde kultivars. Daar was dus maatskappye wat gesorg het dat siektevrye en tipe-egte kernmateriaal van die beskermde kultivars in stand gehou word.

Die Landbounavorsingsraad (LNR) het verantwoordelikheid geneem om in vitro-kernmateriaal van die ou oop kultivars in stand te hou en aan kommersiële laboratoriums beskikbaar te stel met die oog op massavermeerdering deur weefselkultuur.

Befondsing deur die navorsingsprogram is oor baie jare deur Aartappels Suid-Afrika (ASA) bewillig om instandhouding te ondersteun. Producente wat verkies om van die ou oop kultivars te produseer, het dus toegang tot tipe-egte en siektevrye kernmateriaal gehad.

Aanpassing by veranderinge

Aangesien die aanplant van die ou oop kultivars oor jare drasties afgeneem het, het die Navorsingskomitee in 2017 voorgestel dat die befondsing teen Junie 2022 gestaak word. Die besluit is vervolgens deur die Nasionale Raad goedgekeur en die inligting is tydens streekmoerekomitee- en gebiedsbestuursvergaderings bekendgemaak met die doel om producente aan te moedig om seker te maak hul moerverskaffers het toegang tot kernmateriaal van die oop kultivars.

Die jongste stand van sake

Die Independent Certification Council for Seed Potatoes (ICCSP) oftewel Onafhanklike Sertifiseringsraad vir Aartappels (OSRA) het, voordat die befondsing aan die LNR gestaak is, besluit om nié die goedkeuring vir die LNR-*In Vitro* Genebank as vestigings-, instandhoudings- en vermeerderingsfasiliteit, te hernu nie.

Dit beteken dat die kernmateriaal wat tans in die LNR-*In Vitro* Genebank is, nie goedgekeur is vir vermeerdering vir



sertifiseringsdoeleindes nie. Dit geld vir die ou oop kultivars waarvoor befondsing beskikbaar gestel is (Herta, VanderPlank, BP1, Up-to-date) asook ander kultivars in die LNR se genebank, insluitend kultivars wat deur die LNR geteel is (soos Mnandi, Sandvelder, Caren, Hoëvelder, en dies meer). 📍

Indien 'n kweker belangstel om kernmateriaal van oop kultivars te bekom, kan die LNR-VIMP by Roodeplaat gekontak word. Die beskikbaarstelling van die kultivars sal as 'n privaat sake-transaksie tussen die LNR en die betrokke persoon beskou word. Kontak dr Sonja Venter by 082 566 3872 of epos SVenter@arc.agric.za indien u hierin belangstel.

Laboratoriums wat deur OSRA goedgekeur is as vestigingslaboratoriums, kan gekontak word vir kernmateriaal van die oop kommersiële kultivars vir doeleindes van vermeerdering vir sertifisering.

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Minimise the risk of resistance of *Alternaria* blights to fungicides in a potato programme

By the CropLife Fungicide Resistance Action Committee (FRAC)

The use of fungicides is an essential agronomic practice in ensuring healthy crops, protecting yields and improving quality. Potatoes require a very intensive disease spray programme targeting diseases such as early blight caused by *Alternaria solani*, and late blight caused by *Phytophthora infestans*. Fortunately, several different types of fungicides are registered against these diseases. For the control of early blight, the commonly used groups of fungicides listed in Table 1, are available as approved by the *Fertilizers, Farm Feeds, Seeds and Remedies Act, 1947 (Act 36 of 1947)*. For a complete list of registered products, refer to www.agri-intel.com.

Pathogens adapt to survive

Like most other organisms, pathogens need to adapt to survive and can



Potatoes require a very intensive disease spray programme targeting diseases such as early blight caused by *Alternaria solani*. (Photographs: Bayer)

mutate to outlast certain fungicides. In other words, they become less sensitive or resistant to these fungicides. The ability of resistance

development differs from one pathogen to another, and the following factors tend to increase the risk for a shift in sensitivity towards specific fungicides:

- **Life cycle of the pathogen:** Pathogens with short life cycles have more frequent exposure to the fungicide and may have a faster shift in sensitivity.
- **Abundance of sporulation:** The more spores are produced, the greater the chance of mutation and selection.
- **Ability of spores to disseminate:** Wind-blown spores are easily spread.
- **Ability to infect at all crop stages:** This necessitates repeated fungicide treatments.

Taking the above into consideration, it is easy to understand why *Alternaria* species are considered medium to

Table 1: Commonly used groups of fungicides for control of early blight.

FRAC group	Common group name	FRAC group	Examples of active ingredients registered for use on potato
Quinone outside inhibitors (QoI)	Strobilurin	11	<ul style="list-style-type: none"> • Azoxystrobin • Famoxadone • Fenamidone • Fluoxastrobin • Flufenoxystrobin • Kresoxim-methyl • Pyraoxystrobin • Picoxystrobin • Pyraclostrobin • Trifloxystrobin
Succinate dehydrogenase inhibitors (SDHI)	SDHI	7	<ul style="list-style-type: none"> • Boscalid • Fluopyram • Pydiflumetofen
DeMethylation Inhibitors (DMI)	Triazole	3	<ul style="list-style-type: none"> • Difenconazole • Flutriafol • Tebuconazole • Triticonazole



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Table 2: Example of how FRAC categorises fungal pathogens on potatoes according to their probability of developing resistance.

Pathogen risk score		
Low (1)	Medium (2)	High (3)
<i>Rhizoctonia solani</i> (black scurf and stem canker)	<i>Alternaria solani</i> (early blight)	<i>Alternaria alternata</i> (brown spot)
<i>Fusarium</i> spp. (<i>Fusarium</i> dry rot and wilt)	<i>Phytophthora infestans</i> (late blight)	<i>Botrytis cinerea</i> (grey mould)
<i>Sclerotinia sclerotiorum</i> (white mould)		

Table 3: FRAC’s fungicide risk score (low, medium and high) of specific fungicide groups based on the risk of developing resistance or sensitivity.

Fungicide risk score		
Low (0.5)	Medium (2)	High (3)
Multi-site fungicides such as dithiocarbamate (Mancozeb and Propineb) (FRAC Group M)	Azoles (FRAC Group 3)	Phenylamide (FRAC Group 4)
	Cymoxanil (FRAC Group 27)	SDHI fungicides (FRAC Group 7)
	Fenhexamid (FRAC Group 17)	QOI (Strobilurin) (FRAC Group 11) *

high-risk pathogens for a change in sensitivity against fungicides. Table 2 provides some examples in this regard. The complete table is available on the FRAC website, <https://www.frac.info>.

To assist producers in making educated decisions, FRAC has classified fungicides based on the risk of loss of sensitivity or resistance to a group of fungicides by pathogens (Table 3 and 4). FRAC provides guidelines to mitigate this, which is updated annually on the FRAC webpage.

To avoid a shift in fungicide sensitivity, avoid the following practices:

- Continuous treatments with a fungicide with the same mode of action in a programme.
- Not following the recommended rate on the label.
- Timing of fungicide applications is important, so avoid treating too late when the pathogen population is high.

Guidelines to manage resistance

Fungicides are grouped according to their mode of action. Based on

the mode of action, the FRAC committee has developed guidelines for each group (FRAC group) to manage resistance build-up within diseases. In the case of potatoes, the QoI and SDHI groups have the highest potential for developing resistance.

To avoid resistance build-up, the following practices should be introduced when compiling a spray programme:

- Do not exceed a third of the total number of applications with a product from a specific FRAC group. For example, if you apply twelve fungicide applications, only four may belong to the same FRAC group.
- Do not apply more than four products from the QoI or SDHI containing products per season.
- When mixtures (co-formulations or tank mixes) are used, do not apply more than half of the programme with the same mixture. A maximum of six fungicide mixtures may be applied – whichever is the lesser.
- Where resistance has been confirmed, these fungicides must be applied only in mixture with partners with a different mode of action contributing to the effective control of the target pathogens.
- When QoI or SDHI fungicides are used in a solo programme, a strict alternation with fungicides from a different FRAC groups are recommended.


Table 4: An illustration of the combined risk factors when pathogens with different risk scores are treated with fungicides with different risk scores.

Fungicide classes	Fungicide risk score	Risk factor*		
		Low (1)	Medium (2)	High (3)
Phenylamide SDHI fungicides QoI (strobilurin)	High (3)	3	6	9
Azoles carboxanilides, Cymoxanil, Fenhexamid	Medium (2)	2	4	6
Multi-site fungicides such as dithiocarbamates (Mancozeb and Propineb)	Low (0.5)	0.5	1	1.5
Pathogen risk score		1	2	3
Examples of pathogens		<i>Rhizoctonia solani</i> . <i>Fusarium</i> spp. <i>Sclerotinia sclerotiorum</i>	<i>Alternaria solani</i> <i>Phytophthora infestans</i>	<i>Alternaria alternata</i> <i>Botrytis cinerea</i>

*A low score reflects a low risk for developing resistance, while a high score reflects a high risk factor for developing resistance. Refer to www.frac.info for the full table.

Examples of mixtures (FRAC group codes):

- Azoxystrobin (11) + Chlorothalonil (3)
- Azoxystrobin (11) + Tebuconazole (3)
- Boscalid (7) + Pyraclostrobin (11)
- Pyrimethanil (9) + Trifloxystrobin (11)
- Tebuconazole (3)+ Trifloxystrobin (11)

It can happen that fungicides for other indications may also belong to a risk group. For example, the nematicide Fluopyram, belongs to FRAC Group 7 (SDHI), and the late blight products Fenamidone and Famoxadone belong to FRAC Group 11 (QoI). 

See exactly how resistance can develop by visiting www.frac.info/knowledge-database/videos. For more information, contact CropLife SA at 087 980 5163.



The effect of fungicide application on potato cultivars at Cedara

By James Arathoon, Archana Nunkumar and Taslos Magubane, KwaZulu-Natal Department of Agriculture and Rural Development

The Cedara Research Station (S29° 32' 15 33, E30° 16' 09 19) is situated in the moist mist-belt zone of the KwaZulu-Natal Midlands (900 to 1 400 m above sea level), which receives an average annual rainfall of between 800 to 1 140 mm.

The warm and wet summer conditions are ideal for the appearance of early blight (*Alternaria solani* Sorauer) and late blight (*Phytophthora infestans* [Mont.] de Bary) in potatoes (*Solanum tuberosum* L.). The severity of these diseases, especially late blight, can cause crop losses of up to 100% if fungicides are not applied regularly. As a result, seed and table producers will incur large financial losses, while household growers, who do not always have the resources to purchase fungicides, could become food insecure if their crops fail. A solution for household growers is to grow cultivars with good tolerance to late blight.

Testing tolerance to blight

A trial was conducted in the 2020/2021 growing season at

the Cedara Research Station to identify cultivars with tolerance to late blight. Seventeen cultivars were evaluated under irrigation using a split-plot design with three replicates. The cultivar was the main plot, which was split for fungicide application and no fungicide application.

The trial was planted on 16 September 2020 at a seeding rate of 37 037 tubers/ha. Fertiliser

was applied according to Fertrec recommendations for a 70 t/ha yield based on the results of a soil analysis. In total, 120 kg/ha P, 120 kg/ha K and 240 kg/ha N were applied.

Each split-plot consisted of four rows of 5 m in length, and rows were spaced 0.9 m apart. Six fungicides (systemic and contact) were applied weekly in a rotation commencing immediately after

Figure 1: The percentage disease incidence of late blight on seven sprayed cultivars over time.

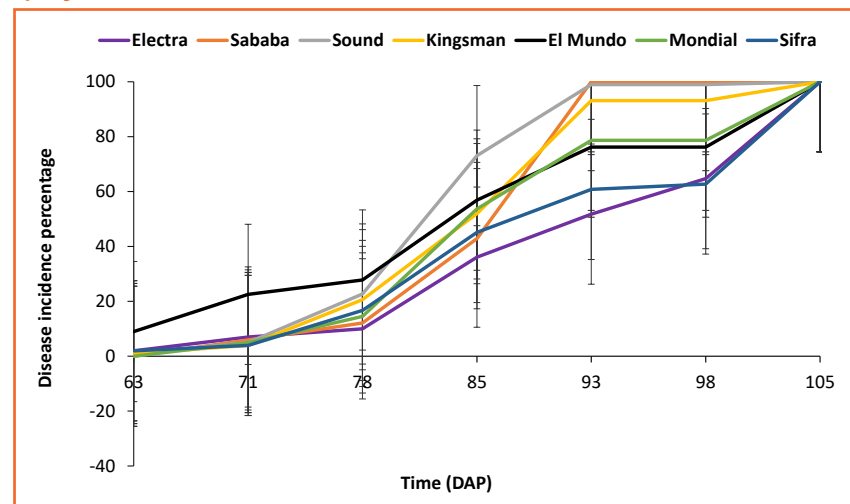


Table 1: Monthly rainfall and mean monthly maximum and minimum temperatures at Cedara during the 2020/2021 growing season.

Month	Rainfall		Maximum temperature		Minimum temperature	
	2020/ 2021	Long-term mean	2020/ 2021	Long-term mean	2020/ 2021	Long-term mean
	(mm)		(°C)			
September	13	50	22.7	22.3	8.4	8.8
October	63	84	24.3	22.5	11.6	10.7
November	188	112	24.7	23.4	13.3	12.5
December	111	127	27.5	24.8	16.3	14
January	123	125	27.6	25.2	16.7	15
February	85	127	26.6	25.3	16.2	15
Total/mean	583	625	25.6	23.9	13.8	12.7

Table 2: Seed quality rating, number of days after planting (DAP) to 75% emergence, plant density, haulms/plant and growth vigour of the 17 cultivars.

Cultivar	Plant readiness*	75% emergence (DAP)	Plant density (number/ha)	Haulms/plant (number)	Growth vigour
Allison	3	19	36 674 ab#	5.700 de	5
Alverstone Russet	3	20	37 037 a	4.950 eg	5
El Mundo	2	22	36 855 ab	9.717 a	5
Electra	2	26	36 855 ab	8.525 b	5
Kingsman	3.5	19	37 037 a	3.667 ij	5
Labadia	2	22	37 037 a	4.567 fh	5
Lanorma	2.5	27	34 495 c	3.500 ik	4
Mondeo	2	22	35 948 ab	6.633 c	5
Mondial	3	21	36 129 ab	5.117 df	5
Morgana	3	19	37 037 a	5.783 d	3
Panamera	2.5	24	36 674 ab	2.300 l	5
Sababa	3	21	36 129 ab	4.500 fh	5
Sifra	3	21	37 037 a	3.000 jl	4
Sound	3.5	20	36 492 ab	4.917 eg	5
Taisiya	3	22	35 585 bc	4.200 gi	3
Tyson	3	21	37 037 a	2.800 kl	5
Valor	2	24	36 855 ab	3.817 hi	5
Mean	2.7	22	36 524	4.923	4.6

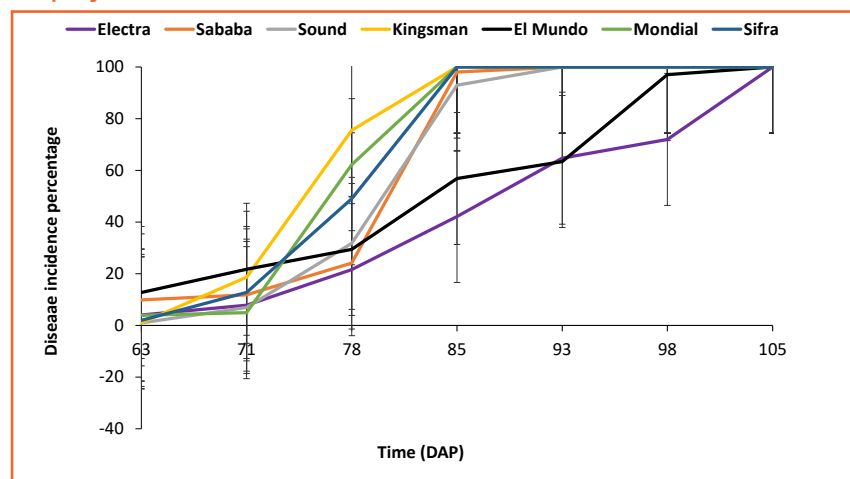
*Plant readiness of seed tubers: 1 = fresh, 2 = slightly fresh, 3 = slightly ready, 4 = slightly old, 5 = old.

ridging on 26 October 2020 until 26 January 2021. Insecticides were applied weekly to the whole trial.

Data was collected from the two middle rows. Twelve ratings of blight disease incidence and severity were conducted between 18 November and 3 February 2021. Harvesting occurred from 5 January to 3 February, approximately two to three weeks after dieback of each plot.

Below-average rainfall was received during the growing season (Table 1). From planting to harvest of the last cultivars, 497.3 mm of rain was received, and 201 mm of irrigation was applied. The mean

Figure 2: The percentage disease incidence of late blight on seven unsprayed cultivars over time.



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Dinamies: Verbeter die dinamiese biochemiese prosesse in die plant vir optimale plantselontwikkeling.



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monthly maximum and minimum temperatures were warmer than average.

Assessing the cultivar quality

Variations in seed quality of the cultivars at planting did not appear to influence the time to 75% emergence, which ranged between 19 and 27 days (Table 2). However, at planting some of the Lanorma tubers were slightly withered. This may account for Lanorma taking the longest time to reach 75% emergence, and for the significantly lower plant population.

The plant density of Taisiya was significantly lower than that of some cultivars. The mean number of haulms per plant ranged from 2.30 for Panamera, to 9.72 for El Mundo (Table 2), but was not significantly correlated to plant population or yield.

Growth vigour is an indication of how well the crop grew and canopied. Morgana, Taisiya, Lanorma and Sifra did not reach 100% canopy cover (Table 2).

The abundant rainfall in November, together with the warm conditions, resulted in a quicker development and spread of late blight compared to the two previous growing seasons. Early blight occurred at the same time as late blight, whereas in the two previous growing seasons, early blight only infected the crop towards the end of December. Early and late blight had infected all the plots by 71 DAP.

Figures 1 and 2 show the effect of the fungicide treatments on the incidence of late blight for the five highest-yielding cultivars and the two industry standard cultivars, Mondial and Sifra, which are known to be susceptible and very susceptible to late blight, respectively.

With fungicides applied, Sababa reached 100% disease incidence at 93 DAP, whereas, without fungicides, Sababa, Kingsman, Mondial and Sifra had 100% disease incidence at 85 DAP. At 105 DAP, all cultivars had 100% disease incidence. The cultivars Electra and El Mundo had lower

Figure 3: The percentage disease incidence of early blight on seven sprayed cultivars over time.

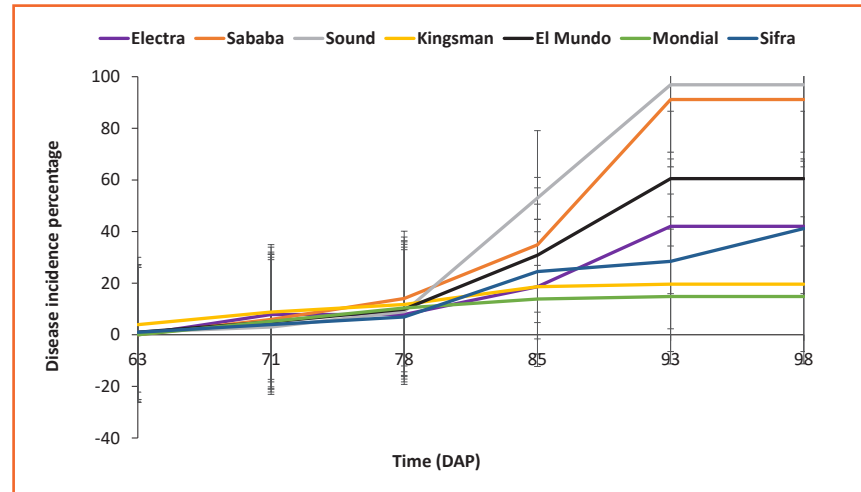


Figure 4: The percentage disease incidence of early blight on seven unsprayed cultivars over time.

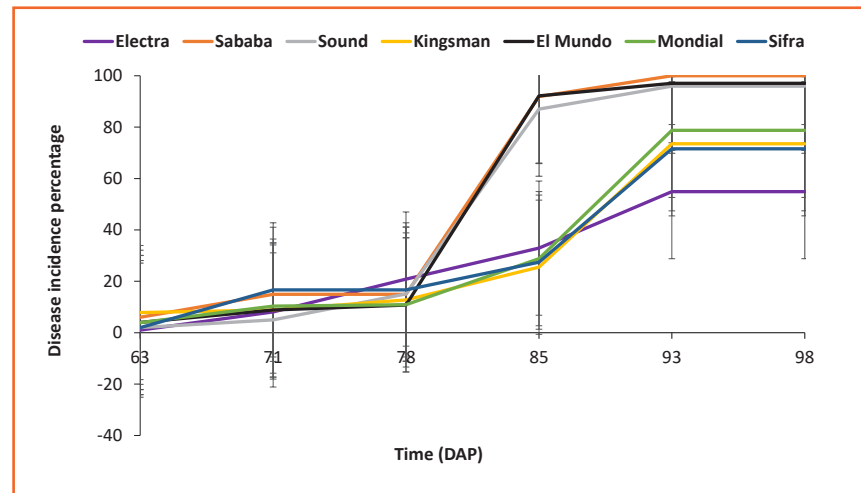


Figure 5: Disease severity percentage over time on earlier maturing cultivars sprayed with fungicides.

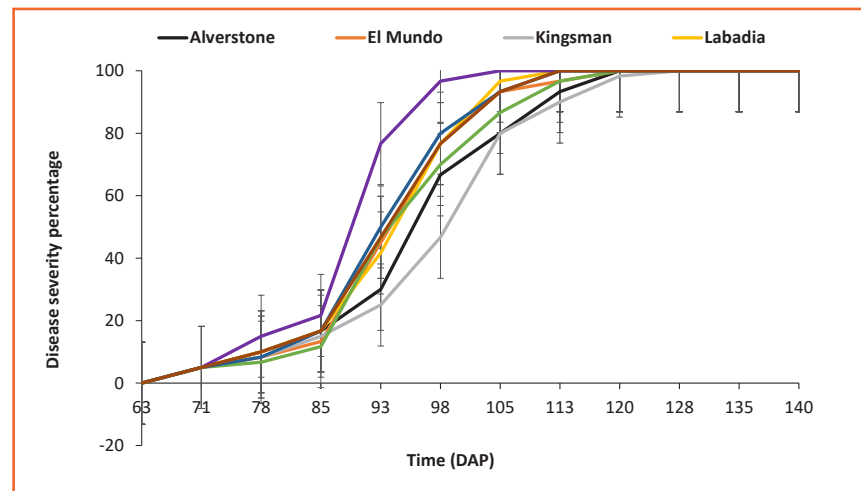


Figure 6: Disease severity percentage over time on unsprayed earlier maturing cultivars.

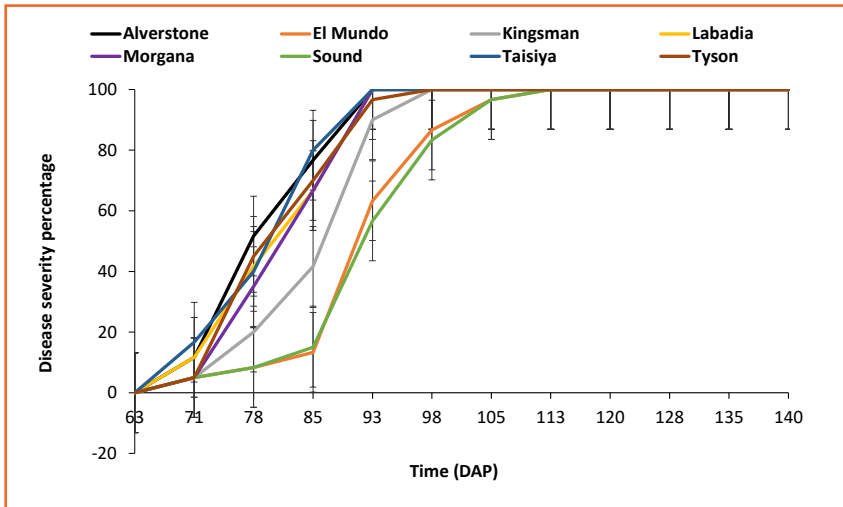


Figure 7: Disease severity percentage over time on later maturing cultivars sprayed with fungicides.

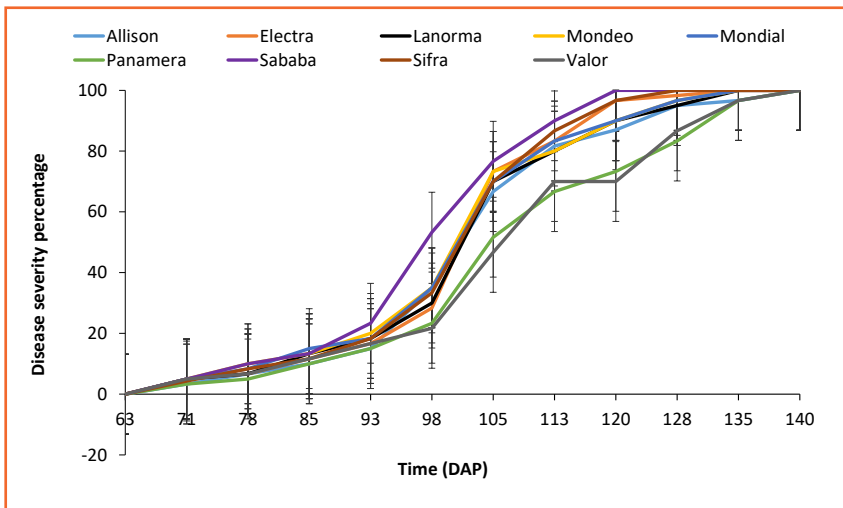
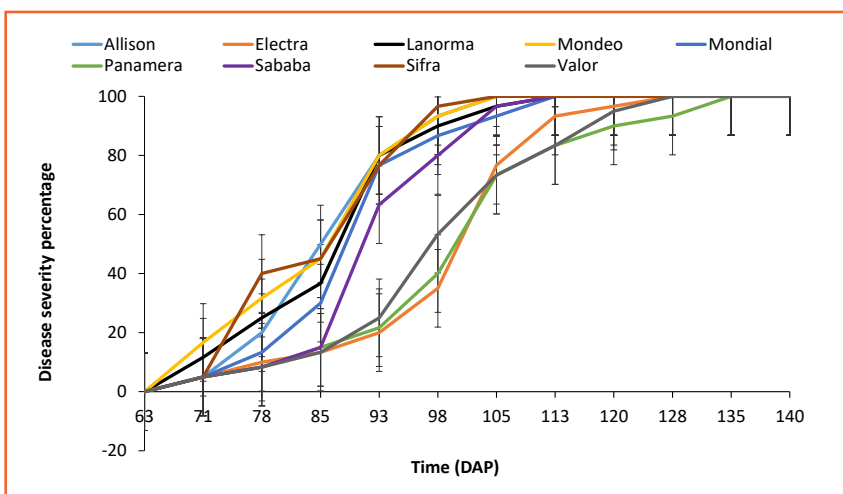


Figure 8: Disease severity percentage over time on unsprayed later maturing cultivars.



disease incidences in both treatments, indicating a level of tolerance to late blight.

As expected, early blight incidence was lower in the sprayed treatment compared to the unsprayed treatment (Figures 3 and 4). No cultivars within the top-five yield rankings had 100% early blight incidence in the sprayed treatment. In the unsprayed treatment, the cultivars Sababa, Sound and El Mundo showed a rapid increase in disease incidence after 78 days from planting.

Sound also showed a rapid increase after 78 days from planting when fungicides were applied. Sababa had 100% early blight incidence in the unsprayed treatment. Disease incidence for early blight was recorded until 98 DAP. This was due to a rapid increase in late blight infection, which, being more aggressive, completely dominated over early blight.

Severity of diseases

Disease severity is the percentage of plants covered by symptoms of the pathogen. It indicates the extent of damage caused by the disease. For disease severity, cultivars were grouped into two maturity groups (i.e., earlier and later maturing cultivars). The results showed a significant interaction between the different cultivars and spray treatments applied.

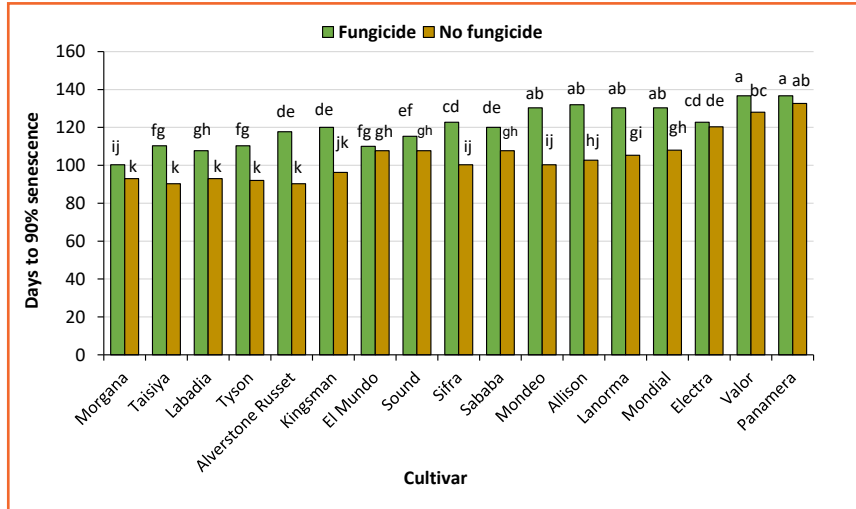
With fungicides, the cultivars had significantly lower disease severity percentages compared to when no fungicides were applied in both maturity groups. In the earlier maturing group, fungicides tended to suppress disease severity by 14 days for most of the cultivars (Figures 5 and 6).

All the earlier maturing cultivars had reached 100% disease severity at 128 DAP. In the later maturing group, all the cultivars had reached 100% disease severity at 140 DAP (Figures 7 and 8). Although the cultivars in this group responded differently, fungicides tended to suppress the rapid increase in severity by three weeks.

Without fungicides, Sound and El Mundo in the earlier maturing group (Figure 5), and Electra, Panamera and Valor in the later maturing group (Figure 8), had lower disease severities than the other cultivars, indicating a level of tolerance to the late blight. Since late blight is a rapidly progressive disease, it is imperative to use fungicides as it lowers the rate of disease progression and allows for higher yields to be obtained.

Variations in disease severity are mainly due to climatic factors and pathogen virulence. The increase in disease severity could be due to a change in the pathogen population. The reason that

Figure 9: The number of days from planting to 90% senescence for the 17 cultivars with the two fungicide treatments.



A trial was conducted in the 2020/2021 growing season at the Cedara Research Station to identify cultivars with tolerance to late blight. Seventeen cultivars were evaluated under irrigation using a split-plot design with three replicates.

Figure 10: Percentage mass of the five tuber sizes for the 17 cultivars with fungicides.

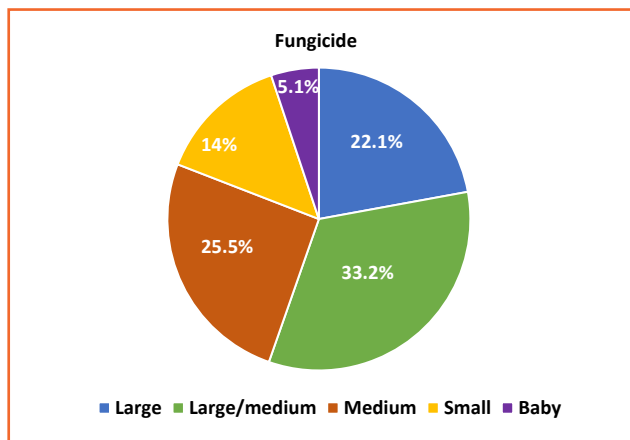
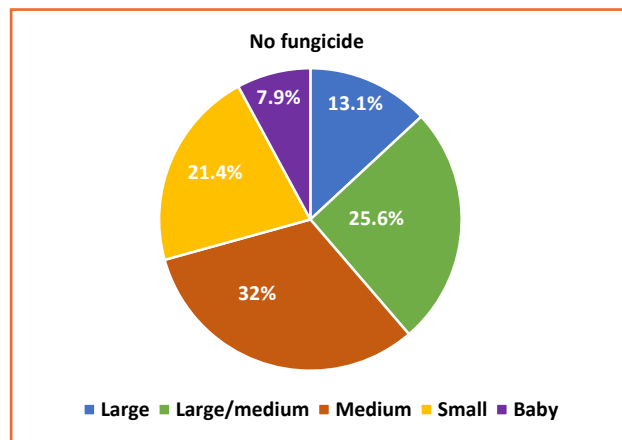


Figure 11: Percentage mass of the five tuber sizes for the 17 cultivars without fungicides.



cultivars lose their tolerance to late blight is because the resistance level of the cultivars is being defeated due to the matching of new virulence genes in the pathogen.

The number of days to 90% senescence gives an indication of the length of the growing season of the various cultivars with the fungicide treatments (Figure 9). Overall, the application of fungicides extended the number of days to 90% senescence by 15. Cultivars that were more susceptible to late and early blight defoliated and died quicker, especially when no fungicides were applied.

Morgana had the shortest growing season (97 days), while

Valor (132 days) and Panamera (135 days) had the longest growing seasons overall. When comparing cultivars individually, no significant differences were measured between the fungicide treatments for El Mundo, Electra and Panamera, indicating good tolerance to late blight.

Longer growing time, greater yield

A significant positive correlation was measured between the number of days to 90% dieback and yield, indicating that the longer the growing season, the greater the yield. Overall, the early defoliation of plants due to blight resulted in significantly lower percentages of large- and large/

medium-sized tuber masses and consequently, lower yields.

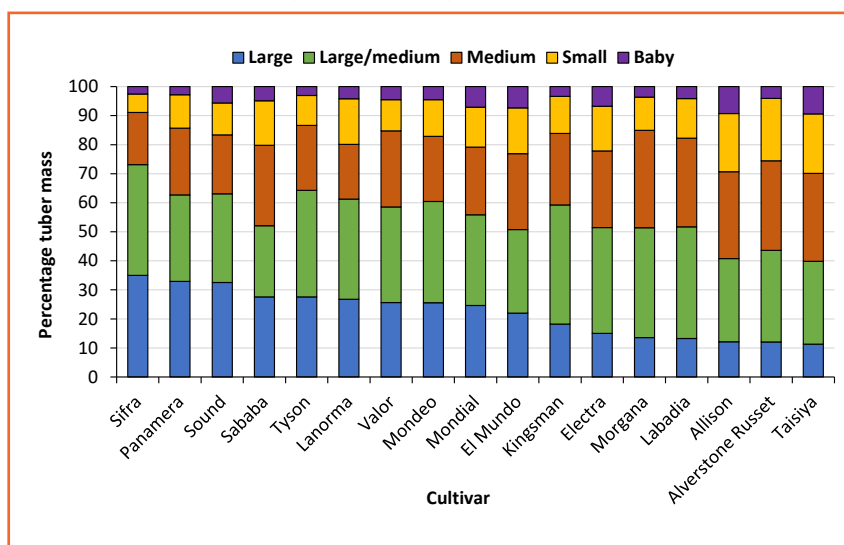
The majority of the yield comprised large/medium- and medium-sized tubers (Figure 12). However, overall, yield was significantly positively correlated to the percentage mass of large and large/medium tubers. Without fungicide applications, the percentage mass of the large and large/medium tubers decreased significantly, while the percentage mass of the medium, small and baby tubers increased significantly (Figures 10 and 11).

Fungicide treatment did not significantly affect the percentage mass of large tubers produced by Allison, El Mundo, Electra, Labadia, Morgana, Sababa, Sound and Taisiya. Without fungicide applications, Alverstone Russet produced no large tubers.

The percentage of large/medium-sized tubers decreased significantly for Alverstone Russet, Kingsman, Mondeo, Morgana and Taisiya when no fungicides were applied, indicating that these cultivars had poor tolerance to blight. Without fungicides, more than 50% of the tuber mass produced by Alverstone Russet and Taisiya was graded Small and Baby.

Due to higher disease pressure in the 2020/2021 growing season compared to the two previous growing seasons, the mean yield was significantly lower (44.54 t/ha vs 54.25 t/ha and 50.02 t/ha, respectively).

Figure 12: Percentage tuber mass of total yield at the five size grades for the 17 cultivars sprayed with fungicides.



Without fungicides, the mean yield was 11.2 t/ha lower.

When comparing the effects of the two fungicide treatments on the yield of individual cultivars, no significant differences were measured for Electra, Sababa, Sound, El Mundo, Morgana and Taisiya (Figure 13).

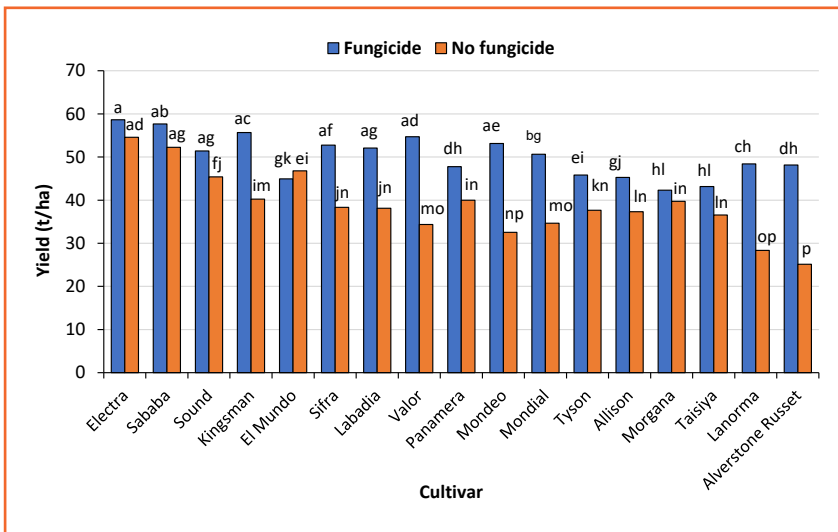
In previous seasons, significantly lower yields were produced by Taisiya when no fungicides were applied. Valor showed good tolerance to late blight in the two previous seasons, but this season the yield was 20.37 t/ha lower when no fungicides were applied. Alverstone Russet,

Mondeo and Lanorma also had a >20 t/ha reduction in yield without fungicide applications.

To optimise production and profitability, potatoes grown in the KwaZulu-Natal Midlands must be sprayed regularly with fungicides to control late and early blight. Although no significant differences in yield were measured between the fungicide treatments for some cultivars, the differences were large enough for it to be financially advantageous to apply fungicides, considering the current prices being obtained for table potatoes, with the exception of El Mundo.

Resource-poor household producers, who cannot afford to purchase fungicides, should grow Electra, Sababa or El Mundo. 🍅

Figure 13: Yield of the 17 cultivars with the two fungicide treatments in the 2020/2021 growing season.



For more information, contact the KwaZulu-Natal Department of Agriculture and Rural Development at 033 355 9100.

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Die vroeë-afsterwing-siektekompleks van aartappels in Limpopo: Deel 1

Deur Estianne Retief, LNR-Plantgesondheid en -beskerming, Plant Mikrobiologie; René Sutherland, Elsie Cruywagen en Mariette Truter, LNR-Groente, Industriële en Medisinale Plante, Gewasbeskerming; Mariette Marais, Chantelle Girgan en Antoinette Swart, LNR-Plantgesondheid en -beskerming, Nematologie

Die vroeë afsterwing van aartappels (*potato early dying*) is al in baie dele in die wêreld aangemeld. Die siekte veroorsaak hoofsaaklik verdwergde groei wat met vergeling en verwelking gepaard gaan, gevolg deur vroeë afsterwing van die plant (Foto 1 en 2). 'n Verlagings in opbrengs van tot 50% is al gerapporteer. In meeste lande word vroeë afsterwing aan 'n kompleks van verskillende aartappelpatogene en omgewingsfaktore toegedig.

Produsente stel ondersoek in

Produsente in Limpopo het toenemend probleme begin ondervind met vroeë afsterwing van aartappelplante van die laat aanplantings in Junie en Julie. In 'n opname wat gedoen is, het hulle aangedui dat vroeë afsterwing meestal voorkom ná tydperke van hoë temperatuur, wat kenmerkend is van die lente en vroeë somer in dié streek. Oesverliese van 5 tot 20% is aangemeld.

Derhalwe is 'n ondersoek geloods om vas te stel watter patogene by hierdie siekte-toestand betrokke is. Plase in die Dendron-, Tom Burke en Vivo-gebiede is gedurende die 2019- en die 2020-groeiseisoene besoek. In die eerste groeiseisoen is twaalf lokaliteite vir die studie uitgesonder, en in die tweede seisoen is agt lokaliteite uitgesonder.

Meer as net een kwaaddoener

Navorsing in Amerika het getoon dat die swam, *Verticillium dahliae*

(*V. dahliae*), tesame met die letselnematode, *Pratylenchus penetrans* (*P. penetrans*), die primêre patogene in die vroeë-afsterwing-siektekompleks is. Beide hierdie patogene is grondgedraag en besmet die plant deur sy wortels. *Pratylenchus penetrans* is 'n endoparasiet wat saam met die voeding en beweging van die nematode in die wortel ook infeksiepunke aan die swam verskaf.

Navorsing in Amerika het gewys dat wanneer *V. dahliae* en *P. penetrans* saam teenwoordig is, dit 'n sinergistiese verband het en die simptome van vroeë afsterwing erger is as wanneer slegs *V. dahliae* voorkom. Die vlak van patogeen-inokulum wat benodig word vir ontwikkeling van siektesimptome, is dus laer wanneer albei patogene saam teenwoordig is.

Verdere studies het getoon dat ander organismes ook moontlik betrokke kan wees in die vroeë-afsterwing-siektekompleks, naamlik die *Colletotrichum coccodes* swam en die sagtevrotbakterieë, *Pectobacterium* en *Dickeya* spesies.

Colletotrichum coccodes

Colletotrichum coccodes (*C. coccodes*) veroorsaak swartspikkel, wat hoofsaaklik op die aartappelknol sigbaar is, maar ook op die wortels voorkom. In die verlede was swartspikkel nie as 'n ernstige siekte beskou nie, maar as 'n siekte wat slegs die voorkoms van knolle benadeel (*blemish disease*).

Daar is egter toenemend gevalle waar *C. coccodes* betrokke



Foto 1: Vroeë afsterwing van 'n aartappelplant.

is by ander siektesimptome wat groei-onderdrukking, verwelking, vroeë afsterwing en 'n verlaging in opbrengs insluit. Daar is ook 'n paar keer aangemeld dat *C. coccodes* donker letsels op die stam van die aartappelplant kan veroorsaak.

Omdat beide *C. coccodes* en *V. dahliae* soortgelyke simptome veroorsaak en albei geharde strukture, bekend as mikrosklerotia vorm, word die twee patogene telkens met mekaar verwar. Studies in beide Israel en Amerika het getoon dat dié twee patogene wel saam op aartappels kan voorkom. 'n Israelse studie waar beide *C. coccodes* en *V. dahliae* kunsmatig op aartappels geïnokuleer is, het getoon dat die organismes 'n sinergistiese verband het.

Pectobacterium spp. en Dickeya spp.

Hierdie patogene veroorsaak sagtevrot van knolle asook swartstam en stamvrot van aartappelplante. Moere wat met die sagtevrotbakterieë besmet is, het 'n swak opkoms, en die plante wat wel groei, is verswak.

Simptome sluit verwelking en vergeling in. Swartstam ontstaan meestal weens besmette aartappelmoere en die infeksie en letsel beweeg dus van onder na bo. Wonde op die stamme kan lei tot bakteriële infeksie wat stamvrot veroorsaak. In so 'n geval sal die letsel nie noodwendig aan die onderkant van die stam voorkom nie, maar eerder rondom die infeksiepunt, en kan verskeie letsels op die stam gevorm word.

In 'n studie waar *V. dahliae* en *Pectobacterium* spesies saam geïnokuleer is, het resultate getoon dat hierdie patogene ook 'n sinergistiese verwantskap vorm.

Metodes

By elke lokaliteit in Dendron, Tom Burke en Vivo is monsters geneem van plante met simptome van vroeë afsterwing, en daar is in die twee seisoene onderskeidelik 76 plante en 57 plante versamel. 'n Grondmonster vir nematode-onderzoek is in die wortelsone van elke plant geneem.



Foto 2. Vroeë afsterwing in 'n aartappelland.

Daar is nie in dieselfde lande monsters geneem oor die twee seisoene nie, omdat die lande 'n vier- tot vyf-jaar wisselbousiklus het, maar daar is sover as moontlik van dieselfde plase monsters geneem.

Isolاسies van swamme en bakterieë is van beide die stamme en wortels gedoen en op 'n verskeidenheid van groeimedia uitgeplaat. Die nematodes is uit beide die grond en wortels met die sif-sentrifugasie-suikerflotasie-tegniek onttrek. In hierdie artikel sal slegs die voorlopige resultate van die patogene wat moontlik 'n rol in vroeë afsterwing speel, bespreek word.

Resultate

Die voorkoms van *Colletotrichum* isolate, *Verticillium* isolate, sagtevrotbakterieë en *Pratylenchus* eksimplare in vergelyking met die totale aantal monsters versamel, word per lokaliteit aangedui in Figure 1 en 2. Dit is noemenswaardig dat daar gedurende die eerste seisoen, uit 28% van die plante *Verticillium* isolate verkry is.

Van hierdie plante was 91% in kombinasie met *Colletotrichum* isolate, 23% in kombinasie met sagtevrotbakterieë en 18% in kombinasie met *Pratylenchus* eksimplare. Gedurende die tweede seisoen was *Verticillium* isolate uit 42% van die totale aantal plante verkry.

Van hierdie plante was 71% in kombinasie met *Colletotrichum* isolate, 38% in kombinasie met die sagtevrotbakterieë en 17% in

kombinasie met *Pratylenchus* eksimplare verkry. Slegs gedurende die eerste seisoen is volwasse *Pratylenchus* nematodes verkry en die spesies *P. zeae* is in al drie areas geïdentifiseer, hoewel in baie lae getalle.

Bespreking

Die voorkoms van patogene het tussen die twee seisoene verskil. Daar was byvoorbeeld baie meer *Verticillium* isolate gedurende die tweede seisoen verkry as in die eerste seisoen. Dit was te verwagte, omdat die lande verskillende verbouingsgeskiedenis het en klimaatstoestande normaalweg oor twee seisoene verskil. Die hoogste voorkoms van *Colletotrichum* en *Verticillium* isolate is tydens beide seisoene in die Dendron- en Vivo-lokaliteite gekry en aansienlik minder in die Tom Burke-lokaliteite.

Twee van die lokaliteite by Tom Burke in Seisoen 1 en twee Tom Burke-lokaliteite in Seisoen 2 was lande waar aartappels vir die eerste keer aangeplant was. Beide *Colletotrichum* spesies en *Verticillium* spesies is grondgedraagde patogene wat bekend is om, weens die opbou van inokulumvlakke in die grond, eerder probleme te veroorsaak in lande waar aartappels reeds vir lang tydperke verbou word. Dit is waarskynlik die rede waarom daar by die vier Tom Burke-lokaliteite geen *Colletotrichum* en *Verticillium* isolate verkry is nie.

In beide seisoene was daar 'n hoë voorkoms van sagtevroetbakterieë by die Tom Burke-lokaliteite en dit is waarskynlik dat dié bakterieë die oorsaak was van die simptome wat waargeneem is. Omdat die sagtevroetbakterieë hoofsaaklik deur aartappelmoere versprei, speel die verbouingsgeskiedenis van die land nie noodwendig 'n rol in siekte-ontwikkeling nie.

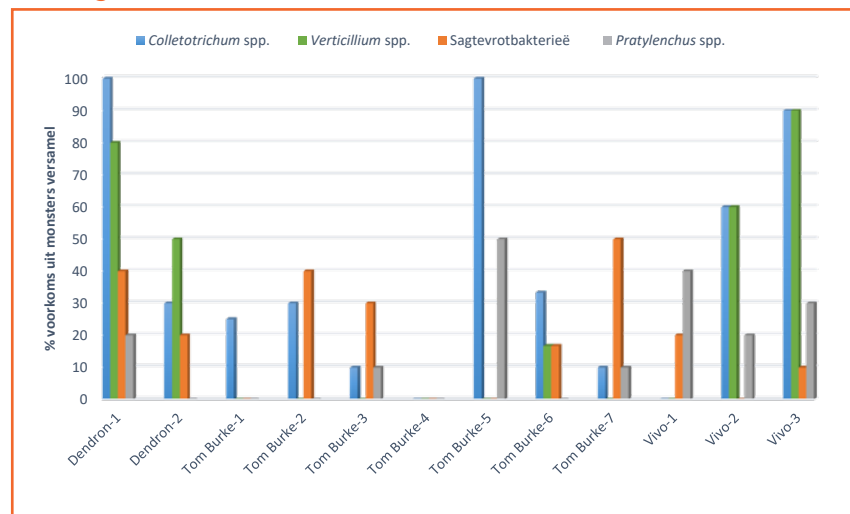
Hierdie studie dui dus aan dat sagtevroetbakterieë met simptome van vroeë afsterwing verbind kan word, en dat die patogene heel waarskynlik 'n rol speel in die vroeë afsterwing van aartappels.

Sagtevroetbakterieë is egter nie 'n voorvereiste vir die ontwikkeling van vroeë afsterwing nie en word nie as die primêre patogeen beskou nie, maar indien teenwoordig, mag dit wel die simptome vererger. Volgens die isolate verkry, stel ons voor dat *Colletotrichum* spesies moontlik 'n baie groter rol speel in vroeë afsterwing van aartappels in Limpopo as wat in ander dele van die wêreld aangemeld is, en dat *Colletotrichum* en *Verticillium* spesies wel saam kan voorkom in plante met simptome van vroeë afsterwing.

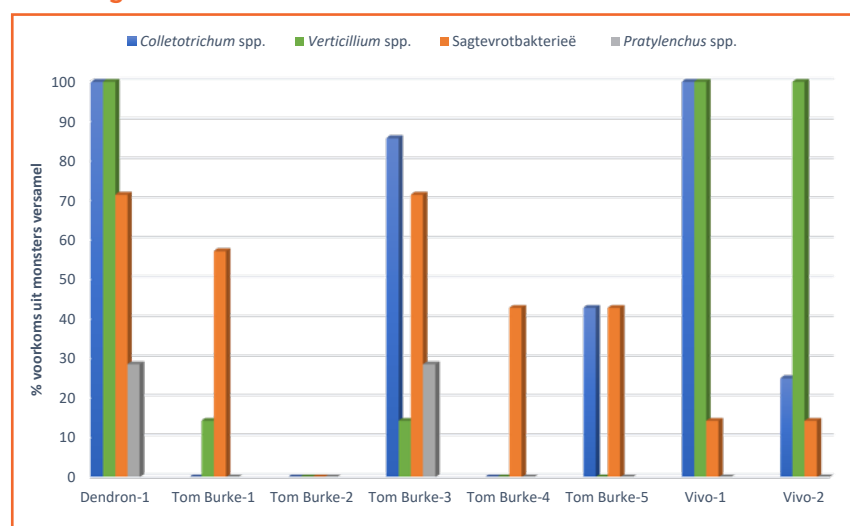
Volgens die data van die eerste seisoen van Dendron-, Tom Burke- en Vivo-lokaliteite, blyk dit onwaarskynlik dat *P. penetrans* 'n rol in vroeë afsterwing speel, soos elders in die wêreld aangemeld, aangesien net *P. zeae* van die monsters verkry is. *Pratylenchus* spesies is by 17 en 18% van die plante, onderskeidelik, saam met *Verticillium* isolate tydens die twee seisoene waargeneem.

Hierdie lae voorkoms is teenstrydig met die voorkoms en verspreiding van *Pratylenchus* spesies in Suid-Afrika en, meer spesifiek, in die res van die aartappelproduksiegebiede. Dit is dus onwaarskynlik dat *Pratylenchus* spesies, heel moontlik as gevolg van die aggressiewe behandelingsprogramme deur aartappelboere, wel 'n deurslaggewende rol in die vroeë-afsterwing-siektekompleks

Figuur 1: Voorkoms van *Colletotrichum* spp., *Pratylenchus* spp., sagtevroetbakterieë en *Verticillium* spp. per lokaliteit gedurende die eerste groeiseisoen.




Figuur 2: Voorkoms van *Colletotrichum* spp., *Pratylenchus* spp., sagtevroetbakterieë en *Verticillium* spp. per lokaliteit gedurende die tweede groeiseisoen.



van aartappels in Limpopo sal speel.

Gevolgtrekking

Vroeë afsterwing van aartappels in Limpopo word meestal met *Colletotrichum*, sagtevroetbakterieë en *Verticillium* geassosieer. Dit is verder belangrik om te onthou dat alle organismes wat uit 'n plant geïsoleer word, nie altyd 'n patogeen is nie. Om hierdie rede is identifikasie van die organismes tot op spesievlak, hul vermoë om siekte te veroorsaak (patogenesiteit), én aggressiwiteit van die isolate belangrik. Dit sal in 'n opvolg-artikel bespreek word.

Gedurende die studie is verskeie ander swamme van die genera *Alternaria*, *Fusarium*, *Macrophomina*, *Pythium* en *Rhizotonia* ook verkry. Verskeie ander plantparasitiese en vrylewende nematodes is ook verkry. Hierdie organismes word egter nie as deel van die vroeë-afsterwing-siektekompleks beskou nie, maar sal wel in opvolgartikels bespreek word. 

Vir meer inligting,
 epos Estianne Retief by
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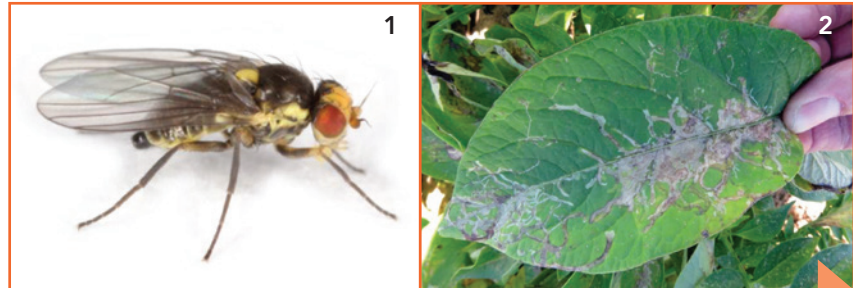
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The potato leaf miner: Origin of the first fly infestations of the season

By Dr Diedrich Visser, ARC-Vegetables, Industrial and Medicinal Plants, and Dr Pia Addison, Dr Antoinette Malan and Thabu Mugala, all from the Department of Conservation Ecology and Entomology, Stellenbosch University

The potato leaf miner, *Liriomyza huidobrensis* (*L. huidobrensis*), is one of the key potato pests in South Africa. Originally from South America, it was first detected in South Africa in 2000. The adult leaf miner is a minute fly (2 to 3 mm in length) (image 1), while the immature stage is an even smaller maggot that feeds inside leaves, causing the characteristic leaf mines (image 2).

The leaf miner usually occurs in such high numbers in potato fields that the majority of leaves



The potato leaf miner, *L. huidobrensis*, (image 1) and the characteristic leaf mines left by *L. huidobrensis* (image 2).

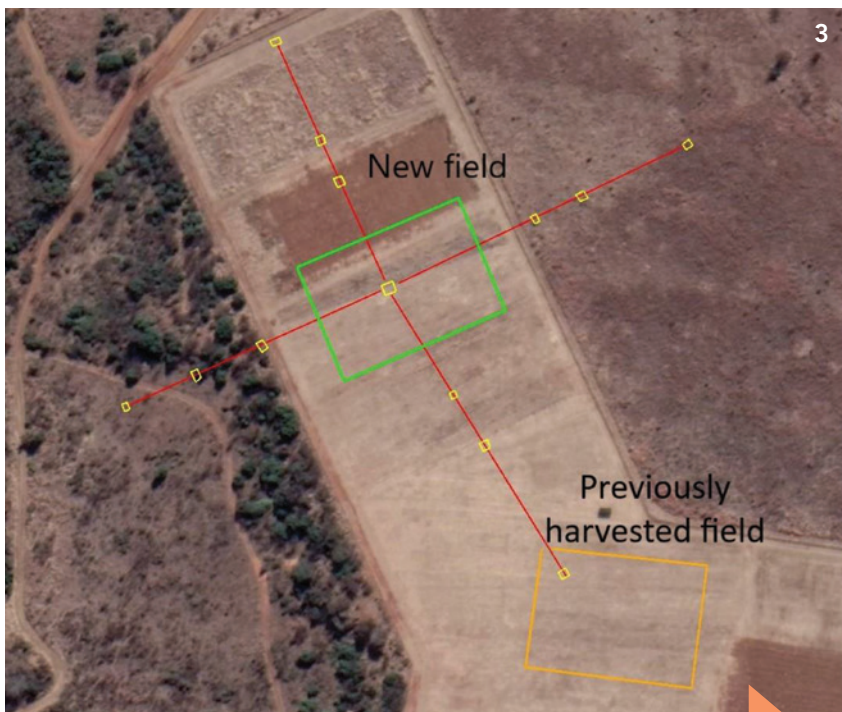
are infested, resulting in premature dieback of foliage. Although tubers are not attacked, the dieback of

foliage may cause up to 70% yield loss. Control with insecticides gives varying results; infestations may stay high up to the end of the season.

To address the problem of seemingly uncontrollable fly numbers in potato fields, an investigation was initiated to study aspects of the ecology of the leaf miner, and to identify the origin of leaf miners that infest newly planted fields.

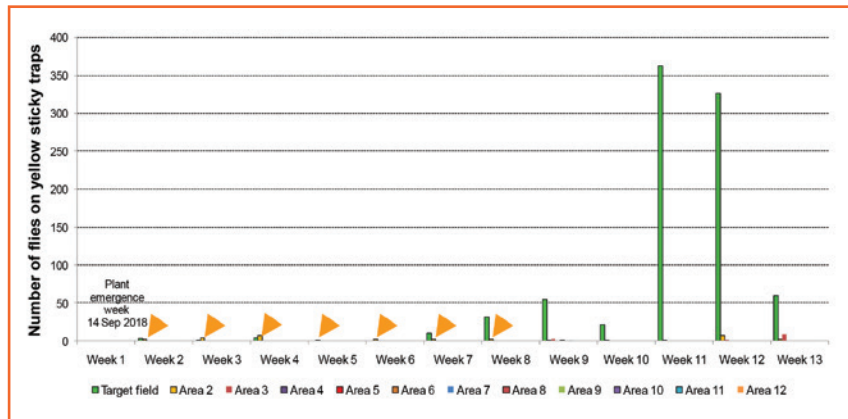
The first leaf miners in potato fields, sometimes occurring in high numbers soon after plant emergence, remained a mystery since their arrival in South Africa. Conventionally it was believed that the surrounding field sustained a leaf miner population on uncultivated plants and weeds. What made this scenario plausible was the fact that it was known that the leaf miner had a wide host range, and that many unrelated plants might act as host plants.

In the winter rainfall region these implicated 'sources of leaf miners', however, could not be located, and in the summer rainfall seasons, most plants and weeds in the



The field trial layout to determine where the first leaf miner flies originated from. The red lines indicate the transects, and the small yellow boxes the positions of the yellow sticky traps. The new field and previously harvested field are indicated.

Figure 1: Record of leaf miners caught in different areas in 2018.



The number of leaf miner flies caught per week on yellow sticky traps in and around the new field (green bars) in 2018. The orange arrows indicate the leaf miner numbers in the previously harvested field (Area 2). No leaf miners were caught in any other area around the new field (indicated as Areas 3 to 12) during the early season up to week nine.

surrounding areas die off during the winter months.

The Roodeplaat trial

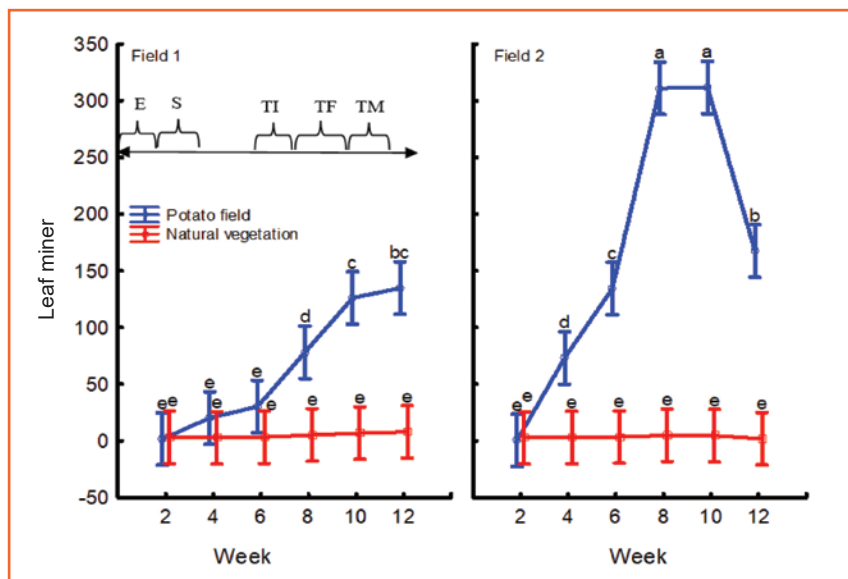
In the summer rainfall area, a trial was performed on the Roodeplaat campus of the Agricultural Research Council (ARC) to investigate the occurrence of leaf miner flies in and around a potato field. Yellow sticky traps were installed in transects from the middle of a newly planted field outwards in four different directions (image 3). The traps were

placed at 25, 50 and 100 m from the new field. The traps furthest away were located in fallow areas, in virgin veld with weeds and trees, and in a previously harvested field.

The 13 traps were inspected on a weekly basis for any signs of leaf miner flies that would be attracted and caught on their sticky surfaces. Records were kept to establish where the first leaf miners would appear, as well as their emergence in the new field.

Our results showed that the

Figure 2: Mean number of adult leaf miners caught on yellow sticky traps throughout two growing seasons (Field 1 – winter, Field 2 – summer) in two potato fields and adjoining vegetation in the Western Cape Province (Sandveld).



only flies that appeared in the early season (first seven weeks after emergence) were found in the previously harvested and new field (Figure 1). None of the other traps caught any flies during the early season. The origin of the first flies was therefore not from the surrounding areas, but from the previously harvested field.

The traps that were installed in the other areas around the new potato field started to show fly activity only after senescence, and after more than 600 flies were caught per trap per week in the new field. This indicated that when a field is saturated with flies later in the season, and during senescence, they will move outwards from the infested field to infest nearby fields.

In follow-up trials during the next three years, traps were placed in new fields and spaced out in fallow areas in the proximity of the new fields. Some of these areas included potato fields that were harvested the previous season. As was found in the first year, flies were only caught in the new field and in fields that were harvested the previous season – no flies were caught in the other fallow areas.

The Sandveld trial

In winter rainfall regions, a similar study was conducted in the Sandveld area at two sites in the manner described. The natural vegetation surrounding the potato fields consisted of daisies, Saldanha Pincushion, Graafwater shrubs and *Helichrysum* species. Monitoring took place at the beginning of the winter growing season (June to October) and summer growing season (October to January).

Additional host plants were confirmed by incubating infested leaves in the laboratory and identifying emerging flies.

It was found that leaf miner populations increased during the summer crop development period, but numbers remained low during winter monitoring periods (Figure 2). Leaf damage was regularly spotted

two weeks after plant emergence, with 100% of leaves infested during tuber maturity. Infestation percentage was very similar in summer and winter months, with damage emerging slightly sooner in summer.

Numbers of leaf miners on sticky traps in the surrounding natural vegetation were insignificant, indicating that this is not a major habitat for leaf miners to overwinter or shelter in the Sandveld. It is therefore more likely that leaf miners populate potato fields from within infested fields, as is the case in the summer rainfall region.

Several additional host plants were identified in areas of the Western Cape, including common beans, tomatoes, *Chrysanthemum* plants, onions, *Amaranthus*, field mustard, wild cabbage,

Chenopodium plants, black nightshade, tropical soda apple and hairy fleabane.

In conclusion


The first leaf miner flies of the early season originate from previously harvested potato fields, and not from the surrounding field.

Other factors that must still be investigated include how far the leaf miner might fly to reach new fields, and to what extent other crops, e.g. tomato, might play as sources for leaf miners that infest newly planted potato fields.

Reports of leaf miners 'migrating' in large numbers with wind currents could not be verified with information from literature searchers. The latter scenario is a possible subject for future research.

Despite the availability of various registered insecticides, the potato

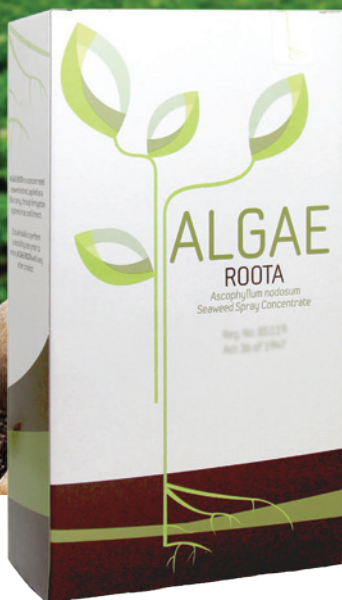
leaf miner remains one of the most important potato pests in South Africa. The finding in this study, i.e. that leaf miner infestations originate from pupae in previously harvested fields, may now be used to focus on possible additional control options against the pupae.

If severe leaf miner infestations can be limited by eliminating a large portion of the pupae, control through insecticides may become more effective to reduce the fast build-up in fields during the late season. Possible control options against leaf miner pupae will be discussed in a next article in *CHIPS*. 

For more information, contact Dr Diedrich Visser at DVisser@arc.agric.za or cell 082 416 3340.

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InteliGro sets the standard for crop advisors

The requirements for agricultural success are multiplying on an almost daily basis, and without the best possible support, producers cannot keep up with the new demands. This is why a new development programme for crop advisors is good news.

A recent analysis by Futuregrowth Asset Management describes agriculture in South Africa as having three significant challenges namely volatility, complexity, and scrutiny.

Volatility includes climate change and unpredictable weather conditions, local and global politics, and shifts in consumer preferences. Complexity refers to the many different crops and food types, each with their own unique and fragmented supply chains, as well as the variables that influence production of individual crops.

Finally, scrutiny highlights the pressure that role-players in the agricultural and food value chain are under to improve the traceability of the food we eat, along with the environmental and social impact of how it is produced.

InteliGro meets producers' demand

It is fair to say that South African producers have much to deal with – even before they get out into their fields and start the business of food production. As a result, expert and holistic crop advice is an input which producers cannot do without.

InteliGro is stepping up to meet this demand with its Certified Crop Advisor (CCA) programme.

"Our crop advisors are well known in the industry, given our long-standing focus on solid technical training and support," says Ernest Myburgh, regional director (south) of InteliGro. "However, given the far-reaching shifts in the agrochemicals market, combined with the volatility, complexity and scrutiny that is evident throughout the agricultural sector, it is clear that

access to products and technical knowledge is no longer enough. Realising that producers need more, we developed the CCA programme."

Crop experts for the future

This future-driven programme puts crop advisors through an intensive evaluation to determine their existing knowledge and competence levels. Based on the assessments, a training and development programme is designed for each person, the outcome of which is crop experts who will make a difference in various aspects of our customers' business.

The programme includes:

- Regular technical and business assessments.
- Formal technical and business training programmes.
- Personality and work-style assessments.
- Soft-skills training.
- Personal development programmes.
- Ensuring that all crop advisors meet industry standards and requirements.
- Distinct career phases with clear requirements for each phase.
- Sustainability and benchmark analyses.

The CCA courses are a perpetual work in progress, given that they are based on the latest research results, as well as the practical knowledge and experience of the experts compiling them. The emphasis is on relevance and practicality, and on topics that are not covered at the

usual crop and technical training events.

Not simply your everyday advisors

"We have every confidence that our CCAs will be far more than crop advisors," says Gideon Hefer, InteliGro's managing director. "They will develop into trusted business advisors, capable of providing input into our clients' businesses at various levels. Their contributions will make a noteworthy difference on the farm and will further enable producers to deal with the complexities they face."

The first cohort of CCAs received their certification at the end of November, and the objective is for all of InteliGro's crop advisors to eventually achieve and maintain CCA status.

"The programme will deliver significant benefits for all involved," says Myburgh. "Producers get professional, expert support, the advisors receive invaluable professional and personal development, and InteliGro builds its reputation on advice and services that are unparalleled in the industry."

Mostly, however, it is agriculture and all its stakeholders that stand to gain. When producers receive the best available support, sustainability and food security become attainable objectives, regardless of volatility, complexity, and scrutiny ... Because we know, it all starts on the farm.

For more information, contact InteliGro at 021 873 6177 or email info@inteligro.co.za. Alternatively, visit www.inteligro.co.za.

Oos-Vrystaatse standproef onder aanvullende besproeiing op Reitz in 2019/2021

Deur Enrike Verster en Herman Haak, Aartappels SA, en Steve Terblanche, Fick en Seun Boerdery



Die Oos-Vrystaat is 'n groot aartappelproduksiestreek waar sowat 22% van die land se kommersiële aartappels

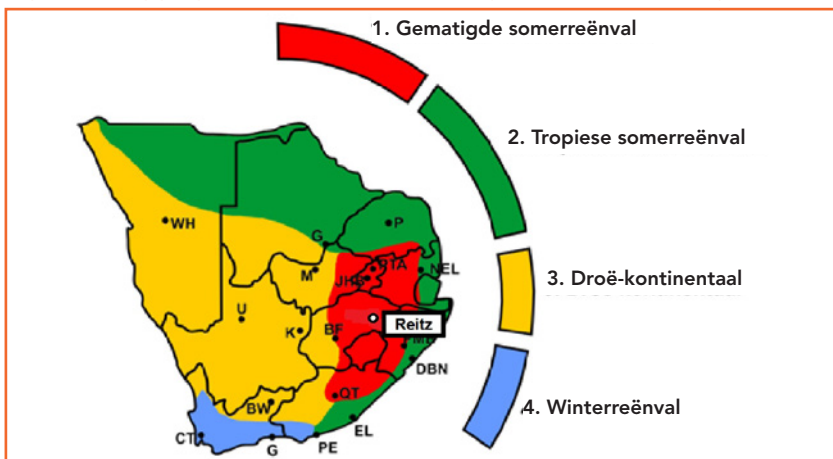
deur nagenoeg 68 produsente op ongeveer 11 703 ha produseer word. Die mees prominente kultivars geproduseer vir tafel- en verwerkingsdoeleindes in die Oos-

Vrystaat is Mondial, Lanorma en FL2108.

Reitz val in Suid-Afrika se gematigde somerreënvalgebied (*Figuur 1*) en ervaar die afgelope 18 jaar 'n gemiddelde jaarlikse reënval van ongeveer 475 mm. Hierdie streek word deur warm somers en baie koue winters gekenmerk, met ryp wat vanaf Mei tot Augustus kan voorkom.

Hierdie standproef is uitgelê in sandleemgrond in 'n ewekansige blokontwerp met vier herhalings per populasiegrootte. Twee gewilde Oos-Vrystaat-kultivars, naamlik Lanorma en Mondial, is in die proef ingesluit. In *Tabel 1* word ander tegniese inligting rakende die proefperseel gegee. Grondmonsters is vóór plant geneem om die grondvoedingstatus van die proefperseel te bepaal (*Tabel 2*).

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



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

Plaas	Swartkrans			
Boer	Fick en Seun Boerdersy			
Plant- en oesdatums	Jaar 1	12 September 2018 tot 14 Maart 2019		
	Jaar 2	24 Oktober 2019 tot 7 Mei 2020		
	Jaar 3	20 Oktober 2020 tot 26 Mei 2021		
Besproeiing/droëland	Aanvullende besproeiing			
Dubbel- of enkelrye	Trapsgewys – dubbelrye in wal			
Loofafsterwe	Natuurlik			
Tussenry-spasiëring	1.8 m			
Proefperseel	18 m ²			
Kalibrasies vir stand	51 680 plante/ha			
	26 250 plante/ha (26 000): 42 cm inry-spasiëring			
	28 180 plante/ha (28 000): 39 cm inry-spasiëring			
	30 000 plante/ha (30 000): 36 cm inry-spasiëring			
	32 420 plante/ha (32 000): 34 cm inry-spasiëring			
	34 200 plante/ha (34 000): 32 cm inry-spasiëring			
Bemestingsprogram				
	Voedingswaarde			
		N (kg/ha)	P (kg/ha)	K (kg/ha)
Voor plant	Jaar 1	130	90.45	90.45
	Jaar 2	130	90.45	90.45
	Jaar 3	128	94.6	457.1
Ná opkoms (bandplaas)	Jaar 1	13	–	38
	Jaar 2	13	–	38
	Jaar 3	–	–	–
Ná opkoms (deur spilpunt)	Jaar 1	24.22	2.4	4.84
	Jaar 2	24.22	2.4	4.84
	Jaar 3	24	2.4	4.8
Totaal	Jaar 1	167.22	92.85	133.29
	Jaar 2	167.22	92.85	133.29
	Jaar 3	152	97	161.9

Evaluering

Die evaluering van die standkategorieë soos in die Reitz-standproef, verskaf resultate rakende onder andere opbrengs- en bemarkingsindeks. Die bemarkingsindeks word bereken deur 'n herhaling van elkeen van die standkategorieë van elkeen van die twee kultivars te klas en te sorteer volgens gehalte en groottegroepe (byvoorbeeld Klas 1 Groot of Klas 2 Groot tot Medium). Dienooreenkomstige prysvergelykings word dan gemaak met markpryse soos verkry ten tye van oes.

Soos met enige gewas is die temperature, beskikbaarheid van water (hetsy goeie besproeiingskedulering of reënval), sowel as hitte-eenhede belangrike faktore wat 'n wesenlike invloed gedurende die aartappelplant se groeitydperk uitoefen. Hierdie faktore word dus in aanmerking geneem wanneer die prestasie van verskillende behandelings geëvalueer word. Toepaslike daaglikse en langtermynweerde data word verkry vanaf 'n gekose Landbounavorsingsraad-weerstasie wat so naby as moontlik aan die proefperseel geleë is.

Die reënvaldata vir die drie seisoene van die proef (2019 tot 2021) word in *Figuur 2* aangedui. Seisoen 1 is gekenmerk aan lae reënval in die eerste helfte van die seisoen, maar ook reënval wat ietwat bo die gemiddelde langtermyn-tendens in die laaste drie maande vóór uithaal is.

As gevolg van 'n lang droog-tetydperk, was die dam waaruit besproei moes word se watervlak deurgaans laag. Derhalwe kon daar nie besproei word volgens plantbe-

Tabel 2: Grondvoedingstatus van proefperseel vóór plant.

	Organiese materiaal	pH (H ₂ O)	P-Bray					% van KUK ¹			
			p	K	Ca	Mg	Na	K	Ca	Mg	Na
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	%	%	%	%
Jaar 1	1.26%	5.8	41.0	242	1 119	113	39	6.2	55.9	9.4	1.7
Jaar 2	1.21%	5.75	42.7	250	1 204	102	41	6.4	57	9.4	1.8
Jaar 3	1.3%	5.8	44	238	1 093	118	27	6.1	55	9.5	1.6

¹KUK = Katioon-uitruilkapasiteit.

hoeft nie, maar noodgedwonge volgens beskikbaarheid van water. 'n Totaal van 80 mm is aanvullend besproei vir die seisoen. Die sub-optimale hoeveelheid besproeiing as gevolg van omstandighede mag dalk ook die relatiewe lae opbrengs in groot aartappels verklaar.

Seisoen 2 het genoegsame reënval ervaar (wat ook duidelik reflekteer in die goeie opbrengste behaal), met ver bogemiddelde reënval in die middel van die seisoen gedurende Desember en Januarie. Seisoen 3 het ook 'n reënvaltendens ver bokant die langtermyn gemiddeld getoon, maar lang tydperke van druipnattoestande op kritieke tye het beslis bygedra tot 'n opbrengs wat ietwat laer as die voorafgaande seisoen was.

Hitte-eenhede en temperature

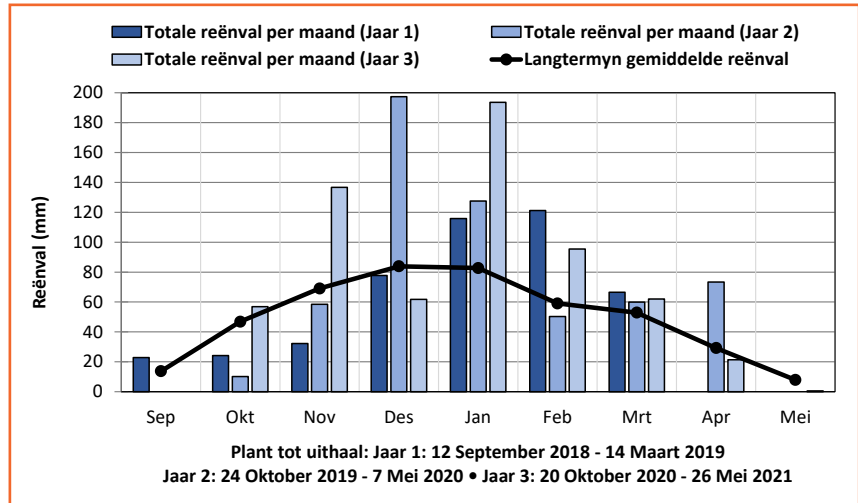
Minimum- en maksimumtemperature word in *Figuur 3* en *4* uiteengesit. Seisoen 1 is gekenmerk deur etlike dae van temperature wat noemenswaardig hoër was as die langtermyn gemiddelde maksimumtemperature, veral in die middel van die seisoen tussen November en begin Januarie.

Seisoen 2 was 'n meer gematigde seisoen wat maksimumtemperature betref, met die uitsondering van warm tydperke oor November en Desember. Seisoen 3 het ondergemiddelde maksimumtemperature ervaar, behalwe in Oktober net ná plant, asook meer na die einde van die seisoen vir 'n week gedurende April.

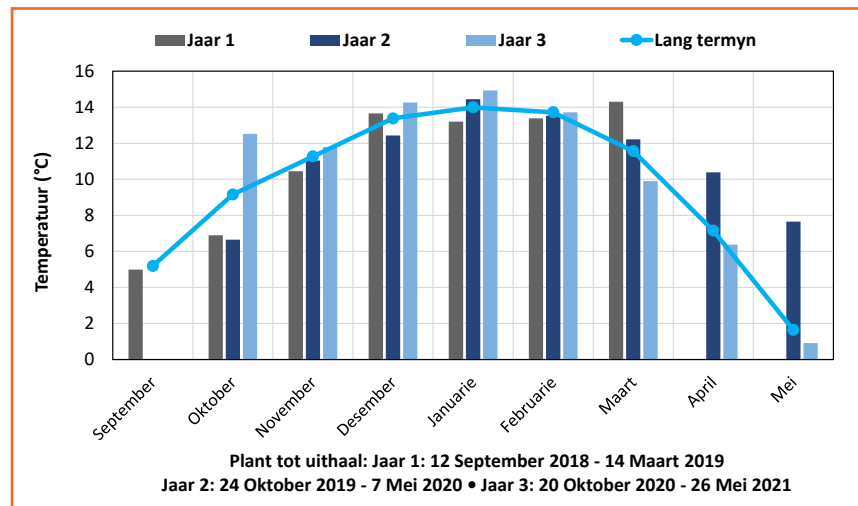
Die versameling van hitte-eenhede gedurende 'n groeitydperk is 'n belangrike faktor in die ontwikkeling van 'n aartappelplant. Die tendens van hitte-eenhede beskikbaar vir die proef van Seisoene 1 en 3 blyk baie na aan die tendens vir die langtermyn data van hitte-eenhede te wees (*Figuur 5*). Seisoen 2 het 'n akkumulاسie van hitte-eenhede ietwat bo die langtermyn gemiddeld getoon, met besonder warm tydperke in die eerste twee maande ná plant.

Opbrengsdata versamel tydens oesdag, word onderwerp aan statistiese verwerking met behulp van die GenStat®-program. Die Tukey-toets

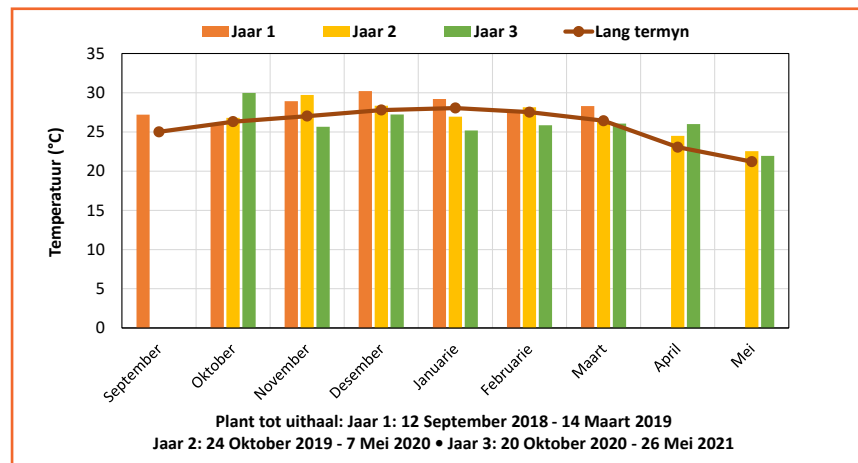
Figuur 2: Reënval vanaf 2019 tot 2021 asook die langtermyn gemiddelde reënval.



Figuur 3: Minimumtemperature vanaf 2019 tot 2021 sowel as die langtermyn minimumtemperature.

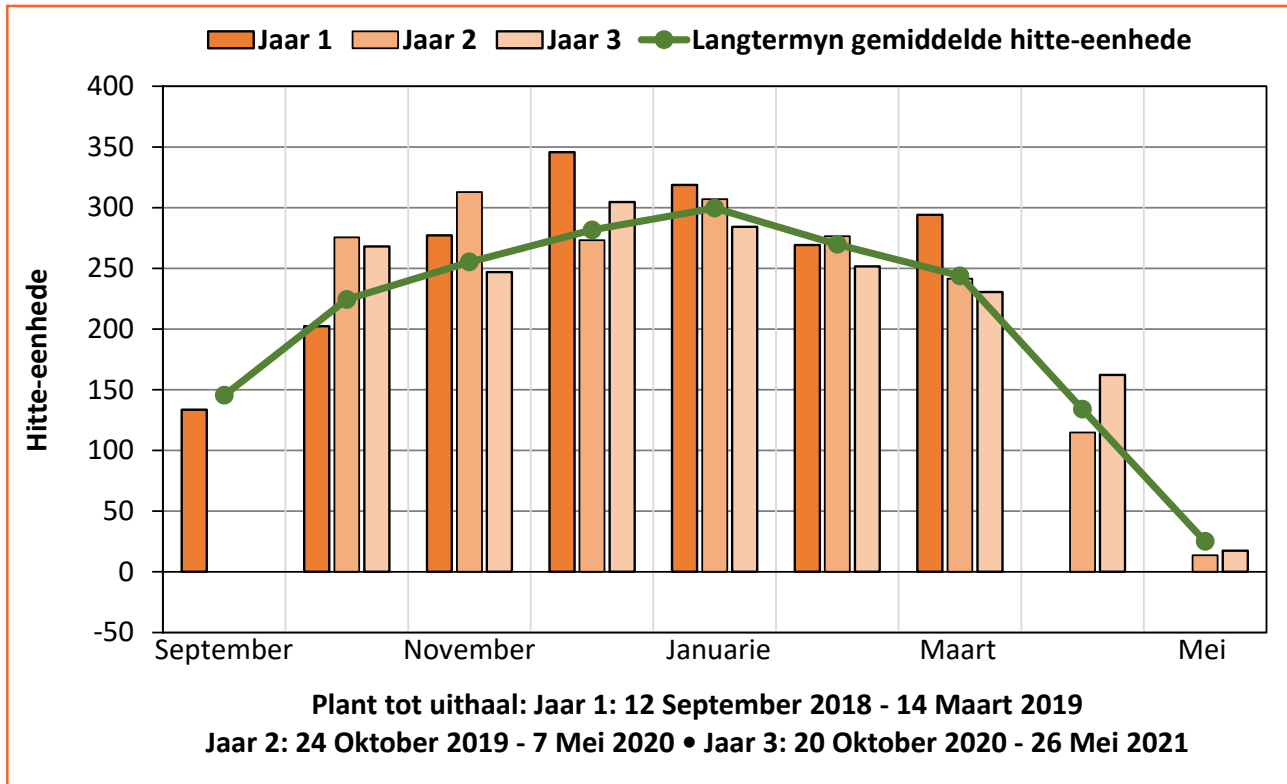


Figuur 4: Maksimumtemperature vanaf 2019 tot 2021 sowel as die langtermyn maksimumtemperature.



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

Figuur 5: Hitte-eenhede vanaf 2019 tot 2021 asook die langtermyn gemiddelde hitte-eenhede.



van kleinste betekenisvolle verskille (KBV) is gebruik om die gemiddelde te skei.

Die standeffek gedurende hierdie betrokke standproewe (Figuur 5) was statisties beduidend ($p < 0.05$) en die koëffisiënt van variasie (KV) was laag (tussen 5.7 en 12.4% vir al drie die seisoene, vir beide kultivars getoets). Hierdie faktore dui daarop dat die proef baie goed uitgevoer is en die resultate derhalwe betroubaar is.

Die opbrengs van elk van die standkategorieë word deur die

proefgemiddeld gedeel (die proefgemiddeld van al die standkategorieë word as 100% geneem). Hierdeur word 'n opbrengsindeks bepaal en word elke populasiegrootte se prestasie in terme van opbrengs as 'n persentasie van die proefgemiddeld gelees.

Lanorma

Die gemiddelde opbrengs van die Lanorma-standproef in Seisoen 1 is 45.41 t/ha, Seisoen 2 is 57.42 t/ha en Seisoen 3 is 44.05 t/ha. Geen van

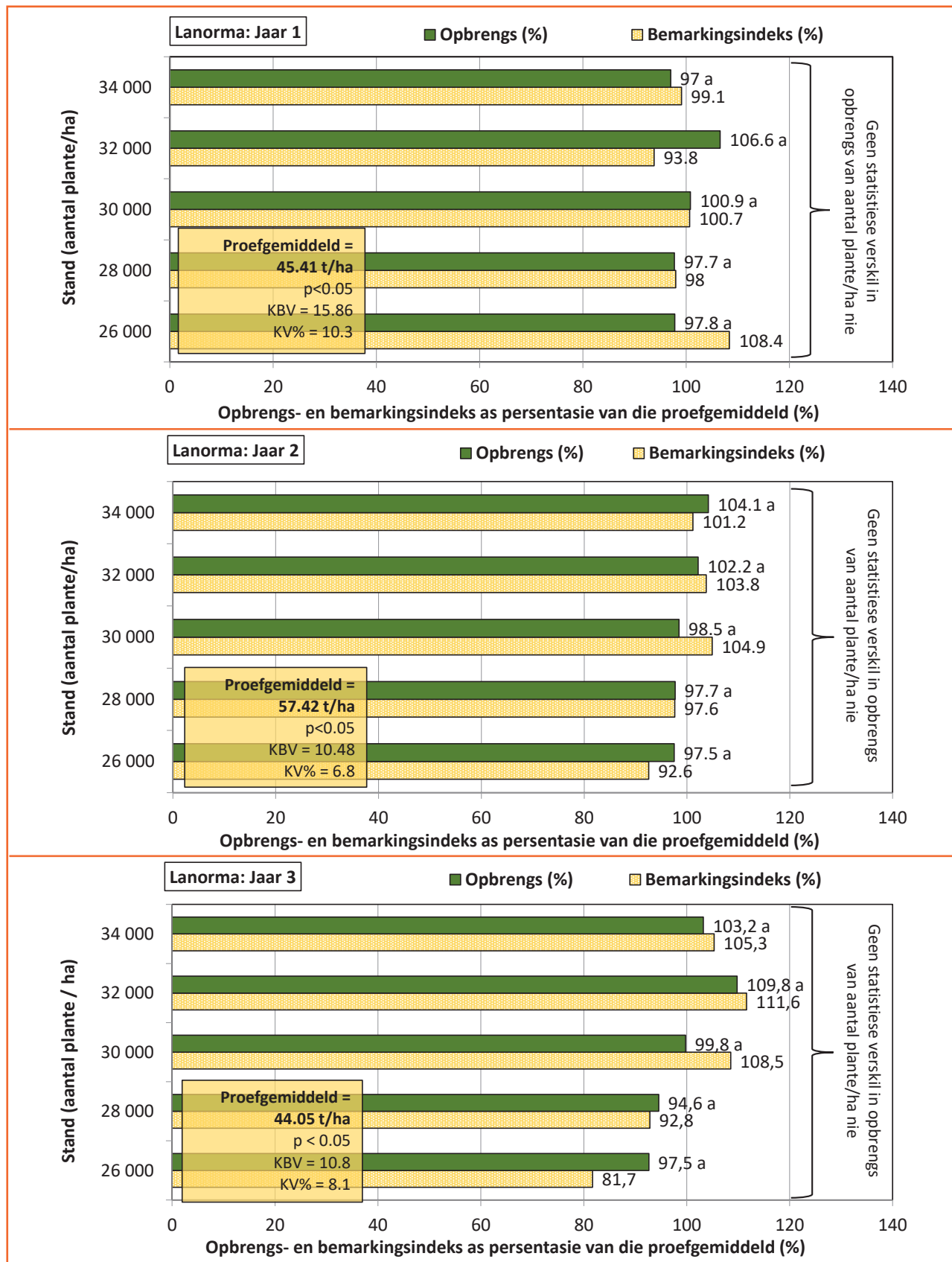
die standkategorieë het by enige van die drie jare statisties betekenisvolle verskille in opbrengs getoon nie (Figuur 6).

Tendense vir opbrengs by die plantdigtheid kan wel onderskei word na gelang van die betrokke jare se reënval en temperatuur. By Seisoen 1 (gekenmerk deur suboptimale reënval en besproeiing) het dit voorgekom of Lanorma die beste opbrengs behaal het by 'n stand van 32 000 plante/ha (hoewel statisties nie betekenisvol nie), maar

Tabel 3: Hoofredes vir afgradering by Lanorma (2019 tot 2021).

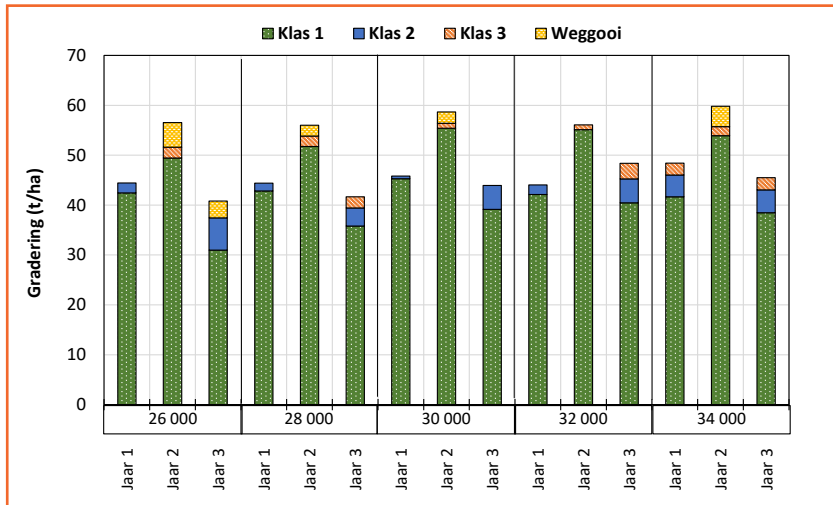
Stand (plante/ha)	2019		2020				2021		
	Misvorming	Sandspleet	Mot	Insekte	Vergroening	Aalwurm	Insekte	Mot	Sandspleet
26 000	x		x	x	x		x	x	
28 000	x		x	x	x	x	x	x	
30 000	x		x	x	x		x	x	x
32 000	x	x	x	x	x		x	x	
34 000	x		x	x			x	x	

Figuur 6: Totale opbrengs en bemarkingsindeks per standkategorie van Lanorma as persentasie van die proefgemiddeld (2019 tot 2021).

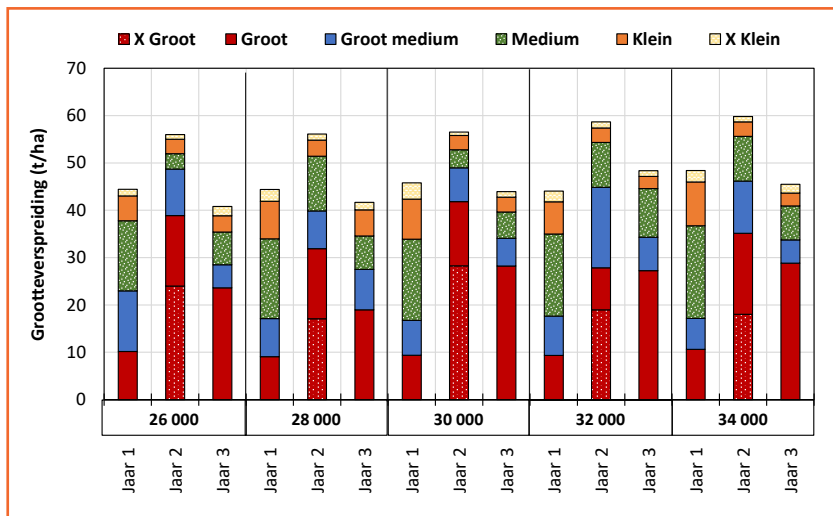


*Waardes gevolg deur dieselfde letter is nie beduidend verskillend van mekaar nie.

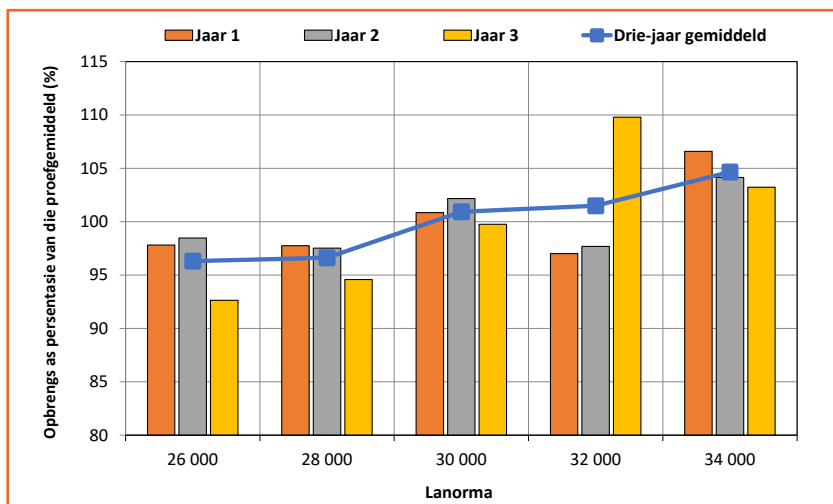
Figuur 7: Gradering van elke standkategorie getoets vir Lanorma (2019 tot 2021).



Figuur 8: Groottegroepverspreiding van elke standkategorie vir Lanorma (2019 tot 2021).



Figuur 9: Drie-jaar prestasie (2019 tot 2021) van Lanorma-standkategorieë in die proef getoets (uitgedruk as persentasie van die proefgemiddeld).



die beste bemarkingsindeks met 26 000 plante/ha behaal het.

Seisoen 3 (met vogstres soos vroeër aangedui) het ook by 32 000 plante/ha die beste opbrengs gelewer (hoewel nie statisties betekenisvol nie), sowel as die beste bemarkingsindeks met 32 000 plante/ha. Seisoen 2, wat baie meer gematigde temperature asook genoegsame en beter verspreide reënval ervaar het, het 'n baie hoër opbrengs gelewer as die ander twee seisoene, maar so ook minder sigbare verskille in opbrengs en die bemarkingsindeks.

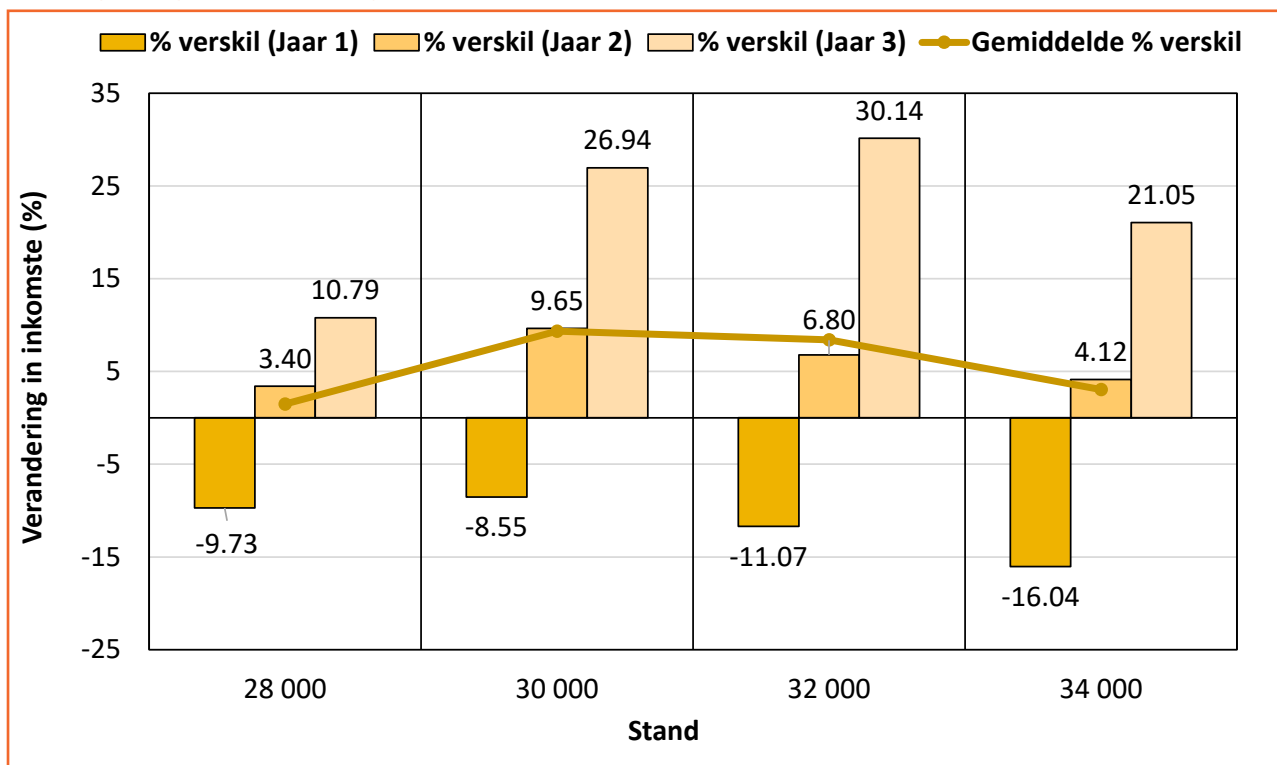
Figuur 7 toon die verskille in terme van gradering by die verskillende standkategorieë vir Lanorma in die drie jaar van die proef se afloop. Dit blyk dat die meeste Klas 1-aartappels gemiddeld gelewer word by 32 000 stand. In die droë seisoen van Jaar 1 was baie min Klas 3 en geen weggooiklas-aartappels aangeteken.

Die hoofredes vir afgradering was misvorming en sandspleet (Tabel 3). Misvorming is tipies van 'n seisoen soos wat hierdie proef vir die eerste seisoen ervaar het, met vogstres en/of hoë temperature. Die proef het fluktuasies in die beskikbaarheid van water ervaar, asook baie hoë temperature. Wanneer strestoestande weer eindig nadat onderbreking in die groei tydperk plaasgevind het, vind misvorming plaas wanneer groei weer naby die aartappel se groei punte hervat.

In Seisoen 2 waar groot opbrengs ervaar is, was uiteraard meer weggooi-aartappels aangeteken met mot- en ander insekskade wat die hoofsaak was. Mot- en insekskade was ook in Seisoen 3 die groot rede vir afgradering. Beide die twee laaste seisoene se grootste hoeveelheid afgradering (vernaam weggooiklas) was by 'n 26 000-stand aangeteken.

Seisoen 2 is die enigste seisoen waar Ekstra Groot aartappels aangeteken is, en dit reflekteer in die goeie opbrengs (Figuur 8). Wanneer die drie seisoene vergelyk word, blyk dit dat Lanorma by 'n 30 000-stand die meeste Ekstra Groot-, tot Groot tot Medium-aartappels opgelewer het.

Figuur 10: Persentasieverandering in inkomste (na gelang van stand) met saadkoste as funksie van opbrengs (uitgedruk as basislyn: 26 000 stand = 0%).



Figuur 9 toon opbrengs as 'n persentasie van die proefgemiddeld oor drie jaar. Na aanleiding van hierdie figuur, wil dit voorkom of Lanorma (afgesien van verskille in seisoene), die mees konstant presteer het onder 30 000- sowel as 34 000-stand.

'n Marge word in Figuur 10 geïllustreer. Die vermeerdering of vermindering in wins (slegs met betrekking tot saadkoste na gelang van standverhoging) word hier

uitgebeeld. Moerkoste is afgetrek van inkomste/ha en 'n 26 000 stand is as basislyn (of 100%) gestel.

Die persentasie op die figuur is dus 'n persentasieverandering in inkomste by elke stand vergeleke met die 26 000-stand. As die verskille van die 28 000-stand byvoorbeeld geneem word, beteken die vermeerdering in moere dat daar 'n 9.73% verlaging in inkomste tot gevolg is, in vergelyking met die

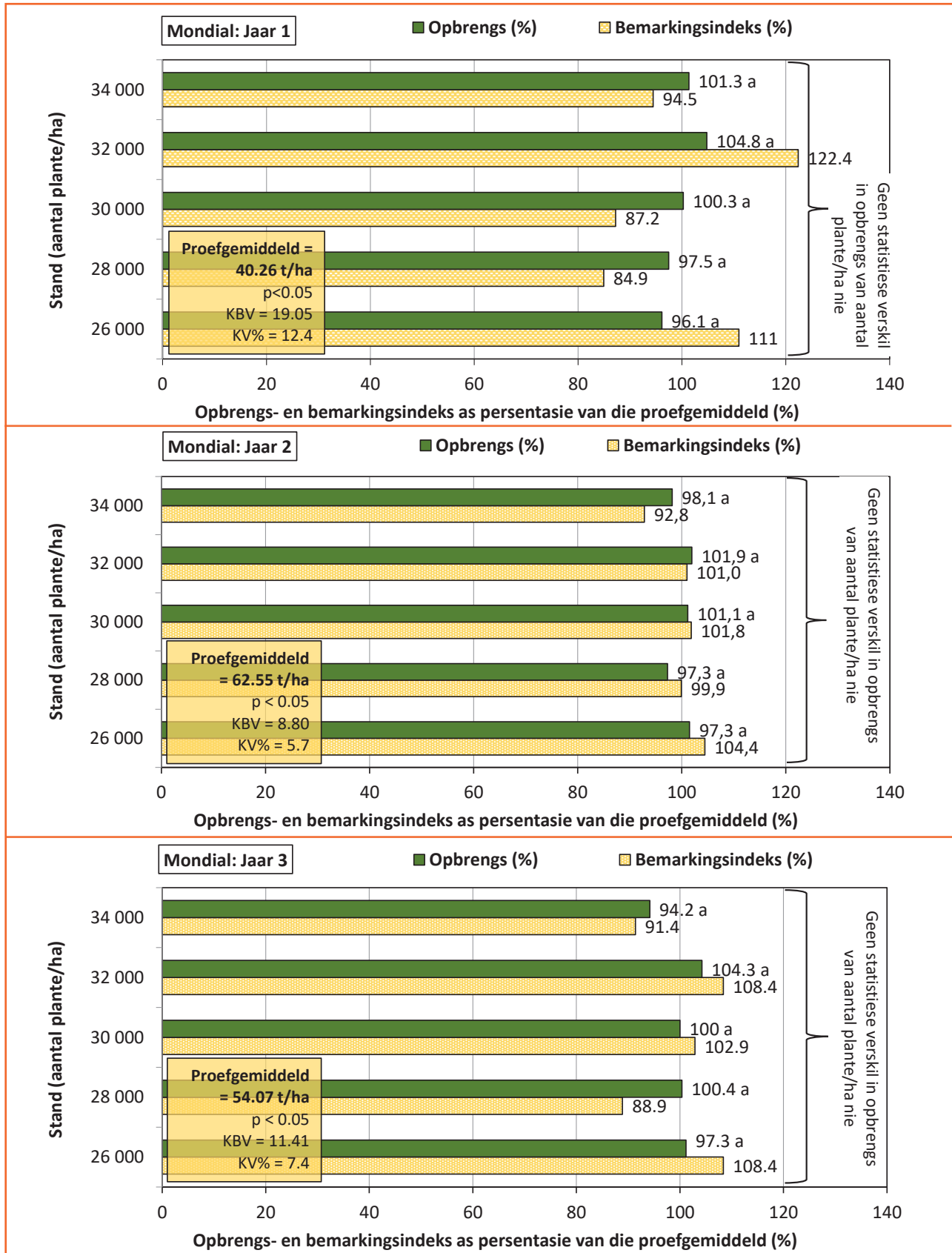
26 000-stand in Jaar 1, maar in Jaar 2 en 3, onderskeidelik, 'n 3.4 en 10.79% verhoging in inkomste weens beter opbrengs by 'n hoër stand/ha.

As alles in ag geneem word, wil dit dus voorkom of die verhoging in stand die meeste sin maak vanuit 'n moerkoste- vs. opbrengs-oogpunt by 'n 30 000- en 32 000-stand. Dit is veral die geval in Jaar 3, waar 26.94 en 30.14% meer inkomste

Tabel 4: Hoofredes vir afgradering in Mondial (2019 tot 2021).

Stand (plante/ha)	2019		2020				2021		
	Misvorming	Sandspleet	Aartappelmot	Vergroening	Misvorming	Swartspikkel	Misvorming	Aartappelmot	Sandspleet
26 000	x		x	x	x	x	x	x	
28 000	x		x				x	x	x
30 000	x		x	x		x	x	x	
32 000	x	x	x				x	x	x
34 000	x		x				x	x	x

Figuur 11: Totale opbrengs en bemarkingsindeks per standkategorie van Mondial as persentasie van die proefgemiddeld (2019 tot 2021).



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

gegeneer is in vergelyking met die 26 000-stand.

Mondial

Die gemiddelde opbrengs van die Mondial-standproef in Seisoen 1 is 40.26 t/ha, Seisoen 2, 62.55 t/ha en Seisoen 3, 54.07 t/ha. Geen van die standkategorieë het by enige van die drie jare statisties betekenisvolle verskille in opbrengs getoon nie (Figuur 11).

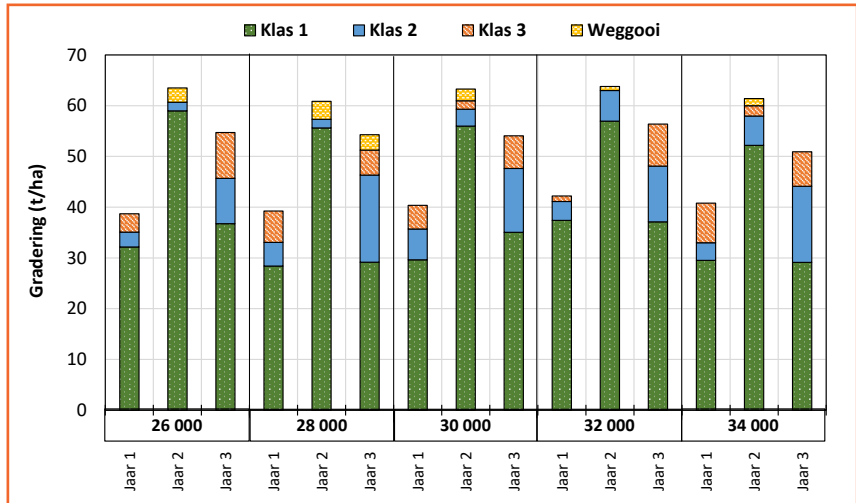
Tendense vir opbrengs by die plantdigthede kan wel onderskei word na gelang van die betrokke jare se reënval en temperature. In Seisoen 1 (gekenmerk deur sub-optimale reënval en besproeiing) het dit voorgekom of Mondial die beste opbrengs behaal het by 'n stand van 32 000 plante/ha (hoewel statisties nie betekenisvol nie), asook die beste bemarkingsindeks met 32 000 plante/ha.

Seisoen 3 (met vogstres soos vroeër aangedui), het ook by 32 000 plante/ha die beste opbrengs gelewer (hoewel nie statisties betekenisvol nie) en die beste bemarkingsindeks was te sien by 26 000 en 32 000 plante/ha. Seisoen 2, wat baie meer gematigde temperature asook genoegsame en beter verspreide reënval ervaar het, het 'n baie hoër opbrengs gelewer as die ander twee seisoene, maar so ook minder sigbare verskille in opbrengs- en bemarkingsindeks.

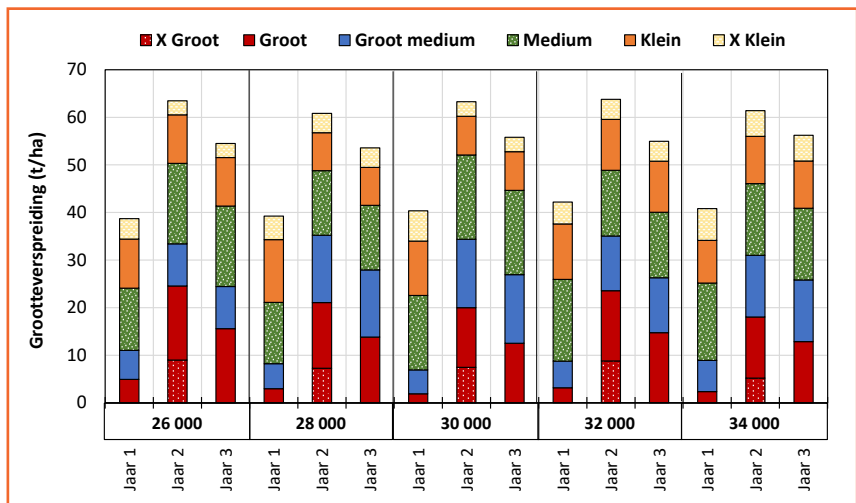
Figuur 12 toon die verskille in terme van gradering by die verskillende standkategorieë vir Mondial in die drie jaar van die proef se afloop. Die meeste Klas 1-aartappels word gemiddeld gelewer by 'n 26 000 stand. In die droë seisoen van Jaar 1 was 'n redelike hoeveelheid Klas 3-aartappels aangeteken. Die hoofrede vir hierdie afgradering was misvorming (Tabel 4).

Soos vroeër genoem, is misvorming tipies van 'n seisoen soos wat hierdie proef vir die eerste seisoen ervaar het, met vogstres en/of hoë temperature. Die proef het fluktuasies in die beskikbaarheid van water ervaar, asook baie hoë temperature. Wanneer strestoestande weer eindig nadat 'n onderbreking in die groeitydperk plaasgevind het, vind

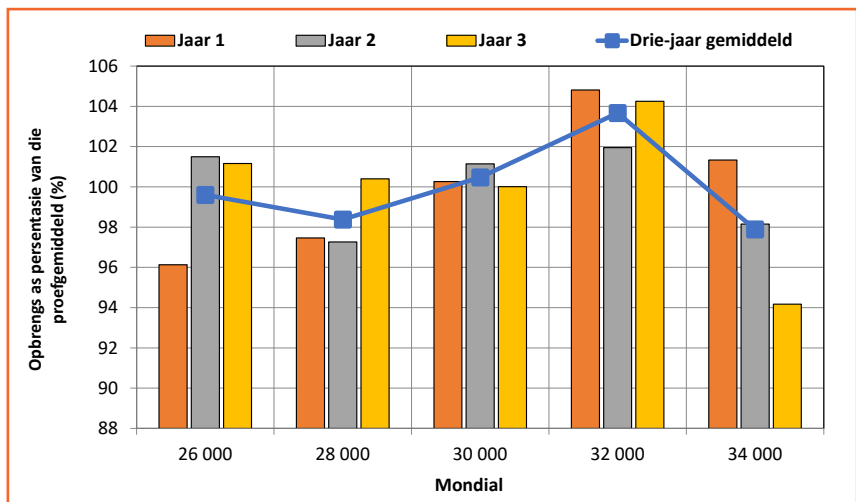
Figuur 12: Gradering van elke standkategorie getoets vir Mondial (2019 tot 2021).



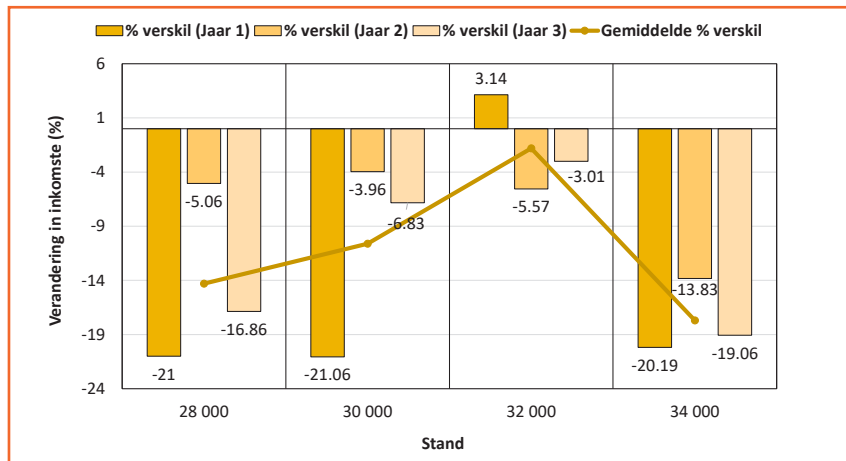
Figuur 13: Groottegroepverspreiding van elke standkategorie vir Mondial (2019 tot 2021).



Figuur 14: Drie-jaar prestasie (2019 tot 2021) van Mondial-standkategorieë in die proef getoets (uitgedruk as persentasie van die proefgemiddeld).



Figuur 15: Persentasieverandering in inkomste (na gelang van stand) met saadkoste as funksie van opbrengs (uitgedruk as basislyn: 26 000 stand = 0%).



misvorming plaas wanneer groei weer hervat naby die aartappel se groeipunte. In Seisoen 2, waartydens 'n groot opbrengs gerealiseer is, was daar by Mondial ook meer weggooi-aartappels aangeteken met motskade as die hooforsaak. Motskade en misvorming was in Seisoen 3 die groot redes vir afgradering.

Seisoen 2 is die enigste seisoen waar Ekstra Groot aartappels aangeteken is en dit reflekteer in die goeie opbrengs (Figuur 13). Wanneer die drie seisoene vergelyk word, wil dit voorkom of Mondial rakelings by 26 000- en 32 000-stande die meeste Ekstra Groot-, tot Groot tot Medium-aartappels opgelewer het.

Figuur 14 toon opbrengs as 'n persentasie van die proefgemiddeld oor drie jaar. Na aanleiding van hierdie figuur, wil dit voorkom of Mondial (afgesien van verskille in seisoene), die meeste konstant presteer het onder 'n 30 000-stand, maar gemiddeld beter opbrengs by 'n 32 000-stand gelewer het.

Die marge van die Mondial-prysvergeljking van moerkoste teenoor inkomste (opbrengs) word in Figuur 15 geïllustreer. Op hierdie grafiek blyk dit dat die basislyn-stand van 26 000, die kostedoeltreffendste van die vyf standkategorieë is met betrekking tot moerkoste. Van 28 000- tot 34 000-stand toon 'n verlaging in persentasie inkomste wanneer dit met 26 000 moere/ha geplant vergelyk word. Ⓞ

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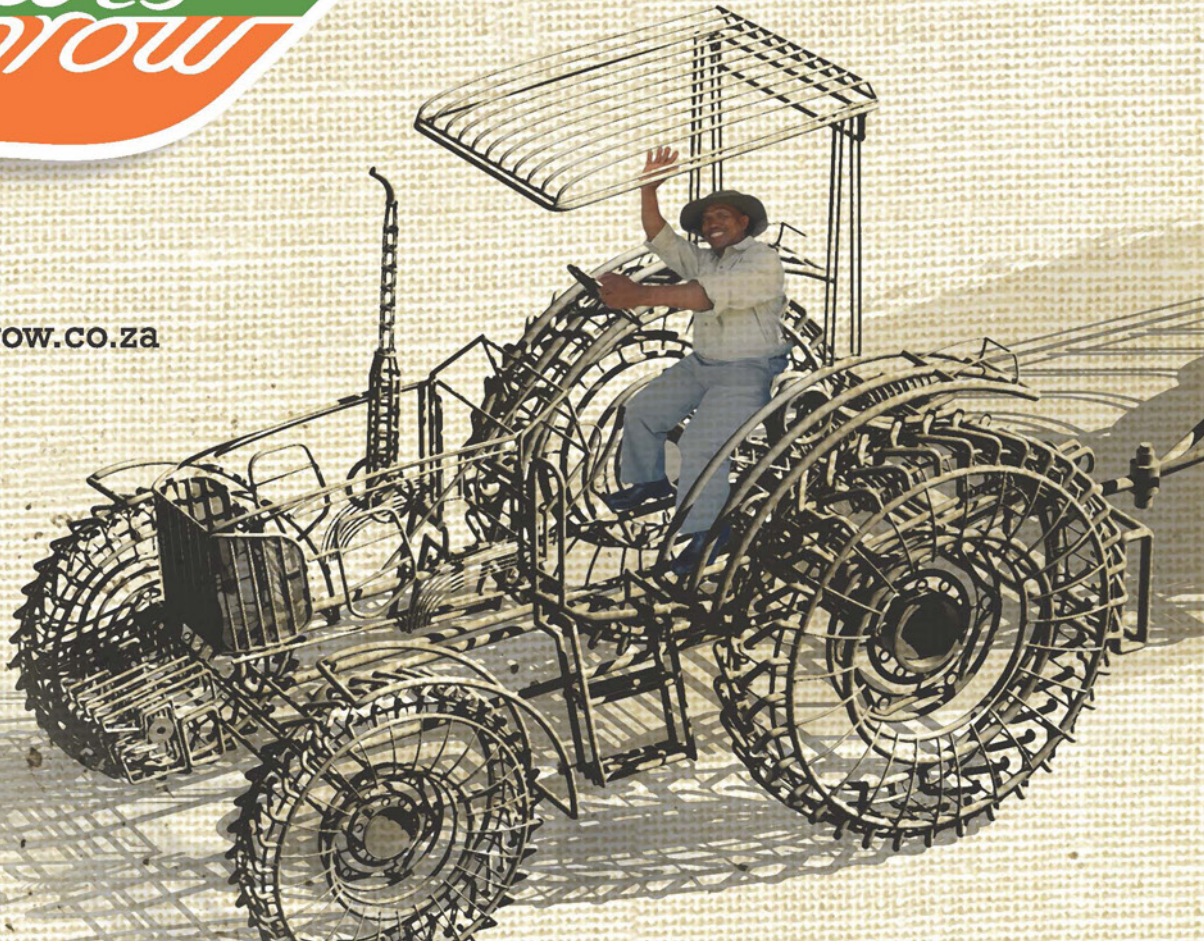
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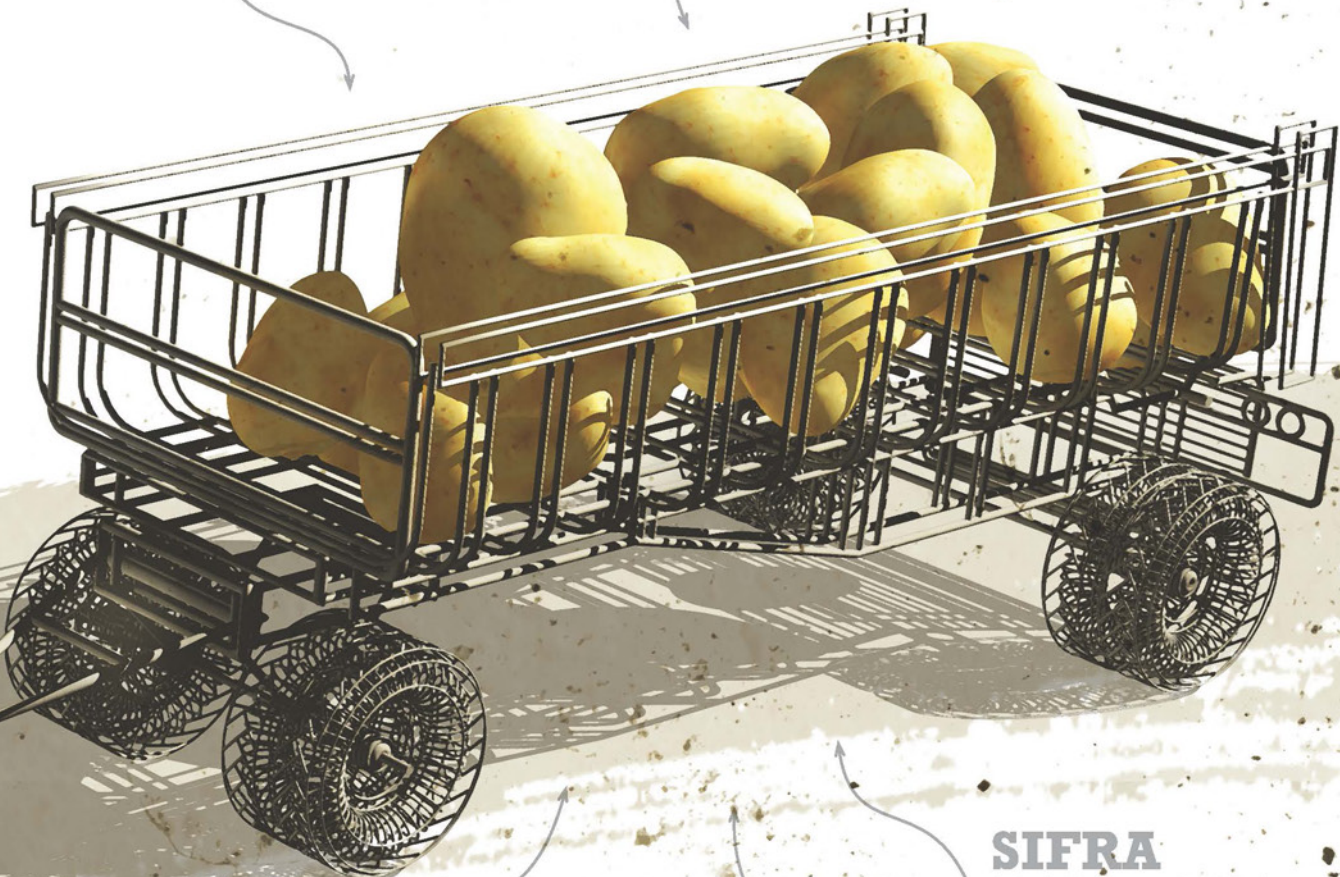
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Deur Chantel du Raan en Janó Bezuidenhout, Aartappels SA

Impopulo se grootste boeredag het vanjaar vanaf 8 tot 9 Oktober by Die Drukgang in Vivo plaasgevind en was ten bate van die CVO Vivoskool. Dit is die eerste keer wat dié boeredag oor twee dae gehou is en dit was 'n reusesukses.

Dit is nie net 'n unieke netwerkgeleentheid nie, maar ook 'n dag wat gesinne saam kan geniet. Die twee-dag geleentheid het met talle uitstallings, landboudemonstrasies, veeveilings, vermaaklikheid en optredes deur gaskunstenaars gespog. Aartappels Suid-Afrika (ASA) was trots om deel van hierdie propvol program te kon wees.

Kenner spreek produsente toe

Willie Jacobs, uitvoerende hoof van ASA, het die spreekbeurt geopen met 'n kort oorsig oor waarmee ASA in die bedryf besig is, en vertel hoe tegnologie deel van ASA se daaglikse aktiwiteite gaan word.

Francois Knowles, registrateur van die Raad van Landbouprodukte-agente (APAC) het oor die organisasie

se mandaat gesels en gesê dat hulle verantwoordelik is vir die regulering van varsprodukte-, uitvoer- en lewendehawe-agente. Knowles het produsente ook ingelig oor verskeie gevaartekens waarna hulle moet oplet wanneer hulle van dié agente gebruik maak.

Baie dankie aan die organiseerders van die CVO Vivo Boerebemarkingsdag en welgedaan met twee puik dae. ASA sien uit na volgende jaar se byeenkoms!

Tydens die byeenkoms is besluit dat APAC werkswinkels vir produsente en hul personeel sal aanbied. Daarna het Janó Bezuidenhout, inligtingspesialis by ASA, 'n oorsig van historiese en huidige markdata aangebied.

Deon van Zyl, uitvoerende hoof van die varsprodukte-agente-maatskappy, Grow, het produsente



Francois Knowles, registrateur van die Raad van Landbouprodukte-agente, het oor die belangrikheid van varsprodukte te midde van Covid-19 en die impak van die plundery wat vroeër vanjaar in KwaZulu-Natal en Gauteng plaasgevind het, gepraat.

oor die belangrikheid van varsprodukte te midde van Covid-19 en die impak van die plundery wat vroeër vanjaar in KwaZulu-Natal en Gauteng plaasgevind het, ingelig. Hy het produsente versoek om die varsproduktemarkte te bewaar, sodat die markte nie 'n stille dood sterf nie.

Dendron-kultivarproef uitgestal

ASA het op 11 Mei 2021 'n statistiese kultivarproef by Zandput Boerdery in Dendron geplant. Die proef het uit 13 kultivars bestaan en is op 30 September 2021 geoes. Die resultate is voorgehou en voorbeelde van knolle en skyfies van elke kultivar, is tydens die dag uitgestal. Die gemiddelde opbrengs was 70.4 t/ha, waarvan die kultivar met die hoogste opbrengs 86.2 t/ha behaal het. Die resultate sal in 2022 in CHIPS gepubliseer word. **C**



Talle uitstallings, landboudemonstrasies, veeveilings, vermaaklikheid en optredes deur gaskunstenaars het die dag gekenmerk.

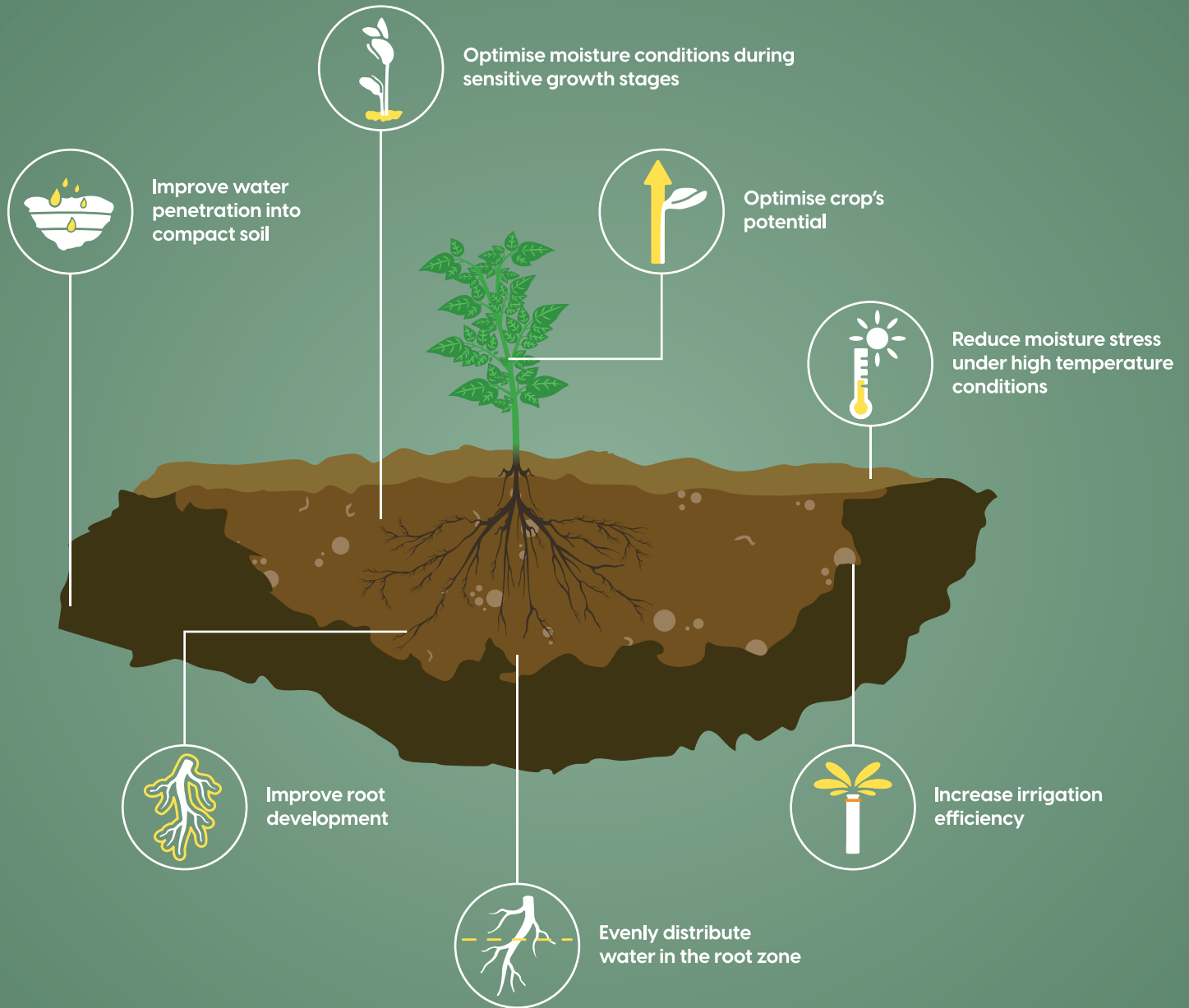


ASA het op 11 Mei 2021 'n statistiese kultivarproef by Zandput Boerdery in Dendron geplant. Die proef het uit 13 kultivars bestaan en is op 30 September 2021 geoes.

Vir enige navrae, kontak Chantel du Raan by chantelr@potatoes.co.za.

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Tom Burke-proewe besigtig

Deur Chantel du Raan, Aartappels Suid-Afrika

In 'n bedryf wat geografies so wyd verspreid is en waarin die behoefte aan inligting vir 'n spesifieke area so groot is soos in die aartappel-bedryf, is dit belangrik om proewe uit te voer wat streekspesifieke behoeftes aanspreek.

Op 12 November 2021 is terugvoer gegee oor die jaarlikse Tom Burke-kultivarevaluasieproef. Die terugvoer het in 'n uitstalformaat in die Tom Burke Boerevereniging se saal plaasgevind. Die proef was statisties uitgevoer by Ratho Boerdery en het bestaan uit 13 kultivars, wat

'n groot hoeveelheid nuwe kultivars ingesluit het.

Proefbesonderhede

Die proef is op 17 Junie 2021 geplant en op 4 November 2021 geoes. Die resultate is aangebied en voorbeelde van knolle en skyfies van elke kultivar, is tydens die inligtingsdag uitgestal. Die gemiddelde opbrengs was 50.4 t/ha, waarvan die kultivar met die hoogste opbrengs 61.4 t/ha behaal het. 'n Laer opbrengs as gewoonlik is aangeteken, hoofsaaklik as gevolg van die feit dat die LEPA (Low Energy Precision Application)-stelsel se besproeiing nie so doeltreffend en eenvormig op die land was nie.

Resultate

Van die nuwe kultivars wat in die proef ingesluit was, het vir 'n paar verrassings gesorg wat opbrengs en skyfiegehalte betref. Hoewel daar nie groot verskille in die kultivars se opbrengs was nie, was daar definitiewe verskille in grootteverspreiding en gehalte.

Interessante resultate rakende die spasiëringsproewe wat die afgelope jaar by twee boere in Tom Burke uitgevoer was, was ook beskikbaar. Die behandelings het drie moertellings (telling van 140, 250 en 400) asook vyf spasiërings (25.5 cm, 30.5 cm, 34 cm, 39.5 cm en 44 cm) ingesluit. 📍

Hou gerus komende uitgawes van **CHIPS** dop vir die finale verslae van hierdie proewe.

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









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Ontwerp deur Plast Media APT/21

Deel 6: Die effek van mikroklimaat op siekte-ontwikkeling

Deur dr Fienie Niedewieser, Aartappels SA

Die feit dat 'n knol net op een helfte van die oppervlak bruinskurfletsels vertoon en nie die ander helfte nie, is waarskynlik as gevolg van die grondtoestande waarin die knol gegroei het.

Die deel van die knol met sigbare simptome, het waarskynlik gegroei in grond wat droog en warm is – moontlik aan die kant van die wal. Die deel van die knol wat nie simptome toon nie, het waarskynlik in koel grond met ideale grondwaterinhoud ontwikkel.

Die ideale toestande vir bruinskurf is droë, warm grond. Hierdie geval is 'n goeie illustrasie van die rol wat mikroklimaat in die ontwikkeling van 'n siekte speel. 🌱



'n Knol wat bruinskurfletsels op net een helfte van die oppervlak vertoon. (Foto: N Wagner)

Vir enige navrae rondom dié aartappelsiekte, kontak dr Fienie Niedewieser by 083 634 4848.

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Januarie / Februarie 2022 ♦ CHIPS

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PIDT and NAMC engage with successful New Era farmers in Limpopo

By Hanrie Greebe, Potatoes SA

Transformation is high on the agenda in the potato industry. In the Potatoes SA (PSA) Enterprise Development beneficiary pipeline, 19% of participants are in their second year, 62% in their third year and 19% in year six. On-farm mentorship support is an integral part of the Enterprise Development Programme. Industry-related training was released on DVDs in eight languages and distributed at various agriculture-related events. Business mentorship as well as accounting services support have been introduced to all farmers in the programme.

The Enterprise Development Programme of PSA has participants in Limpopo, Mpumalanga, KwaZulu-Natal and the Western Cape, ten farmers of which are situated in Limpopo. Three of these farmers' hectares were expanded and, apart from the PSA contribution, further infrastructure and inputs support is received from the Department of Agriculture Land Reform and Rural Development (DALRRD).

Members of the Potato Industry Development Trust (PIDT), National Agricultural Marketing Council (NAMC), PIDT Transformation Advisory Committee (PTAC) and PSA visited five successful New Era farmers in Limpopo on 1 and 2 December 2021. The delegation consisted of Dr Ben Pieterse, chairperson of the PIDT, Nokanyo Moyake of PIDT, Gert Bester, PTAC and PSA board member, Bonani Nyhodo, Matsobane Mpyana, Brian Makhele and Precious Yeki of the NAMC, Rodney Mbuyazi, chairperson of the PSA Transformation Committee and a

PSA board member, and Nomvula Xaba, PSA's transformation manager.

A visit to Afrikan Farms

Afrikan Farms is currently owned and managed by Siphwe Khumalo, its financial director and Vusi Khanyile, chairperson of the board of directors. The business has 2 396 ha available in Mpumalanga which is currently utilised for grazing. Afrikan Farms in Marble Hall comprises 86 ha of which 46 ha is under irrigation, 26 ha under grazing and 12 ha is dryland.

Potatoes were produced for the first time in 2020 with a yield of 48 t/ha. After a vigorous selection process, including the compilation of a business plan which was presented to different PSA approval committees, the farm commenced its first year under

the PSA Enterprise Development Programme.

Approval was granted for 20 ha on which Mondial was planted. The crop was harvested from the third week in November until the first week in December 2021. Afrikan Farms successfully implemented the envisaged production plan under the mentorship of Alex Jandrell.

The business has been working with the following partners:

- AECI Plant Health, providing crop protection advice.
- Tiger Brands, an offtaker for white beans.
- RSA Market Agents.
- Easy Greens, which assists with washing, sorting, and packaging of potatoes.
- SABIE Farming, assisting with final land preparation, planting and harvesting of potatoes.



Gert Bester, PTAC and PSA board member, Dr Ben Pieterse, PIDT chairperson, Siphwe Khumalo, financial director at Afrikan Farms, and Nokanyo Moyakhe of the PIDT, inspecting the last of the season's potato harvest at Afrikan Farms.



Siphiwe Khumalo, financial director of Afrikan Farms, with Gert Bester, board member of PTAC and PSA, discussing the long-term benefits of access to an on-site sorting machine.

The farm in Limpopo has a 23 ha centre pivot used to irrigate the potato crop. There are four boreholes with a pump station along with a 500 000-litre reservoir for steady water supply. Other infrastructure include farm dwellings and an office. In terms of mechanisation, the farm has three tractors with trailers, seed planters, boom sprayers, a slasher, mist blower, bale handler as well as firefighting units. To complete its farming activities, the farm also has an old model potato harvester and a branded delivery truck.

Afrikan Farms plans to expand its potato production to 30 ha on the Mpumalanga farm in 2022. To accommodate the planned expansion, the business is currently in the process of registering for more than 50 000 m³ worth of water rights per annum with the Department of Water and Sanitation. Although the business mainly focusses on the production of potatoes, some commodities such as spinach, tomatoes, lettuce, white beans, and cabbage are currently produced on the farm in Marble Hall. The vegetables are mostly sold to national fresh produce markets and local supermarkets.

The following opportunities are needed to assist Afrikan Farms in becoming a commercially viable agricultural concern:

- Access to funding for developing a packhouse.
- A potato sorting, washing, and packaging machine.
- A generator to support the irrigation schedule as disruptions are currently caused by load shedding.

- Access to funding to acquire a bigger potato planter and a potato harvesting machine.

**Kaalbult Farming:
Petrus Ratsomane**

Kaalbult Farming in Limpopo was established by the late father of Petrus Ratsomane, who inherited his father's name. Petrus is in his third year of the PSA Enterprise Development Programme. Farming activities are currently conducted on a 120 ha portion of land acquired through a permission to occupy (PTO) from the local tribal authority.

In 2021, Petrus planted 20 ha of potatoes which was harvested in October 2021 and attained an extraordinary yield of 71 t/ha. Produce was sold to the Mozambique market as well as the local national fresh produce markets at R5 300 per ton. The farm has successfully implemented its envisaged production plan under the mentorship of Alex Jandrell, VKB and Solly's Boerdery.

Kaalbult Farming has been working with the following partners:

- VKB, which provided a production loan, mentorship, offtake for sugar beans, seed contributions, fertilisers, and chemicals.
- Novon, providing crop protection advice.



Gert Bester, PTAC and PSA board member, with Petrus Ratsomane of Kaalbult Farming.



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Illustraties deur Marth Schwelbe, Schink Art

The farm currently has two 10 ha centre pivots, three equipped boreholes, a storage facility and a dwelling. In terms of mechanisation there are two tractors, a planter, potato harvester, plough, rippers, disc harrow, two-wheel trailer and a 1 000-litre boom sprayer for chemical application.

Petrus intends to purchase an additional 10 ha centre pivot and plant potatoes on 30 ha in 2022. He will be deforesting new fields on the current 120 ha land. The business is also involved in the production of other crops such as sugar beans and sweetcorn which are sold to VKB and the open market respectively.

Opportunities required that can assist Kaalbult Farming in becoming a commercially viable agricultural concern include:

- Access to funding for developing a packhouse for potato sorting, washing, and a packaging machine.
- Selling all the potatoes to national fresh produce markets.

**Mankona Farming:
Andrew Nekgotha**

Andrew Nekgotha from Mankona Farming has been involved in the production of potatoes for nine years with 2021 marking his third year in the PSA Enterprise



Andrew Nekgotha of Mankona Farming in his potato field. (Photograph: Masabatha Motsoeneng)



Mentor Alex Jandrell with Andrew Nekgotha and assistant mentor Josh Jandrell. (Photograph: Masabatha Motsoeneng)

Development Programme. Farming activities are conducted on a 120 ha portion of land acquired through a PTO from the local tribal authority.

During the 2021 harvesting season, Andrew planted 7 ha and 10 ha of potatoes. The 7 ha field was harvested in October with a yield of 65 t/ha, while the 10 ha field which was harvested from the last week of November, was anticipated to sell at an average price of R6 000/ton.

Mankona Farming has successfully implemented its envisaged production plan under the mentorship of Alex Jandrell and Phophi Raletjena, a local commercial farmer. Additional support with the development of water infrastructure, implements, a tractor, potato seed, chemicals, and fertilisers was provided by the DALRRD. Furthermore, the farm is also involved in the production of butternuts and watermelons which are sold to the open market.

To conduct his potato farming operations, Andrew has centre pivots covering 7 ha and 10 ha for irrigation. There are five boreholes with a pump station along with a 960 000-litre reservoir for steady water supply. There is a storage facility as well as a tractor, disc harrow, planter, harvester, boom sprayer, fertiliser spreader and ripper.

Andrew plans to expand his potato production to 30 ha in the

next two years. This will require the purchase of an additional 13 ha centre pivot, two additional boreholes and upgrading the electrical transformer from 50 kva to 100 kva to ensure that there is sufficient electricity.

Opportunities required that can assist Mankona Farming in becoming a commercially viable agricultural concern include:

- Access to funding for developing a packhouse for potato sorting, washing, and a packaging machine.
- Selling all the potatoes to national fresh produce markets.

**Raletjena Farming:
Phophi Raletjena**

Phophi Raletjena is a commercial producer who farms in Teerven in the Blouberg municipality of Limpopo. He has eleven years of involvement in potato production under his belt and has been participating in the PSA Enterprise Development Programme for eight years. He is now a successful commercial potato producer. Phophi is also the first New Era farmer to be awarded PSA Enterprise Development Farmer of the Year.

Farming operations are conducted on 2000 ha of land acquired from the tribal authority. During the 2021 season, Phophi

planted 80 ha potatoes of which 40 ha were planted with Mondial and yielded 68 tons/ha. The harvest was sold to Mozambican traders. The other 40 ha was planted with FL2108 under an offtake contract with Simba. A relatively low yield of 48 t/ha was realised due to frost damage.

Phophi, who provides mentorship to New Era potato farmers in the region, has been working with the following partners:

- DALRRD, which provides infrastructure, implements and machinery.
- AECI, providing operational capital.
- VKB, providing technical support on an informal basis.
- Novon, providing crop protection advice.

Phophi's enabling potato farming operations include centre pivots, water reservoirs, equipped boreholes and a packhouse with a potato sorting machine. He also owns a planter, harvesters, tractors, a ripper, a disc harrow, a boom sprayer, trailers, forklifts and an 8-ton delivery truck. He is also involved in the production of other commodities such as onions and peppadews which are sold to the open market and Miami



Nomvula Xaba, PSA's transformation manager, with Phophi Raletjena and Gert Bester, PTAC and PSA board member, at Raletjena Farming.

respectively. A mixture of beans and cow candy is planted for crop rotation and animal feed.

In terms of expansion, Phophi is planning to expand his potato production to 200 ha in the next three to four years. He has acquired 2000 ha land from the tribal authority, part of which will be used for producing certified seed which he intends to sell to local potato producers. Phophi has expanded 30 ha to 40 ha for potatoes supplied to Simba, with a further envisaged expansion of 150 ha.

Due to limited water supply and infrastructure, Phophi was

given an option by Simba to have an outgrower programme, in terms of which he can contract farmers under the PSA Enterprise Development Programme who are situated in close proximity, to also grow potatoes for Simba on his behalf.

Opportunities required that can assist Raletjena Farming in growing as a commercially viable agricultural concern, include:

- Access to affordable finance for machinery & infrastructure.
- To use the current farm, which is still owned by the government,



Seed harvesting at Raletjena Farming.

as collateral. Government has offered Phophi an option to buy the current land that he is leasing. However, he is unable to obtain financing from the banks due to the tight collateral requirements.

- Information on how to become a certified seed potato producer.

Selamoola & Sons Boerdery: Johannes Selamolela

Johannes Selamolela farms with potatoes on Selamoola & Sons Boerdery’s farm in Limpopo. For the past five years, he has been planting potatoes and in 2021 was in his third year of the PSA Enterprise Development Programme. He planted Mondial on 6.5 ha with harvesting that commenced in the early weeks of November 2021. The entire harvest was sold as ‘unwashed potatoes’ to Mozambican traders and to Soetdoring in Dendron.

The farm has successfully implemented the envisaged

production plan under the mentorship of Alex Jandrell and Wouter Van Amstel, a local commercial potato farmer and also PSA Board member. The DALRRD also supported Johannes with the development of water infrastructure, chemicals, and fertilisers. Furthermore, Novon provided him with crop protection technical advice.

To conduct his farming operation, Johannes acquired a 170 ha portion of land through a PTO from the local tribal authority. The local community has raised concerns over the expanse of grazing land taken up by his potato operations, and this is preventing Johannes from expanding his production. However, Johannes has entered into a ten-year lease agreement for a 200 ha farm in Pickum.

Infrastructure on Selamoola & Sons Boerdery consists of a 10 ha centre pivot (reduced to 6.5 ha due to lack of water), 960 000 litre



Johannes Selamolela from Selamoola & Sons Boerdery. (Photograph: Masabatha Motsoeng)

reservoir and four boreholes. As far as mechanisation is concerned the enterprise has tractors, a maize harvester, disc harrow, chisel plough, slasher as well as a potato harvester. Johannes is also involved in the production of other commodities such as butternut, baby marrows, patty pans, green peppers and cabbage which are sold at the national fresh produce markets.

Johannes plans to expand by 10 ha in the 2022 season. He acquired a grant funding of R5 000 000 from DALRRD which he will use to purchase an additional 10 ha centre pivot, a 950 000 litre reservoir, fencing and production inputs for the 16.5 ha potato crop.

Opportunities required that can assist Raletjena Farming in growing as a commercially viable agricultural concern, include:

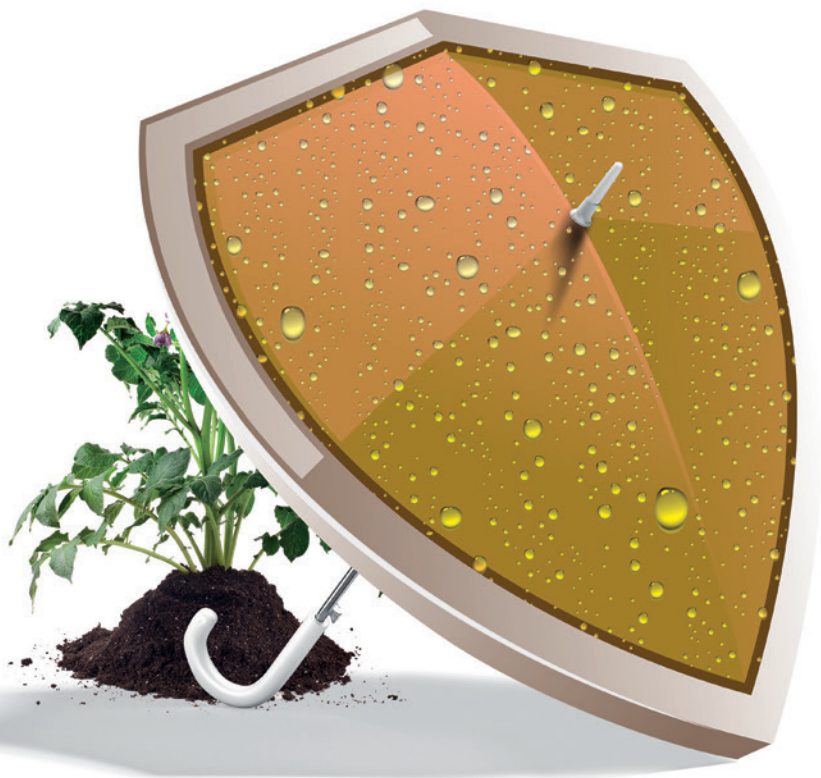
- Access to funding for an own packhouse with a potato sorting and washing machine.
- Access to the national fresh produce markets.
- Funding for planting and harvesting implements. 📍



Josh Jandrell, mentor assistant, Johannes Selamolela, Dr Ben Pieterse, PIDD chairperson, and Alex Jandrell, mentor.

For more information on PSA’s transformation projects, email Nomvula Xaba at nomvula@potatoes.co.za.

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Lauretha Mohlala: The sky is the only limit

By Rotondwa Raligidima, Potatoes SA

Lauretha Mohlala was born and raised in the small village of Bushbuckridge, Mpumalanga. Hers was a very disciplined household with her housewife mother playing a significant role in her early childhood development, teaching her how to read and write and ensuring that she never missed a day at school.

Her father, a farmer, was the one who motivated and encouraged her to study agriculture. "My family is such a loving and great source of motivation, and they keep me focused on what I do."

On to the PSA joyride

Lauretha was a recipient of the Potatoes South Africa (PSA) Bursary Programme, which funded her undergraduate diploma in plant production at the Lowveld College of Agriculture from 2013 to 2015. She applied for the bursary after having been referred by the college administrator. During her years in the programme, Lauretha says she felt a sense of belonging, as PSA did not just treat them like students, but as family.



Lauretha at the Indigo Fruit Farming facility.

A large percentage of students face financial challenges, and for Lauretha the bursary from PSA helped to ease financial stress and allowed her to focus fully on her studies. PSA did not only impact her academically, but she also had the opportunity to attend the acclaimed industry symposium and induction, events she found very informative and effective. They also helped her to understand the overall importance of the potato industry and agriculture as a whole. "These lessons," she says, "cannot be traded for anything."

Why agriculture?

Lauretha was exposed to agriculture from a young age. Her grandparents were subsistence farmers and, during visits, she would always tag along when they checked on their plots. She was always eager to assist as she was amazed at the vegetables they produced.

It did not stop there; she asked her father to buy her some seeds so she could start farming in their backyard. Her father then began to take her to his farm. "It was such a beautiful experience and I guess the passion for farming runs in the family," she says.

Work experience

After completing her diploma, Lauretha worked at Champaign Agri from 2014 to 2016 as an assistant junior farm manager on their vegetable project. She gained a lot of practical experience in farm operations and management.

It also motivated her to start her own farming operation called Queens' World Farming, which she registered in 2016. The project operated for a year and did very well planting various vegetables, such


as cabbage, tomatoes and onions, for retailers such as Spar and Boxer. Due to land challenges, however, the project is currently not operating.

Lauretha was also employed as a quality controller for Twypack at Indigo Fruit Farming on a seasonal basis from March to August in 2021.

What the future holds

She is currently in her second year of BCom Business Informatics studies at the University of South Africa and would love to improve her financial management skills and learn more about information systems, given that we find ourselves in the Fourth Industrial Revolution. What she most aspires to is becoming a successful farm owner and an agricultural business analyst. She wants to make a meaningful contribution to the agricultural industry by assisting small and emerging farmers to make sound economic decisions, as well as to employ the right information systems and technology.

Lauretha wants to encourage fellow students with financial challenges to apply for the PSA Bursary Programme. Through the programme, prospective students do not only receive financial assistance, but also valuable exposure to the potato industry and its stakeholders. Lauretha will forever be grateful for the opportunity of having been considered for the bursary programme and for the experience she gained.

Lauretha, the sky is the only limit. PSA wishes you all the best. 

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

Potatoes bring rural communities back to life

By Masabatha Motsoeneng, Potatoes SA

In 2021, six communities in the Limpopo region were given the opportunity to participate in the Potatoes South Africa (PSA) small-grower development programme. The programme is aimed at sharing knowledge and skills regarding potato production, through the planting of a demonstration trial. The programme has been well received by communities in the region.

A trend observed over the years, is that of rural community members moving to cities in a bid to find employment and generate an income. However, due to the lack of employment opportunities and global economic pressures, people are now abandoning cities and returning to the rural areas, without any farming skills. The small-grower development programme is a great tool to reach out to these communities.

The Ga-Kibi demonstration trial

Ga-Kibi Village is situated 115 km outside of Polokwane in the

southeastern part of the Capricorn district of Limpopo. The farmers of this village focus predominantly on livestock production and basic crops consumed by households, such as spinach, beans, tomatoes, onions, and maize.

The local farmers said they were convinced that potatoes could only be produced by sub-commercial and commercial farmers who possess the necessary infrastructure and machinery. The PSA small-grower development programme, however, utilises simplified methods of planting which makes it possible for communities to plant potatoes with the aim of generating income and creating food security.

Information sessions

The Mondial potato variety was planted on 0.2 ha on 14 July 2021, and was harvested on 25 November 2021. Information sessions were held during the planting of the demonstration trial, crop monitoring and harvesting.



The demonstration trial at Ga-Kibi Village.

Information shared at planting included factors to consider when selecting a potato cultivar, the use and application of fertilisers, and understanding the use of crop protection products. Information shared during crop maintenance and monitoring included field scouting, identifying different types of pests and diseases, the use and application of top-dressing fertiliser, managing tuber moth, and record-keeping.

Information shared during harvesting included grading and classing potatoes according to size and quality, weighing the potatoes to be sold and/or rejected, packaging, keeping of sales records, and the types of markets available.

Partners in prosperity

In order to enhance the demonstration trial, PSA partnered with the Limpopo Department of Agriculture who provided technical support and crop protection products for



Farmers from Ga-Kibi Village planting Mondial potatoes.



Potatoes harvested from the demonstration trial.

and monitor the trial during the growing season.

The trial created casual work for the Ga-Kibi community members. Ma Kgoši said that the small farmers in the village did not plant potatoes before the demonstration trial was introduced. "Potatoes were viewed as a delicate and expensive crop that can only be successfully planted at a commercial level," she remarked. She says she now sees small patches of potatoes located at some of the households, with the families planning to sell the potatoes. She expressed her appreciation for the project, adding that a lot of information, material and skills were shared. The programme has brought joy and life to Ga-Kibi village. 🌱

the trial. Andrew Nekgotha and Enos Mahwai, both participants in the PSA enterprise development programme, used their tractors and implements for land preparation, and provided additional seed to expand the trial.

Ester Leboho, also known as Ma Kgoši (Queen Mother), contributed to the project by making her own land available for the planting of the trial, water, and water infrastructure. She also hired eight casual workers to maintain

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



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Peeling the true essence of PSA's generic promotion efforts

By Immaculate Zinde, Potatoes SA

Every human being on this planet is in one way or another engaged in marketing. Whether it is to capture the attention of an audience at a speaking event or convincing a panel of interviewers for a potential job – we all take conscious actions to arouse interest for a desired outcome to be achieved. As such, marketing, and ultimately promotion, is not a futile, fruitless or thoughtless exercise. It is intentional.

It is acknowledged that for the 4Ps of marketing – place, price, product and promotion – to work in an organisation's favour, it must produce a product or render a service for which there is a need, it must be made available at prices that consumers can afford or are prepared to pay, and it must be easily accessible. Last but not least, product/service awareness is of paramount importance. How else will consumers choose a product/service if they do not know about it, its features and benefits, and its extrinsic rewards?

About PSA's marketing division

The National Agricultural Marketing Council (NAMC) regards generic promotion as activities carried out to create awareness of a commodity. Coincidentally, the marketing division of Potatoes SA (PSA) describes its strategic mission as to inform, educate and inspire. Indeed, it is the mission of PSA marketing to communicate with targeted consumers in a compelling manner to impart product facts and information, educate and inspire consumers to select potatoes as their number one food commodity.

To this end, all PSA marketing campaigns are carried out with

the intent of stimulating demand. PSA's marketing communication is disseminated through the promotional mixed elements of above-the-line advertising, public relations, digital marketing and regional sporting events.

Above-the-line advertising

Between July and December 2021, PSA launched a mass media campaign on radio and television to elevate the Farm to Fork Initiative. The commercials were flighted on SABC 1 and SABC 2 as well as on Metro FM, Kaya FM, OFM and Jacaranda FM.

The marketing communication is gaining traction and being well received. In the very first focus group commissioned to measure the efficacy of above-the-line advertising, the respondents listed the distinctive attributes of PSA's television and radio commercials as follows:

- Recognition for the potato industry.
- The nutritional value of potatoes.
- That it is a South African product.
- An increased appreciation for potatoes.
- An increased appreciation for producers.
- Being proud to have potatoes as part of their diet.

Public relations

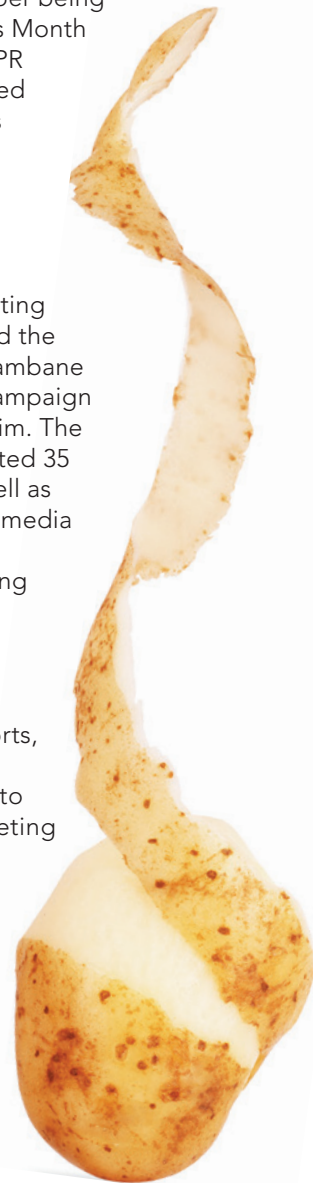
Without the many public relations (PR) efforts PSA has initiated over the years, it would be impossible to build good relations with the public, especially the consumer and media as primary stakeholders in all marketing efforts.

Market research conducted by the Heart and Stroke Foundation

South Africa revealed that year-on-year, products with the Heart Mark endorsement grow in popularity, and the Heart Mark is a sought-after logo. Since 2017, potatoes have been endorsed as a heart-healthy vegetable when cooked with skin on, prepared correctly, and dressed in quality herbs and spices.

With September being Heart Awareness Month in South Africa, PR efforts were aimed at flagging PSA's endorsement during the months of September and October 2021. The marketing division launched the #WeHeartAmazambane PR and digital campaign to positive acclaim. The campaign attracted 35 broadcasts as well as print and online media exposure worth R920 000, reaching just over three million South Africans.

Without effective PR efforts, PSA would not have been able to elevate its marketing communication message to a wider audience. In many respects, all PR efforts have augmented and backed



generic promotion efforts, thereby strengthening its success rate.

Digital marketing

Over the years, the marketing division has produced recipe, health and nutrition content that has kept its captive audience of 74 000 glued to Potato Nation's social media platforms. The division has observed growing engagement, deepened interactions and ever-growing product loyalty. It is safe to say the social currency of PSA's platforms is a melting pot of golden opportunities. The ideal is to reach 100 000 followers by the end of June 2022.

For 2022, the drive behind all PSA's digital marketing efforts will be injecting more humanity into every communication message. When all is said and done, people want to be heard, understood and genuinely cared for. This means marketing that establishes genuine, unadulterated and warm connections with identified core markets.

Someone once said: "Just be nice, take a genuine interest in the people you meet, and keep in touch with people you like. This will create a group of people who are invested in helping you because they know you and appreciate you."

Sporting events

Sporting events are a unifier. For PSA, regional sporting events will be an extension of the organisation's efforts to connect with potato lovers in key production regions. Sporting events will serve as additional marketing communication deployed to reach a wider consumer audience, using both new-age and traditional marketing tactics.

In closing

As we welcome the new year, we aim to put levies at work in a decisive, productive and valuable manner. The power and efficacy of good marketing must never be undermined.

The year 2021 was one of great firsts for the industry in respect of its marketing efforts. The year has taught the division that projects founded on research needs play an instrumental role in performance management.

The year awoke us to the resilience of the value chain. The inaugural State of the Potato Industry Address revealed and demonstrated that the potato industry is unshaken and committed to its vision of "Together towards excellence in the potato industry".

In 2021, the marketing division finally implemented the farmgate sales study with enterprise development producers in Limpopo. This collaboration with the transformation division showcases cross-divisional collaboration aimed at serving all potato producers in a manner that derives value.

The marketing division commits to unleashing greater rewards in the last six months of the 2021/2022 fiscal year through all approved and planned marketing campaigns. 🍌

For more information on PSA's marketing initiatives, send an email to Immaculate Zinde at immaculate@potatoes.co.za.



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AGENTS OF:



Lead a healthy lifestyle in 2022 and beyond by adding potatoes to the mix

By Claire Julsing Strydom, registered dietician, and Immaculate Zinde, contributor

Orange may be the new black, but a healthy lifestyle never goes out of style. In a time of a global pandemic, more than ever, protecting your health is essential. Self-care is a bit of a buzzword and immediately we think of candles, time spent in nature, retail therapy or an inviting bubble bath ... but what about healthy habits like physical activity and good nutrition? These are ways to take care of yourself and your health to reduce the risk of diseases like diabetes, cardiovascular disease and cancer.

Are you ready to supercharge your self-care and take the leap to lead a healthy lifestyle in 2022?

The results are in!

Using data from the Framingham Heart Study, researchers from Boston University School of Medicine monitored the development of disease or death in participants over 16 years. The outcomes are simple: The longer you lead a healthy lifestyle, the less likely you are to develop diseases later in life.

The research focussed on cardiovascular health specifically, and found that for each five-year period that participants had ideal heart health, they were 33% less likely to develop high blood pressure, had a 25% lower chance of getting diabetes, heart and kidney disease, and had lowered their risk of premature death by 14%. It doesn't get more convincing than that!

The bottom line is that the longer a person doesn't smoke, eats healthily to maintain a stable weight, exercises regularly, has stable blood pressure, blood sugar and cholesterol levels, the lower their chances of disease or early death are.

Health is wealth. In 2022, healthy meals do not have to be boring. If anything, if it doesn't look appealing on a plate, it is far from healthy.

All food groups matter

Variety is the spice of life, they say. So often the focus when aiming to lead a healthy lifestyle is fixated on removing certain foods with the aim of 'losing' weight – ditch carbs, ditch sugar and eliminate alcohol. But all food groups matter.

We forget to focus on all the amazing benefits gained by living healthily. A healthy, balanced diet means consuming foods that are correctly prepared and elegantly dressed. Never forget to count your calories. Size matters! During these tough times, saving money by spending less on expensive treats, eating out and takeaways can put you in charge of your own life.

Foods to function at your best

Your body functions at its best when you fuel it with nutrient-dense foods that are rich in fibre, vitamins and minerals. When choosing carbohydrates, fill up on legumes (beans, lentils and chickpeas), and whole and unprocessed high-fibre cereals (barley, bulgur wheat and brown rice).

Potatoes with their skin on are also a high-quality, plant-based carbohydrate source. Pick proteins that are lean and low in animal fats such as chicken (without skin), meat cuts with the fat removed, fish and low-fat dairy.

Plant foods are rich in natural compounds called phytonutrients that are anti-inflammatory and prevent damage to the cells of your body. Always remember, good quality carbohydrates are not the enemy. They are the body's fuel for energy!

Start today

While essential, optimal nutrition and high-quality food is not the only focus. Fitness levels and regular physical activity will also help you to love the skin you're in. Work towards reaching 150 minutes of moderate activity per week (that's five days of 30 minutes of exercise you enjoy like swimming, jogging, cycling, skipping or aerobic classes).

Don't skimp on sleep – follow a routine that helps you get eight hours of quality sleep every night. Stay connected with friends, family and loved ones and surround yourself with people who have a positive impact on your life. Meditate, eat, pray, love! 🍌

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

Tegnologiese ontwikkeling in bedryfsbemarking

Deur Immaculate Zinde en Phindiwe Nkosi

Tegnologiese vooruitgang het deur die eeue grootliks bygedra tot landbouontwikkeling – van ystergereedskap en die ploeg, tot digitale toepassings wat in die moderne boerdery aangewend word. Daar is ook voortdurende ontwikkeling in ons pogings om nuwe maniere te vind om meer doeltreffend te boer ten einde voedselsekerheid wêreldwyd te verseker.

Tegnologie is 'n hoeksteen van die moderne landboubedryf en die rol wat dit speel in onder meer presisieboerdery, binnenshuise vertikale boerdery, revolusionêre kweekhuispraktyke, kunsmatige intelligensie, blokketting, outomatisering en robotika kan nie oor die hoof gesien word nie.

Die druk om 'n groeiende wêreldbevolking te voed te midde van stygende kostes, voorraadontwrigting, mannekragtekorte en volhoubaarheid voldoen aan verbruikersvoorkeure, is aan die toeneem. Juis daarom is dit van kardinale belang dat die aartappelbedryf se generiese produkbe-marking aan moderne tegnologiese ontwikkeling gekoppel moet word ten einde die bedryf te ondersteun en bevorder.

Vinnige reaksiekodes

Soos die naam aandui, bied vinnige reaksiekodes (*quick response codes* of

QR-kodes) maklike toegang tot inligting vir verbruikers. Deur hierdie kode met 'n digitale toestel te skandeer, kan toegang verkry word tot gebergde inligting, webtuistes en/of data.

QR-kodes speel ook sleutelrolle in bemarkings- en advertensieveldtogte, veral gegewe die verhoogde voorsorgmaatreëls weens die Covid-19-inperking.

Ten einde verbruikers in te lig en te inspireer, het Aartappels Suid-Afrika (ASA) se bemarkingsafdeling die moontlikheid om QR-kodes by hul bemarking in te sluit, begin ondersoek. Die vermoë van hierdie kodes om webtuiste-adresse, kontakbesonderhede en teks te berg, maak dit die moeite werd om te ondersoek, veral inaggenome die feit dat talle verbruikers slimfone besit.

Deur gebruik te maak van QR-kodes kan resepte, inligting oor voedingswaarde, kompetisies en veldtogte onmiddellik en op 'n kostedoeltreffende wyse, met verbruikers gedeel word – hierdie voordeel baat selfs aartappelprodusente.

Kodes op aartappelverpakking

Om te verseker dat al ons produsente voordeel trek, het die bemarkingsafdeling navorsing gedoen ten opsigte van die koste-implikasie om QR-kodes op aartappelsakkies aan te bring. Die ondersoek het getoon dat dit wel

moontlik is, en alhoewel addisionele inligting ingewin moet word, dui voorlopige navorsing daarop dat die plaatkoste vir aartappelsakkiekodes tussen R5 000 en R20 000 beloop (registrasie van die kode, webtuiste, ens. is uitgesluit).

Aartappelprodusente wat belangstel om hierdie kodes op hul sakkies aan te bring, kan direk met hul sakvervaardigers skakel. ASA se bemarkingsafdeling sal rugsteun verleen aan belangstellende produsente ten opsigte van ontwerp en tersaaklike inligting.

QR-kode of nie?

Afhangend van die gebruikskredes, hou QR-kodes ook die volgende voordele vir besighede in:

- In Suid-Afrika is data duur en nie almal het toegang tot die Internet nie. QR-kodes bied die perfekte brug tussen aanlyn- en vanlynkliënte. Kliënte wat slegs toegang tot produsente se diensaanbieding in gedrukte media het, kan van QR-kodes gebruik maak om produsente se aanlynplatforms te besoek.
- QR-kodes is ideaal om besighede op 'n kostedoeltreffende, toeganklike wyse aan kliënte bekend te stel. Dis nie nodig om nuwe toepassings of hardeware vir jou slimfoon af te laai nie. Jy benodig net 'n slimfoonkamera om die kode te skandeer.
- QR-kodes is veeldoelig. Dit kan gebruik word as 'n 'oproep tot aksie' om webtuisteverkeer te verhoog en doeltreffendheid te meet. 📍

Wen 'n QR-kode vir jou aartappelsakke!

Aartappelprodusente wat die QR-kode hieronder skandeer, staan 'n kans om 'n gratis kode vir hul 10 kg-aartappelsakke te wen. ASA sal die kode ontwerp, registreer en toesien dat dit deel vorm van die produsent se verpakkingsplaat.

Skandeer die QR-kode met jou slimfoon • Volg die webskakel op jou foon • Voltooi die vorm en deel jou siening oor die gebruik van QR-kodes op aartappelverpakking.

(Bepalings en voorwaardes geld.
Slegs Suid-Afrikaanse aartappelprodusente kan deelneem.)



SKANDEER MY

Om jou sienings te deel, skandeer die QR-kode, besoek www.potatoes.co.za of stuur 'n epos aan immaculate@potatoes.co.za.

Suid-Afrikaners vier #WeHeartAmazambane

Deur Kirsten Drury, Immaculate Zinde, bydraer, en Gawie Geyer, vertaler

Die Griekse filosoof Hippocrates het by geleentheid gesê: "Laat kos jou medisyne wees en medisyne jou kos".

Nog nooit was dit méér waar as nou nie, veral gegewe die nasleep van die Covid-19-pandemie en die enorme impak daarvan op ons gesondheid, leefstyl en in besonder ons dieet.

Met dít in gedagte het Aartappels SA (ASA) kragte saamgesnoer met PR Worx om die belangrikheid van 'n gebalanseerde, gesonde dieet te bevorder, om verbruikers van die vele redes waarom aartappels op Suid-Afrikaners se borde moet wees bewus te maak, en om die beste voorbereidingsmetodes te bespreek ten einde die benutting van aartappels se voedingswaarde te maksimaliseer.

Om hierdie doelwitte te bereik, het ons die hoogs impakvolle #WeHeartAmazambane-veldtog van stapel gestuur, deur gebruik te maak van onderskrywing deur die Hart- en Beroertestigting, om gehore daaraan te herinner dat aartappels nie net die land se mees geliefde groente is nie, maar dat ons liggame dit nodig het.

'n Algehele passie vir aartappels

Ná die afskop van #WeHeartAmazambane in September as Hartbewustheidsmaand, is daar op die invloed van beïnvloeders (*influencers*) staatgemaak om diegene by wie aanklank gevind word, op die voorgrond van die veldtog te plaas, en daardeur die veldtog se reikwydte en impak te versterk.

Eerstens het die gewilde spysenieringspan en koskenners, WhyCook, by die veldtog aangesluit om die boodskap oor die verskeie 'hartvoordele' van aartappels oor te dra. 'n Video is

vertoon waarin hulle een van ASA se hartgesonde disse voorberei en die gehoor van hul persoonlike ondervinding met hoë bloeddruk vertel het. Hoë bloeddruk is 'n belangrike risikofaktor vir hartprobleme.

Tweedens het die WhyCook-span gehelp om ses smullekker wegneemetes met aartappels, keker-ertjies en spinasie voor te berei, wat deur die Hart- en Beroertestigting onderskryf is. Die etes was professioneel verpak en by vriende van die veldtog – 'n groep gesondheids- en fiksheidsbeïnvloeders – afgelewer. Elkeen van hierdie ses beïnvloeders het by die veldtog ingeskakel om die belangrikheid van aartappels tydens Wêreld Hartdag op 29 September 2021 te vier.

Boodskap bereik meer as 1.1 miljoen

In Oktober is 'n verdere vyf aartappel-liefhebbers betrek om gehore tydens die aanloop tot Wêreldvoedseldag oor die voedingsvoordele van aartappels in te lig. Dié vyf beïnvloeders, wat onder meer 'n aartappelboer se dogter en 'n dieetkundige ingesluit het, het elk 'n reeks plasings (*posts*) met prettige feite op sosiale media gepubliseer om die vele voordele van aartappels uit te lig, en wenke te gee oor hoe aartappels op 'n gesonde wyse geniet kan word.

Met 'n hupstoot van addisionele media-rugsteun deur korporatiewe vennote soos AMC Cookware en Instant Pot, het die digitale veldtog meer as 1.1 miljoen sosiale media-gebruikers bereik asook duisende aktiewe skakelings in die vorm van *likes*, klikke, deelname en opinies gegenereer.

Dit was egter nie al nie. Om die boodskap van die veldtog verder te bevorder, het ASA sy eerste



reklame-artikel wat in die spesiale World Food Day-afdeling in *Business Day* gepubliseer is, met elkeen van die koerant se intekenare gedeel en sowat 91 000 Suid-Afrikaanse lesers bereik. Die digitale weergawe van die artikel kon ook vir 'n week op die *Business Live*-webwerf gelees word, wat die veldtog se grense verder laat strek het.

'n Blywende impak op alle platforms

Die #WeHeartAmazambane-veldtog was ook doeltreffend deur 'n geteikende mediastrategie gerugsteun, waarvolgens belangrike boodskappe rondom aartappels deur middel van toonaangewende gedrukte en aanlynpublikasies soos *The Citizen* en *Longevity Online* oorgedra is.

Daarmee saam is ons woordvoerders deur verskeie radiostasies soos Channel Africa, Groot FM, Good Hope FM, Massiv Metro en Lotus FM uitgenooi om oor die veldtog te kom gesels. In sy geheel het die mediaveldtog 'n verdere 2.6 miljoen mense van regoor die land bereik, wat op 'n wesenlike impak in terme van bewusmaking dui asook die reusesukses wat #WeHeartAmazambane bereik het. 📍

Om meer oor ASA se
bemarkingsveldtogte uit te vind,
kontak Immaculate Zinde by
immaculate@potatoes.co.za.

Stappe ter voorbereiding vir die nasionale minimumloon

Deur Charlene Steyn, regsadviseur, LWO

Kragtens die *Wet op die Nasionale Minimumloon, 2018 (Wet 9 van 2018, of NMLW)* word die nasionale minimumloon jaarliks deur die Nasionale Minimumloorkommissie beoordeel en hersien. Die kommissie lê dan 'n aanbeveling voor aan die minister van indiensneming en arbeid om die minimumloon vir die volgende tydperk aan te pas.

Die nasionale minimumloon vir die 2022/2023-tydperk sal op 1 Maart 2022 in werking tree.

Verhogings in die landbousektor

Vir die 2021/2022-tydperk het die landbousektor se nasionale minimumloon met 16.1% gestyg, nadat die sektor se vrystelling om slegs 90% van die nasionale minimum te betaal, verval het en die minimumloon vir plaaswerkers aan die nasionale minimum vir 2021 gelykgestel is.

Die kriteria wat die kommissie gebruik om die voorgestelde verhoging te bepaal, is die verbruikersprysindeks (VPI) plus 1%. In September 2021 was die VPI 5% en kan die nasionale minimumlooonverhoging gevolglik op 6% bereken word. Dit beteken 'n verhoging van die huidige minimumloon van R21.69 na R22.99 per uur.

Kwytskelding: Hoop vir werkgewers

Artikel 15 van die *NMLW* bepaal egter dat indien werkgewers nie die nasionale minimumloon kan bekostig nie, hulle aanlyn om kwytskelding kan aansoek doen (nmw.labour.gov.za). Indien kwytskelding toegestaan word, sal die werkgewer steeds minstens 90% van die nasionale minimum moet betaal.

As deel van die kwytskeldingsaansoek, moet die werkgewer 'n geldige rede vir die kwytskelding aanvoer asook bewys lewer dat daar sinvol met werknemers en verteenwoordigende vakbonde, waar van toepassing, gekonsulteer is.

Die regulasies bepaal verder dat so 'n aansoek nie toegestaan sal word indien die werkgewer nie die bekostigbaarheidselemente met betrekking tot winsgewendheid, likiditeit en solvensie deurstaan nie. Die berekening vir hierdie toets word as deel van die skedules tot die *NMLW* ingesluit.

Let wel: Bepalings en voorwaardes


Kwytskelding sal verder slegs oorweeg word indien die werkgewer op datum is met alle wetlike betalings, insluitend die Werkloosheidsversekeringsfonds, die Beroepsbeserings- en Vergoedingsfonds, en enige ander toepaslike heffings.

Omdat die aansoek aanlyn gedoen word, is die uitkoms onmiddellik beskikbaar, tensy die aansoek vir 'n oudit uitgesonder word. Die uitkoms sal die datum van inwerkingtreding van kwytskelding bevestig, die tydperk waarvoor dit toegestaan word, die lone wat die werkgewer verplig is om werknemers te betaal, asook enige ander relevante voorwaardes. Indien kwytskelding toegestaan word, moet 'n afskrif van

die kwytskeldingsertifikaat in die werksplek vertoon word, asook aan die betrokke werknemers en verteenwoordigende vakbonde, waar van toepassing, verskaf word. Indien die aansoek onsuksesvol is, sal die werkgewer 'n kennisgewing ontvang met die redes vir die weiering.

Nie-nakoming van die NMLW

'n Dispuut oor die nie-nakoming van die *NMLW* kan óf na die Kommissie vir Versoening, Bemiddeling en Arbitrasie, óf die Departement van Indiensneming en Arbeid verwys word. Indien 'n werkgewer versuim om aan die *NMLW* te voldoen, kan die werkgewer soos volg beboet word (watter bedrag ook al die meeste is): Twee keer die waarde van die bedrag wat die werknemer onder die voorgeskrewe minimumloon betaal moet word, of twee keer die werknemer se maandelikse loon.

Beperkende arbeidsregulasies word as een van die mees problematiese faktore geag as dit kom by die doen van besigheid in Suid-Afrika. Werkgewers moet beseft dat 'n kopskuif nodig is en dat hulle die besigheidsrisiko wat aan die voldoening van arbeidswetgewing gekoppel is, proaktief moet bestuur. 

Die LWO help **boere as werkgewers** om aan arbeidswetgewing te voldoen.



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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.

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During October and November 2021, a total of 13 potato producing regions as well as non-producing suppliers delivered potatoes nationally to fresh produce markets.

Average percentage downgraded: **9,93%.**

Total number of bags delivered from 13 regions and non-producing suppliers and inspected on the fresh produce markets: **16 273 970.**

Figure 1: Classes inspected during October/November 2021 at all fresh produce markets.

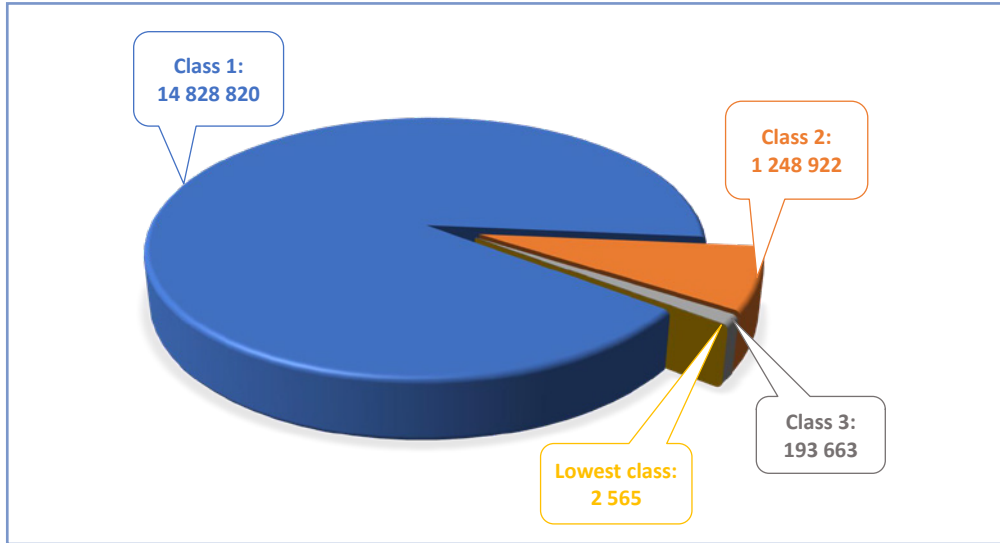


Figure 2: Potatoes downgraded (total 1 616 114) at all fresh produce markets during October/November 2021.

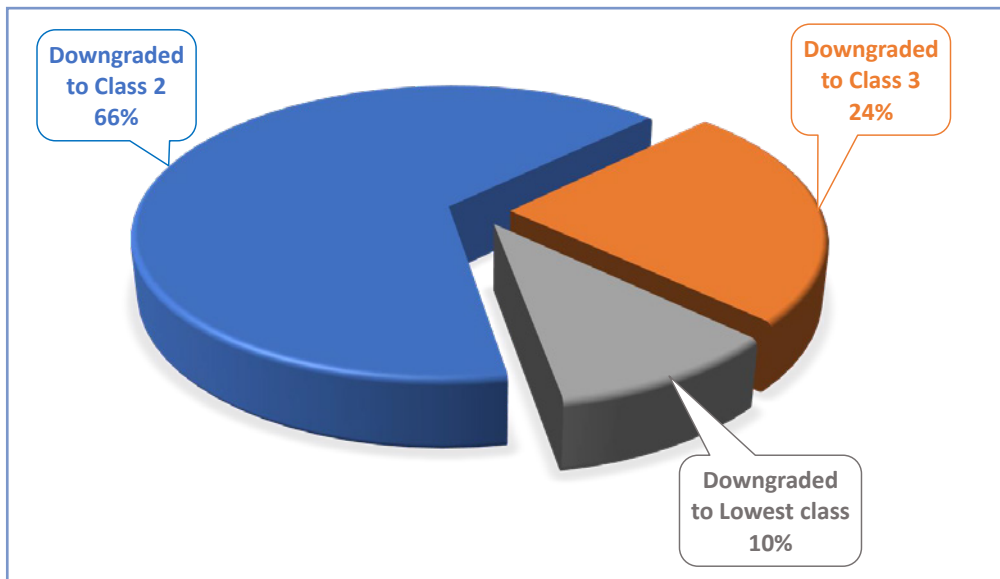
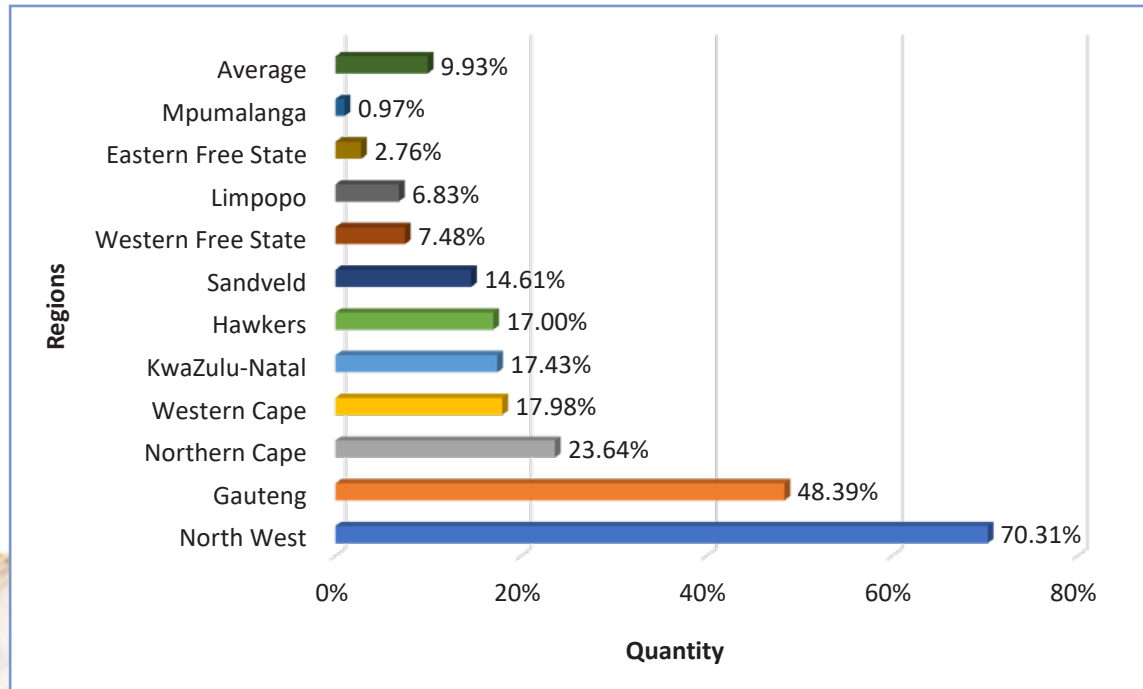
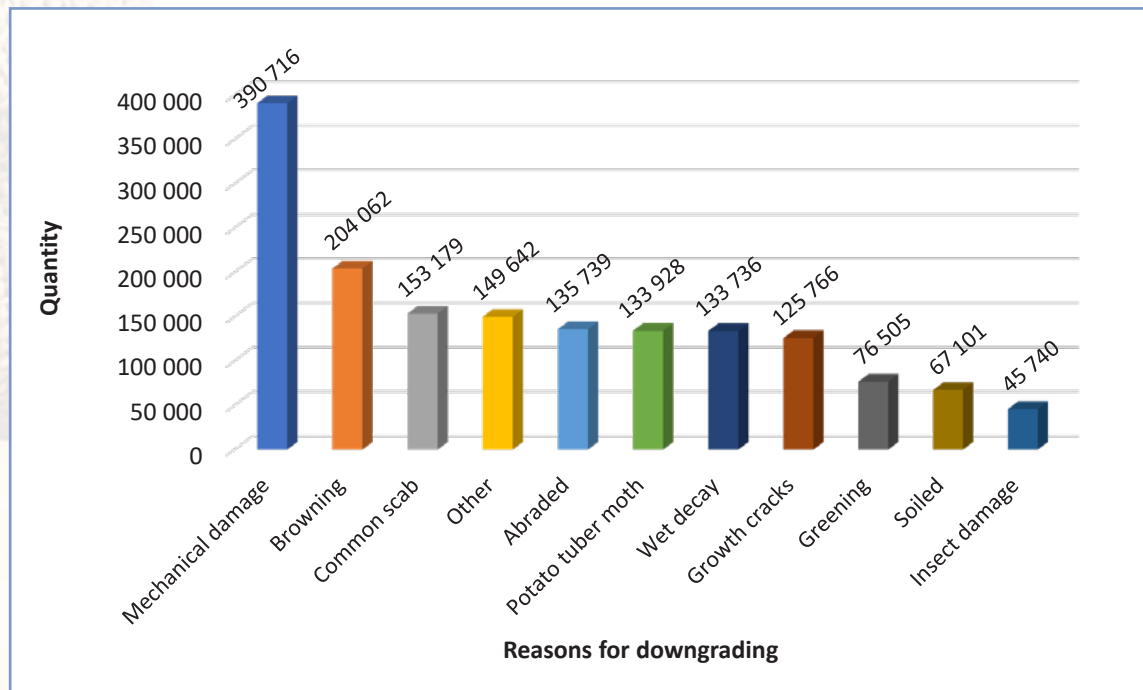


Figure 3: Potatoes downgraded (%) per region at fresh produce markets during October/November 2021.



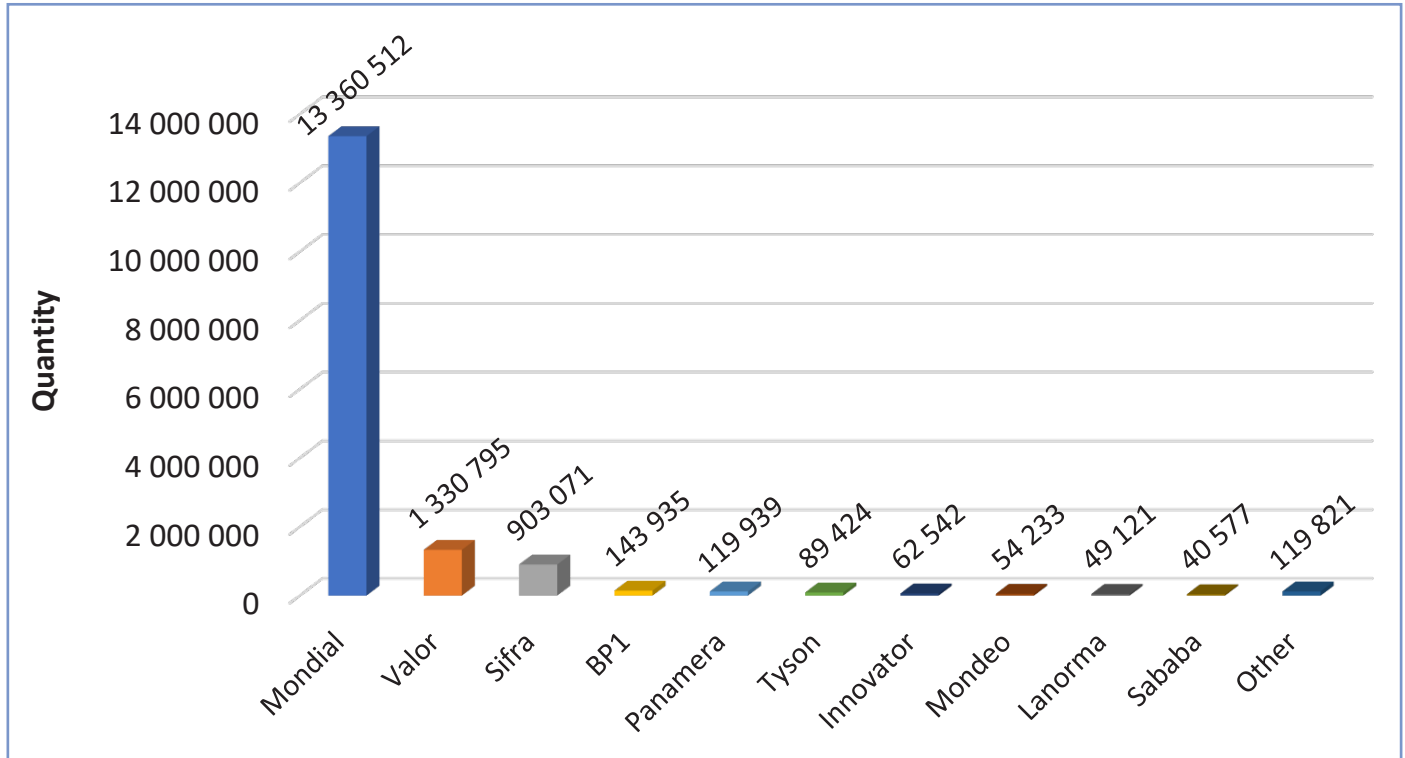
The Eastern Cape and Southwestern Free State had no downgrades.

Figure 4: Reasons for downgrading at all fresh produce markets during October/November 2021.



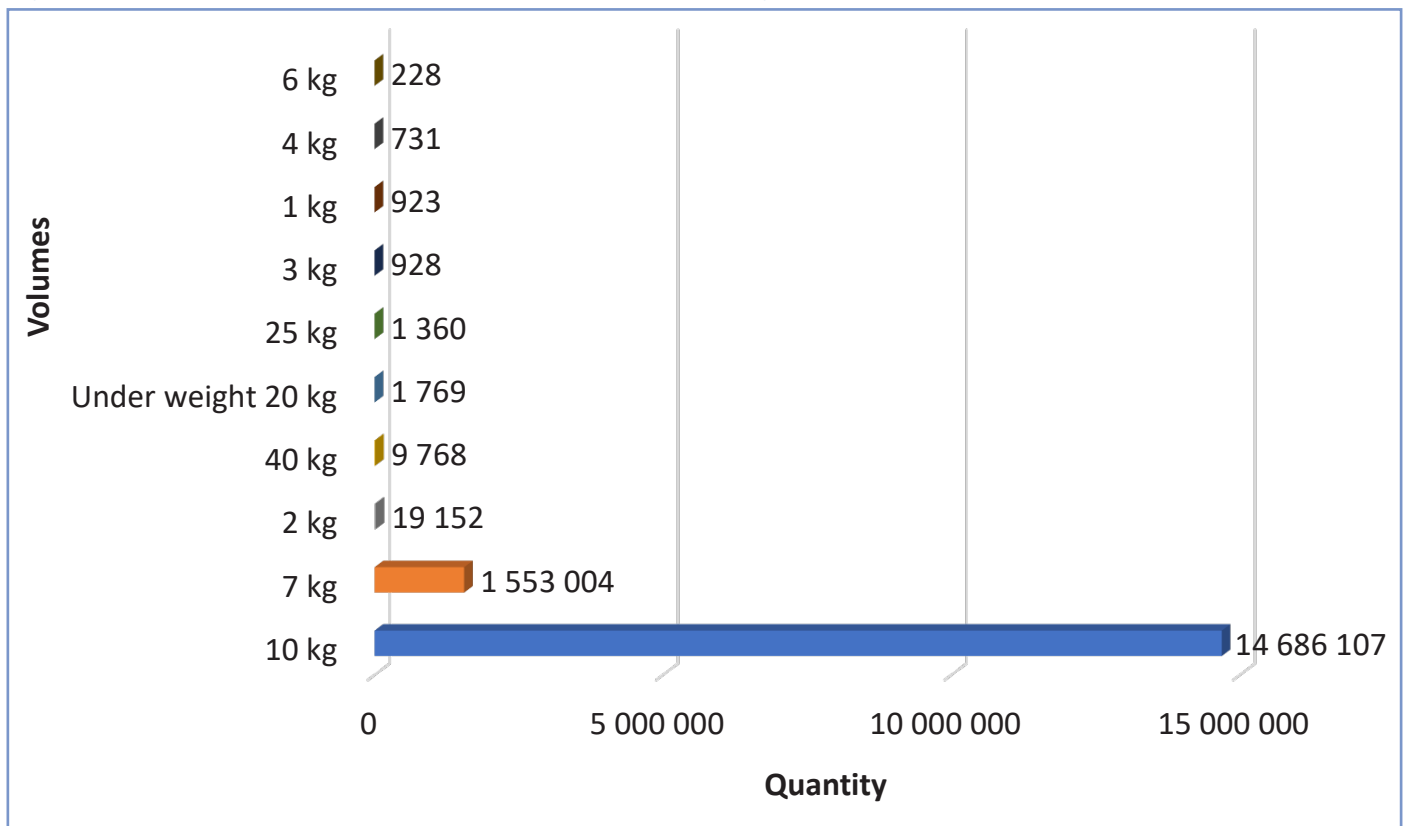
Others include: Cold damage, wilt, skin eelworm, broken and cut tubers, eelworm, too small, dry stem-end, malformed, brown fleck, watergrass damage (int) rhizoctonia, heat damage, hollow heart, wet by decayed tubers, and vascular browning.

Figure 5: Cultivar varieties inspected at all fresh produce markets during October/November 2021.



Others include: Up-to-date, Labadia, Avalanche, Vanderplank, Sandvelder, Markies, Apache (POWW), Almera, Fabula, Savanna, Nicola and Hertha.

Figure 6: Volumes inspected on all fresh produce markets during October/November 2021.





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	KEI FRESH PRODUCE MARKET Farmers Direct 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
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	KING WILLIAM'S TOWN FRESH PRODUCE MARKET RSA Eastern Cape Market Agency	
DURBAN FRESH PRODUCE MARKET Delta Market Agency Hanly Market Agency Port Natal Market Agency RSA Coastlands Market Agency	KIMBERLEY FRESH PRODUCE MARKET Kimberley Market Agency Subtropico Kimberly Market Agency	VAAL MUNICIPALITY RSA Vaal Market Agency
EAST LONDON FRESH PRODUCE MARKET AA Market Agency Border Farmers Market Agency Martin & Scheepers Market Agency Subtropico East London 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	VEREENIGING FRESH PRODUCE MARKET Subtropico Vereeniging Market Agency
GEORGE MUNICIPALITY Maverick Market Agency	LIMPOPO PROVINCE RSA Limpopo Market Agency RSA Mooketsi Market Agency	WELKOM FRESH PRODUCE MARKET Botha & Roodt Welkom Market Agency Opkoms Market Agency Subtropico Welkom 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 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	NELSPRUIT MUNICIPALITY Fresh Pro Market Agency RSA Nelspruit Market Agency Whoopi Up Nelspruit Market Agency	WITBANK FRESH PRODUCE MARKET Subtropico Witbank Market Agency Witbank Market Agency
	NOORDEINDE FRESH PRODUCE MARKET Noordeinde Market Agency	OTHER Agri Empire Market Agency Comfy Fresh Core Fruit Farm Fresh Direct Farm Market Federated Farmers Fruitways Green Network HL Hall & Sons Multiflora RSA Beyond RSA Beyond North Stargrow Subtropico Online Subtropico online DC United Exports Westfalia Marketing
	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	

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

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GWK Aartappels is sóveel meer as net plant en eet.



Om die perfekte aartappel te kweek, is 'n proses wat langer as 'n dekade kan duur. Vir dié proses het jy mense nodig wat wetenskap, navorsing, kultivering, produksie en bemarking verstaan. Dit is waarvoor ons daar is.

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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
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