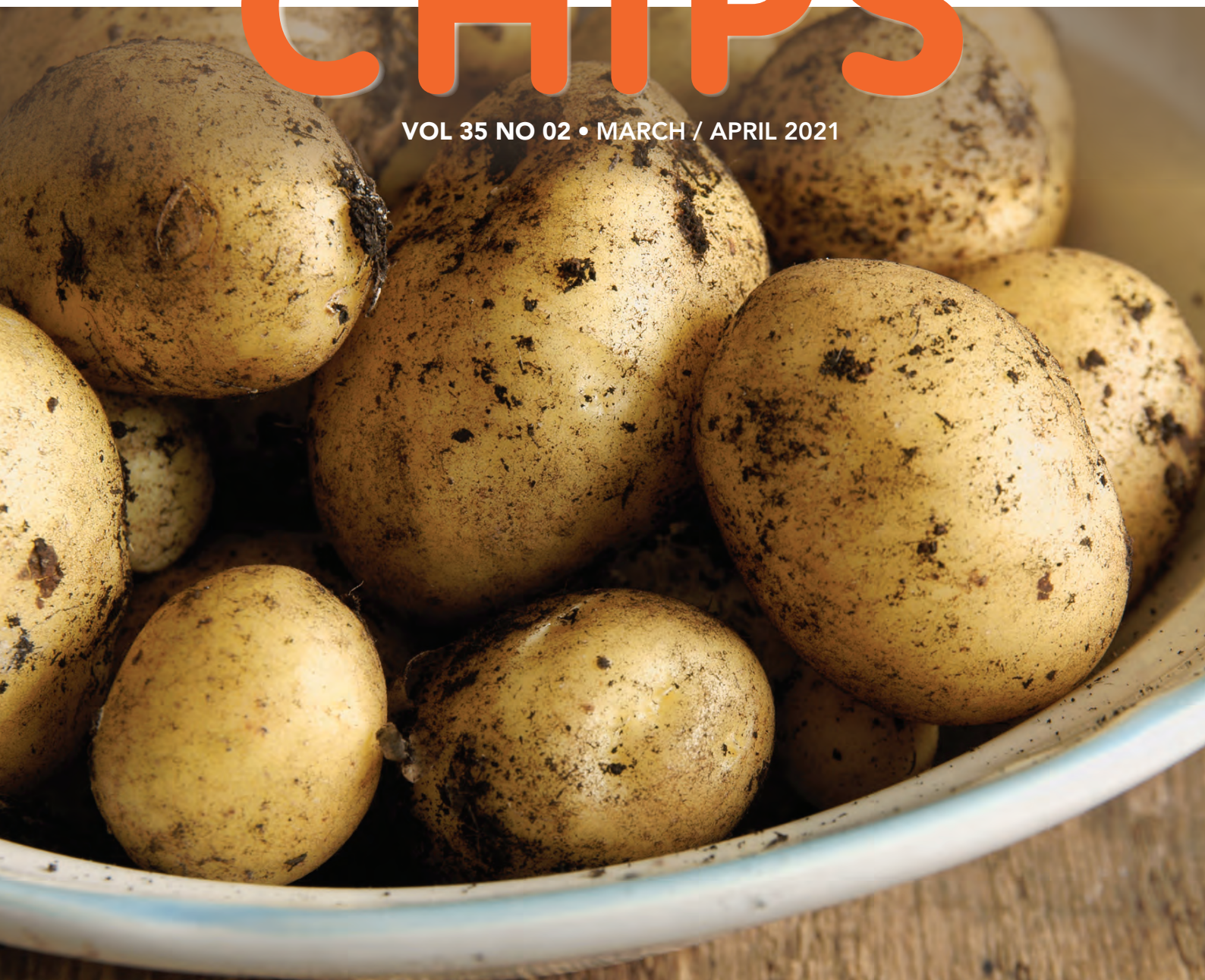


Mondstuk van die Suid-Afrikaanse aartappelbedryf • Mouthpiece of the South African potato industry

# CHIPS

VOL 35 NO 02 • MARCH / APRIL 2021



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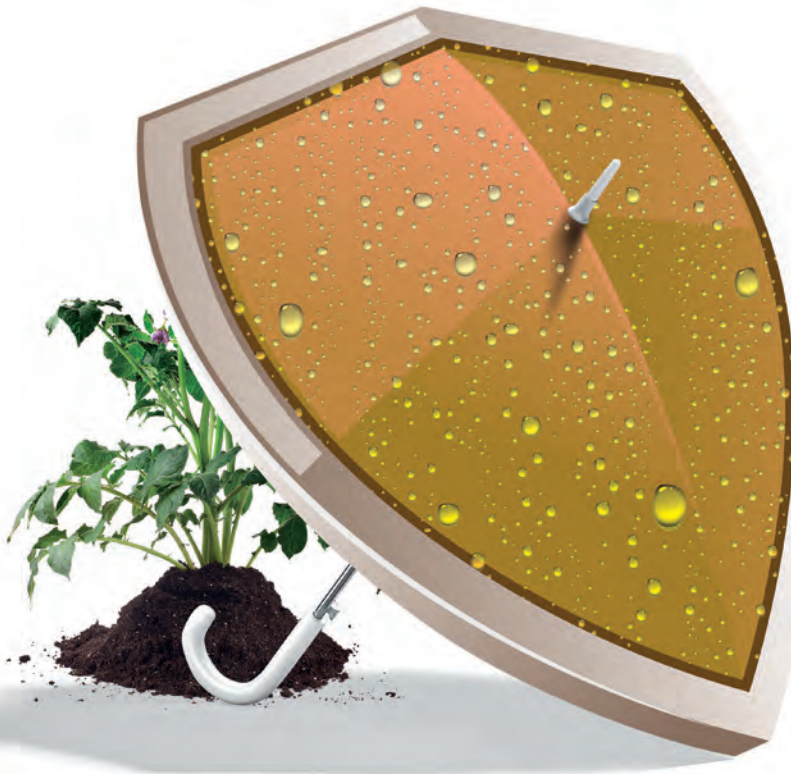
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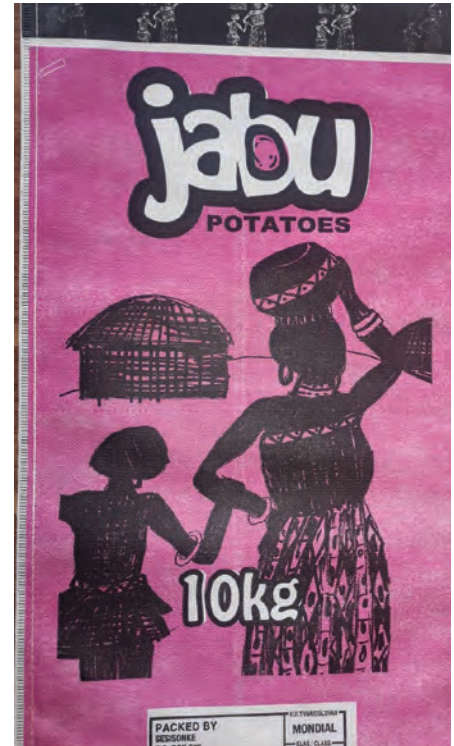
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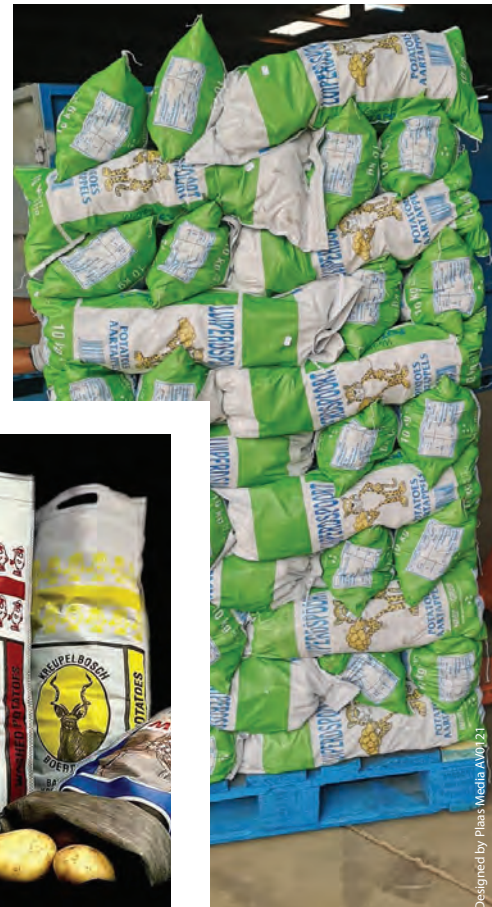
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# Chipping in on potatoes

By Willie Jacobs, CEO of Potatoes SA



*Dear potato family, I plan on taking a journey with you on topical issues that I pick up on during my interactions with Potatoes SA (PSA) family members. This issue's conversation relates to the recent minimum wage announcements as well as price hikes and service delivery issues at Eskom.*

Since a year ago, producers in the potato industry had to adapt several times during their production seasons, in order to adhere to Covid-19 regulations. In order to adhere to social distancing, many producers have been implementing work shifts by extending operating hours in their packhouses, a step which necessitates greater electricity usage.

The recent minimum wage increase along with electricity price hikes, are expected to have a significant effect on the potato industry in 2021. As part of this journey, we intend to build a case file to support arguments against future interventions which may not have been carefully deliberated.

## **Agriculture's positive performance**

Despite Covid-19, and according to data from Agbiz and the Bureau for Food and Agricultural Policy (BFAP), South Africa's agricultural sector performed relatively well in 2020. The sector's gross value is estimated to have expanded by between 10 and 13%. These gains also allowed for employment opportunities in the sector, with overall agricultural

jobs standing at 810 000 in the last quarter of 2020, down marginally by 8% from the same period in 2019.

Job losses occurred primarily in subsectors that were affected by the lockdown regulations, such as the wine industry, tobacco and floriculture in the Western and Northern Cape. Basically this alludes to the fact that the agricultural industry was but one of a few that managed to hold its own during and after the core Covid-19 exposure and lockdown periods.

While having faced various challenges in 2020, the potato industry still contributed positively to South Africa's farm economy, employment, and food security. Nevertheless, the recently announced 16.1% increase in the agricultural minimum wage to R21.69 per hour with effect from 1 March, is cause for concern. Not only did the general minimum wage increase by 4.5% – it was also accompanied by the National Minimum Wage Commission's recommendation (notwithstanding an objection by business representatives of whom PSA is an instrumental role-player) to equalise farm workers' pay to the general minimum wage.

The agricultural sector's notable performance served as the basis upon which the majority of National Minimum Wage Commission members justified to policymakers that the industry is thriving. Despite the industry's performance, this large increase combined with a general increase in input and administrative costs, are putting enormous pressure on producers. Despite numerous efforts to convey this message, it seems not to have


had an impact on the committee's decision – a trend that is also visible in other considerations of national importance.

Hence it was decided that we need to initiate our counter measures earlier, and build a case file for future negotiations, preferably on referenced public platforms, so as to foster greater insight and awareness of burning issues that are putting pressure on farming success in our country.

## **Engage with us**

PSA is currently engaging with researchers and industry stakeholders to assess the potential impact the minimum wage increase will have on the industry. We will be making these results available to members as soon as we have greater clarity.

In future interactions, PSA will isolate and address electricity in a similar manner and, later, also other inputs in order of merit. These expenses not only have an impact on the profitability of farming enterprises, but also affect sustainability and food security. Agbiz has noted that many of its members involved in various commodities are disappointed by the notable increase in the minimum wage as well as government's disregard of the inputs submitted ahead of the final discussion.

PSA will continue to update potato producers on its interactions with stakeholders to prevent future debilitating cost increases. Please keep an eye out for messages requesting information on inputs and support us in our attempts to establish an accurate reference base. 

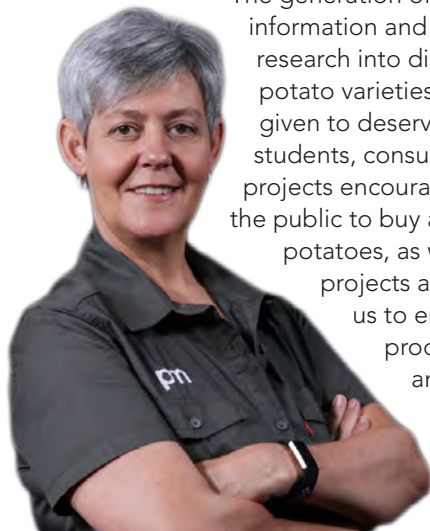


There are a great many things we can be thankful for this year, one of them being agriculture's excellent performance in 2020, while many other industries suffered. There are several reasons for this, one being the resilience and can-do attitude of our producers. Their hard work and focus paid off, and their contribution towards our failing economy is praiseworthy.

But as in all good stories, there are unsung heroes and in agriculture, these are often the commodity organisations. Very few people know or realise how much hard work is done behind the scenes to enable farmers to produce successfully. As Potatoes SA's (PSA) director for the southern region, DC Schellingerhout, rightly points out in this issue of *CHIPS*: Once you realise what your levies are used for, you can only be amazed at the value being added to the life and work of producers.

Take PSA as a shining example:

The generation of market information and trends, research into diseases and potato varieties, bursaries given to deserving students, consumer projects encouraging the public to buy and eat potatoes, as well as projects allowing us to empower producers and create a brighter future – what would



farmers have done without the enormous amount of work performed diligently and passionately by PSA's employees? This all means that potato producers in South Africa really don't have to shoot in the dark. Their organisation is paving the way for them.

### Kraakvars leesstof vir jōu genot

Dit is dan inderdaad ook 'n plesier om te werk aan 'n tydskrif soos *CHIPS*, waarin hierdie harde werk gestalte kry in die vorm van artikels waarin 'n magdom bewese inligting oorgedra word. Dis 'n moet-lees publikasie en die Maart/April-uitgawe getuig hiervan.

Van markinligting en die jongste proewe, tot navorsing oor *Alternaria* en die Potato Nation-webwerf se nuwe baadjie – harde werk en deursettingsvermoë is hier in woorde omgesit en verewig, sodat aartappelprodusente hulself met nuwe inligting kan verryk en nog 'n ding of twee in die boerdery-gereedskapkis kan laai.

Hierdie uitgawe lui ook twee splinternuwe artikelreekse in: FP Coetzee en Pieter van Zyl se reeks oor verpakkingstendense by aartappels op varsproduktemarkte, en drs Freddie Denner en Fienie Niederwieser se reeks, getiteld "Wat op aarde?", wat belooft om lekker-lees-inligting oor interessante en ongewone verskynsels aan ons lesers oor te dra.

Maak seker jy lees hierdie uitgawe van hoek tot kant deur, en geniet maande en jare se werk wat in 'n maklik verteerbare vorm aan jou oorgedra word

*Lynette Louw, redakteur  
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### Bydraers in hierdie uitgawe

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## Advice on minimising tuber bruising

During the annual online Idaho Potato Conference, Prof Nora Olsen of the University of Idaho gave a presentation on factors that impact the development of bruises in potatoes. According to Prof Olsen, evaluating quality losses over the past several years pointed to the primary association with either a direct impact, blackspot bruise, or shadow bruise.

"We must move potatoes around on several pieces of equipment, and physical impact is unfortunately inevitable," Prof Olsen said. "One option to identify those physical impact risks, is to use some sort of detection method, such as an impact recording device as a management tool, which allows you to identify the force and velocity of a physical impact. It then allows you to modify equipment and lessen the risk of bruising." – *Potato News Today*

## Sale of unwashed potatoes to cut food waste

British retailer, Tesco, is trailing the sale of unwashed potatoes for the first time in 40 years in a bid to reduce food wastage. Experts say potatoes last longer if they are kept dry and in a dark cupboard, as both light and moisture can result in rotting on the skin, which will shorten shelf life. The logic behind selling potatoes with soil, is that it helps to block out light and slow down decay, and could extend usability dates.

Rob Hooper of Tesco told British newspaper and news site, *The Sunday Times*: "Up until about 50 years ago, potatoes would generally be sold unwashed, and having a natural film of soil around them would help keep them fresher for longer. At the end of the 1970s, supermarkets and greengrocers moved towards selling more cosmetically perfect produce, and as a result, potatoes were washed before being put out on display." – *Potato Business*

## Online fresh produce trading takes root in SA

Online marketing platforms for the fresh produce industry have increasingly been adopted during the Covid-19 pandemic. This trend was highlighted by Louis de Kok, founder of the online fresh produce marketing platform, *Nile.ag*, in a Beanstalk Global monthly broadcast hosted in partnership with the Produce Marketing Association (PMA) in Southern Africa.

*Nile.ag* has quickly made a name for itself in the fresh produce market as a major role-player. De Kok said he was surprised that the platform was adopted so quickly and attributes this increase to the 'new normal' that consumers are getting accustomed to.

"We see that existing customers continue to use the platform and the value in monetary terms and size increases. Clients can be confident that the country's big producers are already using the platform. We are actually experiencing supply constraints," says De Kok. – *Ursula Human, Plaas Media*

## New potato varieties released in Malawi

The newly released varieties of potatoes in Malawi are expected to respond to the needs of stakeholders in the potato value chain, including high yield per unit area, early maturing, and tolerance to major pests and diseases amid growing changes in climatic conditions.

The Department of Agricultural Research Services in the Ministry of Agriculture, in collaboration with the International Potato Centre, announced that the agricultural technology clearing committee had approved the new varieties for production and utilisation in Malawi.

The new varieties, Mpatsa, Mtukulapakhomo, Ufulu, and Kaso, have been produced under the five-year Root and Tuber Crops for Agricultural Transformation in Malawi project funded by Irish Aid. – *The Times Group*

## Trial highlights seed-borne diseases

The Washington Commercial Potato Seed Lot Trial in the United States (US), has been ongoing for 56 years. It observes the performance of seed lots grown in commercial potato fields across Washington State on an annual basis.

The trial also helps individual growers diagnose seed-borne issues. Personnel at Washington State University (WSU) organise the seed lot trial and usually receive and plant 200 to 300 seed lot samples every year, each consisting of approximately 300 seed tubers.

Once the plants emerge, pathologists inspect them visually and flag those that show seed-borne disease symptoms or other issues, such as herbicide injury. At the end of June, a field day is facilitated to view the seed lots and discuss the results.

Some of the production problems identified in the trial over the years, include bacterial ring rot, potato virus Y (PVY), and herbicide carryover. The bacterial ring rot incidences highlighted by the seed lot trial in 1961, led to a larger investigation and cleanup effort in potato seed production regions.

In addition, PVY is the reason for most potato seed lot rejections by seed certification agencies in the US today. This disease has become increasingly difficult for seed producers to deal with due to the rapid spread of recombinant PVY strains that produce milder symptoms than the ordinary strain. Mild symptoms make it difficult to spot PVY-infected plants in the field and remove them before the virus spreads. The potato seed lot trial in Washington has helped document the PVY strain shift that has been occurring in North America over the past decade, and it is helping growers and seed inspectors learn to recognise the less obvious symptoms of PVY that are now predominant. – *Growing Produce*



## Potato protein market set to increase by 7%

Plant-based proteins can be isolated or concentrated to be added to different food and feed products. The development of plant-based proteins in most of the developed nations represents new growth opportunities for key players in the food industry, as well as for producers.

Potato protein is an added-value ingredient extracted from potato fruit juice, which is a by-product of potato starch manufacturing and contains approximately 1.5% protein. It offers better nutritional quality and functionality compared to many other plant sources.

Additionally, allergenicity to potato protein is rare, making it a preferred plant-sourced protein ingredient by many manufacturers.

According to a report by Persistence Research Market, the high nutritional profile and functionality of potato protein is expected to drive the growth of the potato protein market at a compound annual growth rate value of close to 7% through 2030.

– *Potato Business*

## Global trade in frozen potato products down

Market and consumer data analytics company, Annual Insight, has released its November Insights report on frozen potato products. Following a mediocre October, November proved to be a difficult month for the frozen potato exporters. In November 2020, trade was down by 9% compared to November 2019. Year-to-date trade is still down by 11%.

In terms of exporters, the Netherlands took a heavy blow, with exports down by 21% compared to November 2019. Trade for the Netherlands was especially down in the United Kingdom (-19%), Germany (-30%), Italy (-79%), and France (-37%). These are all markets in which Covid-19 related food service restrictions were in place.

With general trade taking a severe hit, there are some exceptions to the rule. American imports are still up and continue to be on the rise. Besides Belgian imports, Canadian imports also show strong growth.

– *Potato News Today*

## Cure found for cause of Irish Famine

An international team of researchers has made an important discovery in the fight against the potato blight that caused the Great Famine in Ireland in the 1840s. Researchers from The Sainsbury Laboratory in the United Kingdom and Wageningen University and Research in the Netherlands, have discovered a new gene that appears to provide potatoes with resistance to the disease.

Scientists found the gene in the *Solanum americanum* plant, which appears to offer protection against all races of potato blight (*Phytophthora infestans*). Researchers examined a wide range of wild *Solanum* plants related to the potato in the hopes of finding a resistant gene that was effective against a variety of pathogens. They found that the *Solanum americanum* plant proved to be an excellent source of resistance against late blight. – *Irish Central*

## Villa Crop and InteliChem join forces

The worldwide landscape of agricultural and crop protection is changing fast, and in order to provide customers with the best solutions, Villa Crop Protection and the InteliChem Group announced a merger under the American brand, WinField United.

The combination of these established agricultural leaders in South Africa will create a platform to develop an improved value proposition, including technology, scientific data, best genetic seed provision, and an unbeatable portfolio in crop protection solutions. The new group will present unique opportunities for all stakeholders.


The integration of Villa Crop and InteliChem will bring forth one holding company with structured functionalities, separate operating divisions, and shared services. The new WinField United South Africa Group consists of a holding company with a focussed, standalone retail legal entity and a separate, standalone wholesale legal entity, each retaining their dedicated management teams.

– *Press release, Villa Group*

## South African companies embrace Veganuary

Retailers, restaurants, and food manufacturers rallied behind the global Veganuary campaign that saw more than half a million people sign up for a vegan diet in January. The Veganuary campaign in South Africa saw household names such as Pick n Pay, Food Lover's Market, John Dory's, and Hudsons – The Burger Joint supporting the campaign.

Other local supporters of Veganuary included B-Well Foods, producing egg-free mayonnaise; Vfoods, importing the popular Violife vegan cheese range; and Nature's Charm, offering alternatives that include coconut custard and oat milk based condensed milk.

Outcast Foods manufactures healthy falafel and flapjack premixes; Liquid Concepts imports the MilkLab range of plant-based milk and produces a range of vegan frappé mixes; and Rugani Juices offers veggie juices that count as one daily serving of vegetables. – *Press release, ProVeg* 



# DC Schellingerhout: 'n Kaapse draai met aartappels

Deur Hanrie Greebe, Aartappels SA

**C**HIPS het onlangs 'n draai gemaak by DC Schellingerhout, Aartappels SA (ASA) se direkteur vir die suidelike streek (Ceres, Oos-Kaap, Suidwes-Kaap en Suid-Kaap), om uit te vind hoe dié voorslag aartappelprodusent sy boerdery bedryf en sake met gesinsverpligtinge balanseer.

DC en sy pa is 'n gedugte span wat net buite Hankey in die Oos-Kaapse Gamtoosvallei boer. Die familieplaas is in 1948 op 'n beskeie paar hektaar deur DC se oupa gestig. "My oupa het van Holland na Suid-Afrika gekom en het aanvanklik 'n stukkie van so 5 tot 8 ha grond gehad. Hy het stadig maar seker vir hom 'n plaas opgebou.

"In 1975 het my pa plaas toe gekom en hoofsaaklik tabak en

produkte vir McCain geproduseer, maar hy het ook 'n bietjie sitrus gehad." In 2001 het DC matriek geskryf, waarna hy na Landboukollege Laeveld in Mbombela is. Hy het sy praktiese jaar vir sy diploma op die familieplaas self gedoen en teen einde 2003 amptelik by die boerdery ingeval. In daardie stadium het hulle nog nie op groot skaal met aartappels geboer nie, hoewel sy pa 'n paar jaar vantevore vir 'n ruk sy hand aan aartappels gewaag het.

## 'n Tree in die regte rigting

In 2006 het dié pa-en-seun-span begin kyk na nuwe opsies om die boerdery nóg 'n stappie vorentoe te vat. Hulle het ietwat weggewyk van die varsproduktemarkgroente en het begin om aartappels te plant. Dit het die boerdery gebring tot waar dit vandag is. Tans dra aartappels



DC Schellingerhout, ASA se direkteur vir die suidelike streek.

by tot sowat 60% van die boerdery se bruto inkomste. Daar is ook 'n redelike klompie sitrus, met rank- en koolgewasse wat in die af-seisoen vir die varsproduktemark aangeplant word wanneer die aartappels en sitrus nie in produksie is nie.

Ondanks die tekort aan grond in die Gamtoosvallei, kon die Schellingerhout-familie drie jaar gelede 'n plaas koop waar hulle tans 'n Dohne-Merino- en Bonsmaravertakking ontwikkel. Hieroor is DC baie opgewonde.

Hy verduidelik dat hulle 'n gematigde klimaat het. Aangesien hulle teen die rivier geleë is, is daar redelik ryp in die winter, maar op die hoëliggende dele waar daar rooigrond is, word Mondial – wat baie meer gehard is en meer weerstand teen koue het – geplant.

Die aartappelplantseisoen neem ongeveer middel Februarie 'n aanvang en dit is gewoonlik Sifra- of Thasia-kultivars wat verbou word. Daar word dan weer in Junie/Julie geplant. "Aangesien Schellingerhout Boerdery nie oor soveel grond beskik om 'n drie- tot ses-jaar wisselbouprogram toe te pas nie, moet ons die kultivars mooi kies. Sensitiewe kultivars werk nie vir ons nie," verduidelik DC.

Nog 'n rede vir die kultivarkeuse is die redelike hoë siektedruk in die



Sitrus doen goed in die Gamtoosvallei. Ten spyte van die Kougadarn wat feitlik leeg is, verwag die Schellingerhout-familie hierdie seisoen 'n goeie oes.





Met die aankoop van nog 'n plaas, is daar drie jaar gelede ook met 'n skaap- en beesvertakking begin.

omgewing. “Ons het drie kultivars waarop ons fokus, elk in sy seisoen en in sy spesifieke grond. Dit is maar lesse wat 'n mens leer. Soms is dit baie duur lesse; iets wat ondervinding bied en wat jy nie kan koop nie, en op grond waarvan 'n mens dan jou keuse van kultivars maak – watter kultivars jy in watter seisoen, watter area en teen watter hellings plant.”

#### 'Patensie-steaks' is die risiko werd

Ten spyte van verskeie risiko's wat met aartappelproduksie gepaardgaan, is dit vir hulle 'n voorkeurgewas om te verbou. DC verduidelik die werking van die plaaslike varsproduktemark soos volg: “Met kool, pampoen en batterskorsies draai jy net jou

geld om. In die Oos-Kaap is daar 'n beperkte hoeveelheid voete en mense wat produk koop. Dus is ons ook altyd beperk met net 'n sekere hoeveelheid produk wat ons kan mark toe stuur, en dan is die mark so te sê versadig.”

Omdat aartappels een van ons land se stapelvoedselsoorte is, is daar in wese 'n onbeperkte hoeveelheid wat Schellingerhout Boerdery mark toe kan stuur. Veral gedurende die seisoene waartydens hulle in die mark is, gebeur dit selde dat DC se markagent hom keer om uit te haal. Volgens hom kan volumes geskuif word as die gehalte reg is.

“As jy 'n goeie naam in die mark het en die kopers jou produk en diens soek, is daar amper nie perke

wat volumes betref nie. Ons boer dus met aartappels omdat ons volume kan produseer. As ons meer grond gehad het, het ons baie meer aartappels geproduseer.”

Hy glo dat die Gamtoos een van die beste aartappelproduksiestreke is – nie noodwendig wat opbrengs betref nie, maar in terme van gehalte en die interne smaak van die produk, waarna sy pa as 'Patensie-steaks' verwys.

#### Soveel meer as net heffings

DC lag lekker op die vraag oor watter waarde ASA tot sy boerdery voeg. Hy meen sy antwoord gaan dalk glad nie wees wat mense verwag nie. Hy vertel dat hy so 'n paar jaar gelede deur Terence Brown na die Aartappel Navorsingsimposium in Bela-Bela genooi is.

“Ons boer met aartappels omdat ons volume kan produseer. As ons meer grond gehad het, het ons baie meer aartappels geproduseer.”

“Ons is nie massiewe aartappelboere nie, maar jy betaal jou heffings en dit gaan aan. Jy ontvang SMS'e, en jy weet daar is 'n instansie wat vir jou goedjies doen vir jou geld, maar jy weet nie eintlik wat aangaan nie omdat jy in 'n gebied is waar daar nie so baie aartappelboere is nie, waar almal die vroeë vra en nie die pot roer nie. Daardie navorsingsimposium was vir my 'n absolute openbaring. Daar het ek vir die eerste keer gesien wat met ons heffingsgeld gedoen word.

“Ek weet dit is net een aspek van alles wat ASA doen, maar dit is vir my ongelooflik om te sien dat daar 'n instansie is wat ek betaal, wat soveel vir die bedryf doen en waarde toevoeg, en dat daar soveel rolspelers is. Toe ek daar wegstap het ek vir Terence gesê

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dat 'n mens meer moet belê om meer mense by so 'n simposium te kry, sodat die boere daarbuite – jong boere wat onkundig is – kan sien wat ASA vir ons bedryf, vir be-marking, navorsing, vir die chemiese ouens en selfs die huisvrou doen.”

### Om uitdagings die hoof te bied

Een van die grootste uitdagings vir die Schellingerhout Boerdery is water. Die boerdery se water kom vanaf die Gamtoos-besproeiingskema, met die Kougadam wat as opgaardam dien. DC verduidelik dat hulle in 'n droogtegeteisterde gebied is, met net 6.7% water in die dam (ten tyde van skrywe) en 'n 20% kwota vir die boerdery.



Die maklik herkenbare en wel-vertroude verpakking van Schellingerhout Boerdery se 10 kg-aartappelsakkies.

“Grond is natuurlik die ander groot uitdaging. Ons het nie duisende hekta-re waarmee ons wisselbou kan toepas nie. Ons sit met ou grond en heelwat grondgedraagde siektes wat 'n groot rol in ons opbrengs en gehalte speel. Ons moet sitrus verbou en ons moet aartappels plant – dit verg fyn bestuur en jy moet die grond en kultivars reg kies.

Jy moet aanhoudend die regte tipe wisselbou toepas,” verduidelik DC.

Dan is daar die hoë insetkoste. Schellingerhout Boerdery moet al hul kunsmis en chemikalieë in dollars aankoop, wat 'n reuse-impak op volhoubaarheid en netto wins het. DC sê dat grondsake, die randwisselkoers, en arbeidskoste wat nou die hemel in skiet, alles bydra tot 'n stresvolle situasie. Die koste van elektrisiteit is in sekere opsigte 'n uitdaging, maar in ander nie. Water vanuit die Gamtoos-besproeiingskema gaan gepaard met ongeveer 70% van aartappelgrond onder selfdruk terwyl sowat 30% moet gepomp word.

Hy meen hulle is baie bevoorreg om 'n graviterende skema te hê. Beurtkrag is wel 'n probleem. DC verduidelik: “As daar 'n hittegolf is en jy moet natmaak, dan sit jy met daardie drie tot vier ure per dag wat verlore gaan. Ons word darem nie so erg geraak soos ander gedeeltes in die land, waar die produsent van die eerste druppel tot waar dit by die spilpunt uitkom, van Eskom gebruik moet maak nie.”

### Vertrou in die aartappelbedryf

DC meen dinge gaan vanjaar dieselfde as verlede jaar verloop. Mense het soveel planne, drome en ideale, dat 'n skielike pandemie jou letterlik kan plattrek. “Ten opsigte van die invoer van chemikalieë en kunsmis, met die minimumloon en die rand/dollar-wisselkoers wat nou



Die Schellingerhout-gesin sien baie uit na 'n derde spruit wat later vanjaar verwag word.

heeltemal teen ons is, is landbou 'n unieke bedryf, veral in Suid-Afrika.”

Volgens hom gebeur dit vinnig dat produsente uitspring en eerder met beeste gaan boer of bome vestig, want hulle kan byvoorbeeld met makadamia- en pekanneute dollars verdien. Hul inset- en arbeidskoste is ook laer.

“Tog moet 'n mens hoop hê en vertrou dat die ekonomie gaan regkom. Indien wel, gaan die aanvraag na aartappels die hoogte in skiet. Dan gaan elke ou geld hê om sy stapelvoedsel vir die week of vir die dag te koop, en ons almal weet aartappels is dié stapelvoedsel in Suid-Afrika.”

Hy het verseker hoop vir die toekoms. “As die leiers van ons land net wil help om die ekonomie meer stabiel te kry, sodat ons meer beleggings kan inkry en meer werk kan skep, dan kan ons 'n ongelooflike vyf tot tien jaar verwag wat die aartappelbedryf betref.

“Ek het vertrou dat ons in die regte bedryf is. Waar anders wil jy wees as in 'n bedryf waarin almal belangstel? Daar het 2020 vir ons gewys dat landbou en voedselproduksie die regte bedrywe is om in te wees, veral as jy bydra tot die stapelvoedsel van die land.”

Vir meer inligting,  
kontak DC Schellingerhout  
by 084 582 0678  
of [decas@lantic.net](mailto:decas@lantic.net).

# Tendense op varsproduktemarkte: Deel 1

Deur FP Coetzee en Pieter van Zyl, Aartappels SA

In 2006 het die Nasionale Landbouberaamingsraad (NLB) 'n verslag getiteld 'Global trends in fresh produce markets' uitge-reik. Luidens dié verslag is die belangrikste algemene tendens in die bemarking van varsprodukte regoor die wêreld (veral in die Verenigde Koninkryk, Suid-Amerika, die Verenigde State en Asië), die geweldige groei in kleinhandelaars (met 'n vinnig toenemende marktaandeel).

Hierdie kleinhandelaars is gewoonlik in 'n ingewikkelde verskaffings-netwerk geïntegreer en gebruik meganismes vir direkte verkryging wat varsproduktemarkte (VPM'e) omseil. Volgens die verslag sal Suid-Afrika na verwagting hierdie tendens volg.

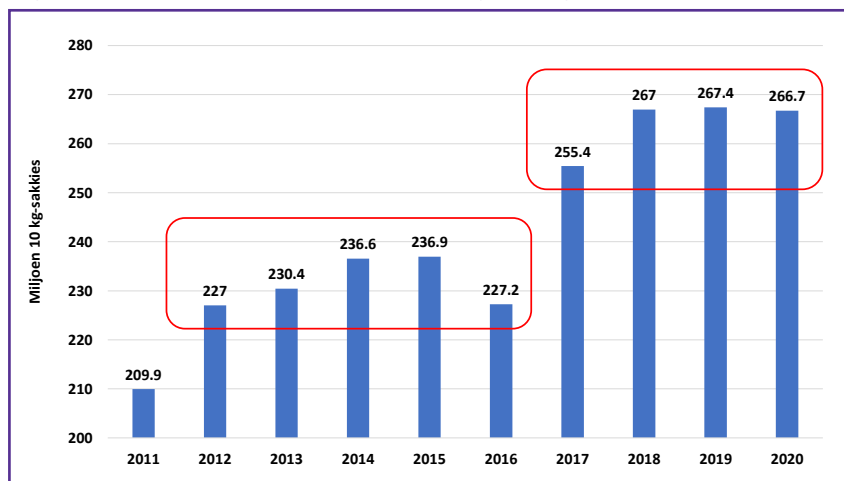
Op 'n internasionale vlak word daar lankal reeds planne beraam oor hoe om die produsent se deel van verbruikerspandering te vergroot. Die nuwe besigheidsmodel wat toenemend tot stand kom, veral in Europa se varsproduktebedryf, is die bemarkingskanaal wat in 'n sogenaamde voorsieningsketting bedryf word. Hierdie bemarkingsbenadering staan loodreg teenoor die huidige model in Suid-Afrika, waar produkte na ons nasionale VPM'e gestuur word.

Produsente met ekonomie van skaal en wat teen die laagste koste produseer, gaan hier die weners wees. Kopers neig ook om produkte teen die laagste maontlike pryse aan te koop. Hierteenoor word daar in die formele voorsieningsketting nie soseer op prys gehandel nie, maar eerder op grond van volumes, gehalte en verdeling van koste, voordele en wins. Die gedagte is dat dit meer stabiliteit teweeg sal bring, maar ook in die langtermyn meer volhoubaar sal wees.

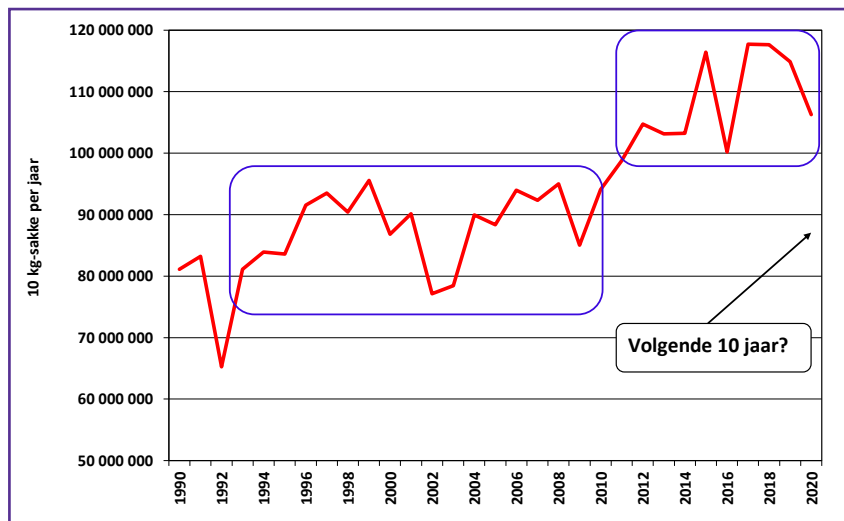
## VPM'e as prysvormingsmeganisme

In Suid-Afrika vervul ons VPM'e die rol van 'n prysvormingsmeganisme

Figuur 1: Grootte van die aartappelbedryf oor tyd.



Figuur 2: Aartappelverkope op VPM'e oor tyd.



(price discovery mechanism). 'n Prysvormingsproses, of *price discovery process*, is die (voortdurende) proses waarin kopers en verkopers op 'n gegewe oomblik op 'n spesifieke prys ooreenkom.

Bedryfsrolspelers meen ook dat ons VPM'e in 'n vryemark handel dryf waar vraag- en aanbodfaktore pryse bepaal. 'n Voorwaarde van so 'n vryemark is dat daar baie kopers en verkopers moet

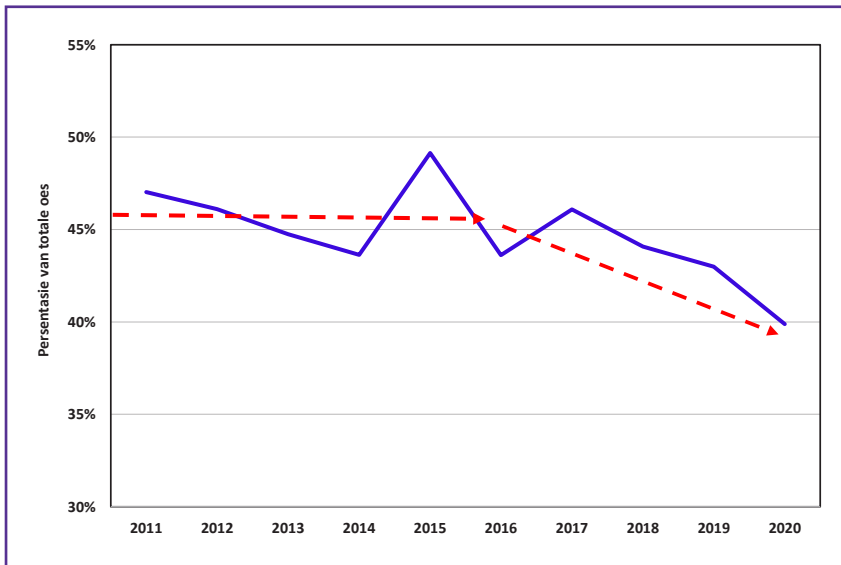
wees, sodanig dat geen enkele rolspeler pryse kan beïnvloed nie.

So, hoe presteer ons prysvormingsmeganisme, oftewel VPM'e? Figuur 1 dui die grootte van die algehele aartappeloes sedert 2011 aan.

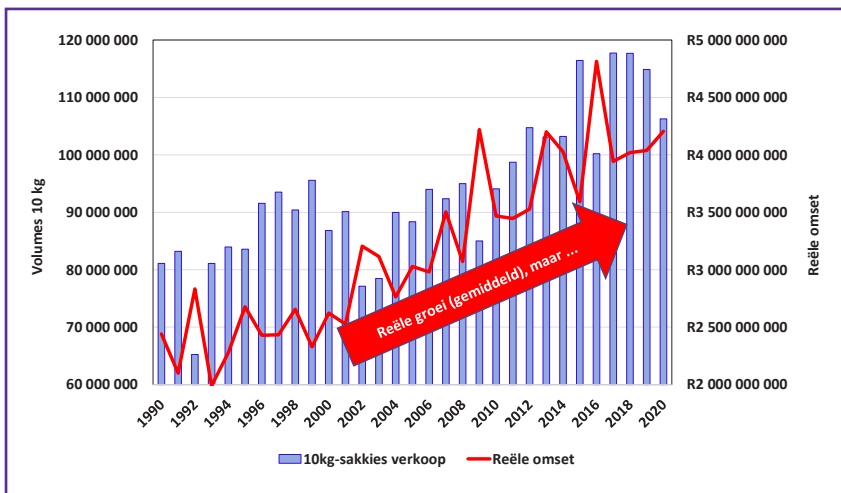
Tussen 2012 en 2016 het oesgroottes tussen 227 miljoen en 237 miljoen 10 kg-sakke gewissel. In 2016 was die oes kleiner weens droogte en hoë temperature. Vanaf 2016 het



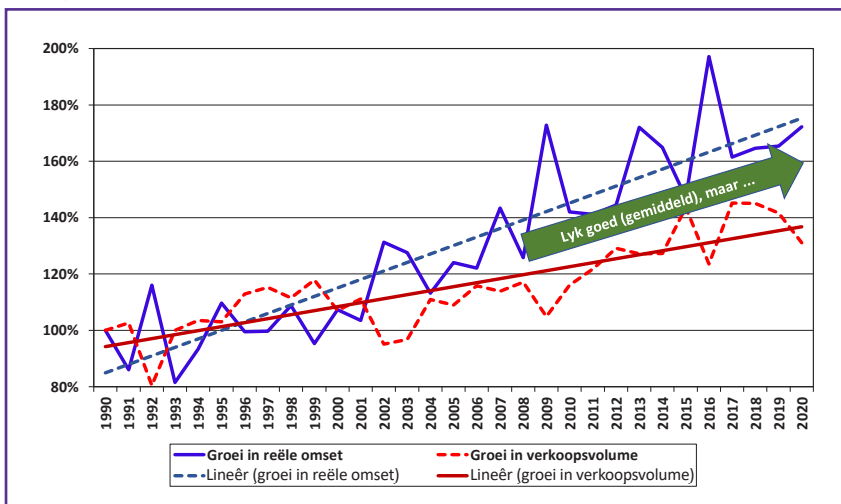
**Figuur 3: Persentasie van die totale aartappel-oes wat deur VPM'e bemark word.**



**Figuur 4: Jaarlikse verkoopsvolumes op alle markte vs. reële omset.**



**Figuur 5: Markte se groei in verkoopsvolume vs. groei in reële omset oor tyd (1990 = 100%).**



die oesgrootte tot 'n nuwe tendens van tussen 255 miljoen en 267 miljoen sakke gestyg. Dit is sowat 30 miljoen sakke aartappels per jaar meer as in die vorige vyf jaar (2011 tot 2016).

Suid-Afrika se bevolking het dan ook sedert 2016 met meer as drie miljoen mense gegroei. Tans is die per kapita-verbruik van aartappels 40 kg. *Figuur 2* gee 'n aanduiding van die hoeveelheid aartappelsakke wat vanaf 1990 op VPM'e verkoop word.

Tussen 1993 en 2009 het die hoeveelheid sakke wat verkoop is, tussen 80 miljoen en 95 miljoen sakke per jaar gewissel. Die jare 1992, 2002 en 2016 was droogtejare wat kleiner oeste gerealiseer het. In 2008/2009 het die wêreld 'n ekonomiese instorting beleef, wat tot gevolg gehad het dat 5 600 ha minder aartappels in 2009 aangeplant is (sien die 2009-daling in *Figuur 4*). In 2020 is 3 700 ha minder aangeplant, maar nogtans is 'n groot oes gerealiseer.

Die dalende tendens in *Figuur 3* gaan gepaard met die groter nasionale oeste sedert 2017. Die addisionele aartappels wat geproduseer word, word nie na markte – ons prysvormingsmeganisme – gekanaliseer nie. In 2020 is 40% van die nasionale aartappeloes deur VPM'e bemark (*Figuur 3*) – die laagste syfer nog.

Het markte 'n versadigingspunt bereik? *Figuur 4* dui die gemiddelde reële jaarlikse omset (ná voorsiening vir inflasie) en die getal sakke verkoop vanaf 1990 tot 2020.

Beide volumes en reële omset styg in die lang termyn, wat beteken dat VPM'e 'n groeiende sektor is. Let op die jare met laer verkoopsvolumes (1992, 2002, 2009 en 2016). Reële omsette vir hierdie jare het telkens skerp gestyg. Indien die data van individuele markte bestudeer word, ontstaan rede vir kommer, want enkele markte se reële omset styg, maar die volumes daal oor tyd. Ander markte se reële omset daal weer. Die geheelbeeld van markte lyk dus goed, maar wanneer individuele markte se data bestudeer word, lyk die uitkyk maar droewig.

Hoe sal dit voedselsekureit affekteer indien sommige van hierdie kleiner markte oor vyf jaar nie meer bestaan nie? In 'n volgende artikel gaan individuele markte van nader beskou word.

In *Figuur 5* word die groei in reële jaarlikse omset van alle markte met 'n toename in verkoopsvolume oor tyd vergelyk (vergeelyk saam met *Figuur 4*).



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 Fine Bros Market Agency  
 Rhoda's Market Agency  
 RSA Cape Town Market Agency  
 Subtropico/Spes Bona Market Agency

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 Port Natal Market Agency  
 RSA Coastlands Market Agency

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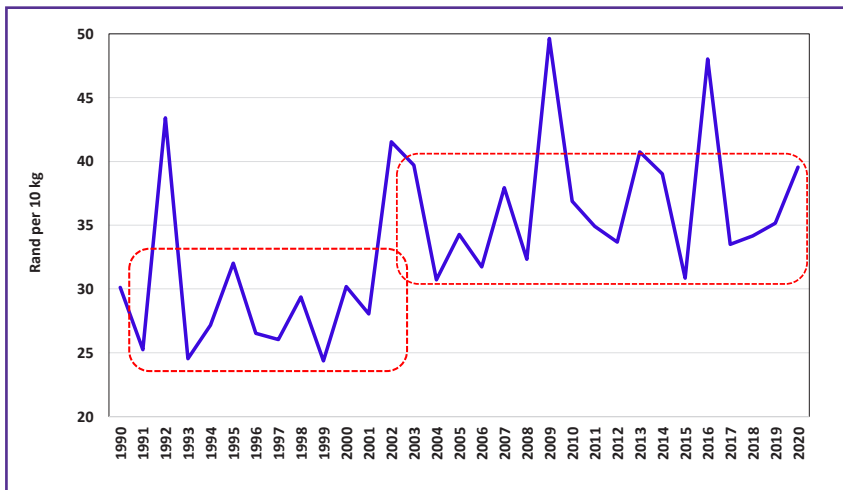
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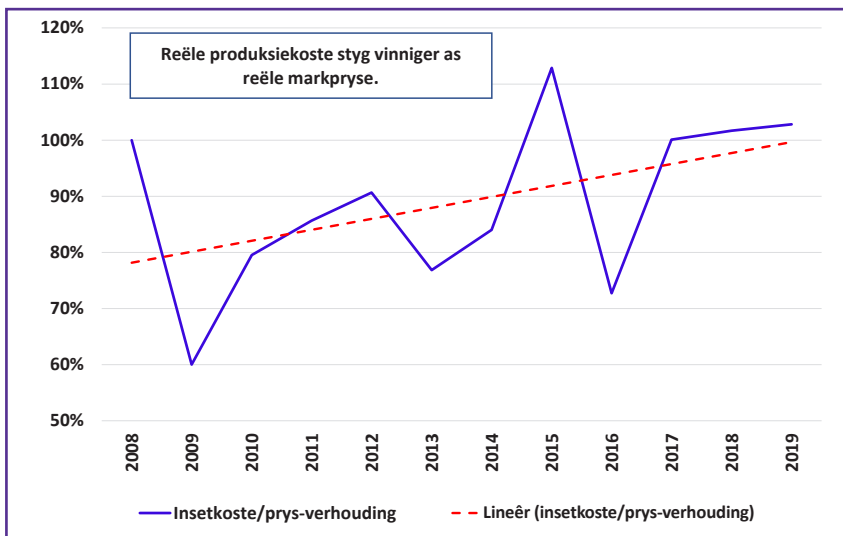
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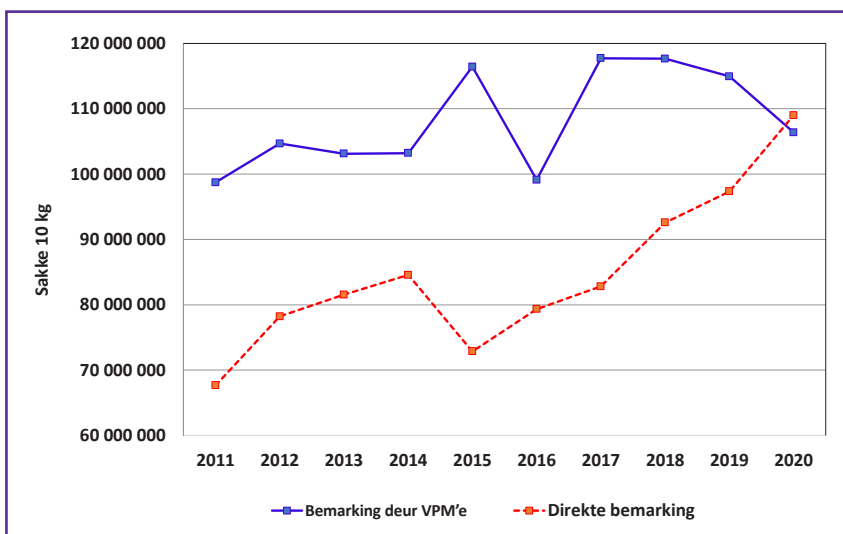
Figuur 6: Gemiddelde reële markpryse oor tyd.



Figuur 7: Insetkoste/prys-verhouding vir aartappelproduksie oor tyd (2008 = 100%).



Figuur 8: Bemaking van tafelaartappels vanaf pakstoor: VPM'e vs. direkte bemaking.



**Markpryse klop nie inflasie nie**

Dit is opvallend dat die groei in reële omset oor tyd vinniger styg as die groei in verkoops-volume. Hierdie tendens skep 'n positiewe uitkyk, maar die data van enkele individuele markte skets 'n somber prentjie. *Figuur 6* dui die gemiddelde jaarlikse reële markpryse sedert 1990 aan. Dit is duidelik dat reële markpryse die afgelope sowat 20 jaar in 'n sywaartse rigting beweeg.

Dit beteken dat, sou die gemiddelde inflasiekoers byvoorbeeld 5% wees, die gemiddelde jaarlikse markpryse ook met 5% sou styg. Markpryse klop dus nie inflasie nie. *Figuur 7* toon dat die jaarlikse insetkoste/prys-verhouding oor tyd gegroei het. Dit beteken dat insetkoste vinniger as markpryse styg. Producente moet dus meer aartappels per hektaar produseer om te kan oorleef.

Beide die minimumloon en Eskom-tariewe styg binnekort met onderskeidelik 16 en 15%, terwyl inflasie maar effens meer as 3% is. Die olieprys het ook onlangs 'n stygende tendens begin toon.

Volgens *Figuur 8* is daar in 2020 vir die eerste keer meer aartappels buite VPM'e as op die markte self verkoop. Die skerp opwaartse tendens van direkte bemaking toon ook dat dié tendens waarskynlik nie binnekort gaan verander nie. Net die tyd sal leer. Stadig maar seker begin die rooi ligte flikker vir VPM'e wat tans as prysvormingsmeganisme funksioneer.

**Slotgedagte**

Prysvorming en die bemaking van varsprodukte gaan nog vir lank 'n punt van bespreking wees. Die res van die wêreld se bemaking van veral varsprodukte (wat aartappels insluit) het reeds in 'n rigting weg van VPM'e ontwikkel. Daar is eintlik nog min lande wat beskik oor VPM'e soos ons dit ken. Impliseer dit noodwendig dat die produsent nou aan die res van die voedselketting uitgelewer is? Nie noodwendig nie.

Ons VPM'e funksioneer as 'n prysvormingsmeganisme – ons moet dit koester. Met die VPM'e en die markagentskapsmodel, is ons relatief naby die ideale weergawe van 'n vryemark. Gegewe die feit dat markte marktaandeel verloor, bly dit steeds ons 'eerste prys', maar ons moet die 'wat as'-vrae vra.

Wat as markte aanhou om hul marktaandeel te verloor? Wat as markte minder as, sê, 80 of 90 miljoen sakke per jaar begin verkoop? Tans is die prysinligting wat ons van 110 miljoen sakke kry, genoeg om te verseker dat ons prysvormingsmeganisme steeds deursigtig en doeltreffend is. ©

Vir enige navrae, kontak FP Coetzee by [epos fp@potatoes.co.za](mailto:epos fp@potatoes.co.za) of Pieter van Zyl by [epos pieter@potatoes.co.za](mailto:epos pieter@potatoes.co.za).

# Forest Lodge



## IMPLEMENTE VEILING!

**VRYDAG • 11 JUNIE 2021**  
**11:00 • MOOIRIVIER**

**TREKKERS:** 2 MF 5465 Dyna 4 (2013; 6000 ure). MF 7624 Dyna 6 (2000 ure). MF 6499. New Holland TD 95 (2017). New Holland TD 95 (2017; 3091,8 ure). New Holland TD 95 (2017; 3272,2 ure). New Holland TD 95 (2017; 3064 ure). JD 6410 (2000; 4X4, met papier). Case JX85 (7244,9 ure). Case 7240 (180KW; 8894 ure). Case 7240 (180KW). Claas Arion (110KW; 8455 ure). Kubota M130X (1252,4 ure). MF 6711 (83KW; 2396,9 ure).

**VOERTUIG:** 3 Mahindra Bolero SC Turbo (1 x 2013 met 110 000 km; 2 x 2016 met 55 000 km). Land Cruiser 70 (1 x 2007 met 390 000km). Nissan NP 300 (met tralies; 1 x 2017 met 90000km). Hyundai bakkie.

**VRAGMOTORS:** Mercedes Benz 2628 (2002; 610000 km; met tralies). Warrior vragmotor (8 ton, met beestralies).

**PLANTERS:** 3 Grimme GL 32F aartappel planters (2015; 2 ry; met rollers; met spuit en pomp). JD 4500 koringplanter. Aartappel planter (soos nuut). MF 555 koring planter (2015; 8 ry; met vloeibare kunsmistoeiender; 500L tenk). Standen Pearson planter.

**SLEEPWAENS:** Platbak sleepwa (dubbel-as; met massa kante; 14 ton; 1998). 3 Kantel sleepwaens (soos nuut).

**SKOTTEL-; SKAAR- & TANDWERKTUIG:** Agrator GRC 3700 saadbedvoorbereider (2011; 3.6m; 3 punt; met 2 1000L tenks). Agrator GRC 1900 saadbedvoorbereider (2011; 1.9m; 3 punt). Agrator kapploeg KD 5005 (2011 model; 5m; 3 punt). 2 Baldaline kapploeg skoffel (4 ry; PTO aangedrewe; nuut; 3 punt). Baldaline kapploeg skoffel (2015; 6 ry; 3 punt). Kverneland Visio 200 hidrouliese kontra sny-eg (2010; 40 skottel). Kverneland CLG grondbreker (2014; 8 tand, 3 punt; met rollers). GRC grondbreker. Kverneland omswaai ploeg (2016; 5 skaar; 3 punt). Rovic tussenrygewas skoffel (2017; 8 ry; 3 punt; met spuit - en pomp sisteem; 1000L tenk). JD gewas skoffel (2000; 6 ry; 3 punt; hidroulies opvoubaar). Rovic tussenry gewas skoffel (2016; 4 ry; met 1000L tenk). TCL 16 kontoer maker (2016; 32 skottel). Morent Power Horrow saadbedvoorbereider (2015; 5m; met rollers). Krag-eg.

**AARTAPPELTOERUSTING:** Grimme SE 85-55 aartappel uithaler (2006; 1 ry). I Mac 8090 RB 45-55 aartappel uithaler (2017; 1 ry; 5 ton bak). I Mac opteller (2013; nuut). Scanstone 4215 "destoner" (2012). Scanstone operter. De Wulf 2060 RQA aartappel uithaler (2 ry; baie min gewerk). Aartappel wasser 10 000 sakkies/ sag.

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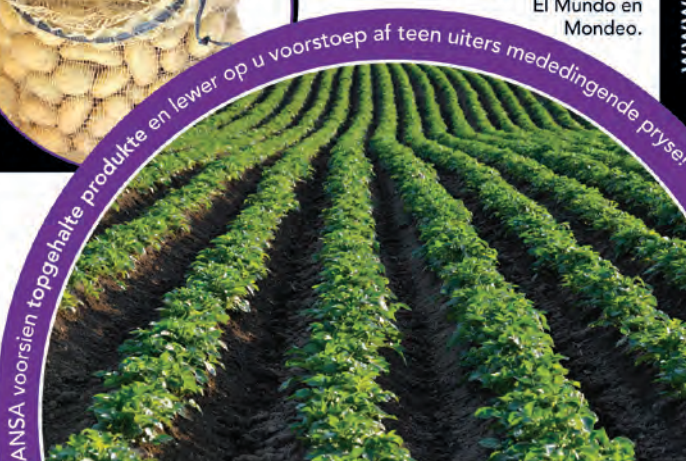
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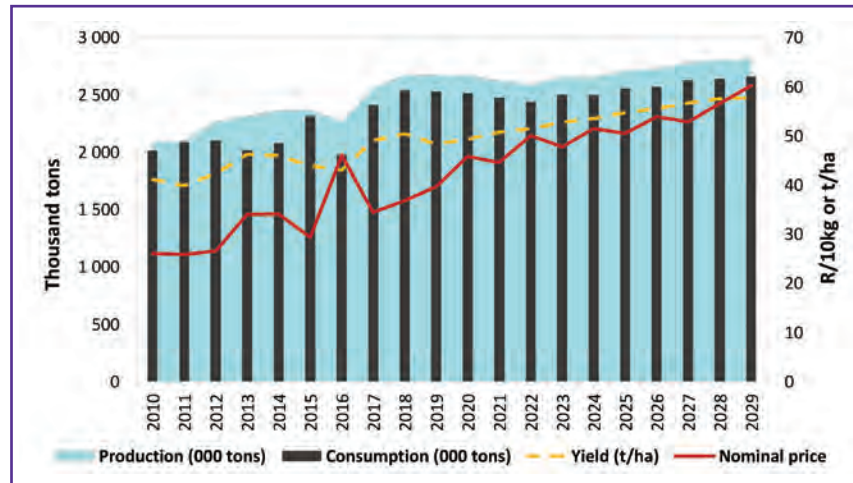
# Baseline and market dynamics for the coming season

By Pieter van Zyl, Potatoes South Africa, Divan van der Westhuizen, BFAP, and Marion Delpont, BFAP

For every section of the agricultural industry, a series of core drivers or fundamental factors exist that can determine the direction of an industry. A differentiation can also be made between drivers influencing an industry in the short term, and the more long-term strategic drivers. The greatest challenge when making future projections is to make assumptions pertaining to the fundamental drivers, as well as to anticipate when the interrelationship between these drivers will change.

The past year was particularly challenging due to major Covid-19-related disruptions in the food and beverage sector. *Table 1* illustrates the macro-economic assumptions of the baseline outlook. The gross domestic product (GDP) growth rate for 2020 is 'less negative' than initially anticipated (-9.4%) due to a stronger rebounding of the economy in the third and fourth quarters. The ZAR/USD exchange rate is projected

Figure 1: BFAP potato outlook.



to strengthen in 2021 (largely due to a relative weakening of the American dollar), and the inflation rate is expected to slowly increase over the next three years.

## BFAP's outlook for potatoes

South Africa's potato production has increased by an average of 2.6% per annum over the past decade

(*Table 2* and *Figure 1*). During this period, the area under potato production has remained relatively constant at an average of 52 000 ha, while yield improvements (2% average increase per annum) drove production increases.

The rate of increase in yields is projected to decrease to 1.7% per annum over the outlook period, to reach an average yield of 57.8 t/ha by 2029, while the area under potatoes is projected to decline by an average of -0.7% per annum to 48 730 ha by 2029. Yield increases are assumed to be primarily driven by factors such as research, cultivar development, better production

Table 1: Macro-economic assumptions for the 2021 baseline.

	2019	2020	2021	2022
Exchange rate (ZAR/USD)	14.55	16.45	15.36	16.24
GDP growth rate (%)	0.2	-7.2	3.1	2.8
Interest (%)	10.14	7.86	7	7.26
CPI food growth rate (%)	4.9	3.3	4.2	4.7

Table 2: Baseline summary.

	2019	2020	2021	Average annual growth: 2010 to 2019	2029	Average annual growth: 2020 to 2029
Area ('000 ha)	55.34	51.73	51.78	0.3%	48.73	-0.7%
Yield (t/ha)	48.32	51.55	50.72	2%	57.80	1.7%
Production ('000 tons)	2 674	2 667	2 626	2.6%	2 817	1.1%
Fresh consumption ('000 tons)	1 853	1 857	1 802	2.5%	1 962	1.1%
Nominal market price (R/10 kg)	39.72	45.80	44.65	5.3%	60.25	3%

practices, and better plant protection products.

The projections generated by the Bureau for Food and Agricultural Policy's (BFAP) potato partial equilibrium model are based on a set of macro-economic assumptions, as well as the latest industry information. For 2021, potato production is projected to decrease slightly by 1.5% to 2.63 million tons. Despite a 15% increase in the potato price from 2019 to 2020, the potato production area is projected to remain nearly constant in 2021 (51 780 ha) due to significant expected production cost increases from 2020 to 2021 (Figure 1).

The decrease in production is therefore largely driven by a decrease in the average yield from 51.55 t/ha in 2020, to 50.72 t/ha in 2021, assuming that factors such as research, cultivar development, better production practices, and better plant protection products will drive an average increase in yield of 1.2% per annum. Potato prices are driven by domestic supply and demand dynamics as potatoes are not typically traded in bulk.

Despite the relatively constant crop size from 2018 to 2020 (2.67 million tons), the nominal average market price of potatoes increased consistently from R36.83/10 kg bag in 2018, to R45.80/10 kg bag in 2020. These recent price movements can largely be attributed to demand dynamics, which need to be unpacked and understood in more detail.

The real average market price (deflator consumer price index for all products, December 2012 = 100) has also been increasing over the past few years and is projected to increase marginally over the outlook period.

### The sensitivity of the potato price

The potato price is extremely sensitive with regard to production volumes as well as quantities demanded. A sensitivity analysis using two scenarios has been performed for the 2021 season to illustrate this. Firstly, a 10% increase or decrease in the average yield in 2021 was imposed and the resulting

**Table 3: Price sensitivity analysis: yield variability.**

	2021 (baseline)	2021 (10% increase in production)	% change	2021 (10% decline in production)	% change
Area ('000 ha)	51.78	52.06	0.6%	51.50	-0.5%
Yield (t/ha)	50.72	55.78	10%	45.66	-10%
Production ('000 tons)	2 626	2 904	10.6%	2 351	-10.5%
Price (R/10 kg)	44.65	24.70	-44.7%	64.37	44.2%

**Table 4: Price sensitivity analysis: GDP growth rate variability.**

	2020 (baseline)	2020 (10% increase in GDP)	% change	2020 (10% decline in GDP)	% change
GDP (% growth)	-7.2	-6.5	10%	-7.9	-10%
Fresh consumption ('000 tons)	1 857	1 858	0.4%	1 856	-0.4%
Production ('000 tons)	2 667	2 667	0%	2 667	0%
Price (R/10 kg)	45.80	46.65	1.9%	44.96	-1.9%

price movements were modelled (Table 3). It can be concluded that a 1% increase (decrease) in yield can cause a 4.4% reduction (increase) in the average potato price.

Secondly, a change in consumers' situations also has significant implications on the demand for and ultimately the price of potatoes. The 2020 season is a case in point, where consumer income declined on average (represented by the GDP growth rate) and lockdown regulations resulted in more home-cooked meals prepared than usual.

Covid-19 brought about a great deal of uncertainty around the extent to which the consumer was impacted, and Table 4 illustrates the impact of imposing a 10% increase and decrease of the GDP growth rate on the potato market. It can be concluded that a 1% increase in GDP growth rate can cause a 0.2% increase in the price of potatoes.

GDP growth rate (as a proxy for consumer income) is only one factor affecting fresh potato consumption and, therefore, the impact of GDP on the price of potatoes is 'indirect' (the price of potatoes is determined by fresh potato demand and supply).

Fresh potato consumption (bulk of demand for potatoes) influences the potato price directly. After a 10% increase in GDP growth, fresh

potato consumption only increased by 0.4%. If, however, fresh potato consumption had to fluctuate by a full 1% (due to higher GDP growth rate changes or other factors influencing demand), this would lead to a 4.75% increase (or decrease) in the average potato price.

The average nominal potato price is highly sensitive to various volume changes in the market – albeit a supply change or a change in demand and consumption.

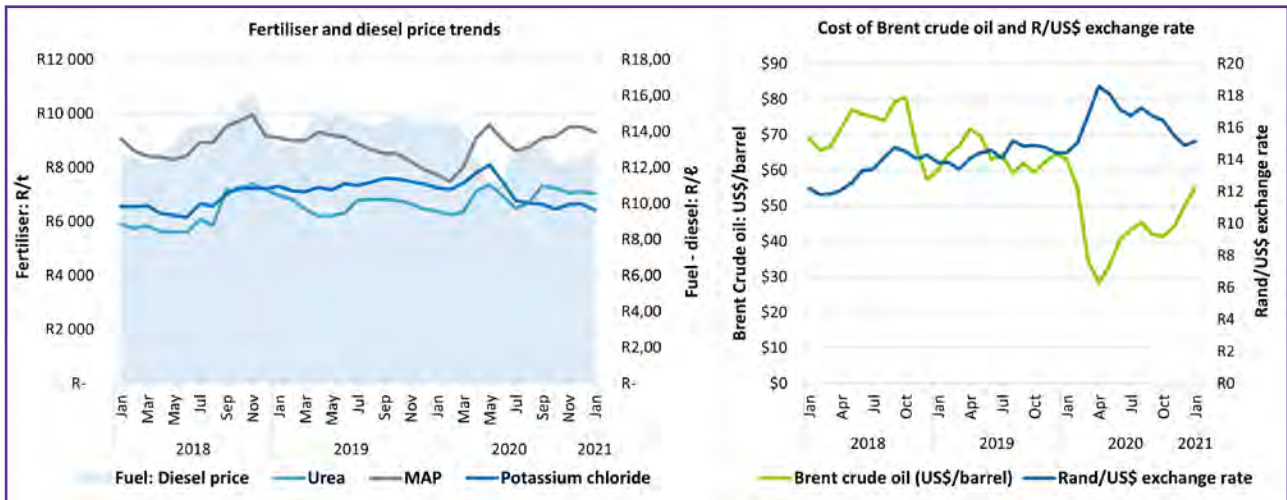
### Farming input expenditure trends

Producers often face an environment in which the cost of inputs increases at a faster rate than output or farmgate prices. Throughout the Covid-19 pandemic, major volatility was observed in macro-indicators such as the ZAR/USD exchange rate and the Brent crude oil price (Figure 2). Since South Africa is a net importer of various farming inputs such as fertilisers and chemicals, these inputs are subject to fluctuations in the exchange rate and oil price.

Since January 2020, the cost of Brent crude oil has decreased significantly from roughly US\$63/barrel to reach US\$28/barrel in April 2020. Over the same period, the rand has depreciated against the dollar to levels above R19/US\$.



Figure 2: Fertiliser, diesel, and Brent crude oil price trends, and ZAR/USD exchange rate. (Source: Grain SA, 2021)



The correlation between these macro-indicators and domestic fertiliser and fuel prices is clearly visible, with domestic fertiliser peaking in May 2020, and fuel in August 2020.

Apart from fertiliser and fuel prices, the potato industry faces further pressure resulting from the introduction of the new minimum wage for farmworkers during March 2021 and further electricity hikes to

be implemented in April 2021. The new minimum wage for farmworkers will be aligned with the national minimum wage of R21.69/h, implying a year-on-year increase of 16%.

The recent announcement by Eskom entails an electricity tariff hike of almost 16%. A recent study indicated that a 15% increase in electricity tariffs could imply that the South African potato industry

would have to absorb an additional R55 million in electricity expenses. ©

For more information, send an email to Pieter van Zyl via [pieter@potatoes.co.za](mailto:pieter@potatoes.co.za), Divan van der Westhuizen via [divan@bfap.co.za](mailto:divan@bfap.co.za), or Marion Delpoit via [marion@bfap.co.za](mailto:marion@bfap.co.za).

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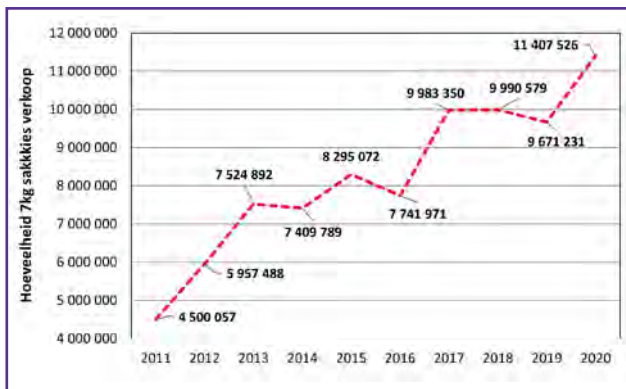
# Verpakkingstendense van aartappels op varsproduktemarkte: 7 kg vs. 10 kg

Deur FP Coetsee en Pieter van Zyl, Aartappels Suid-Afrika

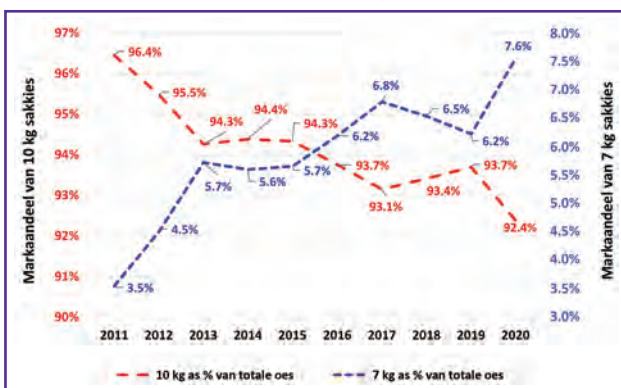
**G**edurende 2020 is daar byna 11.5 miljoen 7 kg-sakkies op alle markte verkoop, soos aangedui in *Figuur 1*. Let op die skerp stygende tendens. Vanaf 2011 tot 2020 het die 7 kg-sakkies se tonnemate, as 'n persentasie van die algehele tonnemate op varsproduktemarkte (VPM'e) verkoop, van 3.5 tot 7.6% verdubbel (*Figuur 2*).

*Figuur 3* toon die maandelikse hoeveelheid 7 kg-sakkies wat sedert 2018 verkoop word. Dit blyk nie of 'n duidelike seisoenale tendens voorkom nie. Maandeliks word maklik tussen 600 000 en 1 miljoen 7 kg-sakkies op markte verkoop.

**Figuur 1: Hoeveelheid 7 kg-sakkies verkoop op VPM'e oor tyd.**



**Figuur 2: Markaandeel op VPM'e volgens die hoeveelheid massa verkoop: 7 kg- vs. 10 kg-sakkies.**

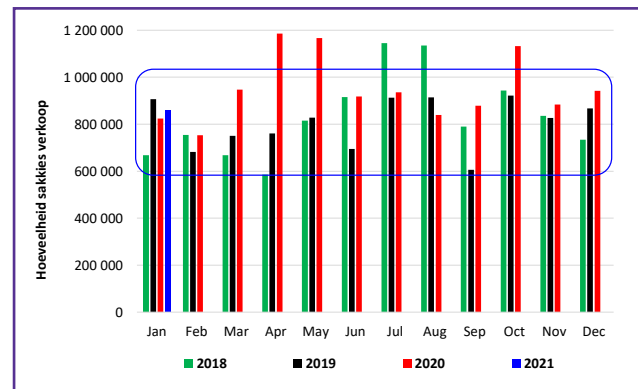


Volgens *Figuur 4* was daar nie 'n duidelike korrelasie tussen hoë markpryse en die aantal 7 kg-sakkies gedurende 2020 verkoop nie. Die sakkieverkope vir April en Mei – die eerste twee maande van die inperkings tyd – was hoog, maar pryse was terselfdertyd onder druk. Te midde van die hoë pryse in Oktober is daar wel heelwat 7 kg-sakkies verkoop. Verbruikers verkies dus om eerder 7 kg-sakkies te koop.

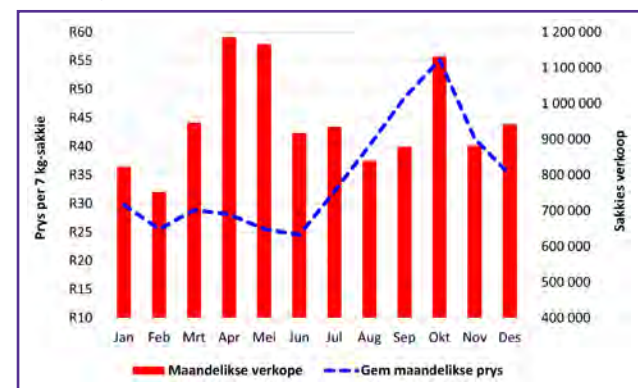
## Die impak op markaandeel

*Figuur 5* en *6* beeld die 7 kg-sakkie se markaandeel uit teenoor die 10 kg-sakkie op die Johannesburg-mark vir 2019 en 2020, onderskeidelik. In April 2020 was die

**Figuur 3: Hoeveelheid 7 kg-sakkies op VPM'e verkoop vanaf 2018 tot 2021 (alle klasse, markte en kultivars).**



**Figuur 4: Alle markte 2020: Hoeveelheid 7 kg-sakkies verkoop per maand vs. die gemiddelde markprys per sakkie.**



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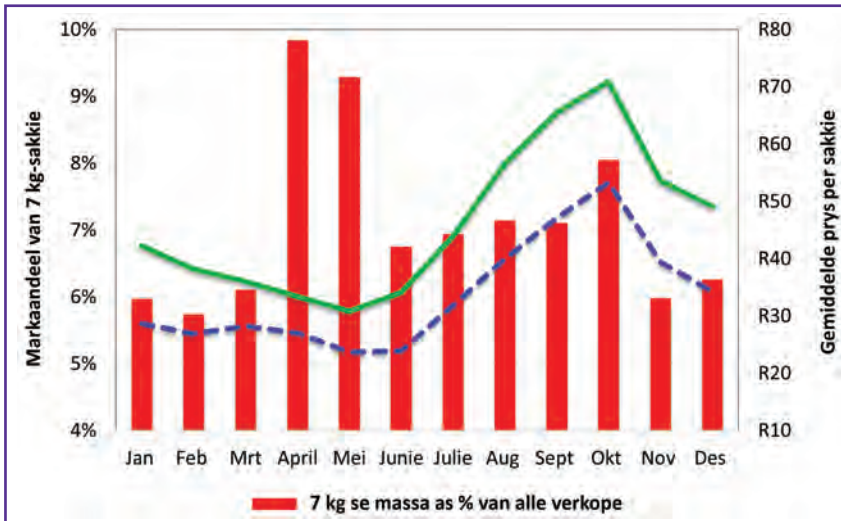
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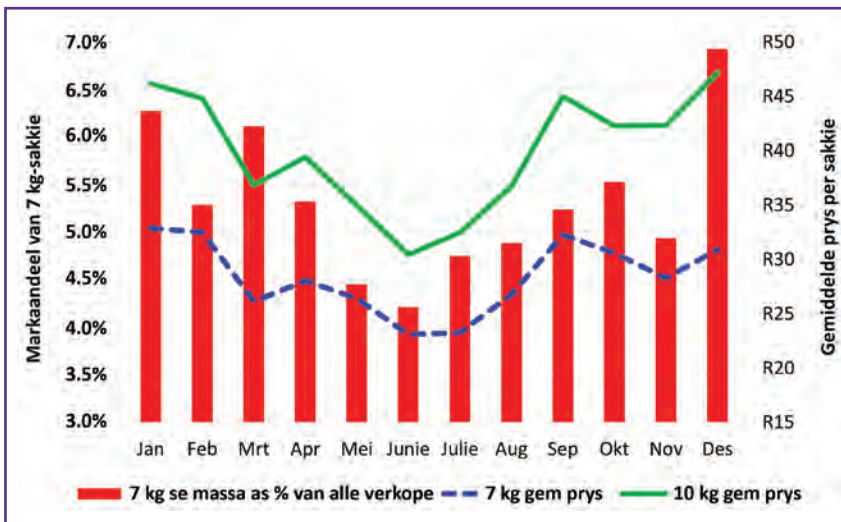
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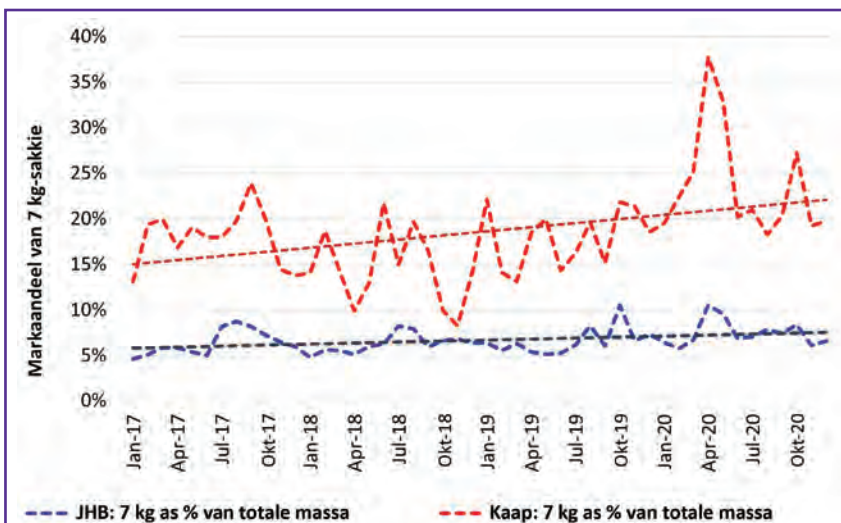
**Figuur 5: Johannesburg-mark 2020: 7 kg-sakkie se markaandeel vs. die gemiddelde prys (7 en 10 kg).**



**Figuur 6: Johannesburg-mark 2019: 7 kg-sakkie se markaandeel vs. gemiddelde prys (7 en 10 kg).**



**Figuur 7: Maandelikse markaandeel: 7 kg-sakkies as % van totale massa verkoop op twee markte.**



7 kg-sakkie se algehele verkope, omgeskakel in massa, bykans 10% van alle verkope. Vanaf Junie tot Desember blyk daar 'n verband te wees tussen hoë/lae markpryse en meer/minder 7 kg-sakkies wat verkoop word (Figuur 5). Dieselfde tendens is ook van toepassing in Figuur 6.

Soos wat markpryse daal of styg, neem die markaandeel van die 7 kg-sakkie af of toe. Hoër/laer markpryse lei tot meer/minder 7 kg-sakkies wat verkoop word. In Figuur 7 word 7 kg-sakkies se maandelikse markaandeel sedert 2017 op die Johannesburg- en Kaapstad-markte aangetoon. Op die Johannesburgse mark het 7 kg-sakkies 'n kleiner markaandeel as op die Kaapstad-mark. Beide markte toon 'n effense stygende tendens oor tyd. Let op die groter wisselvalligheid op die Kaapstad-mark van maand tot maand.

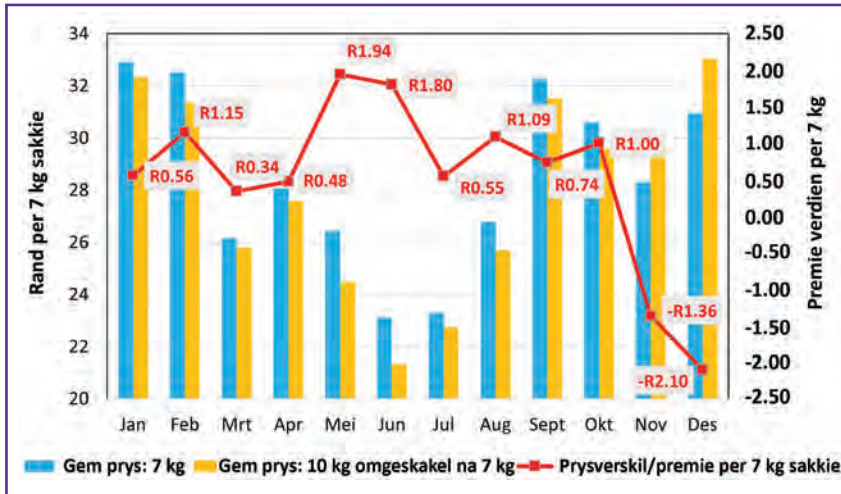
In Figuur 8 word die maandelikse gemiddelde pryse vir 7 en 10 kg (omgeskakel na 7 kg) vir Johannesburg in 2019 vergelyk. Die rooi syfers in die figuur wys gevolglik op die verskil tussen die twee pryse. Dit is die pryspremie wat op die 7 kg-verpakking verdien word.

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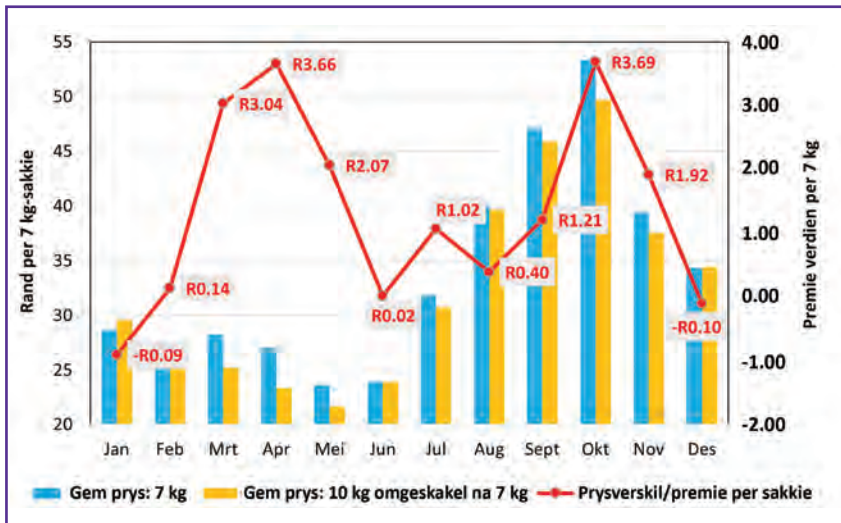
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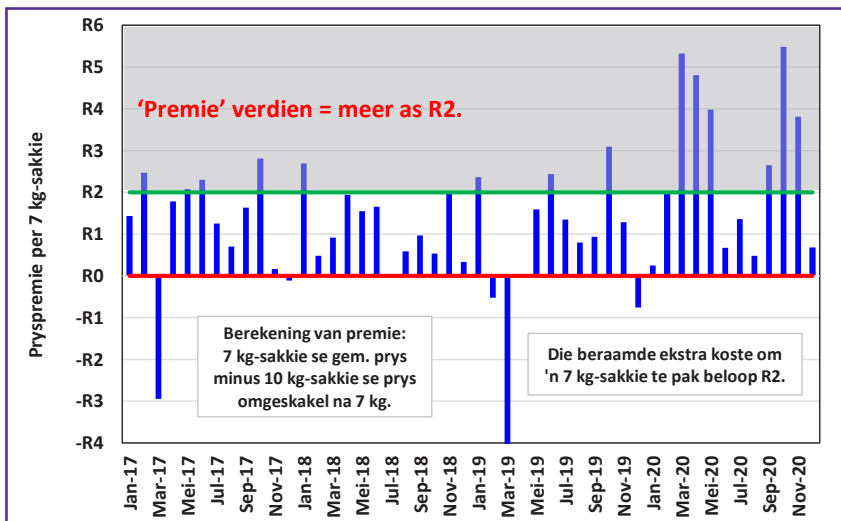
**Figuur 8: Johannesburg-mark 2019: Gemiddelde maandelikse pryse per 7 en 10 kg (omgeskakel na 7 kg), asook 'premie' verdien op 'n 7 kg-sakkie.**



**Figuur 9: Johannesburg-mark 2020: Gemiddelde maandelikse pryse per 7 en 10 kg (omgeskakel na 7 kg), asook 'premie' verdien op 'n 7 kg-sakkie.**



**Figuur 10: Johannesburg-mark: Pryspremie per 7 kg-sakkie (7 kg-sakkie se gemiddelde prys minus 10 kg-sakkie se prys omgeskakel na 7 kg).**



gevolglik op die verskil tussen die twee pryse. Dit is die pryspremie wat op die 7 kg-verpakking verdien word.

**Berekening van prysverskil**

Die premie, of prysverskil, van R1.94 vir Mei 2019, is soos volg bereken: Die gemiddelde markprys vir 7 kg vir Mei, minus die gemiddelde prys van die 10 kg-sakkie, omgeskakel na 7 kg. Indien die premie negatief is (sien November en Desember) beteken dit die prys per kilogram vir die 7 kg is laer as die 10 kg-verpakking se prys per kilogram. Die beraamde ekstra koste om 'n 7 kg-sakkie te pak, beloop maklik meer as R2.

Uit *Figuur 9* is dit duidelik dat geen maand se premie meer as R2 is nie. *Figuur 9* toon presies dieselfde berekeninge as *Figuur 8*, maar vir 2020. Nou is dit duidelik dat daar 'n hele paar maande is waartydens 'n premie van meer as R2 gerealiseer word. Gedurende Januarie en Desember was die 7 kg-sakkies se prys per kilogram laer as die 10 kg-sakkies se prys per kilogram.

*Figuur 10* is 'n uitvloeisel van *Figuur 8* en *9*. Dit dui die pryspremie per maand aan vanaf Januarie 2017. Slegs 13 van die 48 maande se premies was meer as R2. By slegs vyf van die maande was die 7 kg-sakkie se gemiddelde prys per kilogram laer as die gemiddelde prys per kilogram van die 10 kg-sakkie (negatiewe premie op die figuur).

Hoekom sou produsente bereid wees om 7 kg-sakkies te bemark as die prys per kilogram laer as die 10 kg-sakkies se prys per kilogram is? Dit verg meer moeite om 7 kg-sakkies te verpak.

Let daarop dat in hierdie artikel slegs pryse en prysverskille tussen 7 en 10 kg-sakkies bestudeer is. Geen onderskeid is tussen klasverskille en grootteverskille getref nie. ©

Vir meer inligting, kontak FP Coetzee by [fp@potatoes.co.za](mailto:fp@potatoes.co.za) of Pieter van Zyl by [pieter@potatoes.co.za](mailto:pieter@potatoes.co.za).



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Your Direct Online Agricultural Marketplace



# HelloChoice:

## Digitising the future of agricultural trade



**F**ollowing the recent disruptions and shifts in our economy, the agricultural and food sectors have welcomed the innovation of HelloChoice – an online digital marketplace founded in 2018, where buyers and sellers can easily find one another and efficiently trade among themselves.

With 1 600 buyers and sellers currently using the platform and more joining by the day, HelloChoice's user base has doubled over the past eight months and the platform has processed an impressive R70 million worth of trades since inception, representing 11 600 tons of agricultural produce.

Traditional market channels offer very limited market access and they can be tedious and costly. Online marketplace technologies are ushering in a new era, which HelloChoice is leveraging to generate new opportunities.

"HelloChoice makes it possible for commercial and smallholder producers to find the buyers they are looking for and access new markets which they are currently unable to reach," says Grant Jacobs, CEO and co-founder of HelloChoice.

### Seller benefits

HelloChoice presents great hope for the future of promoting economic prosperity, among others by providing seller price certainty. Producers no longer have to send products to a market at their own cost and simply surrender to the price that is given. Now there is greater certainty, as the product doesn't leave the farm until the price has been agreed upon and paid.

With this ground-breaking shift in agricultural trade, sellers can

now transparently connect with their buyers, enabling valuable product development and supply chain feedback. As a producer, the efficiency of your sales will scale as you quickly discover new markets and gain valuable customer feedback to improve key elements of your business, like packaging options, sizing, or varieties.

### Buyer benefits

HelloChoice is the first independent produce trading system that creates benefits for both buyers and sellers. Through HelloChoice, buyers gain access to a universe of sellers, meaning that they're able to find any product they want, from anywhere they want. By shortening the supply chain, agricultural produce can pass through the hands of the producer and into the hands of the buyer much faster, and cheaper.

The range of products available on HelloChoice is rapidly growing to offer buyers more variety. Currently, its marketplace includes potatoes, dried beans, grains, fresh fruit and vegetables, as well as nuts and dried fruit. Meat, livestock, and tree nurseries have also recently been added to the platform.

HelloChoice provides various buying options to suit the needs of every buyer. One option is for buyers to go to the BID Marketplace, where they can see all products that are currently available on auction. Another is for buyers to visit the Buy It Now (BIN) Marketplace and list their product requirements under the 'Offers and Requests' section.

### Improvement through sustainability

HelloChoice was founded with a clear vision in mind: To build

a thriving agricultural trading community. It is overcoming the traditional constraints of time and space by shortening the supply chain. Getting agricultural produce to reach buyers and consumers faster and cheaper is vital when dealing with perishable products. Supply chain visibility also entails highlighting opportunities to reduce and optimise distribution costs.

### HelloChoice user benefits

When users join HelloChoice, they gain a surplus of powerful tools, one being the Green Numbers Report. This report gives a daily benchmark price for each product and shows the performance of products across the various online channels. This gives producers more control over their products and they can gain better financial forecasts through HelloChoice's Pricing Calculator, which provides a seamless solution to calculate farmgate pricing.

HelloChoice has also developed *Playbook* for various products. The first published HelloChoice *Playbook* is *The Potato Playbook*, which gives potato producers a step-by-step guide to optimising their sales via HelloChoice's platform. *The Potato Playbook* has been incredibly successful, and HelloChoice plans to roll out *Playbooks* for other products soon.

Sign up with HelloChoice through the HelloChoice mobile app on Google Play or Apple iStore, or by visiting [www.hellochoice.co.za](http://www.hellochoice.co.za).

# National Minimum Wage Commission proposal: Effect on the potato industry<sup>1</sup>

By Pieter van Zyl, manager: industry information, Potatoes SA

**T**he National Minimum Wage (NMW) Commission recently recommended that the minimum wage be increased this year by inflation plus 1.5%. It also proposed that the minimum wage for farmworkers (currently R18.68/h) be raised to the same level as the national minimum wage (currently R20.76/h).

In effect, the minimum wage for farmworkers may go up to R21.76/h, an increase of more than 16%. Can the potato industry absorb such an increase, coupled with other expected sharp increases in input costs for 2021?

## The impact of higher input costs

Recently, there has been significant upward pressure in input costs on the potato industry. Some of these are considered administered costs, such as electricity and labour. The annual increase in input costs for potato farming is higher than inflation. At the same time, real market prices are moving sideways, hence a significant price-cost squeeze effect impacting on the sustainability of potato production.

The number of potato producers has declined from 2 000 in the early 1990s, to 550 in 2019. This smaller group has been able to sustain the average total production through economies of scale, but the increase in input costs is severely threatening

the sustainability of the primary production of potatoes.

The primary potato sector employs almost 10% of the total labour in primary agriculture. A reduction in hectares planted with potatoes due to non-profitability or shedding of labour to adjust to increased costs, will therefore have a detrimental impact on rural livelihoods, where the poorest among society reside.

Potatoes SA (PSA) acknowledges the vital role that farmworkers play in the industry. The agricultural sector is unique in the sense that a farm is where owners, managers, workers, and their families live and work together on the same property. In many instances, close relationships have been formed between farmers and labourers over generations.

Sound relationships ensure a harmonious and productive workforce. At the same time, PSA acknowledges government's goal of creating one million additional jobs in the sector by 2030, as set out in the National Development Plan (NDP).

## An overview of the industry

Between 50 000 and 54 000 ha are planted annually in South Africa, with a total production of about 2.5 million tons during the past three years. Potatoes are grown twelve months of the year and approximately 80% of all land is irrigated.

The primary potato industry supplies work to an estimated 45 000 labourers (both permanent and seasonal) on approximately 550 commercial farms. In 2011, the number of labourers was approximately 63 000, confirming that potato producers are shedding labour<sup>2</sup>. In the past decade, 18 000 workers on potato farms have lost their jobs<sup>3</sup>.

It is estimated that between 2 000 and 3 000 smallholder farmers cultivate potatoes for own consumption. They are likely self-sufficient in terms of food security, since they can easily realise between five to 30 t/ha, meaning they can also sell surplus products to generate income.

The industry contributes 3% to the total gross agricultural product and 58% of the total vegetable production. Total consumer spending on potatoes and related products is estimated at between R26 and R30 billion. The per capita consumption is almost 40 kg and growing.

## Contributing to food security

A hectare of potatoes under irrigation can easily produce 50 to 70 tons of fresh food – a significant contribution to food security. The average potato producer in South Africa grows 47 t/ha compared to the average of 4 t/ha of maize produced. The direct cost to produce one hectare

<sup>1</sup> PSA recently submitted a document to the Department of Employment and Labour regarding the National Minimum Wage recommendations for 2021.

<sup>2</sup> The number of labourers is derived from two nationwide surveys done by PSA - one in 2011, and another in 2014.

<sup>3</sup> The main reasons for shedding of jobs: Nearly 200 potato farmers left the industry during this time, and the sharp increase in, for instance, labour costs.



of potatoes is, however, four to six times higher than that of maize.

Recent studies showed that of the total consumer expenditure on staples (potatoes, maize meal, bread, rice, and pasta), 10% is spent on potatoes, making them part of consumers' daily diet. When comparing food retail prices, it becomes clear that potatoes are highly affordable compared to other starches. Consequently, they comply with all three tiers of the food security equation – availability, affordability, and nutrition.

Informal traders not only purchase 60% of all potatoes from fresh produce markets; they also buy directly from producers. In total, they purchase between 65 and 75 million 10 kg bags of potatoes (approximately 700 000 kg), which is 25 to 30% of the total harvest. In 2019, the estimated worth of potatoes bought for reselling by informal traders was between R2.5 and R3.5 billion.

All of these were marketed through the various marketing structures in local communities, which emphasises the fact that the industry has an enormous social footprint, as well as an informal labour multiplier in local communities. Informal traders also contribute to job creation as they, too, depend on employees.

### Impact of seasonality

Of the estimated 45 000 labourers employed on potato farms, 40 000 qualify as seasonal workers, most of whom are women. Seasonal labourers are mainly employed for several weeks during the production and harvesting season, which can last between one (small producer) to ten months (large producer) per annum. In many production regions, this is the only income for many of these seasonal labourers.

During 2019, an estimated R518 million (40 000 seasonal labourers x R162 minimum wage per day x 80 workdays) was paid to seasonal workers alone, which was predominantly redirected to their local communities. If, for example, 10% lose their jobs because of

mechanisation – an unintended consequence of an increase in minimum wages – less money (R51.8 million in wages) flows back to mostly poor communities.

The potato industry therefore has a significant influence on the economy of these areas. This will also indirectly impact on other employment opportunities within these local communities, which stem from the loss of income suffered by seasonal and potentially permanent workers.

### Current realities

Potato growers are currently facing numerous challenges related to production costs and the market. Real production costs show an increasing trend over time, increasing faster than inflation.

Potato farming is also highly capital intensive. The input cost of seed, chemicals, and fertilisers can easily surpass R50 000/ha, while the value invested in machinery and implements alone is worth between R50 000 and R150 000/ha of potatoes, depending on the region and size of operations.

The increase in real production costs and the sideways trend in real market prices have resulted in a much tighter cost-price squeeze over the last number of years, and consequently the sustainability of potato production is progressively being threatened in many regions. Some potato growers are already

struggling to survive and will be forced to leave the industry, with more than 20% having already done so since 2011.

To remain sustainable, producers must either increase output and/or cut back on expenses. Depending on the production region, labour costs vary between R9 000 and R24 000/ha on irrigated land, which makes cutting back on labour costs a major consideration in managing the effect of the cost-price squeeze on farms.

### The effect of mechanisation

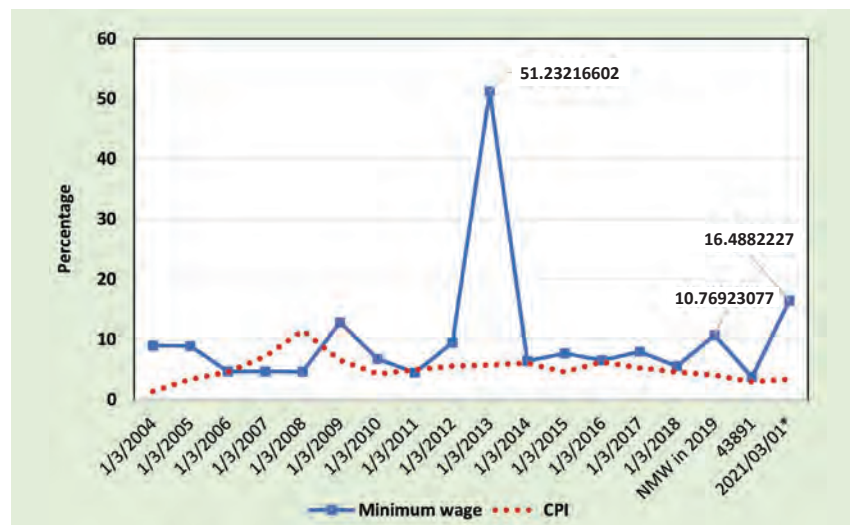
In 2013, the minimum wage increased by more than 51%, starting a 'wave of mechanisation' in the industry and leaving thousands of labourers jobless. A double-digit increase in labour costs in 2021 will see even more workers replaced by machinery (Figure 1).

While potato farming is extremely labour intensive and has the potential to absorb numerous workers, growers have accelerated mechanisation after the introduction of the 51% minimum wage increase, finding it more challenging to cut back on seed, chemicals, and fertilisers.

The following numbers indicate the ease of replacing labourers in the potato industry, especially seasonal workers, by mechanisation:

- Under normal conditions, a producer will employ 20 to 50 seasonal labourers during planting time (in addition to permanent workers). Should

Figure 1: Annual increase in minimum wages: Agricultural sector vs CPI.



the producer decide to fully mechanise the planting operation, only permanent labourers will be required. An average sized planter (R200 000 to R250 000) can easily replace 20 to 30 seasonal workers. The payback period is two seasons, meaning the savings in labour costs will by then be more than the initial outlay.

- A fully mechanical potato harvester costs anything between R2.2 million and R3.2 million, but can easily replace 40 to 80 seasonal labourers. The payback period is two to five seasons.
- Expanding the level of mechanisation in a potato packhouse can result in 30 to 40 seasonal workers losing employment, as opposed to the typical 80 to 140 usually required. There are many examples of producers that have already completely mechanised their packhouses and now employ fewer than 20 seasonal workers for this purpose. Through such extreme mechanisation, between 50 and 70 packhouse labourers can be replaced. The payback period is two to five seasons.

PSA understands that producers can never completely mechanise and that they remain dependent on labour, although the number of labourers needed varies significantly. The initial costs of mechanisation are extremely expensive and since 50% of all potato producers plant fewer than 50 ha, they will find it difficult to commit to large-scale mechanisation.

**Other factors**

Potato producers are increasingly being contracted by processing companies, which negates the need for packhouses, since processing companies transport the products directly from the field to their facilities. Producing potatoes for processing also means that less labour is required on farms.

Other factors that permanent labourers benefit from should also be considered, such as the cost of housing. Many households also have access to running water and electricity. Apart from a loss of income, these benefits will be lost should a labourer be dismissed.

**Measuring the impact of higher costs**

There are numerous ways in which the impact of increasing costs on the profitability of agriculture can be

measured. This includes measures such as gross and net farm income (NFI<sup>4</sup>). In the absence of an enabling environment and a negative or low NFI, farmers will not invest adequately in potatoes.

To begin to understand the impact of increased labour costs on the sustainability of potato production, the discussion that follows evaluates the effect of a scenario of high labour costs for 2021 on the NFI of a typical potato farm in the Eastern Free State – one of the largest producing regions in South Africa.

Not only is potato farming costly in terms of production expenses; it is also highly capital intensive. For example, the cost structure for a typical potato farm in the Eastern Free State is as follows: total cash expenses amount to R15.4 million, while total investment in land, infrastructure, machinery, and packhouse facilities amounts to R14.5 million. This is only for the potato division of the diversified farm. Annually, 178 ha of potatoes are planted on the farm under dryland conditions.

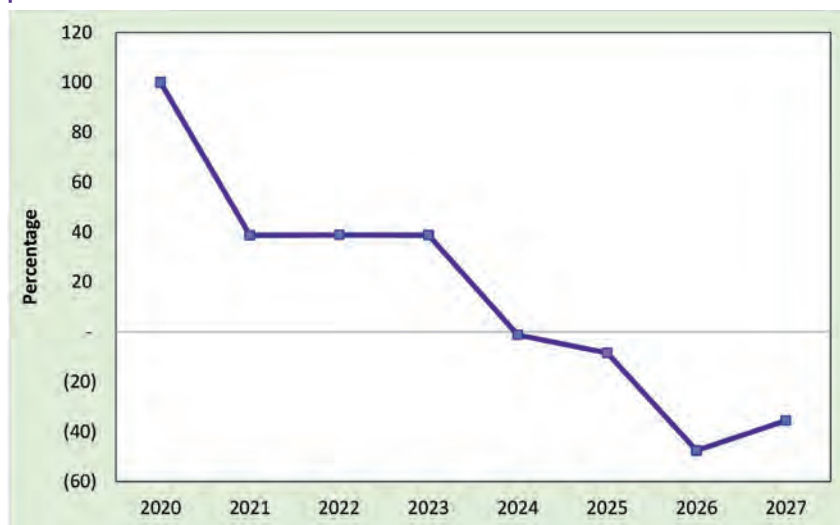
The above gives an indication of the amount of money required to produce potatoes, which are generally considered a risky crop due to their proneness to disease attacks, among others. Still, more than 2.5 million tons are produced annually in South Africa.

**Net farm income**

As is indicated in *Figure 2*, the baseline scenario that represents the status quo without any major external shocks, indicates the yearly change in NFI from 2020 (base year) to 2027.

The NFI was relatively high in 2020 due to record market prices since Lockdown Level 3. This was mostly driven by an extremely cold winter resulting in low yields in certain regions. Another reason for the high prices during the uncertain times is because consumers returned to the basic food types – in this case, potatoes. Note the decreasing trend

**Figure 2: Baseline net farm income of an Eastern Free State prototype potato farm.**



<sup>4</sup> Net farm income (NFI) = All cash receipts minus all cash expenses, excluding family living costs, principal debt payments, as well as income and land taxes.

<sup>5</sup> Return on investment (ROI) = NFI divided by investment in land and machinery.

<sup>6</sup> Assumption: Permanent labour will increase by 9% in 2021, followed by consumer price index (CPI) + 1.5% from 2022 to 2027.



in NFI from 2020, indicating, for example, potential cashflow problems.

Factors putting the NFI and return on investment (ROI)<sup>5</sup> under pressure include the demand for higher wages, the sharp increase in the expected prices for plant protection chemicals, and the expected hike in electricity rates.

**Impact on seasonal labour**

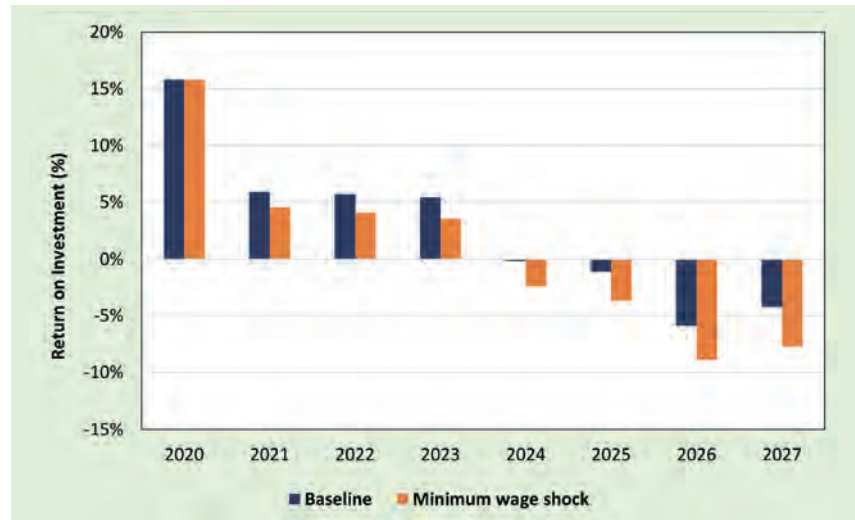
An external shock was used to test the impact of a 16%<sup>6</sup> increase in the minimum wage for seasonal labour for 2021. As shown in *Figure 3*, this will lead to an increase of R182 911 in the seasonal and permanent labour costs on the farm for 2021. This translates to an extra R1 028/ha due to the hike in wages. If the total region is utilised, the additional cost of labour will amount to nearly R10.5 million.

If the increase in the total wage bill is extrapolated to the total primary potato industry, the additional expenses for 2021 will be around R55 million. If the R1 028/ha is extrapolated to, for instance, a 400 ha farm, the extra labour cost will increase to R411 037, according to *Figure 3*.

The yearly average nominal ROI for 2021 for an Eastern Free State farm will decrease to 4.6% compared to the 5.9% of the baseline (see *Figure 4*).

In conclusion, the ROI in agriculture (which is already low compared to other investment opportunities such as the JSE) will be a vital variable that will determine future investment in agriculture.

**Figure 4: Return on investment for an Eastern Free State prototype potato farm.**



Demand growth for agricultural products over the coming decades will put tremendous pressure on the natural resource base.

Eradicating hunger and boosting rural development will require a significant increase in agricultural investment. Sub-optimal investment in the primary potato sub-sector will put the sector’s ability to produce sufficient potatoes at risk, hence prices will increase to the detriment of consumers, who are already economically stressed.

**Suggested way forward**

A recent study by PSA on the efficiency of potato packhouses concluded that some producers can easily cut back 10% on the number of labourers in packhouses, without having them replaced by machinery.

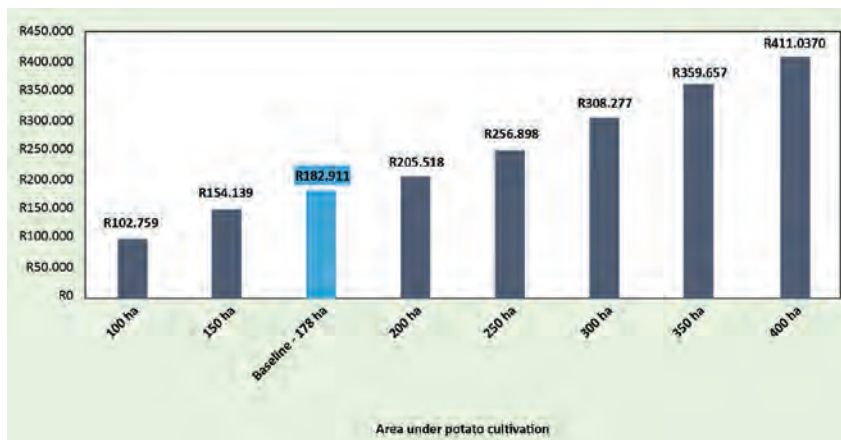
Nevertheless, farmers claim they do not want to shed labour, as they consider it a social responsibility.

PSA’s position is to engage with government to develop a policy environment that is supportive of job creation to achieve the goals of the NDP. Any opportunity to further engage with government on this issue will be welcomed.

PSA would like to see a value-chain approach as potato producers, labourers, and informal traders, as well as other role-players such as input suppliers, are dependent on one another. If a potato producer leaves the industry, not only will his seasonal labourers (and likely his permanent workers as well) lose their jobs, but related informal traders will probably not be able to source enough potatoes.

Should the producer cut back on seasonal labourers in favour of mechanisation, less money will be directed to mostly poor local communities. Unintended consequences when changes are made to labour legislation should always be considered extensively.

**Figure 3: Additional farm wage bill: Difference from baseline in 2021 for different areas under potato cultivation.**



The analysis was performed in collaboration with the Bureau for Food and Agricultural Policy (BFAP). For more information or a list of sources and references, send an email to pieter@potatoes.co.za.

# *Alternaria* species causing leaf blights on potatoes in South Africa: Are they still sensitive to fungicides?

By Dr Elsie Cruywagen, ARC-VIMP

**A** *Alternaria* diseases (early blight and brown spot) are the most troublesome foliar diseases on potatoes in South Africa. Currently, fungicides play a critical role in the management of these diseases and at the same time, reports of tolerance to some classes of fungicides have been published in North America and Europe, with particular reference to the quinone outside inhibitors (QoI) and succinate dehydrogenase inhibitors (SDHI) groups.

Reduced sensitivity to fungicides in some South African *Alternaria alternata* (*A. alternata*) isolates was first reported in 2013 (Dube *et al.*, 2014). However, there is no current information on the status of sensitivity to fungicide of *Alternaria solani* (*A. solani*), or any of the other *Alternaria* species on potatoes in

**Table 1: Classes of fungicides used in this study with their Fungicide Resistance Action Committee (FRAC) codes and the level of risk for fungicide tolerance, adapted from the FRAC code list of 2018.**

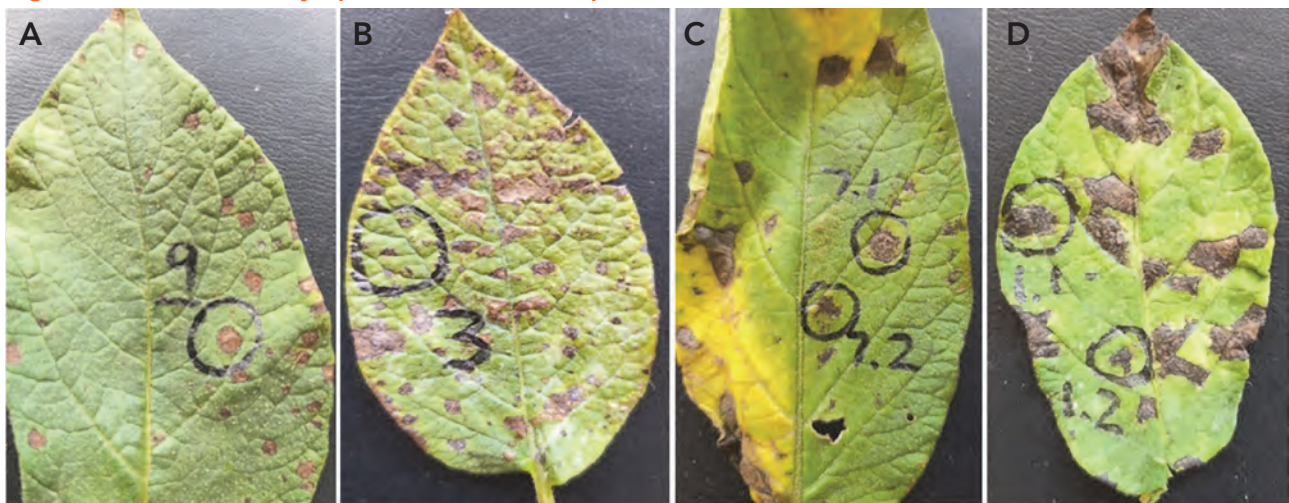
Common name	Group name	FRAC mode of action code	Level of risk according to FRAC
Procymidone	Dicarboximides	2	Medium to high
Tebuconazole	DeMethylation inhibitors (DMI) fungicides	3	Medium
Fluopyram	SDHI	7	Medium to high
Azoxystrobin	QoI fungicides	11	High
Fentin hydroxide	Organotin compounds	30	Low to medium

South Africa. Up-to-date information on the fungicide sensitivity of *A. alternata* from different geographic regions is also lacking, as fungi in different areas may have developed resistance to different classes of fungicides.

## Collection, identifying, and testing of *Alternaria* isolates

This study aims to collect symptomatic potato leaves from all potato production areas in South Africa, and to isolate and identify the pathogenic *Alternaria* isolates

**Figure 1: Some of the symptoms observed on potato leaves.**



The brown spot pathogen, *A. alternata*, was isolated from A and B; the early blight pathogen, *A. solani*, was isolated from C; and both pathogens were isolated from D.



to species level. These isolates are then tested for sensitivity against five groups of fungicides registered for the control of early blight in South Africa (Table 1).

This article reports on results of the first phase of the study, namely to screen *Alternaria* isolates for tolerance to fungicides of five groups in vitro.

Symptomatic potato leaves (Figure 1) were collected from 37 farms in eight production regions (Table 2).

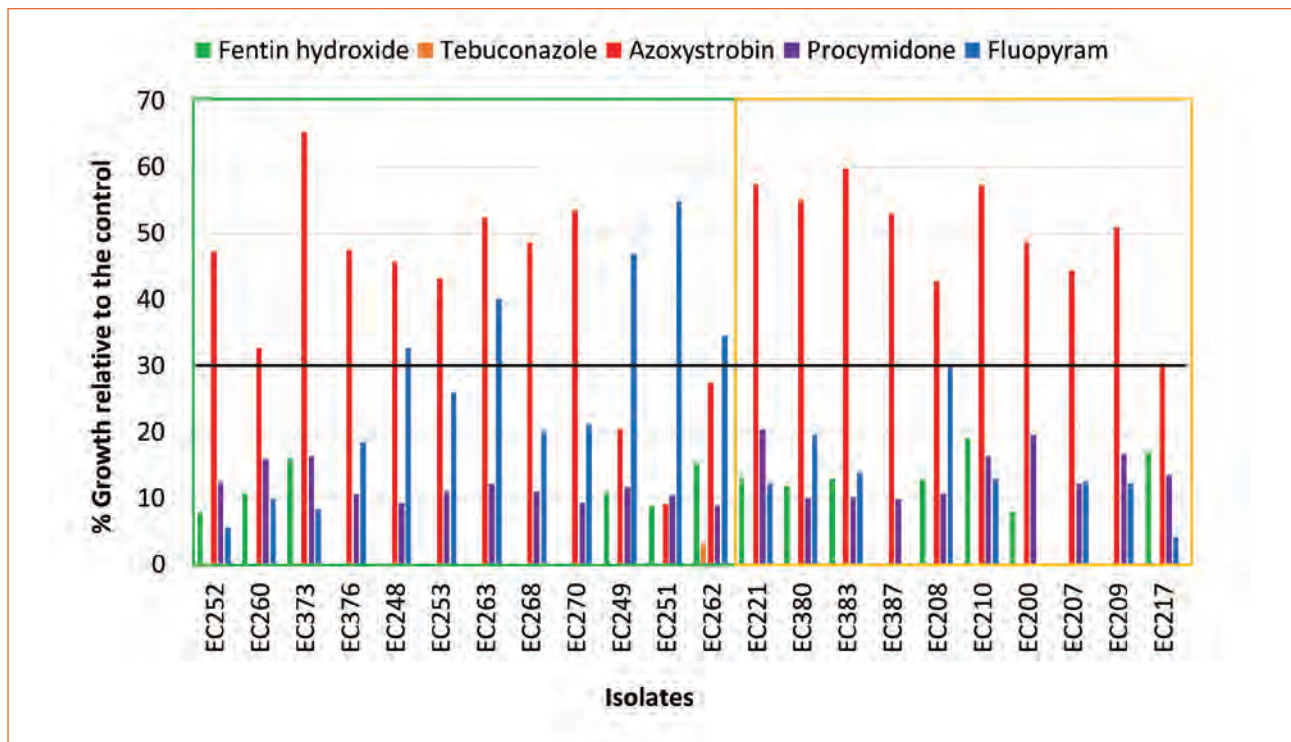
**In-vitro screening of isolates**  
*Alternaria* isolates from the Eastern Free State (Figure 2), Limpopo (Figure 3), Sandveld (Figure 4), as well as Gauteng and Mpumalanga

(Figure 5), the Southwestern Free State (Figure 6), and KwaZulu-Natal (Figure 7) have been screened in vitro against five classes of fungicides registered for control of early blight on potato in South Africa. Five replicates of selected isolates were plated out and incubated at 25°C for five days, whereafter the diameter of fungal

**Table 2: Regions where samples were collected and the number of *Alternaria* isolates obtained from each area.**

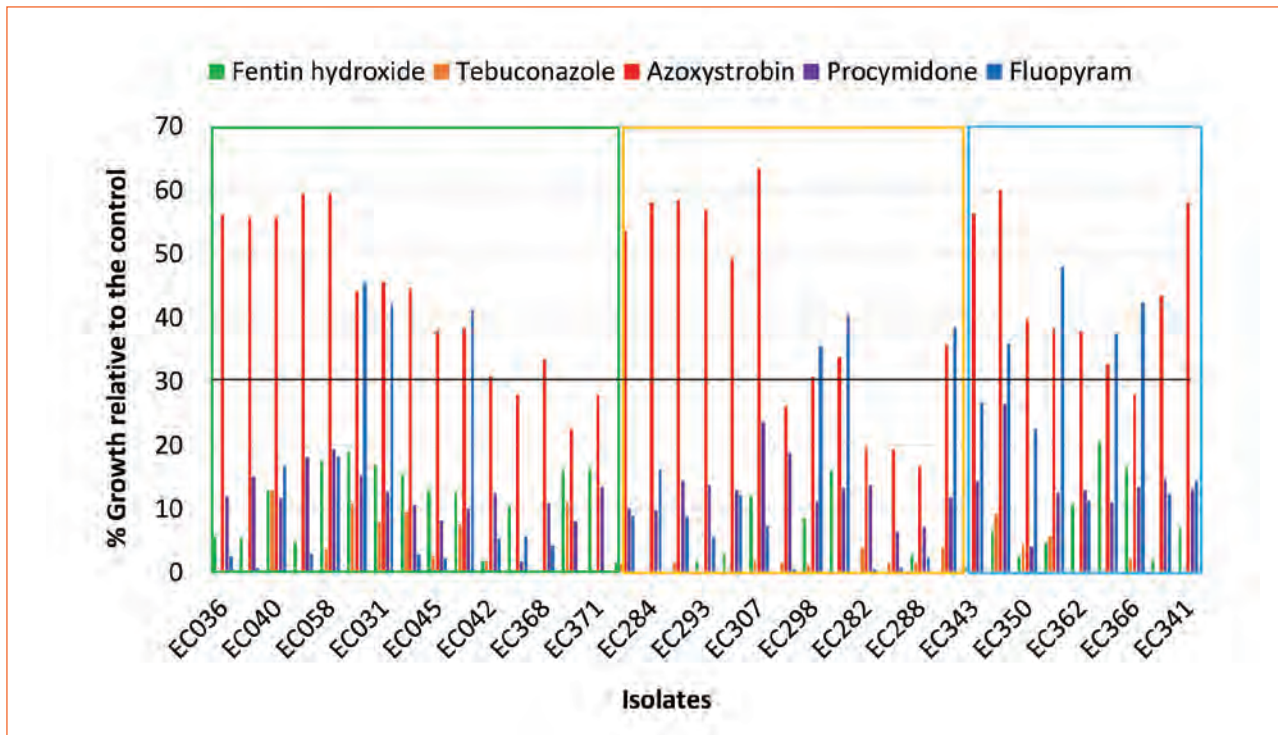
Potato production region	Area	No. of farms	No. of isolates
Limpopo	Vivo, Dendron	3	33
Limpopo	Maasstroomb, Swartwater	3	21
Limpopo	Marble Hall	3	32
Mpumalanga	Middelburg	3	49
Western Cape	Sandveld	9	108
Eastern Free State	Reitz, Petrus Steyn, Harrismith	5	122
KwaZulu-Natal	Mooi River, Cedara	4	85
Southwestern Free State	Petrusburg	3	117
Northeastern Cape	Ugie, Maclear	3	57
Gauteng	Roodeplaat	1	29
<b>Total</b>		<b>37</b>	<b>653</b>

**Figure 2: The average percentage of growth after five days of five replicates each of *Alternaria* isolates from the Eastern Free State on media amended with different classes of fungicides.**



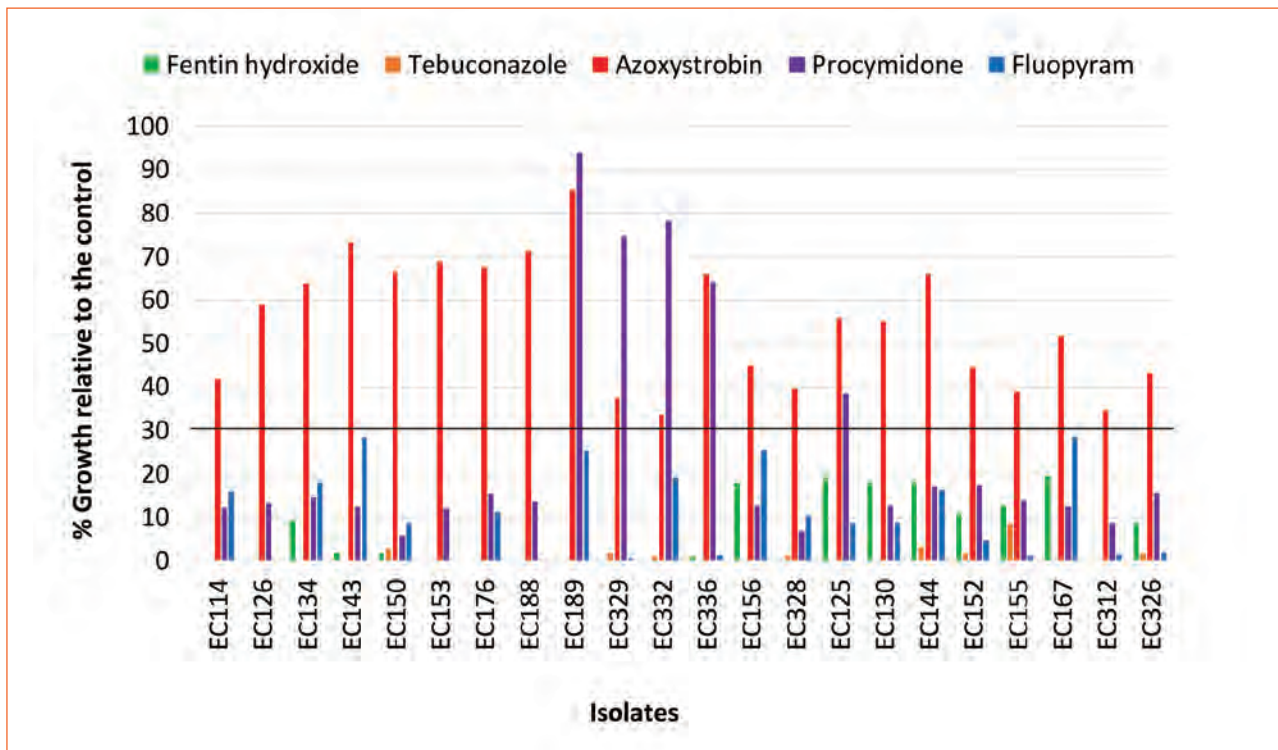
Values of more than 30% growth (black line) are an indication of loss of sensitivity to the fungicide tested. Isolates in the green block were obtained from the Harrismith area, and isolates in the orange block were obtained from the Reitz area.

Figure 3: The average percentage of growth after five days of five replicates each of *Alternaria* isolates from Limpopo on media amended with different classes of fungicides.



Values of more than 30% growth (black line) are an indication of loss of sensitivity to the fungicide tested. Isolates in the green block were obtained from the Dendron and Vivo areas, isolates in the yellow block were obtained from the Marble Hall area, and isolates in the blue block were obtained from the Swartwater, Tom Burke, and Maasstroom areas.

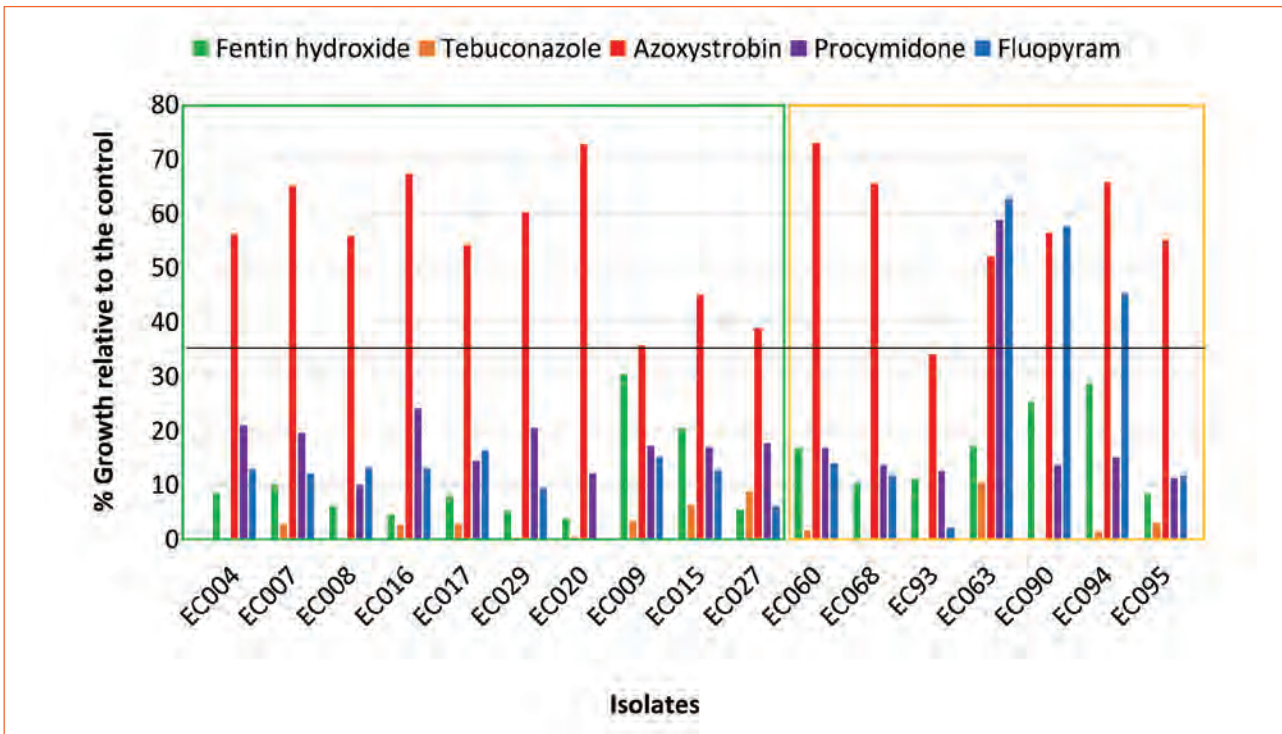
Figure 4: The average percentage of growth after five days of five replicates each of *Alternaria* isolates from the Sandveld area on media amended with different classes of fungicides.



Values of more than 30% growth (black line) are an indication of loss of sensitivity to the fungicide tested.

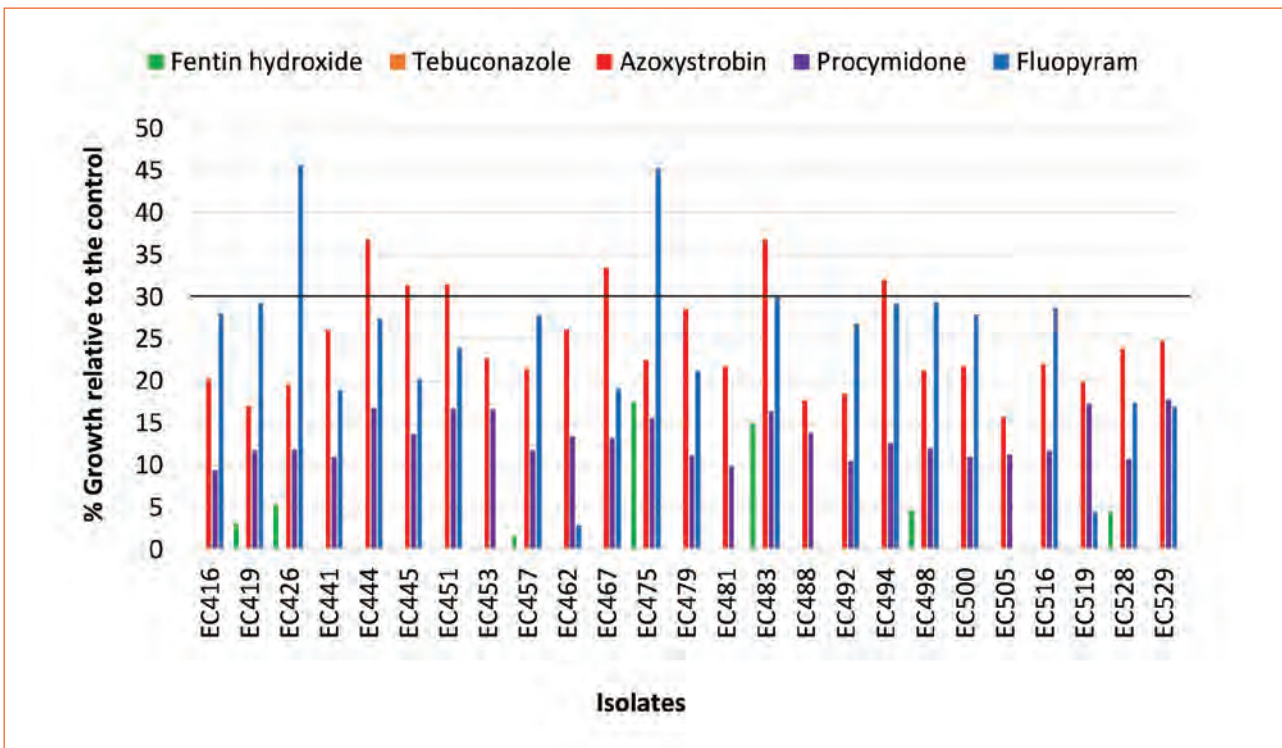


Figure 5: The average percentage of growth after five days of five replicates each of *Alternaria* isolates from Gauteng (green block), and Mpumalanga (Middelburg area – yellow block) on media amended with different classes of fungicides.



Values of more than 30% growth (black line) are an indication of loss of sensitivity to the fungicide tested.

Figure 6: The average percentage of growth after five days of five replicates each of *Alternaria* isolates from the Southwestern Free State on media amended with different classes of fungicides.



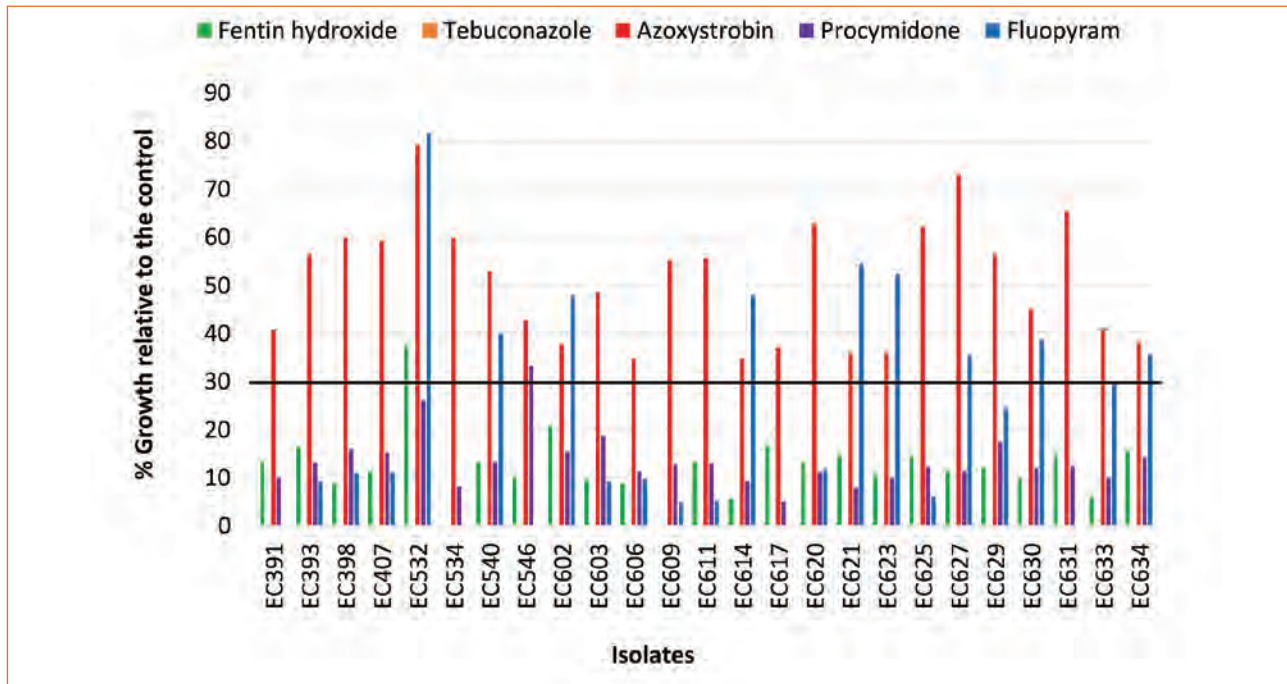
Values of more than 30% growth (black line) are an indication of loss of sensitivity to the fungicide tested.

**Table 3: Classes of fungicides used in this study with their FRAC codes and the level of risk for fungicide tolerance according to FRAC.**

FRAC code	Common name	No. of registrations	Risk level
2	Procymidone	3	Medium to high
3	Difenoconazole	10	Medium
	Flutriafol	2	
	Tebuconazole	19	
7	Fluopyram	2	Medium to high
11	Azoxystrobin	11	High
	Picoxystrobin	2	
	Trifloxystrobin	1	
29	Fluazinam	1	Low
30	Fentin hydroxide	1	Low to medium
40	Iprovalicarb	1	Low to medium
NC	Potassium bicarbonate	1	–
M01	Copper ammonium acetate	5	Low risk group – no signs of resistance developing
	Copper hydroxide	9	
	Copper oxychloride	8	
	Copper sulphate	2	
	Cuprous oxide	2	
M03	Propineb	1	
	Mancozeb	23	
M04	Folpet	4	
M05	Chlorothalonil	14	
	Cymoxanil	1	
1 & 3	Carbendazim + difenoconazole	2	
11 & 3	Azoxystrobin + difenoconazole	3	High, medium
11 & 3	Azoxystrobin + tebuconazole	1	High, medium
11 & M03	Fenamidone + mancozeb	1	High, low
11 & M05	Azoxystrobin + chlorothalonil	2	High, low
3 & 11	Tebuconazole + trifloxystrobin	1	Medium, high
7 & 11	Boscalid + pyraclostrobin	1	Medium to high, high
9 & 11	Pyrimethanil + trifloxystrobin	2	Medium, high
M03	Maneb + zinc oxide	3	Low
M03 & 2	Maneb + procymidone + zinc oxide	1	Low, medium to high
M05 & M05	Chlorothalonil + cymoxanil	1	Low
M05 & 11	Chlorothalonil + fluoxastrobin	1	Low, high
M05 & 11	Cymoxanil + famoxadone	2	Low, high
M05 & 11, M04	Cymoxanil + famoxadone + folpet	1	Low, high, low
M05 & 40	Chlorothalonil + dimethomorph	1	Low, low to medium
M05 & M01	Chlorothalonil + copper oxychloride	1	Low



Figure 7: The average percentage of growth after five days of five replicates each of *Alternaria* isolates from KwaZulu-Natal on media amended with different classes of fungicides.



Values of more than 30% growth (black line) are an indication of loss of sensitivity to the fungicide tested.

growth was measured in two perpendicular directions, giving ten measurements per isolate.

Results are presented as the percentage of growth of isolates on fungicide-amended media, compared with the control with no fungicide added. Initial results of the screening of fungicides have confirmed widespread shift in sensitivity to the Qol (azoxystrobin) fungicide. Several isolates from the Eastern Free State, Southwestern Free State, KwaZulu-Natal, Limpopo, and Mpumalanga also showed a high prevalence of loss of sensitivity to the SDHI (fluopyram) fungicide.



No current information on the status of sensitivity to fungicide of *Alternaria* species on potatoes in South Africa is available.

Sandveld, Mpumalanga, and KwaZulu-Natal are thus far the only regions where isolates less sensitive to dicarboximide (procymidone) fungicides have been isolated. While most isolates are still susceptible to organotin (FRAC 30), some isolates do grow on this media, and one isolate tested from KwaZulu-Natal lost sensitivity to FRAC groups 7, 11, and 30.

The widespread loss of sensitivity to fungicides commonly used to control early blight and brown spot is concerning, and the study highlights the importance of the application of proper resistance management regimes by all producers, as isolates that acquire tolerance in one region can be disseminated to other areas.

Screening of isolates from the other regions is ongoing and samples will be collected from these potato production regions during 2020/21. In the next phase of this study, molecular methods will be used to confirm the mutations conferring tolerance to the isolates.

### Acknowledgements

We would like to thank all the producers who allowed us to collect



Early blight and brown spot are the most troublesome foliar diseases on potatoes in South Africa.

samples from their farms, as well as the representatives of the chemical companies who assisted in this process. We thank Potatoes SA for funding this project. 🍎

For a list of references and more information, contact Dr Elsie Cruywagen on 012 808 8000 or [elsie@arc.agric.za](mailto:elsie@arc.agric.za).

# The basics of managing fungicide resistance

Article supplied by Croplife SA

**F**ungicides are used globally by producers to inhibit the growth or development of pathogens that affect a crop's quality or yield. To put the importance of these agricultural tools in perspective, the control of fungal plant diseases can save up to 125 million tons of food each year, which is enough to feed 60 million people. The role of fungicides in producing healthy food is clearly paramount.

However, there exists a threat to the efficacy of these valuable products, namely fungicide resistance.

Fungicide resistance is a naturally occurring, evolutionary process during which individuals of certain species of fungi develop the ability to survive treatment of a certain crop protection product. What happens over time, is that the survivors that are resistant to the action of the chemical lead to the next generation, and the resistant population multiplies.

The evolution of fungicide resistance is, however, more complex because it is influenced by many additional factors, such as the cropping system, climate, and perhaps most importantly, the implementation of resistance management strategies by the farmer. Fungicide resistance can often

be demonstrated in a laboratory, and it is a crucial tool in the assessment of resistance, yet it does not necessarily prove that fungicide resistance exists in the field.

Accordingly, resistance in the field does not necessarily mean there is confirmed control failure, referred to as practical resistance. The moment control failure in the field is confirmed, it affects all parties involved in the production of a healthy crop, including the manufacturers of the fungicides. Although resistance cannot be entirely prevented, the proactive management thereof is certainly better than any cure.

## Management strategies

Fungicide resistance can be managed by combining diverse management strategies such as avoiding repetitive use of one fungicide or mode of action, mixing or alternating with an appropriate partner fungicide, limiting the number and adapting the timing of treatments, as well as including non-chemical methods in the crop protection programme.

The importance of reading the product label and adhering to those guidelines when developing and implementing a spray programme cannot be overemphasised. The product label contains essential

information, such as the minimum or maximum number of applications per season, the spray intervals that need to be adhered to, and the Fungicide Resistance Action Committee (FRAC) group to which the fungicide belongs.

## Application and dosage

Producers must ensure that they only apply the product according to the stipulated dosage, as well as the mixing and application instructions. A key objective for producers in managing resistance must be to apply the correct amount of active ingredient to the target; in other words, mixing the correct pesticide volume or mass per application volume and applying the correct application volume per surface area.

The correct application technology must also be considered to ensure the precise dosage of the active ingredient is dispensed on the target. Overdosing removes all the susceptible individuals from the pest species population and leaves no susceptible genetics to maintain a susceptible population, whereas underdosing removes too few of the susceptible and semi-susceptible individuals that will procreate and develop resistance through mutation.

A producer should make use of registered tank or formulation mixtures. Some fungicides are already



available as mixtures in formulations; however, it is sometimes necessary to mix two different resistance group fungicides according to the labels' recommendations in the spray tank for stubborn fungi.

### Application frequency

Products should only be applied according to the specified application frequency, as well as the minimum or maximum number of permissible applications per season. The objective is to control repeat infestations of the pest while preventing resistance progression and acceleration.

Not adhering to the spray intervals could allow mutation to manifest in the population or, conversely, not allow sufficient opportunity for the influx of susceptible individuals that maintain susceptibility in the population.

### Information and resources

Each fungicide's active ingredient falls in a particular group, with a particular mode of action or similar mode of action indicated by a FRAC group code. The purpose of FRAC is to provide fungicide resistance management guidelines to prolong the effectiveness of 'at risk' fungicides, and to limit crop losses should resistance occur.

The FRAC group codes are indicated on the label and fungicides from different groups should be alternated within the spray programme. The FRAC website, [www.frac.info](http://www.frac.info), has numerous tools available for producers to ensure they apply the best resistance management practices to their farming operations. An electronic application has also been developed to identify the various FRAC groups and is available for download from Google Play.

Another resource is Agri-Intel ([www.agri-intel.com](http://www.agri-intel.com)), a mobile-friendly platform that contains the product label information of registered crop protection products in South Africa. Producers can search for available products by disease or pest, crop, active ingredient,



*Although resistance cannot be entirely prevented, the proactive management thereof is certainly better than any cure, as is clear from this already infected plant.*

registration holder, or registration number, thereby ensuring they have all the information at hand to develop an effective spray programme for the season.

### Integrated pest management

The Food and Agriculture Organization (FAO) defines integrated pest management (IPM) as an approach to agricultural production that "means the careful consideration of all available pest control techniques and subsequent integration of appropriate measures, that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimise risks to human health and the environment".

With regards to controlling disease, IPM refers to the utilisation of all suitable techniques or strategies to keep the disease below levels that cause unacceptable crop losses. These different strategies could include cultural, biological, physical, and chemical methods of disease management. The choice of which disease management method to employ will depend on the crop and disease conditions, as well as the availability of resources.

### Methods of control

Cultural control methods aim to help plants avoid contact with a pathogen and to eradicate or reduce the

amount of the pathogen in a field or area. Examples of cultural control methods include crop rotation, sanitation, and creating unfavourable conditions for the pathogen.

Biological control methods work by improving the resistance of the host or favouring micro-organisms that are antagonistic to the pathogen. Examples include suppressive soils and trap plants.

Physical methods of control, on the other hand, are aimed at protecting the host from pathogens by using methods such as heat treatment (soil sterilisation by heat, hot water treatment of propagation material, or hot air treatments), drying of products, refrigeration, or radiation.

Chemical control methods include soil treatment, fumigation, disinfection of warehouses and packhouses, and control of insect vectors. These products must be applied according to the label instructions as mentioned.

By incorporating these best practices, a producer can decrease the acceleration of resistance development and ultimately assist in maintaining the longevity of the effective fungicides available as crop protection tools. 📍

For more information, contact Elriza Theron, marketing and communications manager, on [elriza@croplife.co.za](mailto:elriza@croplife.co.za) or 087 940 4166.

# Wat beteken navorsing vir die aartappelboer? (Deel 2): Beheer van blaarsiektes

Deur dr Fienie Niederwieser, Aartappels Suid-Afrika

**D**ie uitbreking van blaarsiektes is klimaatgedrewe en swamdoders is van uiterste belang vir die beheer daarvan. Daarom het navorsing in Suid-Afrika die afgelope dekades grootliks op aspekte van doeltreffende beheer van laat- en vroeëroes deur swamdoders gefokus.

## Laatroes

Laatroes, wat deur *Phytophthora infestans* (*P. infestans*) veroorsaak word, is die mees vernietigende aartappelsiekte ter wêreld. Weens die algemeen droë klimaat in Suid-Afrika, is laatroes nie die belangrikste blaarsiekte in die land nie. Dit kom egter gereeld in die produksiestreke van KwaZulu-Natal, die Oos-Vrystaat en die Sandveld voor, en kan ernstige skade aanrig as dit nie beheer word nie. *P. infestans* vermeerder ongeslagtelik én geslagtelik.

Patoloë van regoor die wêreld vrees dat indien *P. infestans* geslagtelik vermeerder, dit isolate kan produseer wat vinnig verdraagsaamheid teen staatmaker-swamdoders kan ontwikkel indien twee verenigingsgroepe (A1 en A2) saam in 'n gebied voorkom. Toe *P. infestans* in 1840 van Suid- en Sentraal-Amerika na die res van die wêreld (insluitend Suid-Afrika) versprei het, was dit slegs die A1-groep, met die gevolg dat die patoëen vir dekades lank ongeslagtelik vermeerder het en swamdoders met sukses gebruik is om laatroes te beheer.

In die 1970's het die A2-groep deur besmette knolle vanaf Mexiko



Laatroes kom gereeld in die produksiestreke van KwaZulu-Natal, die Oos-Vrystaat en die Sandveld voor.

na die noordelike halfmond versprei. Groot kommer het geheers toe virulente lyne met weerstand teen swamdoders in Europa geïdentifiseer is. Ook in Suid-Afrika is daar gevrees dat *P. infestans* deur genetiese herkombinasie, lyne sou ontwikkel wat weerstand teen swamdoders het.

Om vas te stel wat die risiko was, is 'n studie in die 1990's deur dr Adele McCleod by die Landbounavorsingsraad (LNR) onderneem. 'n Landswye opname en karakterisering het gevolg. Die studie het getoon dat slegs die ou populasie met die A1-verenigbaarheids-groep in Suid-Afrika voorgekom het. Dr McCleod het egter gevind dat, ten spyte daarvan dat *P. infestans* slegs ongeslagtelik voortplant, isolasies uit die Sandveld opgespoor is met weerstand teen metalaksiel. Die middel sou toe van verbruik onttrek word in die streek.

Nadat isolasies van die A2-groep in Noord-Afrika opgespoor is, was die bedryf bekommerd dat dit suidwaarts in Afrika sou versprei. 'n Tweede studie is dus tussen 2007 en 2009 onderneem. Hierdie keer is isolate uit verskeie Suider-Afrikaanse lande, insluitend Mosambiek, versamel en gekarakteriseer. Resultate het getoon dat die A2-groep nie in Suid-Afrika voorkom nie, en dat dit onwaarskynlik is dat dit vanaf ander lande in Suider-Afrika na Suid-Afrika sal versprei.

'n Kommerwekkende bevinding was egter dat *P. infestans*-isolasies vanuit die Wes-Kaap steeds verdraagsaam teen metalaksiel is. Dit beteken dus dat produsente steeds nie die produk moet gebruik nie.

Na aanleiding van die sukses waarmee siektevoorspellingsmodelle in Europa toegepas word, het die LNR in die 1990's 'n studie onderneem om die potensieë



voordele daarvan in Suid-Afrika te ondersoek. Die navorsing van dr Freddie Denner het getoon dat daar 'n besparing op swamdoders kan wees, met dieselfde beheer as gewilde bespuitingsprogramme. Hierdie tegnologie word nog nie algemeen gebruik nie, maar met die kosteknyptang en druk om minder swamdoders te gebruik, kan die tegnologie steeds in die toekoms 'n groot bydrae maak om laatroes kostedoeltreffend te beheer.

### Vroeë- en malroes

Vroeë- en malroes, wat deur *Alternaria solani* (*A. solani*) en *Alternaria alternata* (*A. alternata*) veroorsaak word, word algemeen beskou as die belangrikste blaarsiektes in Suid-Afrika, en dit kom in alle produksiestreke voor. Sover bekend, het vroeëroes teen die 1900's sy opwagting in Suid-Afrika gemaak, en is die eerste formele navorsing op die epidemiologie en beheer eers ná die 1980's deur WG Nevill in die KwaZulu-Natalse misgordel gedoen.

'n Uitgebreide studie op luggedraagde spore is teen die laat 1990's tot 2003 by die Universiteit van Pretoria deur prof Jacque van der Waals onderneem. Van der Waals het bevestig dat spore in die nag gevorm word en bedags, wanneer die lugvog laag is, vrygestel en deur lugstrome of wind versprei word. Spore wat op blare beland, ontkiem en infekteer plante wanneer die blaaroppervlak weens kondensasie of reën nat is. Dit verklaar waarom veral vroeëroes teen



Vroeëroes is 'n bekende plantsiekte wat tot groot verliese vir produsente kan lei.



Vroeë- en malroes word beskou as die belangrikste blaarsiektes in Suid-Afrika en dit kom in alle produksiestreke voor.

die einde van die somer, wanneer nagtemperature daal, 'n probleem is.

Ongeveer 100 jaar nadat vroeëroes sy verskyning in Suid-Afrika gemaak het, is ongewone roes-simptome wat vroeër in die seisoen voorkom as vroeëroes, en nie tipiese konsentriese ringe toon nie, waargeneem en die siekte het verliese van tot 40% veroorsaak. Produsente het dié nuwe siekte baie gepas as malroes (*brown spot*) gedoop. Prof Van der Waals het in 2010 bevestig dat malroes deur *A. alternata* veroorsaak word en sy kon derhalwe riglyne vir die bestuur van die siekte voorstel.

Behalwe dat *A. alternata* baie gashere het en plante wat aan stres onderhewig is, siek maak, is die patogeen geneig om relatief vinnig verdraagsaamheid teen swamdoders te ontwikkel. Die eerste aanduidings dat *A. alternata* reeds verlaagde sensitiwiteit teen die Qol-swamdoders ontwikkel het, is in 2014 deur prof Van der Waals se span bevestig. 'n Projek wat sedert 2019 deur die aartappelbedryf befonds word, word by die LNR deur dr Elsie Cruywagen uitgevoer om verskeie aspekte van *Alternaria* in Suid-Afrika te ondersoek.

Hierdie projek is nog nie afgehandel nie, maar belangrike bevindings is reeds gemaak. Cruywagen het bevind dat *Alternaria*-siektes nie net deur *A. solani* en *A. alternata* veroorsaak word nie, maar ook deur twee ander *Alternaria*-spesies. Dit blyk te verklaar waarom simptome soms

verwarrend is. Evaluasie van isolate van *Alternaria*-spesies bevestig verlaagde sensitiwiteit teen die Qol-groep van swamdoders, en dat dit in elke produksiestreek waar 'n opname gemaak is, voorkom.

Daar is ook aanduidings van verlaagde sensitiwiteit teen swamdoders van ander FRAC-groepe\*. Die resultate word met die samewerking van kenners in Europa deur ander metodes van evaluasie bevestig. Dit is egter kommerwekkend, omdat produsente afhanklik is van swamdoders om *Alternaria*-siektes te beheer.

Die resultate van hierdie projek bevestig die belangrikheid van spuitprogramme, wat op die gebruik van swamdoders van verskillende FRAC-groepe gebaseer is, om in die eerste plek weerstand te verhoed, of te bestuur as daar reeds verlaagde sensitiwiteit is. Daar word voorsien dat die huidige evaluasie van sensitiwiteit teen swamdoders, as basis sal dien vir voortgesette monitering sodat produsente en CropLife SA se lede ingelig bly en spuitprogramme oordeelkundig aangepas kan word. 📍

\*FRAC (Fungicide Resistance Action Committee) is 'n komitee van kenners van CropLife International, wat weerstand teen swamdoders ondersoek en riglyne ontwikkel vir die voorkoming en bestuur van weerstandigheid.

Vir meer inligting, kontak dr Fienie Niederwieser by [fienie@potatoes.co.za](mailto:fienie@potatoes.co.za).

# Nitrogen and potassium nutrition - a balancing act

## Part 1: Plant and tuber growth

By Prof Martin Steyn and Tlotlisang Nkhase, University of Pretoria

**T**he potato is a highly productive crop with rapid dry matter accumulation over a short period of time. However, it has a high nutrient demand and to ensure successful production, sufficient nutrients need to be supplied by means of a carefully designed fertiliser programme.

Due to their shallow, poorly developed root system and fast dry matter accumulation, potatoes have a rapid uptake of more nutrients within a short time compared to most other crops, such as cereals.

For sustainable potato production, nutrient management programmes must therefore be carefully planned and implemented to ensure that production conditions meet crop requirements in an effective manner. Production practices should be both economically and technically viable, but at the same time have little negative impact on the environment.

### Management practices of N and K

Nitrogen (N) management practices have been studied thoroughly in the past, due to the high cost of N and increasing environmental concerns over the impact of leaching of N on the environment and pollution of groundwater resources. Although potatoes also have a high potassium (K) requirement, the management thereof has received less attention than that of N. Potassium plays an important role in growth and yield, and in potatoes it is particularly vital to tuber quality.

For a progressive crop lifecycle and sustainable potato production, best management practices should be developed for both N and K. In this regard, literature suggests that not only are the levels of nutrients in the soil of interest, but the interaction between nutrients such as N and K is also important since yield response to K can depend on the N status in the soil. For example, one study showed that the application of K without any N, resulted in no significant effect on potato yield.

For the full exploration of a crop's potential, it is necessary to provide a balanced nutrient programme, including optimal amounts and ratios of N to K to ensure high yield and the best quality potatoes. Fertiliser requirements of older South African potato cultivars such as BP1 and Up-to-Date, have been studied extensively and

were used to develop the current fertiliser guidelines. However, little local research on potato nutrition has been conducted over the past decade, and there is a need to optimise fertiliser guidelines for some of the newer cultivars available.

Aspects such as nutrient ratios and the interaction effect of applied N and K, are often not taken into consideration in the current fertiliser guidelines. Furthermore, nutrient requirements may vary between cultivars, and yield and quality attributes of a specific cultivar may differ according to climate conditions and production practices.

### Impact on short-season cultivars

A study was conducted with the aim of examining the effects of N and K levels, as well as ratios at constant phosphorous (P) levels on

**Figure 1: A view of a replication of the field trial at UP's experimental farm, with cultivars Innovator (left) and Lanorma (right).**





the growth, tuber yield, and quality of two more recently introduced, short-season potato cultivars – Lanorma and Innovator – under local conditions.

To study these, pot and field trials were conducted on the Hatfield Experimental Farm of the University of Pretoria (UP) with the following specific objectives:

- To investigate the effects of progressive levels of N and K on the growth, yield, and quality of the two selected cultivars.
- To determine whether there are optimal N to K fertiliser ratios for best tuber yield, size distribution, and quality.

Since the results of the pot and field trials were comparable, only the field trial results are presented in this article.

### Methodology

The field trial was conducted during the 2016/17 summer season on sandy soil with low cation exchange capacity (CEC) of 3.1 as can be seen in *Table 1*. The same nutrient levels of 160, 230, and 300 kg/ha<sup>-1</sup> were used for both N and K. The nine N x K treatment combinations provided seven N:K-level ratios. Ratios are expressed as the quantity of N (kg/ha<sup>-1</sup>) relative

**Table 1: Nutrient status of soil before starting the field trial.**

Nutrient	mg/kg <sup>-1</sup>	cmol/kg <sup>-1</sup>	% of CEC
NO <sub>3</sub> <sup>-</sup>	4.33	-	-
NH <sub>4</sub> <sup>+</sup>	2.80	-	-
P	28.4	-	-
K	65.2	0.1672	5.4
Ca	405.5	2.0273	65.3
Na	1	0.0043	0.1
Mg	108.7	0.9059	29.2
Total CEC		3.1048	

**Table 2: Fertiliser treatment combinations and corresponding N:K ratios.**

Treatment number	N (kg/ha <sup>-1</sup> )	K (kg/ha <sup>-1</sup> )	N:K ratio
1	160	160	1.00
2	160	230	0.70
3	160	300	0.53
4	230	160	1.44
5	230	230	1.00
6	230	300	0.77
7	300	160	1.88
8	300	230	1.30
9	300	300	1.00
10	160	0	-

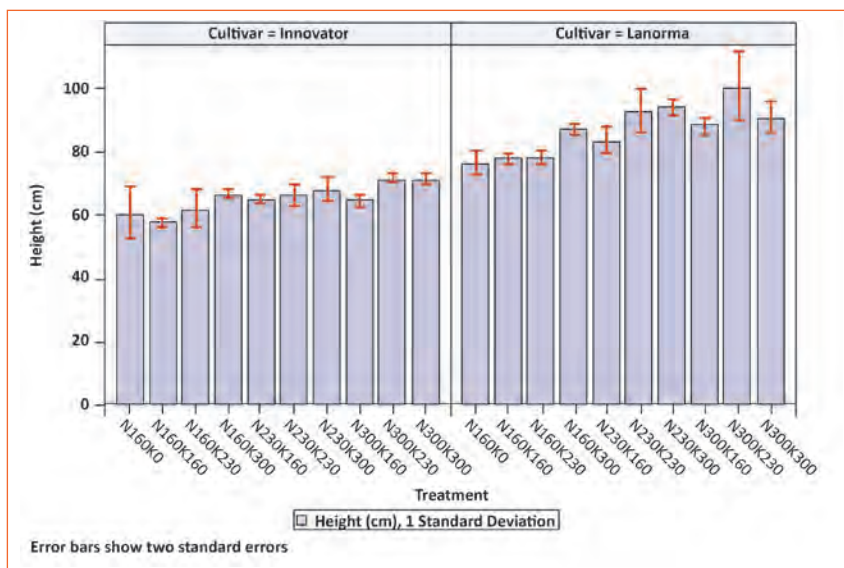
to the quantity of K (kg/ha<sup>-1</sup>). *Table 2* shows the fertiliser

treatments and the corresponding N:K ratios.

A control treatment of 160 kg/ha<sup>-1</sup> of N and 0 kg/ha<sup>-1</sup> of K was also added to evaluate the responsiveness of the two cultivars to K. The experimental layout was a split-plot, randomised complete block design with 20 treatment combinations and three replications. Cultivars were allocated to the main plots and N x K treatment combinations to sub-plots.

Single superphosphate (14% P) was broadcast at a rate of 70 kg/ha<sup>-1</sup> P prior to planting and was incorporated into the soil using a harrow disk. N and K fertiliser dressings were split into two, with the first half applied in the plant rows at planting, and the remainder as a top dressing at 14 days after emergence (DAE).

**Figure 2: Plant height per treatment and per cultivar at the final destructive harvest (104 DAP).**







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The N source was limestone ammonium nitrate (LAN 28%), and potassium sulphate ( $K_2SO_4$ ) was used as the K source.

Destructive growth analyses were performed four times during the growing season – at 41, 62, 83, and 104 days after planting (DAP). The following parameters were recorded: stolon length, tuber number, plant height, leaf dry mass, stem dry mass, and tuber dry mass. Tuber yield and quality tests were performed after crop senescence.

**Results and discussion**

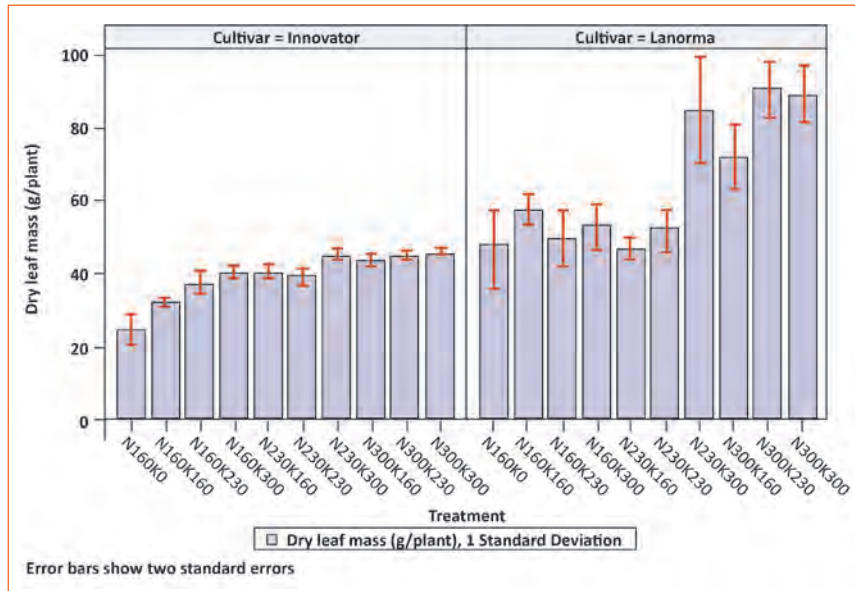
This article focusses on crop growth responses to the different N x K treatment combinations and therefore, only the results from the growth analysis are presented and discussed. Final tuber yield and quality results will be presented in a following article. Since similar trends in crop response to treatments were observed across the four destructive harvests, only results from the final harvest (104 DAP) are presented.

Plant height response of the two cultivars to N and K treatments are presented in Figure 2. Lanorma plants were consistently taller than those of Innovator at corresponding N x K treatments. For both cultivars, plant height tended to increase with increments in both nutrients. Generally, plant height increased with a rise in N level at the same K level. It is also noteworthy that within each level of N, plant height generally increased with a rise in K levels – and thus a decrease in the N:K ratio.

Figure 3 shows the dry leaf mass per cultivar and treatment combination at the final destructive harvest (104 DAP). It is clear that, similar to plant height, dry leaf mass for both cultivars increased along with increases in N and K levels. It is known that the N rate affects leaf growth and number, thus higher N levels are expected to result in higher leaf mass.

Both cultivars, especially Innovator, had already started

**Figure 3: Dry leaf mass per treatment and per cultivar at the final destructive harvest (104 DAP).**

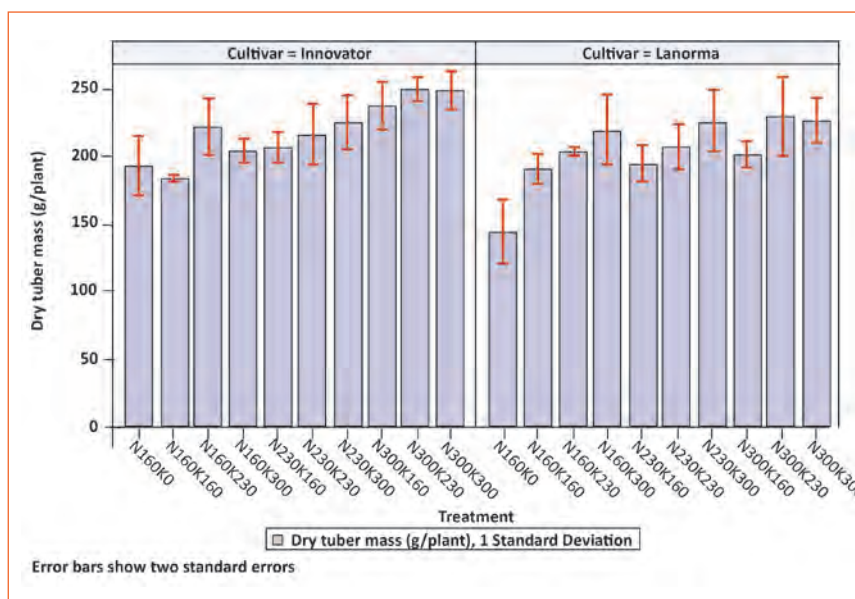


senescing at the time of the fourth harvest. This was more prominent with the low N treatments, which confirms that senescence commenced earlier for N-deficient treatments, while high N rates delayed crop senescence.

Stolons tended to be longer with an increase in N levels, although trends were not consistent. Lanorma had longer stolons (an average of 8.0 cm) than Innovator (4.5 cm), which seemed to initiate

tubers just above and close to the mother tuber. The longer stolons of Lanorma, especially at high N rates, suggest that tubers may be borne close to the soil surface or the side of the ridge. Therefore, it is recommended that special care be taken when making and maintaining plant ridges to prevent exposure of tubers to sunlight, which could result in greening, tuber moth damage, and lower tuber quality.

**Figure 4: Dry tuber mass per treatment and per cultivar at the final destructive harvest (104 DAP).**



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**Table 3: Dry tuber yields (g/plant<sup>-1</sup>) at different N and K levels (with corresponding N:K ratios) for cultivars Innovator and Lanorma at the final destructive harvest (104 DAP).**

Treatment	N:K ratio	Innovator tuber yield	Lanorma tuber yield
N 160, K 160	1	183.77 e	190.27 c
N 160, K 230	0.70	221.97 bac	203.80 bac
N 160, K 300	0.53	204.50 edc	219.33 bac
N 230, K 160	1.44	206.50 edc	194.47 bc
N 230, K 230	1	215.93 bdc	206.8 bac
N 230, K 300	0.77	225.03 bac	225.73 ba
N 300, K 160	1.88	237.80 ba	201.23 bac
N 300, K 230	1.30	244.67 a	228.73 a
N 300, K 300	1	248.83 a	226.57 ba
N 160 only	-	191.57 ed	143.34 d
LSD		28.08	32.713
CV		7.56	9.4135

\*Values followed by the same letter within a column are not significantly different.

Both cultivars finished initiating tubers by the first harvest (41 DAP) and tuber numbers per plant remained fairly constant for the rest of the growing season (data is not presented). There were no clear fertiliser treatment effects on tuber numbers, but the two cultivars differed significantly in average tuber numbers across all fertiliser treatments, with 9.5 per plant for Lanorma and 6.8 for Innovator.

#### Lanorma and Innovator tuber yield

Regarding tuber yield per plant, Innovator displayed a trend of rapid dry tuber mass increase at higher N levels between the third and the fourth harvests. This suggests that for this early maturing cultivar, most assimilates were rapidly translocated to the tubers from early in the growing season and by the third harvest (83 DAP), most tuber filling had already occurred, while Lanorma continued tuber filling until the fourth harvest (104 DAP).

Tuber yields per plant displayed a tendency to increase as K was increased for each N level, as was the case for leaf dry mass,

especially at the low (160 kg/ha<sup>-1</sup>) and intermediate (230 kg/ha<sup>-1</sup>) levels of N (Figure 4). However, at the highest N level of 300 kg/ha<sup>-1</sup>, tuber yield only tended to increase with rising K levels up to 230 kg/ha<sup>-1</sup>, whereafter yields levelled off for both cultivars.

For both cultivars, the N x K treatment combinations that delivered the highest dry tuber yields generally corresponded with N:K ratios ranging between 0.77 and 1.3 at the intermediate and highest levels of N (Table 3). However, at the lowest N and K levels, N:K ratios did not seem to have a clear effect on tuber yield, which might suggest that N:K ratios are more influential on yield when none of the two nutrients are severely deficient.


#### Summary and conclusions

- The two cultivars proved to differ in final plant height, with Lanorma having taller plants than Innovator for most of the growing season. For both cultivars, plant height tended to increase with increments in both N and K.
- Dry leaf mass for both cultivars increased with increments in

N and K levels, and leaf mass tended to increase with each increment in K at a specific N level.

- Stolons showed a tendency to be longer with an increase in N levels, but the trends were not consistent. Lanorma had a longer average stolon length than Innovator, which may require more cautious management during ridging to avoid tuber exposure and damage.
- There were no clear fertiliser treatment effects on tuber numbers per plant, but Lanorma had on average significantly more (9.5) tubers per plant than Innovator (6.8).
- Although both Innovator and Lanorma are classified as short-season cultivars, clear differences in growth patterns were noted between the two.
- Tuber yields per plant generally increased with rising N and K levels. Dry tuber yields also tended to increase as K was increased at each specific level of N, which implies that yields responded to changes in N:K ratios. The highest tuber yields were generally achieved at N:K ratios, ranging between 0.77 and 1.3 at the intermediate and highest N levels.
- N:K ratios were more influential on yield when N and K levels were not severely deficient.

These preliminary growth results suggest that fertiliser programmes should not only consider absolute N and K levels, but also the N:K ratios, as there is an interaction effect between the two nutrients. This effect will likely be more important for low CEC soils with low nutrient release capacity.

Final tuber yield and quality results for this study will be presented in a follow-up article. 

For more information, contact Prof Martin Steyn on 012 420 3880 or martin.steyn@up.ac.za.

# Oos-Vrystaatse droëlandkultivarproef op Warden in 2019/2020

Deur Enrike Verster en Herman Haak (Aartappels SA), Stefan Lategan (Sesisonke Farming) en die Oos-Vrystaatse Aartappelwerkgroep

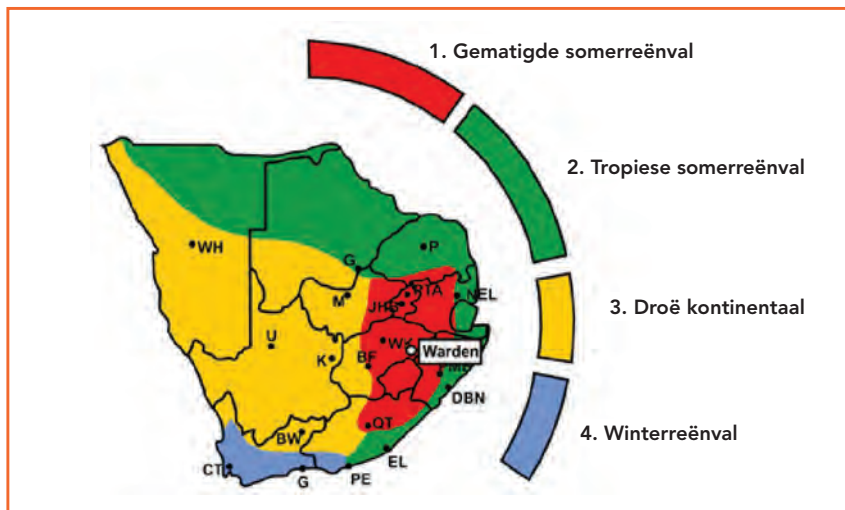
Die Oos-Vrystaat is 'n groot aartappelproduksiestreek waar sowat 22% van die land se kommersiële aartappels op ongeveer 11 703 ha deur 68 produsente vervaardig word. Die mees prominente kultivars wat vir tafel- en verwerkingsdoeleindes in die Oos-Vrystaat geproduseer word, is Mondial, FL2108 en Lanorma.

Die proef is naby Eram, tussen Warden en Harrismith uitgevoer. Die Warden/Harrismith-gebied val in Suid-Afrika se gematigde somerreënvalstreek (Figuur 1) en het vir die afgelope sewe jaar 'n gemiddelde reënval van ongeveer 505 mm vanaf Augustus tot April ontvang. Die streek ervaar warm somers en baie koue winters, met ryp wat vanaf begin Mei tot Augustus kan voorkom. Die kultivarproef is in 'n ewekansige blok-ontwerp uitgelê, met drie herhalings per kultivar.

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

Plaas	Geelbekpan					
Medewerkers	Sesisonke Farming: James Leslie en Stefan Lategan					
Plantdatum	15 Oktober 2019					
Oesdatum	5 Junie 2020					
Besproeiing/droëland	Droëland					
Moergrootte	250 telling					
Dubbel- of enkelrye	Enkelrye – trapgewys					
Loofafsterwe	Chemies					
Tussenry-spasiëring	1.6 m					
Proefperseel	16 m <sup>2</sup>					
Plantestand	16 500 plante/ha					
Bemestingsprogram						
Voedingswaarde (aantal)	N	P	K	Zn	S	Humate
	(kg/ha)	(kg/ha)	(kg/ha)	(kg/ha)	(kg/ha)	(kg/ha)
	140	85	160	6	86	7

**Figuur 1: Ligging van Warden in die Oos-Vrystaat-produksiegebied.**



Relevante tegniese inligting rakende die proef word in Tabel 1 weergegee en die grondontledingsresultate in Tabel 2. Kultivars met kort en lang groeitydperke is in die proef ingesluit en derhalwe kan groeitydperke die uiteindelijke opbrengs van sekere kultivars beïnvloed.

Die lengte van groeitydperke is onderhewig aan die aard van die seisoen, maar word as die hoeveelheid tyd wat vanaf opkoms tot natuurlike loofafsterwe verloop, gesien. Tabel 3 bied 'n uiteensetting van hoe hierdie groeitydperke van kultivar tot kultivar verskil.



**Tabel 2: Grondvoedingstatus van proefperseel voor plant.**

pH (H <sub>2</sub> O)		5.5
Organiese materiaal	%	0.95
N-vrystelling	(kg/ha)	43
P (Bray II)	(ppm)	63
K	(kg/ha)	244
Ca	(kg/ha)	618
Na	(kg/ha)	45
Mg	(kg/ha)	143
Oplosbare S	(ppm)	8
Fe	(ppm)	186
B	(ppm)	0.57
Zn	(ppm)	3.43
Mn	(ppm)	38
Cu	(ppm)	1.13

### Die waarde van plantgereedheid

Daar word algemeen aanvaar dat stand en aantal halms per moer, die knolgrootte en opbrengs beïnvloed. Die aantal ogies per knol is kultivar-afhanklik en bepaal die hoeveelheid spruite wat per

knol voortgebring word. Plantgereedheid van moere is belangrik in hierdie verband, aangesien die ideale plantgereedheid gewoonlik veroorsaak dat moere beter spruit en meer stamme per spruit voortbring.

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

Die evaluering van nuwe kultivars soos in die Warden-kultivarproef verskaf resultate rakende, onder andere, opbrengs en bemarkings-indeks. Die bemarkingsindeks van die betrokke kultivars word bereken deur knolle van een herhaling van elke kultivar volgens gehalte en groottegroepe (bv. Klas 1 groot of Klas 2 groot-medium) te klas en te sorteer. Dienooreenkomstige prysvergelings word dan gemaak met markpryse soos op die dag van oes verkry.

Die prestasie van nuwe kultivars kan nie net op die resultate van een



*Knopwortelaalwurmwyfies in knolweefsel.*

bepaalde seisoen geskoei word nie, aangesien klimaat van een jaar na 'n volgende kan wissel. Daarom word die kultivars verkieslik oor 'n aantal seisoene geëvalueer.

Soos met enige gewas is temperatuur en beskikbaarheid van water – hetsy goeie besproeiingskedulering of reënval – belangrike faktore wat 'n wesenlike invloed gedurende die

**Tabel 3: Karaktereïenskappe rakende groeitydperk, plantgereedheid, stand (%) en halmtellings vir betrokke kultivars.**

Kultivar	Groeitydperk (dae) <sup>1</sup>		Plantgereedheid <sup>2</sup>	Stand (%)	Halms per plant <sup>3</sup>	Halms per ha
7 Four 7	Kort	80	3	70	3.6	41 580
Allison	Medium tot lank	120	3	90	3.5	51 975
Alverstone Russet	Medium tot lank	100	4	70	3.3	38 115
Belmonda	Medium	100-110	2	90	2.5	37 125
Elmundo	Medium	90-100	3	85	4.1	57 503
Kingsman	Medium	110	2	90	3.2	47 520
Lanorma	Kort	80-90	3	90	3	44 550
Manhattan	Medium	110	1	65	3.7	39 683
Mondeo	Kort	80-90	3	60	3.7	36 630
Mondial	Medium tot lank	110-115	3	80	2.8	36 960
Morgana	Medium	110	3	65	3.7	39 683
Panamera	Medium tot lank	120	3	75	2.9	35 888
Rock	Medium	110	2	85	4.4	61 710
Sababa	Medium tot lank	110-115	3	85	3.4	47 685
Sifra	Kort tot medium	90-100	3	85	2.2	30 855
Sound	Medium	110	2	90	3.3	49 005
Taisiya	Kort tot medium	100	3	85	4	56 100
Tyson	Kort tot medium	90-100	3	85	2.6	36 465

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

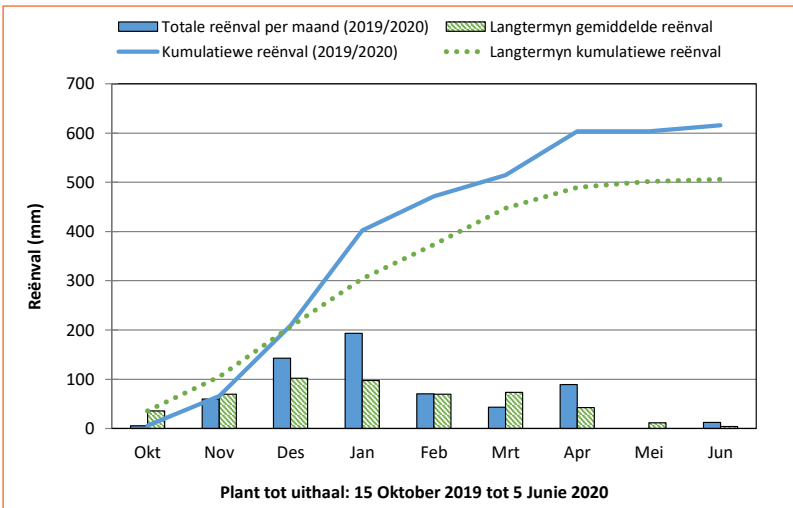
<sup>2</sup>Plantgereedheid van moere: 1 = vars, 2 = effens vars, 3 = plantgereed, 4 = effens oud, 5 = oud.

<sup>3</sup>Halms per plant: Gemiddeld is bereken vanuit halmtekening op tien plante in 'n herhaling.

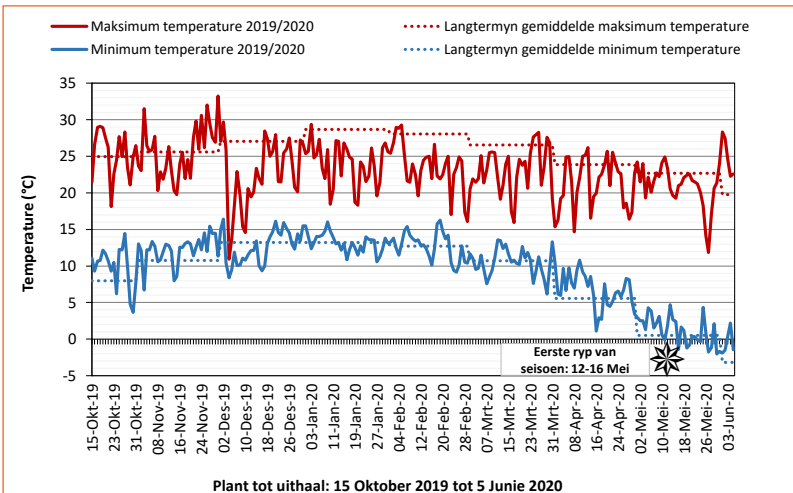


Die kultivarproef is in 'n ewekansige blokontwerp uitgelê, met drie herhalings per kultivar.

**Figuur 2: Reënval vir die 2019/2020-seisoen en langtermyn gemiddelde reënval.**



**Figuur 3: Minimum en maksimum temperature van die 2019/2020-seisoen, sowel as langtermyn-temperature.**



aartappelplant se groeytydperk uitoefen. Hierdie faktore word dus in aanmerking geneem wanneer die prestasie van kultivars geëvalueer word. Toepaslike daaglikse en langtermyn weerdata word vanaf 'n gekose LNR-weerstasie, wat so naby as moontlik aan die proefperseel geleë is, verkry. Die reënvaltendens vir die 2019/2020-seisoen (Figuur 2) toon 'n aansienlike hoër reënval as die algemene langtermyn gemiddelde.

In die aanvanklike weke na plant (Oktober) het reënval ontbreek, maar is aangevul deur goeie gemiddelde reën vir November. In die daaropvolgende maande (Desember en Januarie) is ver bogemiddelde reënval aangeteken, maar die buie was oor die algemeen redelik goed versprei. Gedurende die laaste gedeelte van die seisoen is daar weereens bogemiddelde reënval vir April (rondom loofafsterwe) aangeteken.

Minimum en maksimum temperature word in Figuur 3 uiteengesit. Die betrokke seisoen is gekenmerk deur 'n lang tydperk van onder-langtermyn gemiddelde temperature tussen Desember en Maart, met groot fluktuasies in maksimum temperature. Die eerste dae met minimum temperature onder vriespunt, het reeds in Meimaand ná loofafsterwe voorgekom.

Versameling van hitte-eenhede gedurende 'n groeytydperk is 'n belangrike faktor in die ontwikkeling van 'n plant. Die tendens van hitte-eenhede beskikbaar vir hierdie seisoen se kultivarproef by Warden, blyk ietwat laer as die

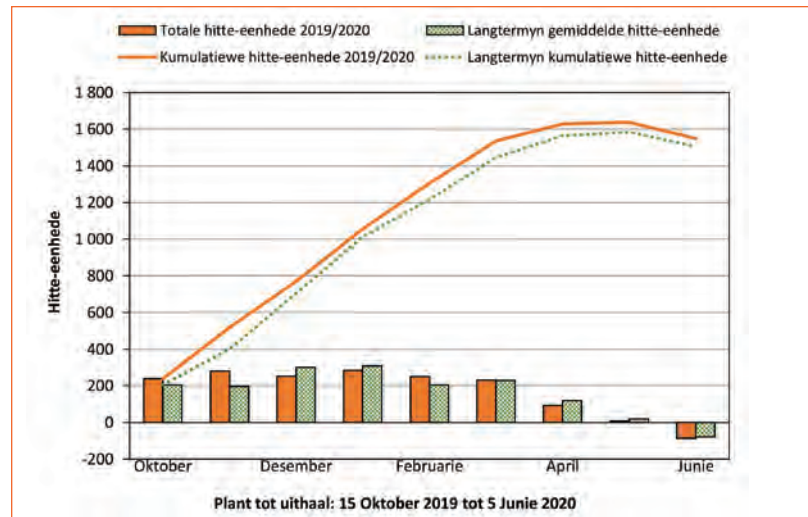




Die goeie opbrengs uit die proef is waarskynlik as gevolg van baie en goed-verspreide reënval asook matige temperature sedert Desember.

tendens ten opsigte van die langtermyn data van hitte-eenhede te wees (Figuur 4), met die uitsondering van November en Februarie wat onder warmer maksimum temperature gebuk gegaan het.

**Figuur 4: Hitte-eenhede van die 2019/2020-seisoen, asook langtermyn gemiddelde hitte-eenhede.**

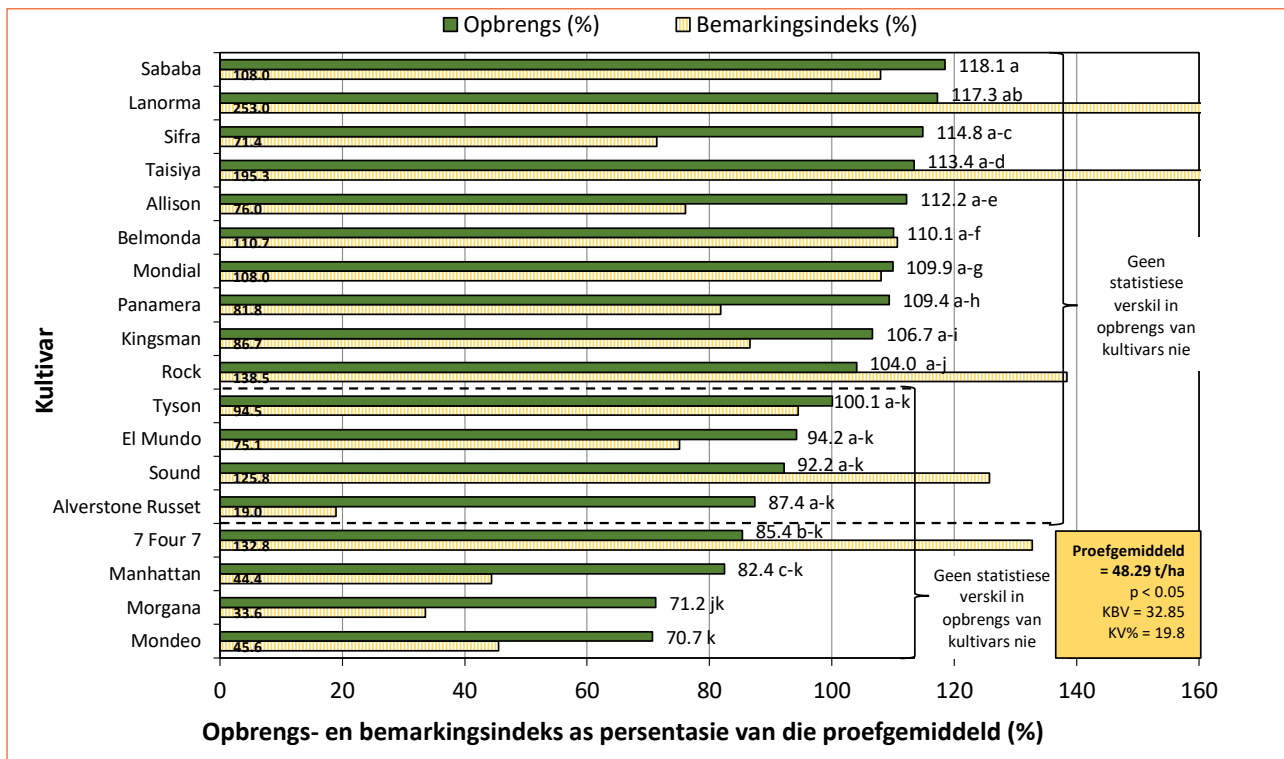


\*Aantal hitte-eenhede word spesifiek bepaal vir aartappels as gewas (drumpeltemperatuur = 5°C). Bereken vanaf uurlikse data.

**Bogemiddelde opbrengs in 2019/2020**

Die gemiddelde opbrengs van die proef vir die 2019/2020-seisoen is 48.29 t/ha, wat 'n ver bogemiddelde opbrengs in vergelyking met die laaste paar seisoene is. Die goeie opbrengs is waarskynlik danksy die baie en goed-verspreide reënval en matige temperatuur sedert Desember. Die meeste van die kultivars het statisties geen verskil in opbrengs getoon nie; dit is hoofsaaklik toe te skryf aan die algemene puik

**Figuur 5: Algehele opbrengs en bemarkingsindeks per kultivar as persentasie van die proefgemiddeld.**



\*Waardes gevolg deur dieselfde letter verskil nie beduidend van mekaar nie.

Tabel 4: Hoofredes vir afgradering.

Kultivar	Hoofredes vir afgradering					
	Knopwortel-aalwurm	Swartspikkel (Antraknose)	Mot/ander insek	Stingelend-verrotting	Bruinskurf	Misvorming
7 Four 7	x					
Allison	x	x			x	
Alverstone Russet	x					
Belmonda	x					
Elmundo						x
Kingsman	x					
Lanorma	x					
Manhattan				x		
Mondeo				x		x
Mondial	x		x	x		
Morgana	x				x	
Panamera	x	x		x		
Rock				x		
Sababa	x					
Sifra	x					
Sound			x			
Taisiya	x					x
Tyson	x					

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

Kultivar	SG <sup>1</sup>	DM <sup>2</sup>	Skyfiekleur <sup>3</sup>
7 Four 7	1.060	15.97	45
Allison	1.069	17.85	45
Alverstone Russet	1.077	19.65	57
Belmonda	1.082	20.69	50
Elmundo	1.077	19.58	47
Kingsman	1.079	19.90	59
Lanorma	1.077	19.47	56
Manhattan	1.069	17.98	56
Mondeo	1.076	19.46	49
Mondial	1.068	17.64	46
Morgana	1.066	17.22	54
Panamera	1.080	20.24	50
Rock	1.087	21.67	55
Sababa	1.071	18.22	52
Sifra	1.081	20.42	53
Sound	1.101	24.59	54
Taisiya	1.069	17.86	52
Tyson	1.080	20.24	51

<sup>1</sup>Soortlike gewig van > 1.075 is aanvaarbaar vir die prosesseringsbedryf.

<sup>2</sup>Die persentasie droëmateriaal is 'n berekende waarde:  $DM\% = 24.182 + 211.04 * (SG - 1.0988)$ . Die werklike persentasiewaarde sal uit hierdie berekeningswaarde effens tussen variëteite verskil.

<sup>3</sup>Skyfiekleur met waarde > 50 en sonder defekte is aanvaarbaar vir die droëskyfiebedryf.

opbrengs verkry deur bykans al die kultivars in die proef.

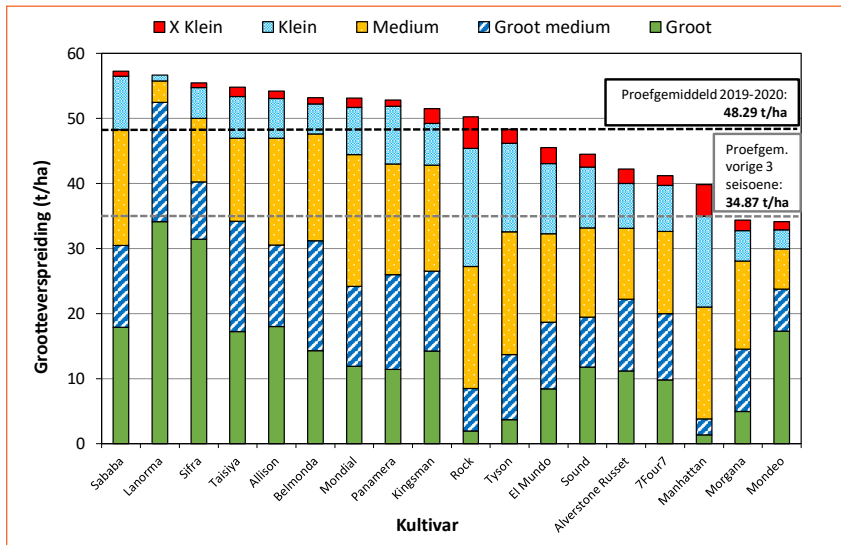
Die kultivars wat onderpresteer het, het oor die algemeen vanaf opkoms 'n standprobleem getoon. Lanorma, Taisiya en Rock het by uitstek die beste bemarkingsindeks behaal as gevolg van 'n groter opbrengs van groot knolle en/of 'n groot hoeveelheid Klas 1-aartappels. Groottegroepverspreiding en gradering is onontbeerlike evaluasies wanneer daar gekyk word na 'n kultivar se bemarkbaarheid (Figure 6 en 7).

Opbrengsdata versamel tydens oesdag, word onderwerp aan statistiese verwerking met behulp van die GenStat®-program. Die Tukey-toets van kleinste betekenisvolle verskille (KBV) is gebruik om die gemiddelde te skei. Die kultivareffek gedurende hierdie betrokke proef (Figure 5) was statisties beduidend ( $p < 0.05$ ) en die koëffisiënt van variasie was binne perke (19.8%).

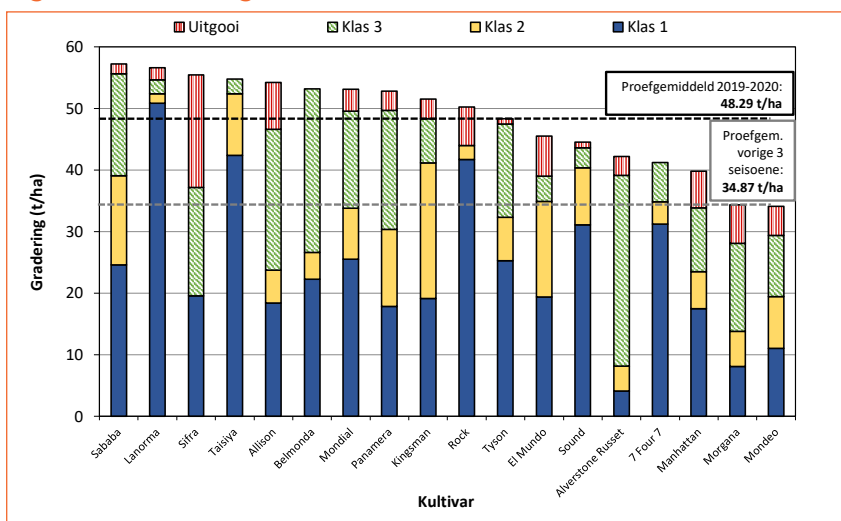
Hierdie faktore dui daarop dat die proef goed uitgevoer is en die resultate derhalwe betroubaar is.



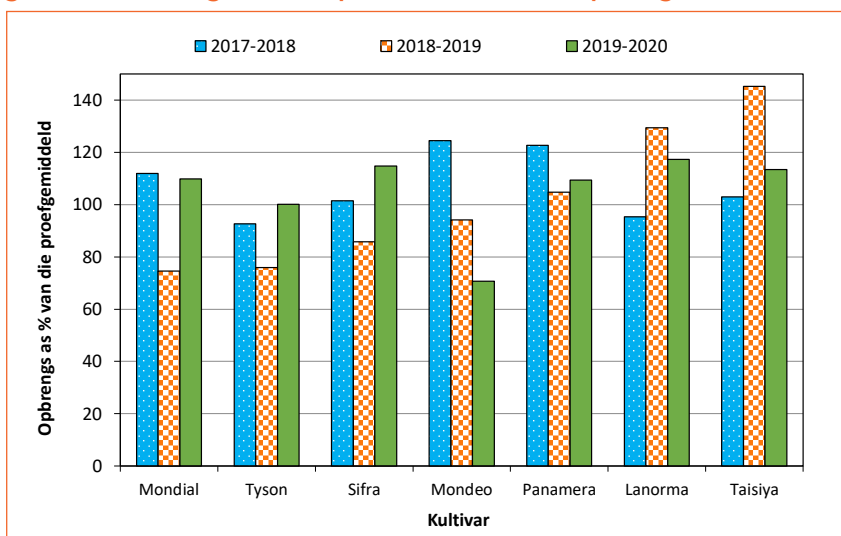
**Figuur 6: Groottegroepverspreiding van elke kultivar.**



**Figuur 7: Gradering van elke kultivar.**



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



Die opbrengs van elkeen van die kultivars word deur die proefgemiddeld gedeel (die proefgemiddeld van al die kultivars word as 100% geneem). Hierdeur word 'n opbrengsindeks geskep en elke kultivar se prestasie in terme van opbrengs, word as 'n persentasie van die proefgemiddeld gelees.

**Hoofredes vir afgradering**

Die hoofredes vir afgradering word in Tabel 4 aangedui. Die hoofredes vir afgradering deur die proef as geheel, was knopwortelaalwurm en stingelendverrotting. Die hoë aalwurmdruk kan moontlik toegeskryf word aan byna konstante versadiging van die grondprofiel, danksy mildelike reën. Dus het die aalwurmpopulasie waarskynlik in groot dele van die seisoen vir lang tye binne die aartappels se wortelzones beweeg en behoorlike besmetting van knolle veroorsaak.

Soos die aard van seisoene is, fluktueer die prestasie van kultivars tussen seisoene, bloot omdat klimaat van een seisoen na 'n volgende nooit eenders is nie. Daarom is dit belangrik om konsekwente prestasie van kultivars oor 'n aantal seisoene in ag te neem (Figuur 8). Laastens, wanneer daar gekyk word na die interne gehalte van aartappels, kan prosesserings-eienskappe ook geëvalueer word.

Om aan prosesseringsvereistes te voldoen, moet kultivars aan 'n skyfie-kleurnorm van > 50 en 'n soortlike gewig (SG) van ≥ 1.075 voldoen (Tabel 5). Die kultivars Belmonda, Kingsman, Lanorma, Panamera, Rock, Sifra, Sound en Tyson het aan beide die skyfiekleurnorm- en SG-vereistes voldoen. Ongeveer 'n driekwart van die kultivars het die gewenste skyfiekleur getoon. 🍅

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

# Limpopo-kultivarproef onder besproeiing op Tom Burke in 2020

Deur Chantel du Raan, Aartappels SA, en Jako Nel, produsent

**A**ansienlike warm somers kom voor, terwyl die winters koud is met swartryp wat dikwels in Junie en Julie voorkom. Een van die redes waarom hierdie

streek so 'n groot bydrae tot die bedryf kan maak, is die feit dat die streek twee produksieseisoene het. Dit sluit in 'n vroeë aanplanting wat gedurende Januarie tot Maart geplant word en weer vanaf Mei

tot Augustus geoes word, asook die hoofaanplanting wat vanaf April tot September geplant word, en tussen September en April geoes word. Die proef is in 'n ewekansige blokontwerp uitgevoer in sandleemgrond met drie herhalings. Verdere tegniese inligting rakende die proefperseel en -uitleg is in *Tabel 1* opgesom.

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

Plaas	Ratho Boerdery
Boer	Jako Nel
Plantdatum	7 Junie 2020
Oesdatum	12 November 2020
Besproeiing/droëland	Besproeiing
Dubbel- of enkelrye	Dubbelrye
Loofafsterwe	Natuurlik
Tussenry-spasiëring	0.75 m
Inry-spasiëring	0.30 m
Proefperseel per eenheid	15 m <sup>2</sup>
Plantestand	44 444 plante/ha

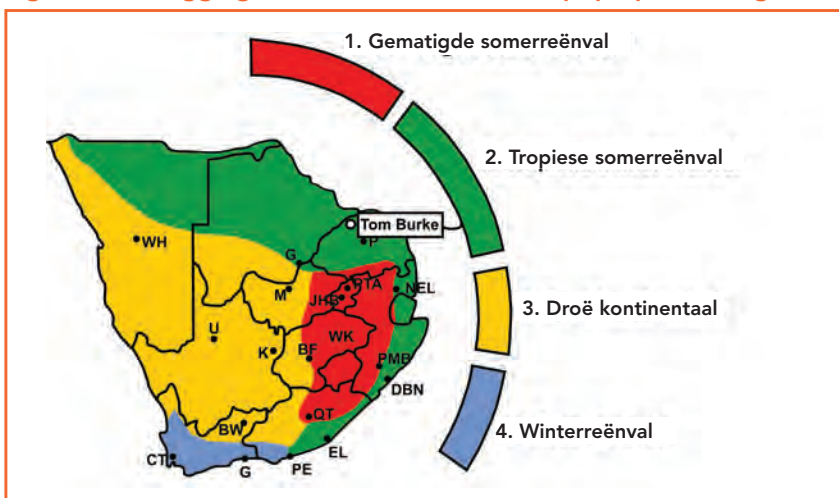
## Grondontleding en groeitydperke

Verteenwoordigende grondmonsters is voor planting geneem en ontleed om die grondvoedingstatus van die proefperseel te bepaal. Die resultate van die ontleding word in *Tabel 2* aangedui. Dit is belangrik om daarop te let dat groeitydperke die oes-opbrengs van kultivars kan beïnvloed.

Groeitydperke word gedefinieer as die aantal dae van opkoms tot natuurlike loofafsterwe, afhangend van die seisoen. Die presiese tydsberekening van die vier groeifases hang af van die omgewing en die bestuurspraktyke, wat wissel tussen liggings asook kultivars. Dit is onder andere as gevolg van verskillende groeitydperke. Die kultivars, plantgereedheid van moere, stand (%) en halmtelling van hierdie proef word in *Tabel 3* aangedui.

Temperatuur, dagliglengte en water is die belangrikste abiotiese faktore wat die groeipatroon, opbrengs en gehalte van aartappels beïnvloed. Om te bepaal wat die aanpassingsvermoë van nuwe kultivars in die Tom Burke-omgewing is, is dit belangrik om hierdie faktore in ag te neem wanneer die

**Figuur 1: Die ligging van Tom Burke in die Limpopo-produksiegebied.**


















**Tabel 2: Grondontledingsresultate vir die Tom Burke-kultivarproef (2020) voor plant asook die bemestingsprogram.**

Grondontleding											
Bruto-digtheid (kg/m <sup>3</sup> )	pH (H <sub>2</sub> O)	P-Mehlich	Ammonium-asetaat (mg/kg)					% van Kation-uitruilvermoë (KUK)			
			P	K	Ca	Mg	Na	S	K	Ca	Mg
1.49	8.21	62	152	616	218	27	2	7.24	57	33	2.18
Klei (%)			Silt (%)				Sand (%)				
6			16				78				
Bemestingsprogram											
Voedingswaarde											
	N (kg/ha)	P (kg/ha)	K (kg/ha)		Ca (kg/ha)		Mg (kg/ha)		S (kg/ha)		
<b>Totaal</b>	<b>271.9</b>	<b>72.8</b>	<b>283.0</b>		<b>1 004.1</b>		<b>72.0</b>		<b>336.4</b>		

**Tabel 3: Karaktereienskappe rakende groeitydperk, plantgereedheid, stand (%) en halmtellings vir elke kultivar.**

Agente	Kultivar	Groeitydperk (dae) <sup>1</sup>		Plantgereedheid <sup>2</sup>	Opkoms (week)	Stand (%)	Halms per plant	Halms per ha
	Allison	Medium tot lank	(120)	1	Week 3/4	100	1.9	84 444
	El Mundo	Kort tot medium	(90-100)	1	Week 2	100	5	22 2220
	Kingsman	Medium	(100-110)	1	Week 4	94	1.2	50 133
	Labadia	Kort tot medium	(100)	2	Week 3/4	97	2.1	90 532
	Lanorma	Kort	(80-90)	1	Week 2/3	97	2.8	120 710
	Markies	Medium tot lank	(120)	1	Week 3	100	1.9	84 444
	Mondeo	Medium	(90-110)	2	Week 3	100	2.7	119 999
	Mondial	Kort tot medium	(95-100)	1	Week 3	100	2.2	97 777
	Panamera	Kort tot medium	(95-100)	1	Week 3	97	2	86 221
	Rock	Medium tot lank	(110-120)	2	Week 1	97	2.7	116 399
	Sababa	Medium tot lank	(110-115)	1	Week 1	97	3	129 332
	Sifra	Kort tot medium	(90-100)	1	Week 3	100	2.5	111 110
	Sound	Medium	(100)	1	Week 1	100	2.5	111 110
	7 Four 7	Kort	(80)	1	Week 4	97	1.1	47 422
	Taisiya	Kort tot medium	(90)	1	Week 4	91	1.2	48 533
	Tyson	Kort tot medium	(90-100)	2	Week 2/3	97	2.3	99 155

<sup>1</sup> Algemene riglyne en kategorieë (dae van opkoms tot natuurlike loofafsterwe, afhangend van die seisoen):

Kort: 70 tot 90 dae, kort tot medium: 80 tot 100 dae, medium: 90 tot 110 dae, medium tot lank: 90 tot 120, lank: 90 tot 140 dae.

<sup>2</sup> Plantgereedheid van moere: 1 – vars, 2 – effens vars, 3 – plantgereed, 4 – effens oud, 5 – oud.

prestasie van verskillende kultivars geëvalueer word. Dit is ook belangrik dat die kultivars vir 'n aantal seisoene geëvalueer word, omdat klimaat van seisoen tot seisoen verskil.

Daaglikse weerdata is vanaf die Hanover-stasie op die proefperseel verkry, terwyl die langtermynweerdata vanaf die Landbounavorsingsraad (LNR) se Swartwaterstasie (-22.85186, 28.19898) verkry is. Geen

reënval was in die eerste drie maande ná daar geplant is, ondervind nie. Wat die laaste drie maande van die 2020-groeiseisoen betref, was daar 76.7 mm reënval, wat effens hoër is in vergelyking met

die langtermyn gemiddelde reënval (Figuur 2).

Die maksimum temperatuur (Figuur 3) vir die 2020-groeienseisoen het deurgaans laer vertoon in vergelyking met vorige jare, terwyl die minimum temperatuur dieselfde patroon gevolg het, vergeleke met die langtermyn data. Vanaf Augustus tot Oktober van die groeienseisoen het die maksimum temperatuur aansienlik gewissel en was vir 25 dae tussen 35 en 43°C, en vir 61 dae bo 30°C.

Die optimale gemiddelde lugtemperatuur vir knolvulling wissel tussen 14 en 22°C. Wanneer die temperatuur bo 29°C styg, sal min of selfs geen knolgroei voorkom nie weens koolhidrate wat vir respirasie gebruik word. Hierdie jaar is geen rypskade gedurende die groeienseisoen ondervind nie.

**Hitte-eenhede bepaal ontwikkeling**

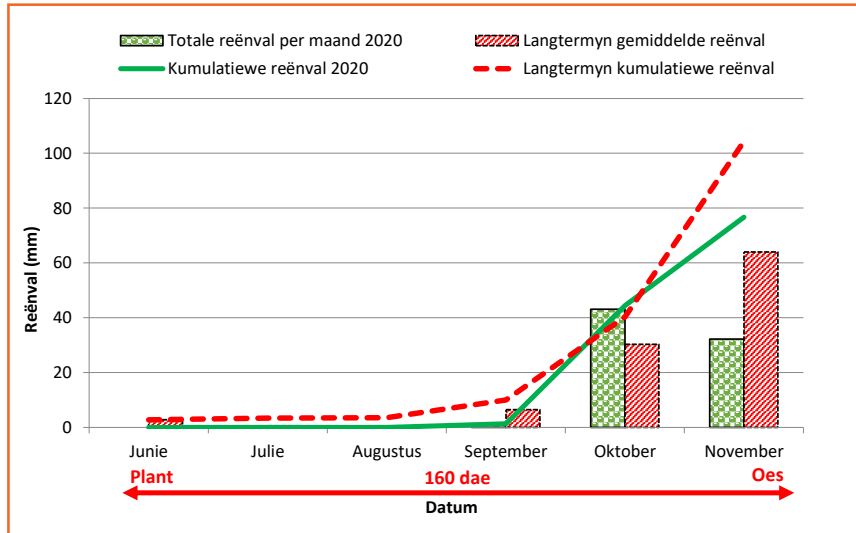
Hitte-eenhede is ook 'n belangrike faktor om in ag te neem, aangesien die ontwikkeling van die plant hoofsaaklik op die versameling van hitte-eenhede gebaseer is. Daar word dus aanvaar dat die plant 'n sekere aantal hitte-eenhede moet versamel om 'n ontwikkelingsfase te voltooi.

Die hitte-eenhede van die 2020-groeienseisoen het byna dieselfde patroon as die langtermyn gemiddelde hitte-eenhede gevolg, en word in Figuur 4 aangedui. Aan die einde van die seisoen was die langtermyn data se kumulatiewe hitte-eenhede 20.2% hoër as die kumulatiewe hitte-eenhede van hierdie jaar se seisoen.

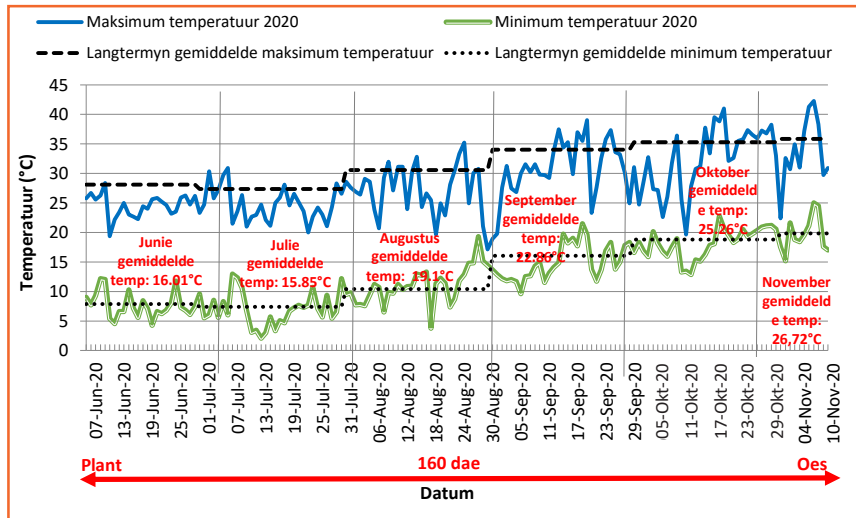
Die opbrengsdata is met behulp van die GenStat®-program statisties verwerk, en die gemiddelde is geskei deur van die Tukey KBV-toets gebruik te maak. Die kultivar-effek gedurende die 2020-proewe (Figuur 5) was statisties beduidend ( $p < 0.05$ ) ten opsigte van opbrengs, terwyl die koëffisiënt van variasie laag (10.9%) was.

Dit dui dus aan dat die proewe goed uitgevoer is en die resultate betroubaar is. Die gemiddelde opbrengs (55.5 t/ha) vir die 2020-seisoen was effens laer

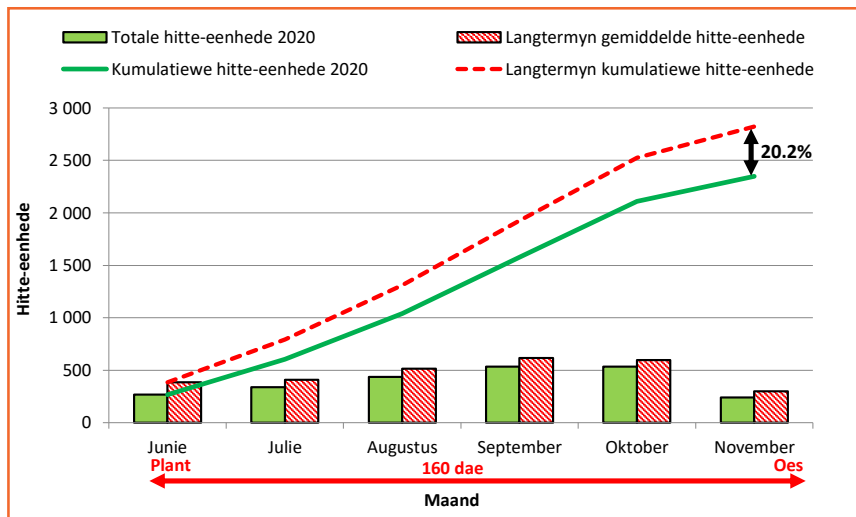
**Figuur 2: Reënval gedurende die groeienseisoen (2020) asook die langtermyn gemiddelde reënval.**



**Figuur 3: Minimum en maksimum temperatuur (°C) gedurende die groeienseisoen (2020) asook oor die langtermyn.**

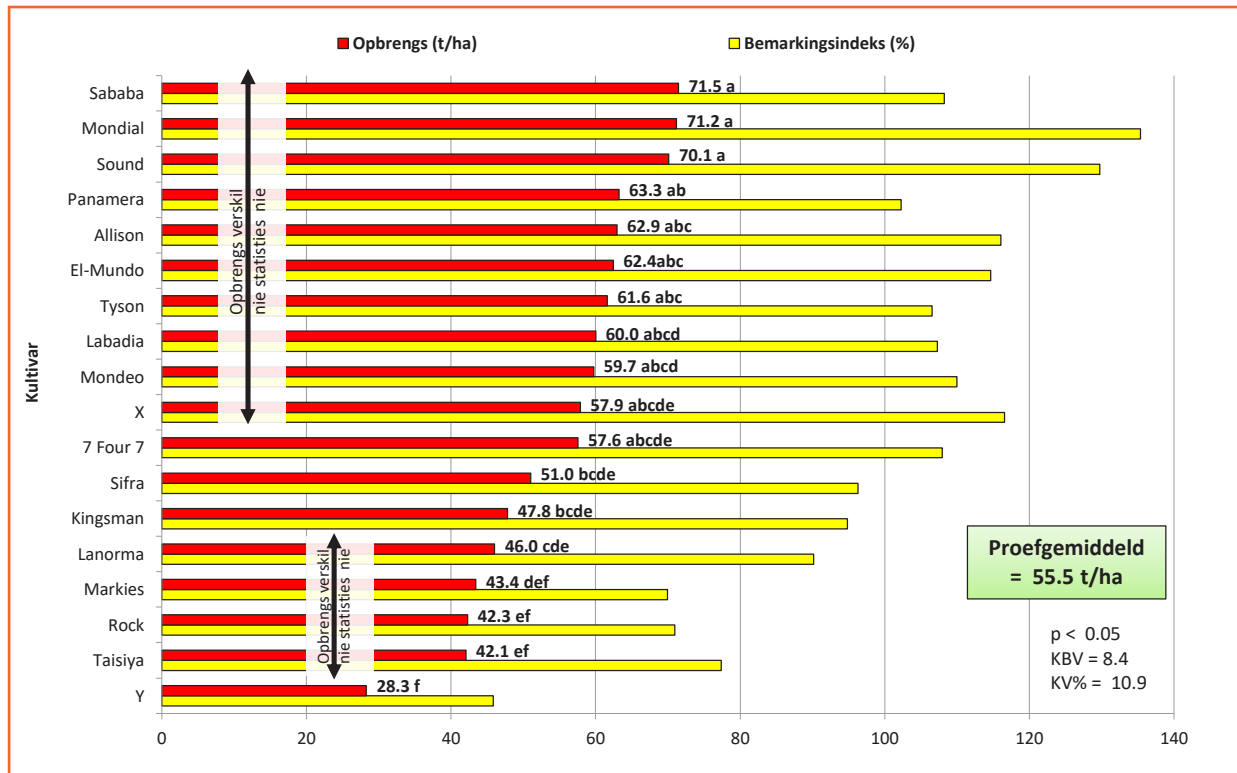


**Figuur 4: Hitte-eenhede gedurende die groeienseisoen (2020) asook langtermyn gemiddeld.**





Figuur 5: Algehele opbrengs en bemarkingsindeks per kultivar as persentasie van die proefgemiddeld.



Tabel 4: Hoofredes vir afgradering tydens die 2020 Tom Burke-oes.

Hoofrede vir afgradering									
Kultivar	Hergroei	Insek-skade	Losskil (onvolwasse)	Meganiese beskadiging	Mis-vorming	Mot-skade	Sclerotium rolfsii	Stingelent-verrotting	Vergroe-ning
Allison	X								X
El Mundo				X		X			X
Kingsman				X		X			
Labadia	X								
Lanorma			X	X			X	X	
Markies	X		X						
Mondeo	X								
Mondial		X		X					
Panamera								X	
Rock			X						X
Sababa	X			X	X				
Sifra		X		X					
Sound			X	X	X				X
7 Four 7				X					
Taisiya			X		X				
Tyson		X				X		X	

# Inisiasie deur innovasie

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**MARKIES SOUND HERTHA**

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

**CONTACT US:**

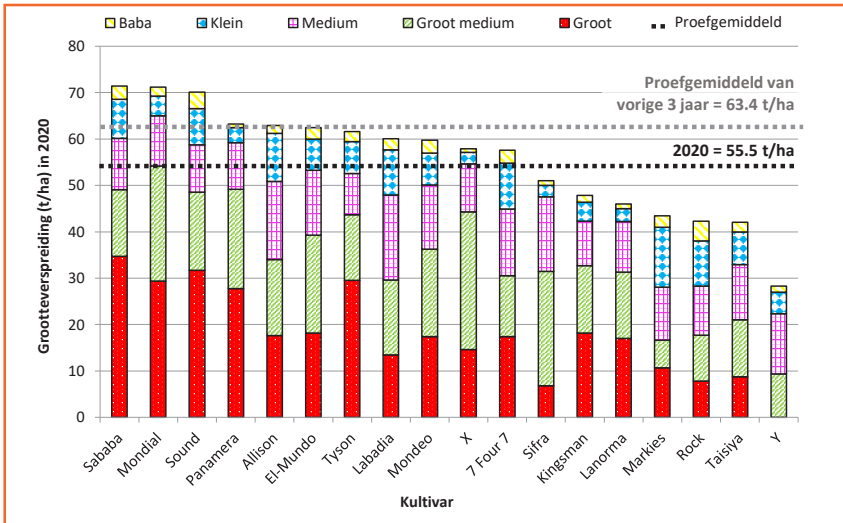
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**AGENTS OF:**

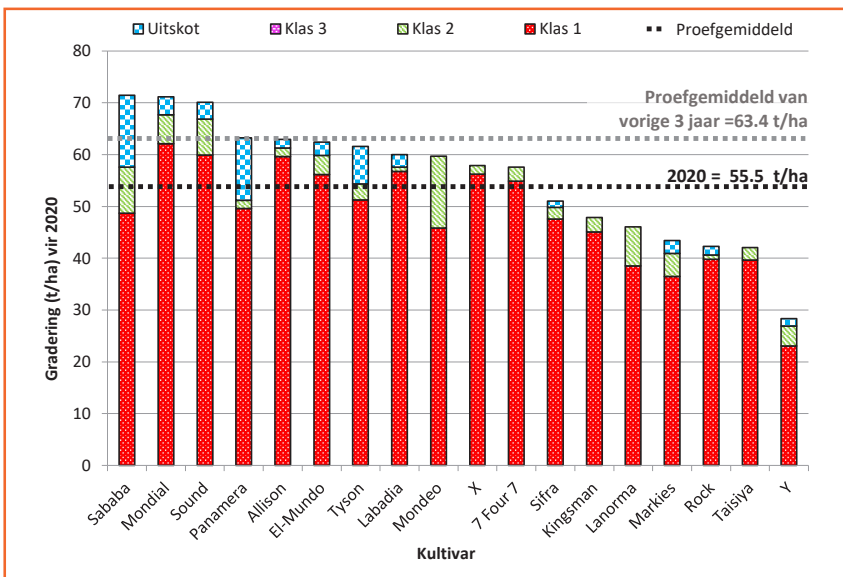




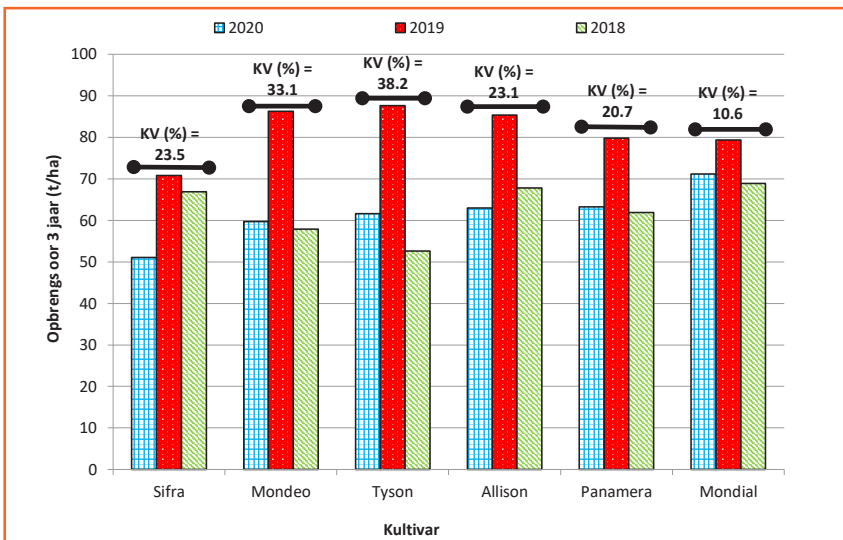
**Figuur 6: Groottegroepverspreiding van elke kultivar tydens finale oes.**



**Figuur 7: Gradering van elke kultivar tydens finale oes.**



**Figuur 8: Prestasie van kultivars oor drie jaar, uitgedruk as 'n persentasie van die proefgemiddeld.**



(7.9 t/ha) in vergelyking met die proefgemiddeld van die vorige drie jaar (63.4 t/ha). Gedurende die 2020-proewe (Figuur 5) het die kultivars Sababa, Mondial, Sound, Panamera, Allison, El-Mundo, Tyson, Labadia, Mondeo en 7 Four 7 die hoogste opbrengste gelewer, asook hoër opbrengste as die proefgemiddeld (55.5 t/ha) bereik.

**Bepaling van bemarkingsindeks**

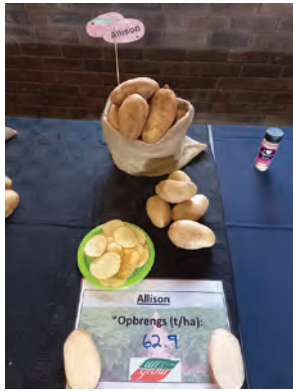
Ten einde die prestasie van die kultivars in terme van opbrengs en gehalte te bepaal, is die opbrengs, grootteverspreiding en klas gebruik om teen die gemiddelde markpryse vir die betrokke dag 'n bemarkingsindeks te bereken. Die opbrengs, vermenigvuldig met die heersende prys wat deur die grootteverspreiding en gradering bepaal word, gee die bemarkingsindeks (Figuur 5).

Mondial en Sound het die hoogste bemarkingsindeks behaal, wat toegeskryf kan word aan 'n kombinasie van 'n hoër persentasie grootteverspreiding (Figuur 6) en 'n hoër persentasie Klas 1 (Figuur 7) wat die kultivar gelewer het. Grootteverspreiding en gradering is dus ook van die faktore wat gebruik word om aartappels te klas. Daarom is dit belangrike faktore om in ag te neem om optimale ekonomiese bemerkbare opbrengs te verseker.

In Figuur 6 word die grootteverspreiding, Figuur 7 die gradering van die opbrengs, en in Tabel 4 die hoofredes vir afkeuring van die onderskeie kultivars aangetoon. Die LINTUL-POTATO-DSS-plantgroeimodel is gebruik om potensiële opbrengste van die kontrolekultivar, Mondial, te bereken. Potensiële opbrengs kan gedefinieer word as die teoretiese boonste opbrengsgrens in 'n geval waar water, voedingstowwe en biologiese faktore optimaal is vir die seisoen waarin die proef gegroei het.

Die inligting stel ons in staat om te evalueer hoe die werklike opbrengs behaal deur die proef vergelyk met gesimuleerde potensiële opbrengste. Die verskil tussen die potensiële en werklike proefopbrengs verwys na die opbrengsgaping. Dit illustreer hoe optimaal produsente van hul omgewing en

Tabel 5: Knol-inisiasie, vleeskleur en interne gehalte van opbrengs vir 2020 op Tom Burke.



Allison



El Mundo



Kingsman



Labadia



Lanorma



Markies



Mondeo



Mondial



Panamera



Rock



Sababa



Sifra



Sound



7 Four 7



Taisiya



Tyson



**Figuur 9: Interne defekte by kultivars Markies, Sifra en El Mundo.**



beskikbare hulpbronne gebruik maak om hoë opbrengs te behaal.

**Werklike vs. potensiële opbrengs**

Die verhouding tussen werklike opbrengs (55.5 t/ha) vs. potensiële opbrengs (64.0 t/ha) is teen 87% bereik, en het dus 'n klein

opbrengsgaping, wat daarop dui dat die beskikbare omgewing uiters doeltreffend benut word. Daar is dus beperkte geleentehede vir verdere toename in opbrengste.

Dit is ook belangrik om te let op die kultivars se vermoë om konsekwent te presteer, ten spyte

van fluktuasies in die klimaat oor tyd. In *Figuur 8* word die drie-jaar data vir die kultivarproewe in die Tom Burke-produksiegebied aangetoon. Bo elke kultivar word die koëffisiënt van variasie tussen die drie jaar aangedui. Dit blyk dat Mondial die minste variasie vir die Tom Burke-gebied toon.

Verder is dit ook belangrik om op die interne gehalte van die produk te fokus om ekonomiese, optimale bemarkbare opbrengs en dus winsgewendheid te verseker. Dit sluit belangrike faktore soos die prosesseringseienskappe, soortlike gewig (SG) asook inwendige defekte (holhart, bruinvlek en vaatbundelverkleuring) in, wat in *Tabel 5* en *6* opgesom word.

Gedurende die 2020-groei-seisoen het al die kultivars, behalwe El Mundo en Taisiya, aan die norm van > 50 vir prosessering voldoen. Met die SG, aan die ander kant, het die kultivars Allison, Kingsman, Labadia, Markies, Mondial, Panamera en 7 Four 7 aan die norm van ≥ 1.075 vir prosessering voldoen. Rakende die inwendige defekte, het holhart by kultivars Markies en Sifra voorgekom (*Figuur 9*), en slegs El Mundo het bruinvlek getoon (*Figuur 9*). 🍅

**Tabel 6: Prosesseringseienskappe en interne gehalte vir 2020 (uitgevoer deur LNR-Roodeplaat).**

Kultivar	Skyfiekleur <sup>1</sup>	SG <sup>2</sup>	Droëmateriaal <sup>3</sup> (%)	Holhart	Bruinvlek
Allison	57	1.0781	19.98	0	0
El Mundo	48	1.0620	16.57	0	
Kingsman	58	1.0798	20.34	0	0
Labadia	53	1.0775	19.86	0	0
Lanorma	57	1.0733	18.97	0	0
Markies	60	1.0810	20.60		0
Mondeo	53	1.0747	19.26	0	0
Mondial	57	1.0804	20.46	0	0
Panamera	56	1.0766	19.67	0	0
Rock	56	1.0728	18.87	0	0
Sababa	56	1.0651	17.23	0	0
Sifra	51	1.0733	18.97		0
Sound	54	1.0713	18.54	0	0
7 Four 7	55	1.0756	19.46	0	0
Taisiya	49	1.0615	16.49	0	0
Tyson	60	1.0728	18.85	0	0
≥ Norm (Aanvaarbaar vir prosessering)			< Norm (Onaanvaarbaar vir prosessering)		

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

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

<sup>3</sup>Die persentasie droëmateriaal is 'n berekende waarde:

$$DM\% = 24.182 + 211.04 \cdot (SG - 1.0988)$$

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

Vir meer inligting,  
epos die outeur by  
chantelr@potatoes.co.za.



**INTEGRITY, QUALITY, INNOVATION**

# CULTIVATED CHOICES

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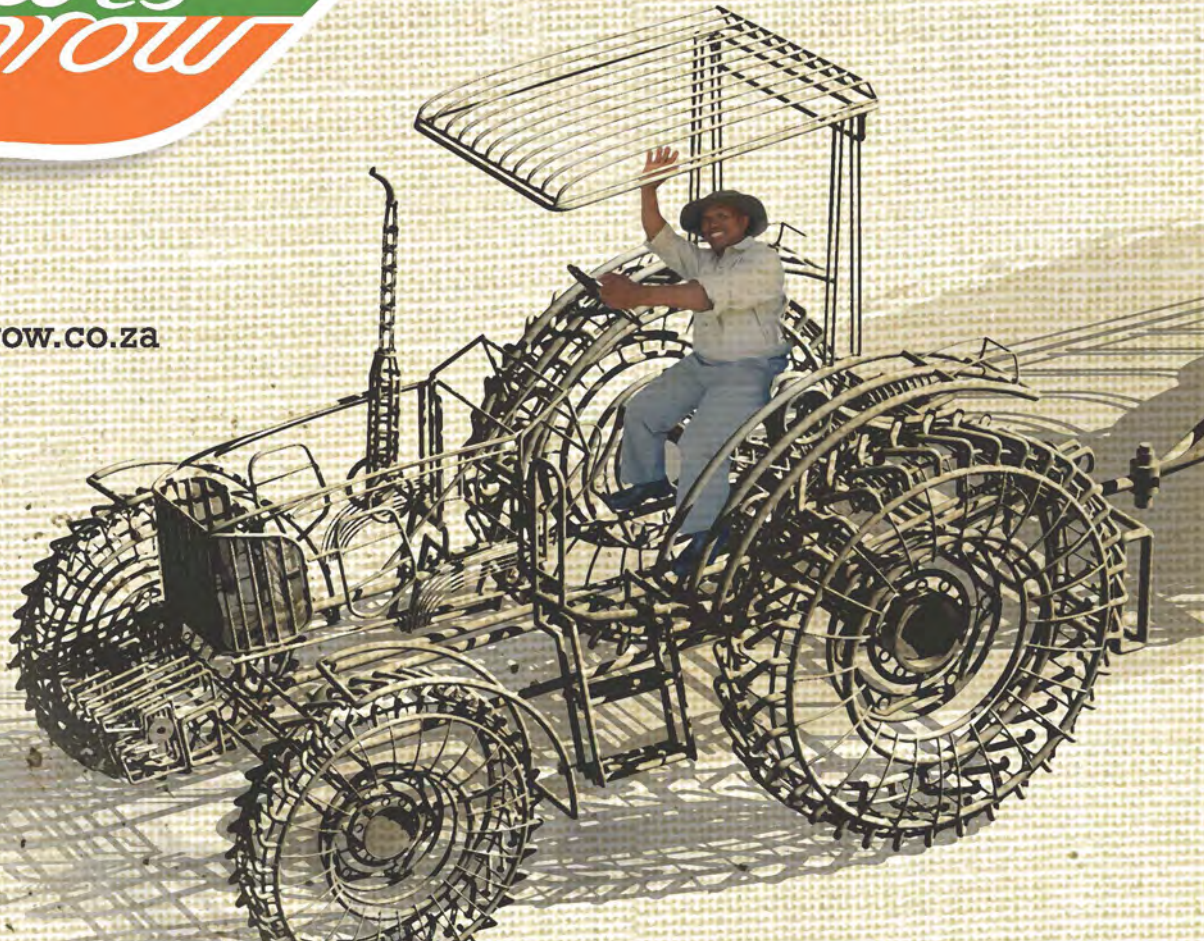
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# VARIETY

of

# SOLUTIONS

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## SABABA

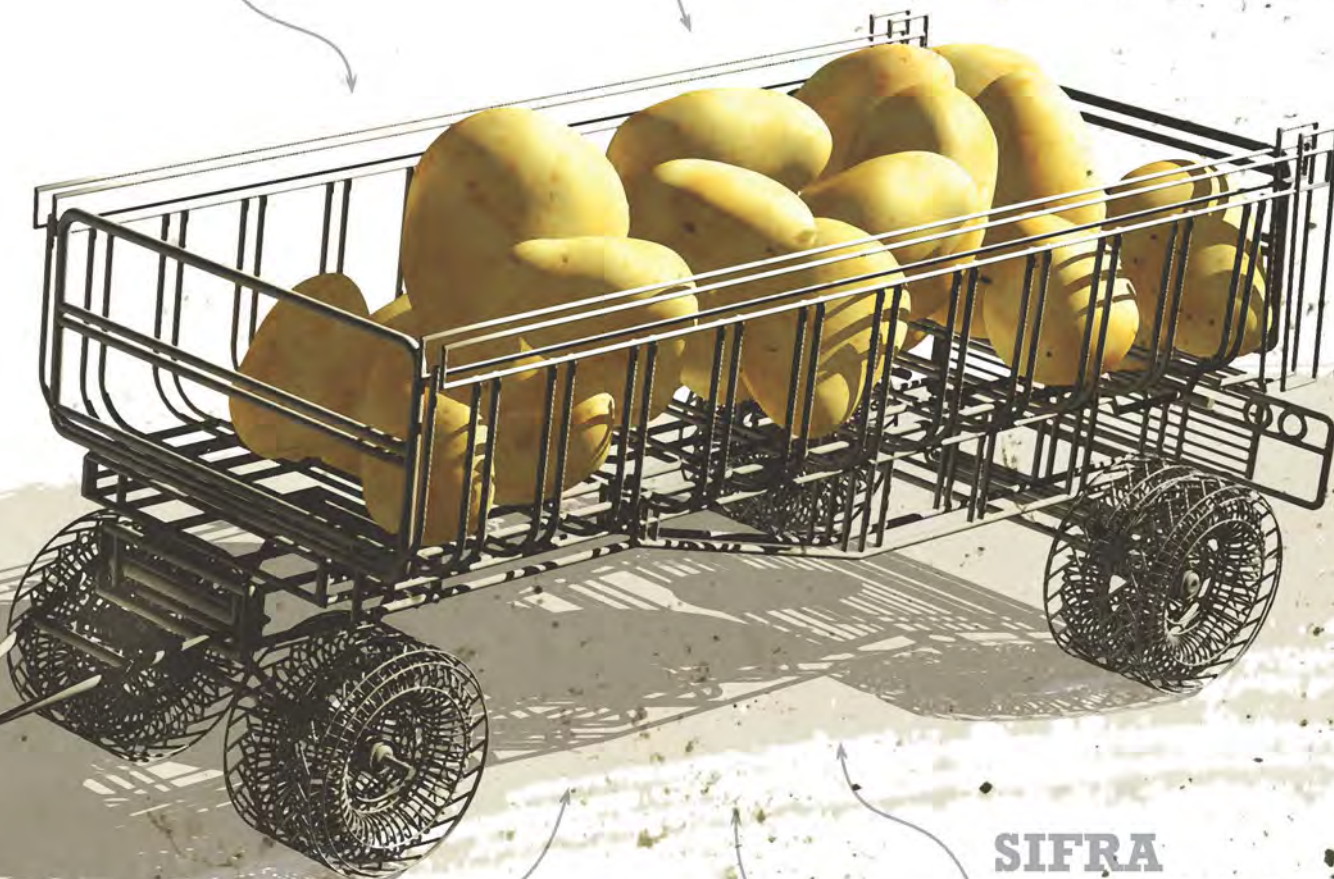
- \* big size tubers
- \* powdery scab resistant
- \* very strong foliage
- \* blight resistance

## TYSON

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

## ALLISON

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



## PANAMERA

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

## SIFRA

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

## MONDIAL

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

# Moenie dat roes jou wêér onkant vang nie

**D**it is alombekend dat die beste manier om siektes – veral dié op aartappels – te beheer, is om hulle in die eerste plek te voorkom. Daarom word soveel klem op die gebruik van gewasbeskermingsmiddels as voorkomingsmaatreël gelê.

Dit is nie sommer praatjies vir die vaak nie. Laboratoriumtoetse het bewys dat sekere SDHI's wat toegedien is slegs twee dae ná 'n aartappel met vroeëroes besmet is, beheer van minder as 50% gee. Hou in gedagte dat die aartappelplant in daardie stadium nog geen letsels toon nie. Voorkomende toedienings is dus uiters belangrik vir effektiewe beheer.

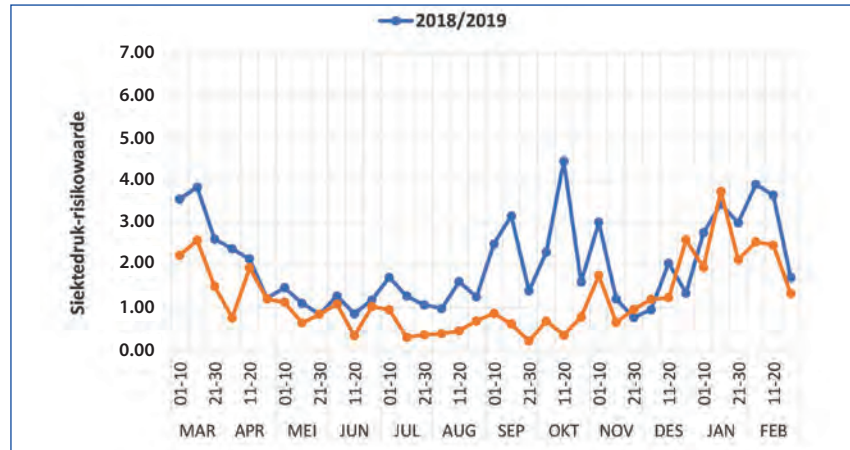
Die ander kant van die siekte-beheer-muntstuk is egter die kosteknyptang waarin aartappelboere hul dikwels bevind. Insetkoste wat styg terwyl die aartappelprys ongeveer dieselfde bly, beteken dat onnodige toedienings van bemesting, chemiese middels of ander insette sover moontlik vermy moet word om die maksimum opbrengs op 'n gewasbelegging te realiseer.

## Nuwe waarskuwingsdiens

Hoe dan gemaak om die slagkat van voorkomende teenoor onnodige beheer te vermy? Die antwoord lê in 'n nuwe diens wat Syngenta onlangs op die been gebring het, om aartappelprodusente te waarsku wanneer omstandighede gunstig is vir die ontwikkeling van vroeë- of laatroes.

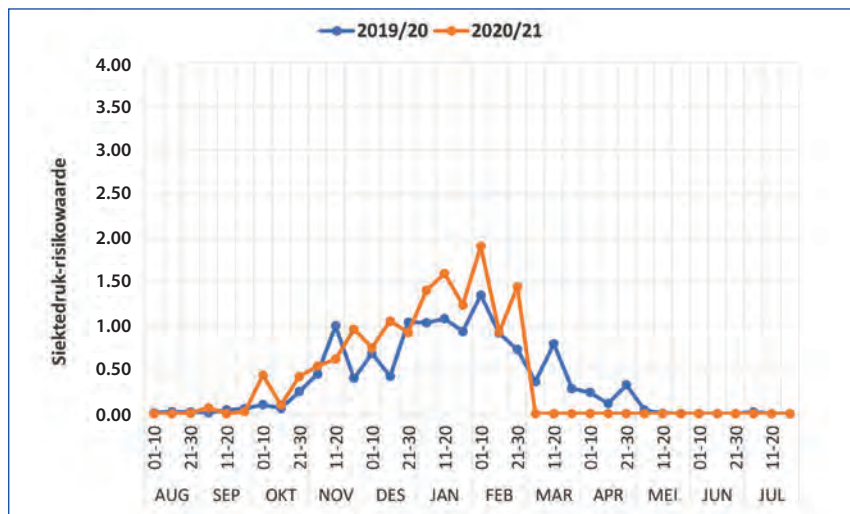
Dié diens kombineer weervoorspellings en siektemodelle om waarskuwings in gebiede rondom 'n spesifieke weerstasie uit te reik. Produsente registreer op die Syngenta-webwerf, en word dan per WhatsApp op Maandae en Donderdae in kennis gestel van die siekterisiko wat vir die volgende vyf dae voorspel word. Indien daar geen

**Figuur 1: Risiko vir laatroes (*Phytophthora infestans*) vir 2019/2020- en 2020/2021-seisoene in Redelinghuys, Wes-Kaap.**



'n Waarde van kleiner as 1 dui op 'n lae risiko vir laatroes.

**Figuur 2: Risiko vir vroeëroes (*Alternaria solani*) vir die 2019/2020- en 2020/2021-seisoene vir Warden, Vrystaat.**



'n Waarde van kleiner as 1 dui op 'n lae risiko vir laatroes.

risiko in die vooruitsig is nie, word geen boodskap uitgestuur nie.

Die produsent kan kies om die waarskuwing per WhatsApp of epos te ontvang, en om toegang tot ander inligting vir die gekose weerstasie te kry, soos omstandighede wat die toediening van chemiese middels kan beïnvloed.

Figuur 1 toon dat die risiko vir laatroes vir die 2019/2020-seisoen laer as die vorige jaar was. Dit is

duidelik uit Figuur 2 dat die kans op vroeëroes die afgelope seisoen hoër was as in 2019/2020.

Vir navrae, kontak jou Syngenta-verteenwoordiger of -verkoopsbestuurder, stuur 'n epos na andre.labuschagne@syngenta.com, of besoek [www.syngenta.co.za](http://www.syngenta.co.za).




# OVS-werkgroep neem voortou met produkproewe

Deur Santa Bronkhorst, Oos-Vrystaat streeksekretaresse

Op 18 Februarie 2021 het die Oos-Vrystaat (OVS)-werkgroep sy eerste besigtigingstoer van produkproewe na die nuwe perseel by Asearch Agri-Tech buite Bethlehem onderneem. Die besoek is meegemaak deur 'n groot aantal verteenwoordigers van chemiese en kunsmismaatskappye, sowel as aartappelprodusente vanuit die Oos-Vrystaat.

Daar was opgewondenheid onder besoekers soos hulle deur die proewe gestap het om na die plante te kyk. In die verlede is die proewe geplant die op plase van produsente wat bereid was om 'n perseel beskikbaar te stel vir aanplantings. Verskeie faktore het die

werkgroep genoop om die proewe na Asearch Agri-Tech te skuif.

Vanjaar het nege chemiese en biologiese maatskappye, asook drie kunsmismaatskappye aan die proewe deelgeneem. Daar word met groot verwagting uitgesien na die betroubare, akkurate resultate wat in 'n latere uitgawe van *CHIPS* gepubliseer sal word. 

Enige produsent wat die projek wil besoek of maatskappy wat belangstel om deel van die projek te vorm, kan vir Enrike Verster, Aartappels SA-navorsing betrokke by die OVS-werkgroep, by epos [enrike@potatoes.co.za](mailto:enrike@potatoes.co.za) kontak.

Die besoek is meegemaak deur 'n groot aantal verteenwoordigers van chemiese en kunsmismaatskappye, sowel as aartappelprodusente vanuit die Oos-Vrystaat.

## Bruinskurf- en opbrengsprobleme?

Die aanwending van PicPlus® in die beheer van bruinskurf verhoog nie net die produksie-uitset en winspotensiaal vir boere nie – dit verbeter ook grondgesondheid. PicPlus® het sy waarde bewys in 'n onlangse berokingsproef\* waartydens die gebruik van die produk tot 'n beduidende vermindering in bruinskurf en hoër totale opbrengs gelei het, met hoër algehele winste tot gevolg!



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\*Aartappelberokingsproef met PicPlus® (Chloropicrin)

Produsent X - Berook 6,5 ha en kontrole 6,5 ha

Berokingsdatum: 21 Oktober 2019

Plantdatum: 11 November 2019

Oesdatum: 30 Maart 2020

Kultivar: Lanorma

Patogeen: Bruinskurf

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## Deel 1: Intumessensie

Deur Freddie Denner, UPL, en Fienie Niederwieser, Aartappels Suid-Afrika

**D**ie oorvloedige reën die afgelope seisoen het 'n paar ongewone verskynsels na vore gebring. In hierdie artikel deel ons inligting oor 'n ongewone fisiologiese afwyking



Intumessensie vertoon soos klein, vragtige blasies wat veral aan die onderkant van blare, asook petiole en stingels sigbaar is.

wat 'n paar verskillende name het. Boonop is daar nie eenstemmigheid oor die oorsaak daarvan nie. Intumessensie (in Engels *intumescence*) en edeem (in Engels *oedema*) is waarskynlik die gewildste benaminge vir hierdie afwyking.


Intumessensie by aartappels is nie 'n nuwe verskynsel nie, net 'n ongewone een, aangesien 'n mens dit eerder op plante in kweekhuise verwag. Intumessensie vertoon soos klein, vragtige blasies wat veral aan die onderkant van blare, asook petiole en stingels, sigbaar is. Die blasies lyk baie soos insekeiertjies en kan maklik daarmee verwar word. Intumessensie ontstaan wanneer epidermale selle vergroot en opswel. Seldeling vind ook aktief plaas.

Die resultaat is dat die selle uitstulpings vorm wat as deurskynende blasies op die blaaroppervlak sigbaar is. Groter uitstulpings vorm as sommige van die kleiner blasies met mekaar saamsmelt. Die intumessensieblasies verdroog na 'n dag of twee en val af.

### Wat veroorsaak intumessensie?

Die oorsaak van intumessensie is waarskynlik veelvoudig van aard en

hang van omstandighede af. Faktore wat al met intumessensie verbind is, sluit onder meer genetiese eienskappe (kultivars), temperatuur (veral grondtemperatuur), lugvog, ligkwaliteit en -intensiteit, hormone, voedingstatus en lugbesoedeling in.

Dit wil egter voorkom of 'n kombinasie van verlaagde transpirasie (hoë lugvog), verhoogde wateropname (warm gronde), verlaagde ultravioletstraling (langdurige wolkbekleding) en die voedingstatus van aartappelplante moontlik bygedra het tot die voorkoms van intumessensie gedurende die afgelope seisoen, wat in sekere streke met hoë reënval en aanhoudende bewolkte dae gepaardgegaan het. Onder normale omstandighede sal die afwyking nie 'n effek op opbrengs en gehalte hê nie. 

Indien daar produsente is wat foto's van soortgelyke simptome het wat op aartappelplante waargeneem is, hoor ons graag van julle. Stuur gerus julle foto's na [epos\\_fienie@potatoes.co.za](mailto:epos_fienie@potatoes.co.za). Enige navrae kan ook aan dr Niederwieser gerig word.

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# The effect of dry conditions at planting on potato emergence and yield

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

**S**mallholder farmers in KwaZulu-Natal are often advised to plant potatoes in August and September. This planting period is suitable for areas where irrigation is available and where heavy, late frost does not occur. In recent years, spring rain has either arrived late or has been insufficient for

good emergence of the crop under dryland conditions.

## Dryland versus irrigated trial

A potato cultivar trial was planted at the Cedara Research Station of the KwaZulu-Natal Department of Agriculture and Rural Development on 19 September 2019 and grown under dryland conditions. No

effective rainfall was received from the beginning of September and therefore the soil was extremely dry at planting.

From planting until the end of October, only a total of 43 mm of rain was received. For 15 days during that period, the maximum temperature was above 30°C. Due to these harsh conditions,

**Table 1: Plant population and yield in the dryland and irrigated trials for the 18 cultivars.**

Cultivar	Plant population		Yield	
	Dryland	Irrigated	Dryland	Irrigated
	(number/ha)		(t/ha)	
Electra	37 407 a*	37 037 a	72.41 a	75.61 a
Valor	37 037 a	36 674 a	67.61 a	59.88 bc
Fandango	37 407 a	36 674 a	66.80 a	62.26 b
Essenza	37 778 a	37 037 a	66.05 a	47.90 d-f
Taisiya	37 037 a	37 037 a	53.14 b	53.07 c-e
Mondeo	37 778 a	37 037 a	53.05 b	49.61 ef
Lanorma	37 037 a	37 037 a	51.84 b	53.64 ef
El Mundo	37 778 a	37 037 a	51.32 bc	52.70 c-e
Allison	37 407 a	37 037 a	49.38 bc	54.27 b-e
Mondial	37 407 a	37 037 a	48.08 b-d	52.11 c-f
Sababa	37 778 a	37 037 a	47.01 b-d	58.24 b-d
Bikini	35 556 a	37 037 a	46.72 b-d	55.93 b-e
Tyson	37 778 a	36 674 a	44.87 b-e	48.95 ef
Panamera	37 037 a	36 674 a	42.39 c-f	53.99 b-e
Labadia	31 111 b	37 037 a	39.27 d-f	47.97 ef
Jelly	31 111 b	31 227 b	35.56 ef	51.88 c-f
Sifra	30 556 bc	37 037 a	34.66 f	58.36 b-d
Georgina	27 778 c	35 948 a	23.46 g	44.08 f
Mean	<b>35 710</b>	<b>36 573</b>	<b>49.65</b>	<b>54.47</b>
LSD (P < 0.05)	3 141.3	1 172.1	9.388	8.272
CV%	5.3	1.9	11.4	9.1

\* Figures in each column that have the same alphabetic letter, do not differ significantly.





A lack of rainfall before and after planting delayed emergence of potato cultivars in a dryland trial (foreground). An irrigated trial planted one day earlier emerged well, as can be seen in the background.


the 18 cultivars took 39 to 61 days from planting to reach 75% emergence, as can be seen in the photograph.

Labadia, Jelly, and Georgina took the longest to reach 75% emergence, indicating that the viability of their tubers was low. In a similar trial planted a day earlier and irrigated frequently, the same 18 cultivars took 17 to 21 days to reach 75% emergence.

#### Reduced viability of cultivars

In the dryland trial, the poor viability of Labadia, Jelly, Sifra, and Georgina resulted in significantly lower plant stands and yields than the majority of the other cultivars (Table 1), indicating that the tubers could not tolerate the harsh conditions and ultimately rotted. It is possible that the tubers of these cultivars may have been lifted earlier or were stored differently compared with the other cultivars, and therefore the viability was reduced. Jelly also had a significantly lower plant stand than the other cultivars in the irrigated trial. In general, this result indicates the strong resilience of potatoes under harsh conditions after planting.

Despite the dry conditions experienced early in the season, good rainfall received from mid-November onwards resulted in the production of overall high yields. In fact, some cultivars produced similar or higher yields compared with the irrigated trial (Table 1). This could possibly be due to the more favourable microclimate present for the development of late blight in the irrigated trial.

Although the results in Table 1 were obtained from a season with exceptionally dry conditions before and after planting, this will not always be the case. However, as insufficient rainfall could be expected from August to October in future seasons, smallholder farmers without irrigation should be advised to delay planting until good rain has been received. In addition, they should plant large (200 to 250 count) fresh tubers to avoid crop losses if the rainfall is insufficient for a long period after planting. 

For more information, contact James Arathoon at Cedara Research Station on 033 355 9495.

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

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

### Balanced nutrition with K<sup>+</sup> and Ca<sup>2+</sup>

Potato plants take up large quantities of both potassium (K<sup>+</sup>) and calcium (Ca<sup>2+</sup>) throughout the growing season. K<sup>+</sup> plays an important role in the control of the plant water status and internal ionic concentration of plant tissues, with a special focus on stomatal functioning.

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

K<sup>+</sup> deficiencies reduce the yield size and quality of the potato crop in association with low specific gravity in potatoes. Excessive K<sup>+</sup> levels can lead to reduced Ca<sup>2+</sup> and/or lower-magnesium uptake.

Ca<sup>2+</sup> is a key component of cell walls, helping to build a strong structure and ensuring cell stability. Cell walls that are enriched with Ca<sup>2+</sup> are often also more resistant to bacterial or fungal attacks. Ca<sup>2+</sup> also helps the plant regulate the active transport of K<sup>+</sup> through stomatal opening and closing. Deficiencies in Ca<sup>2+</sup> interfere with root growth, cause deformation of foliage growth tips, and could result in reduced yields and poor quality.

### The benefits of Nutrigation™

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

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

### Soluble fertilisers for Nutrigation™ by centre pivot or drip irrigation

Haifa Duo™ is an innovative range of plant nutrition formulations that provide balanced nutrition supply for maximum efficiency and

optimal plant development, while minimising losses to the environment. The nitrate (NO<sub>3</sub><sup>-</sup>) facilitates synergistic uptake and improves K<sup>+</sup> as well as Ca<sup>2+</sup> absorption by the plant.

### Extra convenience and enhanced performance

Haifa Group has developed and currently produces a wide range of Haifa Duo™ products based on fully water-soluble K<sup>+</sup> and Ca<sup>2+</sup> containing nitrate fertiliser. Since a healthily growing and high-yielding crop requires large quantities of these macronutrients (N, K, Ca), Haifa Duo™ should be applied to the soil regularly.

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

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

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



## Growing tomorrow's potato producers, today

Over the last few decades South Africa has been experiencing a revolution in agriculture. In the past, many believed farming to be a practice that belonged to older generations. Today, however, we see millennials

leaving cushy professions to venture into farming.

One such person is Petrus Ratsomana, a 30-year-old, vibrant and hard-working farmer, born and raised in Pax Village in the Capricorn district in Limpopo. Petrus, also known as Peter, studied mechanical engineering and

worked in the automotive industry, repairing and maintaining vehicles for seven years. Nevertheless, he always knew that he would one day end up farming – just like his father and uncles.

He recalls that at some point he resigned from his full-time job as a mechanic in Johannesburg to help





*Peter Ratsomana's high-quality potatoes have been sold at an open market at reasonable prices.*

his father on their leased farm in Limpopo. His father later advised him to return to Gauteng, since the family farm was not generating enough income. He was still in the process of obtaining the necessary infrastructure and machinery that would enable them to produce on a larger scale. And so, Peter returned to his job as mechanic.

### PSA lends a helping hand

In 2019, Peter's father sadly passed away while he was participating in the Potatoes South Africa (PSA) Enterprise Development Programme. Peter then made a firm decision to return to full-time farming and in 2020, he picked up

where his father had left off with the development programme.

Peter, who successfully planted 10 ha of the Mondial potato cultivar in the winter, was assisted by his uncle, a well-known commercial farmer in Blouberg, Limpopo. He was also supported by a mentor appointed by Potatoes SA (PSA), who saw to it that his farming skills were honed to ensure better management of the crop and the overall farming enterprise he had inherited.

“Mentorship is necessary for farmers to develop and grow, because in farming, every day holds a new lesson.”

PSA introduced Peter to VKB, which further added value by providing production, financial, and technical support. Peter says he is extremely grateful for the support he received when planting the initial 10 ha of potatoes. “Mentorship is necessary for farmers to develop and grow, because in farming, every day offers a new lesson.”

The technical support he received, Peter says, has helped him realise an average yield of 50 tons/ha. His high-quality potatoes have been sold at an open market at reasonable prices.

During the season, Peter learned about:

- Scheduling and monitoring irrigation.
- Identifying pests and diseases through regular scouting.
- Application rates of fertilisers based on a tailored fertiliser programme.
- Understanding the growth, development, and maintenance of potato crops.

### Expanding in more ways than one

During the 2020 potato production season, Peter created four permanent and 80 seasonal job opportunities for community



*Peter Ratsomana successfully planted 10 ha of the Mondial potato cultivar during the winter of 2020.*

members in Eldorado, Limpopo. He also managed to purchase a disc harrow and a potato planter, which he will use in the next season.

Crop rotation is one of the vital practices he has learned about through the enterprise development programme. Recently, he planted sugar beans, which are known for generating nitrogen which in turn improves soil fertility. The sugar beans will assist in boosting the enterprise's income due to the favourable market price. This will be followed by planting sweet corn.

Peter has expanded his potato production to 20 ha, which will be planted in May 2021. He is already engaging with his mentors and input suppliers for the upcoming season. PSA's transformation division is also working closely with Peter to compile a business plan and ensure that he operates a compliant enterprise.

According to Peter, farming is in his blood and he draws inspiration from his late father and uncles. He says farming is not always fun, easy, or stylish, but he enjoys it thoroughly. 🍅

For more information on PSA's transformation projects, email Nomvula Xaba at email [nomvula@potatoes.co.za](mailto:nomvula@potatoes.co.za) or visit [www.potatoes.co.za](http://www.potatoes.co.za).

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# PSA invests in smallholder farmers

By Louis Pretorius

In the early 1990s, Potatoes South Africa (PSA) identified the need for smallholder farmers who have access to land, to expand food production in rural regions, mainly for food security, but also for them to reach the next level of potato production. A commercial farmer from Elliot suggested the use of basic potato implements to teach smallholder farmers to produce potatoes efficiently.

Basic implements for this purpose were built in Hankey and used for demonstration projects in many rural regions in the Eastern Cape, starting in Uitenhage and expanding into the potato production region of the north Eastern Cape.

The core purpose of the smallholder projects was to disseminate production and business information through demonstration trials in order to achieve food security, job creation, and entrepreneurship within the rural communities.

## Starting with the basics

The main aim of these projects is to assist smallholder farmers with the basics required for successful potato production. These demonstration projects range between 0.1 and



*Progress and spraying of the Swayimane project, which is a dryland project.*



*Potatoes being planted at the Tsolo dryland project.*

0.4 ha in size. PSA formed a partnership with the Departments of Agriculture within each region, ensuring effective selection of projects to reach as many smallholder farmers as possible.

At planting, all surrounding smallholder producers are invited to participate in the planting process. The projects are also regularly visited to assist the farmers in managing these projects.

The following actions form the main framework of each project:

- Soil preparation.
- How to select a suitable cultivar for the farmers' growing conditions.
- How to fertilise correctly using soil samples and practically demonstrating fertilisation on the land.
- The correct planting method for the seed size used.
- The correct use of pre-emergence herbicides for grass and broadleaf directly after planting.
- How to irrigate, as well as the water requirements of the potato plant.
- Providing a complete spraying programme for diseases and pests and supplying the chemicals needed.
- Train smallholder farmers to use spraying equipment correctly.
- Monitoring pests and diseases, and managing the project.

- Correct harvesting and marketing of potatoes.
- Using a branded bag for these projects.

## Branching out, step by step

At this stage, most of the projects – a total of 19 – are situated in KwaZulu-Natal, OR Tambo (Mthatha), and Alfred Nzo (Bizana). For the first time in this financial year, three additional projects were also planted in Mpumalanga.

Three more projects will be planted in the Limpopo region this season. During the next financial year, another project will be planted in Maclear, with four more in Ugie. The projects achieved very high yields under dryland conditions and yields of 45 ton/ha or more are not uncommon in the OR Tambo and Alfred Nzo regions.

The projects were especially valuable this past year with the outbreak of Covid-19. They provided much-needed sustenance to isolated rural communities during lockdown levels 5 to 3. 🍅

For more information, contact the author at email [louis@potatoes.co.za](mailto:louis@potatoes.co.za).



# Why digital user experience (UX) matters

By Immaculate Zinde and Phindiwe Nkosi

**P**otatoes South Africa's newly revamped consumer website boasts enhanced search engine optimisation (SEO) features, adopted new technologies, realigned to current branding guidelines, fresh-off-the-stove recipes, and slants towards improved user experiences.

Statistics and user feedback do not lie. "A single bad experience on a website makes users 88% less likely to visit the website again," according to *Intechnic.com*. The site further reports that 79% of people who don't like what they find on a particular domain, will abandon it and search for another site. These are just some of the stats that re-emphasise the urgent need to prioritise user experience (UX) on the Potato Nation ([www.potatonation.co.za](http://www.potatonation.co.za)) consumer website.

Despite statistics indicating that recipes showcasing the taste, versatility and convenience of potatoes are a great way to captivate end consumers, consumers still tend to fall through the cracks. At the pulse of UX is the need to adapt domains to the end users, their experiences, perceptions of utility, ease of use

and efficiency. It was with this in mind that the marketing division of Potatoes South Africa (PSA) went on a mission to deconstruct the existing consumer website, so as to rigorously investigate it from an end-user perspective.

## Enhanced user friendliness

The marketing division dissected web statistics to see which pages site users most visited. Potato recipes were among the biggest drawcards of the consumer website. However, to tackle the concerning bounce rate, which is a reflection of visitors not lingering long on the website, more needed to be put in place. In as much as the content is imperative, one could also not overlook design-related aspects.

This is even more so when one considers that UX design and development statistics indicate that 94% of the factors that affect a user's first impression of your website, are design related. First impressions matter, and frustrated users can be downright unforgiving.

Unlike the former site, the revamped site has advanced search features making it easier for users to search for recipes from any website

section. For ease of reference, users can search by ingredients, keywords, categories and more. There is also the option to tick off recipes they have read or used, print various sections of the recipes, comment on each recipe, browse through selected recipe galleries, and even watch embedded video recipes without leaving the website. Furthermore, multiple sections were rearranged according to their popularity for ease of access.

## Adopting new technologies

The newly revamped consumer website was rebuilt to WordPress, a free and open-source content management system written in PHP and paired with a MySQL or MariaDB database. The marketing division has built superior content over the last 14 years, which stands to benefit and strengthen its efforts of imparting accurate, well researched and updated information with current and potential product consumers.

Some of the weaknesses of the old site that were identified upon closer scrutiny by the marketing team on the old consumer site included, but were not limited to,



misaligned brand identity, broken links, redundant information as well as utilisation of space.

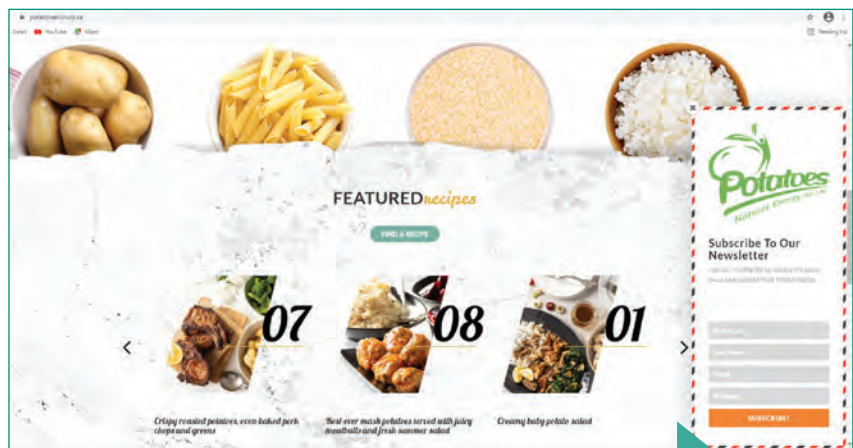
The revamped website is responsive with enhanced navigation, including restructured menu tabs and drop-down menu icons. Redundant information was deleted, several content pieces were rewritten, bugs were removed, and broken links were fixed.

With the launch of the improved site in 2021, the marketing division envisages an improvement in site traffic, especially relating to the bounce rate which represents the percentage of visitors on the website who navigate away from the site after viewing only one page. It is also hoped that the improvements will increase the amount of time users spend on the site perusing the wealth of content that the division has invested in over the years.

**New digital touchpoints**

In moving with the times, the marketing team has found it fitting to add a monthly newsletter to the website. It will be adjusted and emailed to newsletter subscribers. For ease of subscription, a new pop-up feature was added to the revamped website. This newsletter gives the division an added platform to inform, educate and inspire consumers.

To obtain the buy-in of consumers, a competition was put in place for users to submit proposed names for the newsletter on social media and, in so doing, boost both social media engagement, website traffic and the new e-newsletter.



*The newly revamped website is designed to meet user-experience expectations and contains lip-smacking recipes as well as a regular newsletter to which users can subscribe.*

Rather than throwing out the baby with the bathwater, so to speak, the revamp was about improving what works, and sharpening the pencil to stay abreast of local and international benchmarks. SEO does matter in this digital environment. To this end, Yoast SEO, and the popular SEO plug-in for WordPress – globally downloaded more than 200 million times – was installed and configured, along with other ongoing SEO strategies to help improve the site’s Google rankings, among other things. It is worth noting that this is not an overnight transformation, but rest assured that the wheels of change are in motion.

**Improved spaces**

Re-using and strengthening our current image and recipe database was key. Establishing expertise by having a registered dietician update nutritional properties of

potatoes – also comparing it to other starches ‘to make potatoes shine’ – was part of the scope of work undertaken. Repurposing and repackaging existing resources were also part of the scope of the project.

Statistics suggest that 91% of non-complainers leave, and 13% of them tell 15 more people about their bad experience. This project went out of its way to also consider the voiceless non-complainers who contributed to the bounce rate. Current and future users were incorporated to craft a portal that speaks to them and addresses their needs, lest we found ourselves in the conundrum of speaking to ourselves about ourselves. 🍌

For more information, email the author at [immaculate@potatoes.co.za](mailto:immaculate@potatoes.co.za) or visit [www.potationation.co.za](http://www.potationation.co.za)

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# Importation of French fries takes a nosedive due to proactive industry strategic moves

By Immaculate Zinde

The importation of frozen potato products from around the world is permissible. Around 2005, the industry observed volumes that did not pose any harm or threat to locally produced frozen potato products. That year, a total of 13 751 tons of imported fries were recorded in South Africa.

Potatoes South Africa (PSA) on a monthly basis, tracks and monitors potato imports from the world. Through this monthly tracking, industry observed a sharp increase of frozen potato chips from 14 000 tons in 2005 to almost 47 000 in 2010 - a 244% increase in five years.

It is within this context that investigations into the importation of frozen potato products were

launched, focussing on frozen potato chips. The outcome revealed a case of dumping, which necessitated the application of a safeguard measure – a trade remedy used against an unforeseen surge in imports that cause and/or threaten to cause serious injury to the local industry.

## ITAC launches anti-dumping case

The International Trade Administration Commission (ITAC) initiated an anti-dumping case on frozen potato chips from Belgium and the Netherlands during 2013. In December of that year, the South African Revenue Service (SARS) imposed provisional safeguard

duties on frozen potato chips from companies in Belgium and the Netherlands. The safeguard measures were introduced to protect the local industry from unfair trade practices.

Following this short-term safeguard measure, industry sought an imposition of countervailing duties which expired in June 2016. During this time, through many engagements with potato processing companies, it became apparent that a forum was needed. The Potato and Vegetable Processors Forum (PVPF) was established and its members consist of PSA, McCain Foods South Africa, Nature's Garden, and Famous Brands (Lamberts Bay Foods).

Up until recently (2021), the potato industry enjoyed an anti-dumping duty imposed in October 2016. The maximum duration of any anti-dumping duty is four years. The duty has expired, necessitating industry role-players, in close collaboration with the PVPF, to explore further trade remedies to limit the importation of frozen potato chips and protect the local industry from material injury.

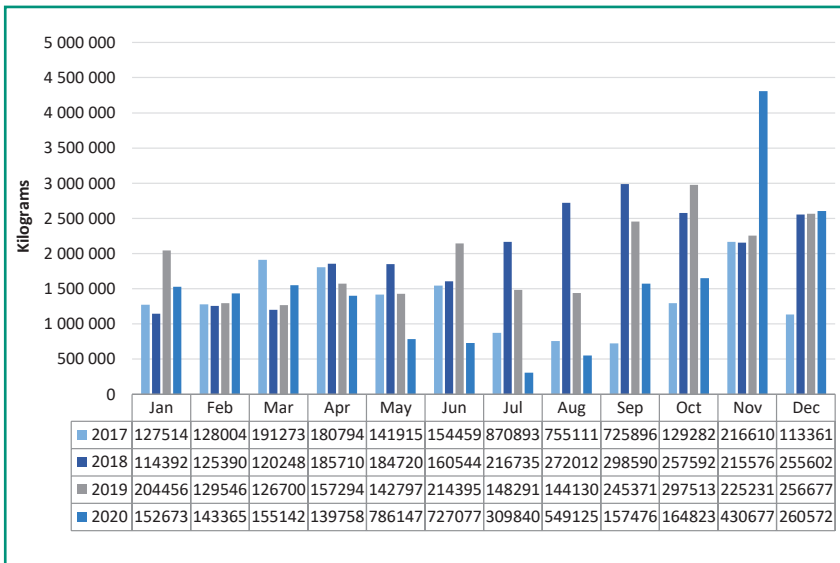
## A look at 2020

Last year, South Africa imported a total of 18 417 tons of French fries. Imports of frozen French fries had declined from 46 904 tons since the implementation of





Figure 1: Imports under tariff line 2004.10.20 from January to December: A quantity comparison.



trade remedies, reflecting a 61% decline over a decade. Covid-19 and associated bans on trade and travel may also have contributed to the significant decline in volumes in 2020.

The PVPF has been lobbying the South African government to institute a temporary prohibition on imports of frozen potato chips from the European Union, due to market conditions impacted by Covid-19. This was done to protect the sustainability of the potato industry, including employment by local potato growers and processors.

Potato growers and processors are significant economic multipliers for rural towns and cities. To this end, one of the points outlined in the forum’s argument to government, states that the long-term effect on local processors could result in a significant shortage of products once European markets recover. Considering the time it takes to grow potatoes from seedlings to the final product, a disruption in local supply could have a severe long-term impact on supply to downstream industries.

In September 2020, the PVPF published a press release titled *Urgent action needed to protect*

SA’s potato industry. Although the initiative did little to dissuade government to enact stricter trade tariffs and regulations, it did create awareness about the magnitude and depth of frozen potato products from Europe, that may pose a threat to locally produced frozen potato chips.

### Industry efforts pay off

Since the implementation of trade remedies, the industry has benefited from a decline in the volumes of frozen French fries imported under tariff line 2004.10.20 (Figure 1). Prior to the implementation of trade remedies, the volumes of imported frozen French fries stood at 30 822 tons. By 2020, the volumes had decreased by 48.9% to 15 811 tons, proving that industry efforts in collaboration with the PVPF are bearing fruit.

With the anti-dumping duty having expired, the PVPF is working tirelessly to prevent a surge in imports of frozen potato products that are priced below fair market value. 🍌

For more information, contact Immaculate Zinde at [immaculate@potatoes.co.za](mailto:immaculate@potatoes.co.za).

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## Potato, wors, and chakalaka bites

**Serves:** 6

### Ingredients:

- 8 large potatoes, peeled and chopped.
- 2 tbsp (30 ml) margarine.
- ½ tsp (2.5 ml) salt.
- ½ tsp (2.5 ml) Aromat seasoning.
- ½ tsp (2.5 ml) ground white pepper.
- 1 tbsp (15 ml) sunflower or vegetable oil.
- 1 pack of thin boerewors.
- 1 tin of hot chakalaka (or chakalaka of your choice).
- ½ cup (125 ml) cake flour.
- 4 eggs, beaten.
- 3 cups (750 ml) breadcrumbs.
- Sunflower or vegetable oil, for frying.

### Preparation:

1. Place the potatoes in a large pot and cover with water. Bring to boil and cook for 15 to 20 minutes, or until the potatoes are cooked through.
2. Drain the potatoes in a colander and place them back into the cooking pot (off the heat).
3. Using a potato masher, mash the potatoes well and while still warm, add the margarine, salt, Aromat, and white pepper. Mix well and set aside to cool.
4. While waiting, heat one tablespoon of oil in a non-stick pan and fry the boerewors until cooked through. Remove from the heat and once cooled, cut into 3 cm pieces and set aside.
5. To make the bites, dip clean hands into flour and place about 4 tbsp (60 ml) of the mashed potato into your hands. Flatten slightly and make a well (for the wors pieces).
6. Add one piece of wors and 1 tsp (5 ml) of chakalaka to the well. Gently fold the potato over the wors and sauce. Add another tablespoon of mashed potato if needed to cover the filling completely. Gently shape into a ball and repeat with the remaining ingredients.
7. Place in the fridge to chill for 30 minutes.
8. Once chilled, dust each ball with flour, shaking off the excess, then dip into the eggs, followed by the breadcrumbs. Repeat this process twice.
9. Heat enough oil in a medium pot over medium to high heat. Once the oil is hot enough, fry in batches for 8 to 10 minutes, turning once during frying. Remove once golden and crisp and drain on absorbent kitchen paper.
10. Serve with additional chakalaka for dipping.



### Top potato tip

To save time in the kitchen, make the balls a day in advance. You can keep the ready-formed and crumbed balls in the fridge for up to 24 hours, and fry when needed.

# Arbeidsbestuur met die oog op volhoubaarheid

Deur Ansofie van der Walt

**W**erkgewers moet daaglik verskeie besigheidsrisiko's bestuur om hul ondernemings se winsgewendheid en volhoubaarheid te verseker. Beperkende arbeidsregulasies in Suid-Afrika is een van die mees problematiese faktore as dit by besigheidsbestuur kom.

Vandag is dit 'n algemene tendens onder besigheidseienaars om nie-kernaktiwiteite, soos sekuriteit, finansiële dienste, vervoer, bemaking, ensovoorts, uit te kontrakteer. Dit gun die werkgewer ekstra tyd om op sy primêre aktiwiteite te fokus.

## Opsies vir arbeidsbestuur

In alle werkgewer-werknemer-verhoudings is daar streng wetlike vereistes waaraan werkgewers moet

voldoen, ongeag die aantal werknemers in diens. Om aan hierdie vereistes te voldoen is daar hoofsaaklik ses opsies wat die werkgewer kan oorweeg:

### Intern:

- Die werkgewer hanteer dit self.
- Die werkgewer skep interne kapasiteit deur 'n kundige in arbeidsreg voltyds in diens te neem.

### Uitgekontrakteer:

- Plaaslike prokureur.
- Arbeidskonsultant.
- Ongeregistreerde werkgewersorganisasie.
- Werkgewersorganisasie wat by die Departement van Indiensneming en Arbeid geregistreer is.

Werkgewers moet beseft dat daar bepaalde verskille tussen hierdie opsies is. Dit kan groot implikasies inhou, met spesifieke verwysing na koste, spesialiskennis, spektrum van dienste, infrastruktuur, beskikbaarheid, ensovoorts.

### Uitkontraktering

Voordat die werkgewer hierdie ondersteuning uitkontrakteer, moet die volgende oorweeg word:

- Kan die instelling werkgewers by die Kommissie vir Versoening, Bemiddeling en Arbitrasie (KVBA), bedingingsrade en die Arbeidshof verteenwoordig? Let wel dat slegs geregistreerde werkgewersorganisasies outomaties verskyningsreg op hierdie forums geniet.
- Spesialiseer die instelling in arbeidsreg en het hulle die toepaslike ervaring?
- Lewer die instelling spesialisdienste op die werkgewer se perseel?
- Bied die instelling 'n kostedoeltreffende oplossing?
- Hoe lank bestaan die instelling al, en hoe word besigheidskontinuiteit verseker? Is daar bestuurskontinuiteit in die instelling?
- Dryf werkgewers se behoefte op grondvlak die instelling, en kan die werkgewer insette tot die bestuur van die instelling lewer?

### Evalueer jou arbeidsrisiko

Werkgewers kan ernstige boetes en selfs tronkstraf opgelê word in gevalle van nie-nakoming. Maak seker dat jou besigheid veilig is deur jou arbeidsrisiko teen hierdie kontrolelyns te evalueer:

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



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**Dissipline in die werksplek** - konsultasies,  
waarskuwings, dissiplinêre verhore |

**KVBA en Arbeidshof verteenwoordiging**  
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- *Toepaslike wetgewing:* Weet jy watter wetgewing op j ou besigheid van toepassing is en verstaan jy die vereistes van elk?
- *Nasionale minimumloon:* Betaal jy minstens die toepaslike nasionale minimumloon?
- *Plakkate:* Word opsommings van die Wet op Basiese Diensvoorwaardes, 1997 (Wet 75 van 1997), die Wet op Billike Werksgeleentehede, 1998 (Wet 55 van 1998) en die Wet op Beroeps-gesondheid en -veiligheid, 1993 (Wet 85 van 1993) in die werksplek vertoon?
- *Dienskontrakte:* Het jy 'n getekende dienskontrak in plek vir elke werknemer? Gebruik jy die regte tipe dienskontrak en voldoen dit aan wetgewing? Is jy as werkgewer reg geposisioneer vir moontlike toekomstige dispute, sodat jy flink kan optree en jou regte kan beskerm?
- *Ander dokumentasie:* Is die teenwoordigheidsregister, salarisstrokies, personeell eers en registrasie by die Werkloosheidsversekeringsfonds asook die Vergoedingskommissaris in plek en voldoen dit aan wetgewing?
- *Vakbondregte:* Weet jy wat jou regte as werkgewer in terme van vakbondaktiwiteite is? Het jy 'n erkenningsooreenkoms met die geregi-streerde vakbond in plek wat jou regte as werkgewer beskerm?
- *Dissipline in die werksplek:* Is jou dissiplin ere kode relevant en op datum? Elke werksplek moet 'n relevante dissiplin ere kode met duidelike re els en toepaslike sanksies h e. Dit is jou reg as werkgewer om kontrole in die werksplek uit te oefen, maar die korrekte prosedures moet deurlopend gevolg word. Werkgewers moet ook daarop let om dissipline konsekwent toe te pas ten einde diskriminasie te vermy.

### Werkgewers se regte

Dit is belangrik om in ag te neem watter rol arbeid in die werksomgewing speel en te verstaan dat wetgewing tot die werkgewer se voordeel toegepas kan word om die besigheid te beskerm.

In Suid-Afrika se hoogs gereguleerde arbeidsomgewing voel werkgewers dikwels dat hulle aan die kortste ent trek. Werkgewers het egter baie regte in die werksplek, maar ook die verantwoordelikheid om hierdie regte toe te pas. Kundige hulp om die besighheidsrisiko's rondom arbeidswetgewing reg te bestuur, sal verseker dat werkgewers nie hul besighede onnodig blootstel nie.  

Vir meer inligting,  
kontak Ansofie van der Walt  
by 076 091 4647 of  
ansofie@lwo.co.za.

**V.Z.S.**  
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During January/February 2021, a total of 13 potato producing regions as well as non-producing suppliers delivered potatoes nationally to fresh produce markets.

Average percentage downgraded: **10.37%.**

Total number of bags delivered from 13 regions and non-producing suppliers and inspected on the fresh produce markets: **15 758 849**

Figure 1: Classes inspected during January/February 2021 at all fresh produce markets.

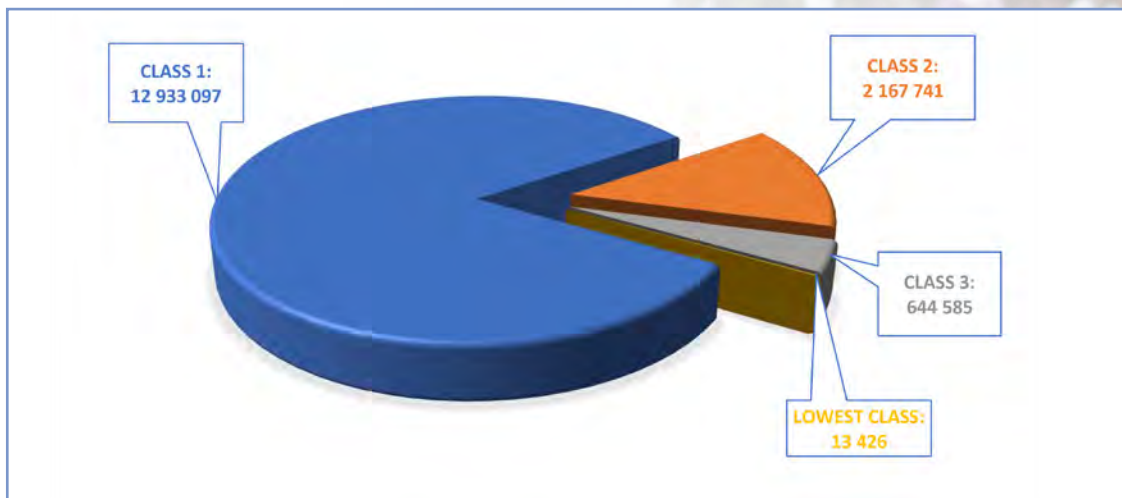


Figure 2: Potatoes downgraded (%) at all fresh produce markets during January/February 2021.

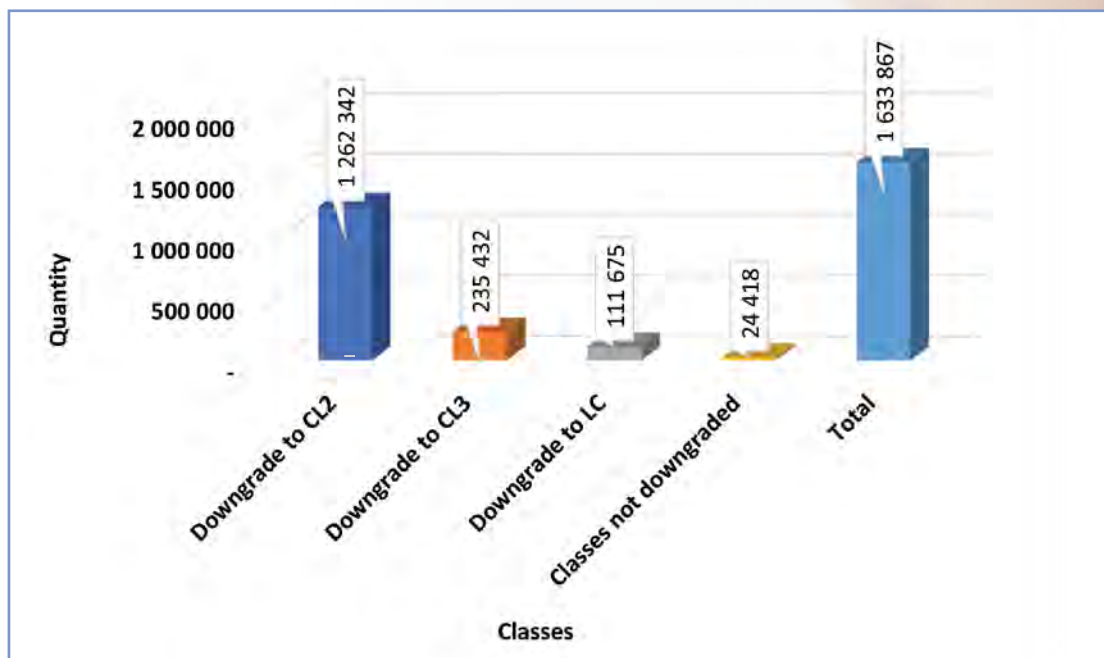




Figure 3: Potatoes downgraded (%) in all regions at fresh produce markets during January/February 2021.

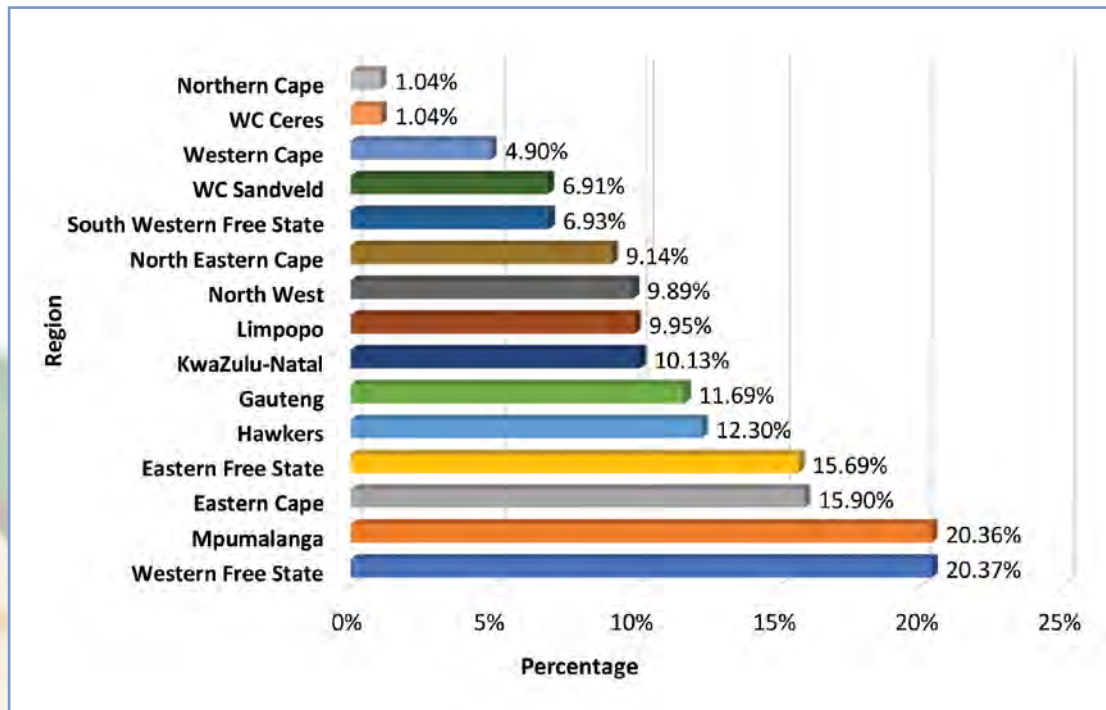
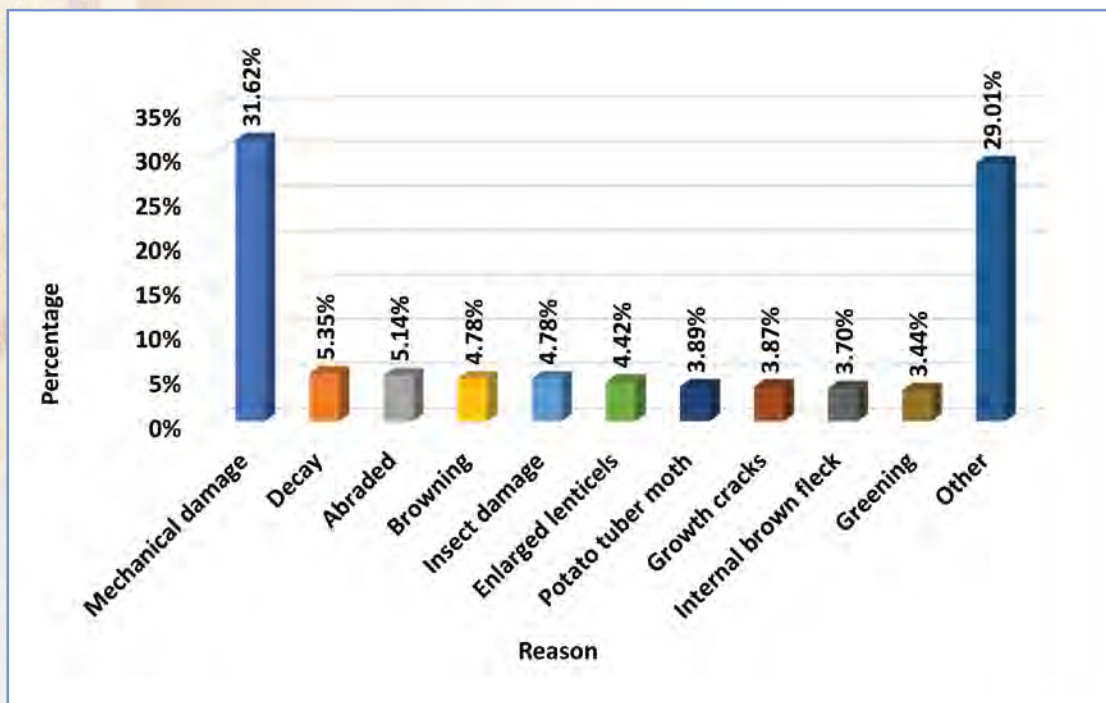
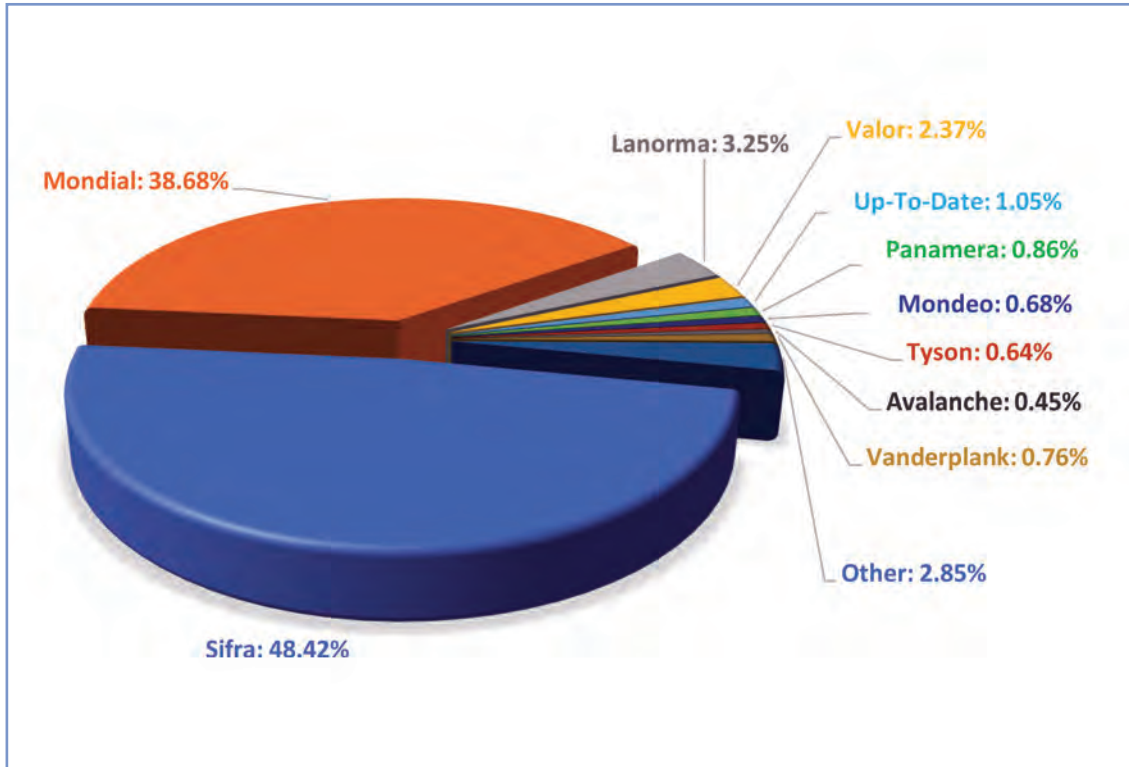


Figure 4: Reasons for downgrading in percentage (%) at all fresh produce markets during January/February 2021.



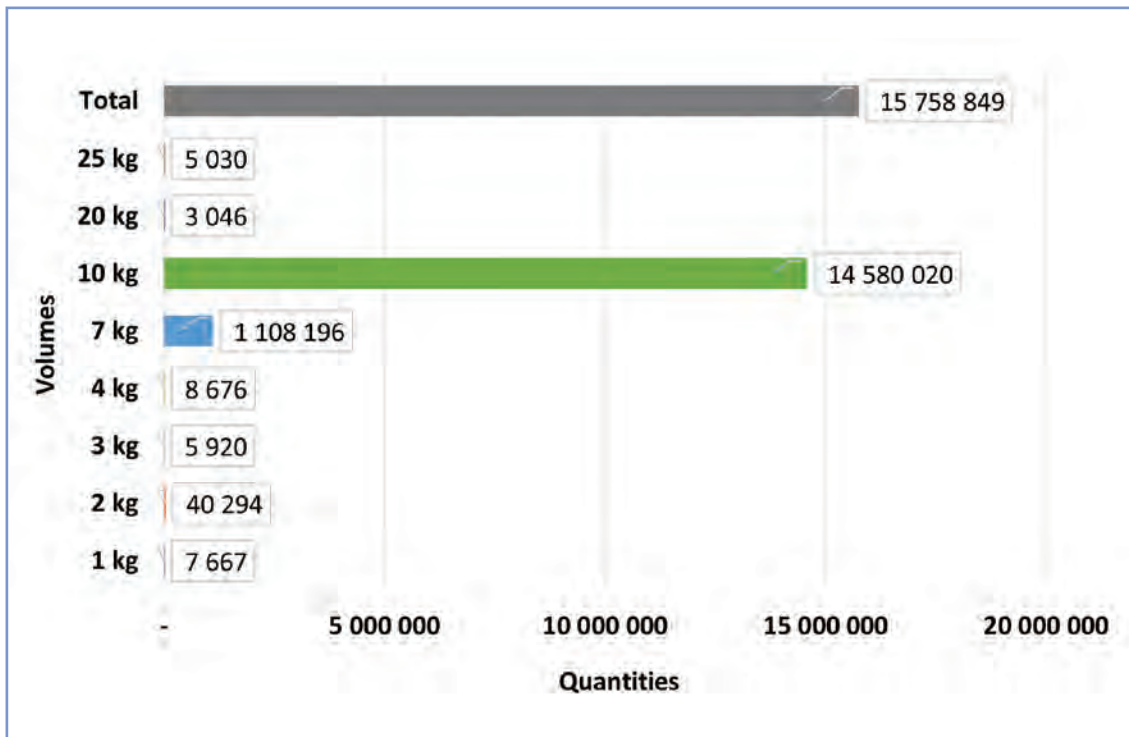
\*Other causes include: Eelworm, common scab, silver scab, holl heart, soiled, malformed, dry rot, broken tubers, skin eelworm, too small, wilted, stem-end rot, watergrass, cold cracks, appearance, soiled by decay, heat damage, too big, glassiness, unspecified defects, sprouted, rhizoctonia, foreign matter, cold damage, vascular browning, powdery scab, and anthracnose.

Figure 5: Cultivars inspected in percentage (%) at all fresh produce markets during January/February 2021.



\*Others include: Savana, Taisya, Almera, Hertha, Inovator, Markies, BP1, Alison, Ami, El Mundo, Nicola, and Daisy.

Figure 6: Volumes inspected on all fresh produce markets during January/February 2021.





# The COIDA: What you need to know

By Stephan Pietersen

**T**he *Compensation for Occupational Injuries and Diseases Act, 1993 (Act 130 of 1993)*, or *COIDA*, administers work accidents in South Africa. The main objective of the *COIDA* is to provide compensation for injured workers and workers who contracted an occupational disease. Covid-19 contracted in the workplace is also regarded as an occupational disease. Families of workers who died in the workplace may also qualify for a pension.

## Compensation Fund regulations

All companies that employ one or more employees (part-time, full-time, or contract) must register with the Compensation Fund within seven days after appointing its first employee. This also includes seasonal workers in the agricultural industry.

Producers that are registered with the fund, are protected in such a way that farmworkers cannot lodge civil claims against them. Employees who are injured on duty can qualify for compensation depending on the seriousness of the injury (for example, if a finger was cut off).

Companies must submit their annual return of earnings by 30 March every year and pay their accounts within 30 days to be in good standing with the Compensation Fund. The fund raised R9.3 billion from companies in South Africa during the 2018/2019 financial year. If a company does not submit the return of earnings, the fund can do its own estimates and, as a result, companies can be overcharged. Failure by companies to submit their annual return will result in a penalty of 10% being issued on the

actual assessment, and a further 10% for the late payment.

## The agricultural industry

Producers in the agricultural industry are charged some of the highest rates when calculating their assessments.

The agricultural industry is divided into four categories for the purposes of the *COIDA*, and the new rates effective from 1 March 2021, payable on every R100 paid out in wages, are as follows:

- Livestock farming: R2.15.
- Tillage and forestry: R2.13.
- Mixed farming: R2.65.
- Sugar and tea farming: R1.42.

This industry also had the highest number of work-related accidents, with more than 10 000 incidents reported during the 2017/18 financial year. However, farm owners do not always claim back the salary they paid their injured workers and, in the process, lose thousands of rand. This is due to the inaccessibility of services from the Department of Labour. The Compensation Fund only paid out R3.9 billion for benefits in 2018/19, which included medical expenses, refund of salaries to companies, and pensions.

All employers must report work accident claims on the fund's new electronic system, CompEasy. In terms of the *COIDA*, a company must pay the injured employee his/her salary for the period booked off duty and claim this back from the fund. Doctors and hospitals must also send their invoices directly to the fund for payment.


## COIDA amendments to be approved

The minister of employment and labour drafted new amendments which are awaiting approval. These

amendments will have a major effect on the administration of work accidents, and companies will face hefty fines if the right processes are not followed.

Some of the amendments include:

- *Failure to report an accident within seven days:* A 10% penalty of the declared annual earnings (these are the earnings used to calculate the assessment).
- *Failure to furnish all information:* A penalty equal to the full amount of compensation plus interest (if information is not completed on the forms when reporting the accident).
- *Failure to pay the employee's salary while he/she is off duty:* A penalty equal to double the full amount of three months' compensation plus interest (in terms of the *COIDA*, a company must pay the worker for up to three months while he/she is booked off duty).
- *Failure to provide conveyance of an injured employee:* A fine equal to the full cost of the conveyance (the company must transport the injured worker to the nearest doctor).
- *Failure to keep a record of earnings:* 10% of the actual or estimated annual earnings.

Companies must familiarise themselves with these amendments, update their internal processes and educate their employees regarding the proper procedures to follow when reporting a work accident. 

For enquiries, send an email to Stephan Pietersen on [support@workaccident.co.za](mailto:support@workaccident.co.za).

# Die onskatbare waarde van navorsing

**N**avorsing is die olietenskip van die aartappelbedryf. Al is dit groot en vaar nie baie vin-nig nie, dra dit die brandstof om oplossings vir knelpunte in die bedryf te vind. Olietenskepe moet op die uitkyk wees vir storms, sodat daar betyds aanpassings in rigting of spoed gemaak kan word om dit te vermy.

Net so moet navorsing op hoogte wees van faktore wat aartappelproduksie bedreig, maar ook vir moontlike gevare weens klimaatsverandering, veranderende markvereistes, grond wat 'aartappelvoos' raak, nuwe siektes en peste, en vele ander. Navorsing wat deur die bedryf befonds word, word bepaal tydens strategiese dinkskrumms van die navorsingskomitee.

Die volgende fokuspunte geniet prioriteit:

- Waterverbruik.
- Identifisering van kultivars met aanvaarbare aanpassings-vermoë, hoë opbrengs en goeie gehalte.
- Bestuur van grond- en knolgedraagde siektes.
- Bestuur van virusse en hul vektore (plantluise).
- Bestuur van insek- en aalwurmplae.
- Bestuur van blaarsiektes.
- Identifisering van biosekuriteitsrisiko's en proaktiewe navorsing om die organismes te identifiseer en te bekamp.

Omdat die navorsingskip nie vinnig vaar nie en nuwe kennis betyds beskikbaar moet wees, is dit noodsaaklik dat die fokuspunte soms herbesoek word, sodat kenners by universiteite en navorsingsinstansies relevante voorstelle kan maak. Die aartappelbedryf befonds tans 25 projekte wat deur eksterne spesialiste uitgevoer word.

Vir elkeen van hierdie projekte is 'n voorstel ontvang wat deur die navorsingskomitee geëvalueer is. Tydens die komitee se onlangse begrotingsvergadering, is nóg 24 projekte vir befonding aanbeveel.

Twee daarvan is op grondgedraagde patogene gefokus, nog een op *Alternaria*-spesies, en die vierde op bestuur van aartappelblaarmyner. Die oordra van inligting wat deur navorsing gegenereer word, geniet hoë prioriteit by Aartappels Suid-Afrika (ASA) se navorsingafdeling, en in hierdie verband speel CHIPS 'n belangrike rol.

Tegniese en/of wetenskaplike CHIPS-artikels is op ASA se tuisblad beskikbaar. Gaan na [www.potatoes.co.za/document-library](http://www.potatoes.co.za/document-library) en dan na 'Research' waar verskeie CHIPS-artikels beskikbaar is.

*Aartappelgroete,  
Hanrie Greebe*



Hanrie Greebe.

**R**esearch is the oil tanker of the potato industry. While it may be a large vessel and its voyages might be slow, it still transports the fuel needed to obtain solutions for pressing matters. Oil tankers need to be on the lookout for storms to make timeous adjustments in speed or direction to avoid danger.

In the same manner, research needs to be on par with factors that pose a risk to production, as well as dangers relating to climate change, varying market requirements, soil that becomes 'potato fatigued', and new diseases or pests, among others. Research selected for funding by the industry is decided during the strategic brainstorming

sessions of the research committee.

The following focal points are given preference:

- Water usage.
- Identification of cultivars with adequate adaptability, high yield, and good quality.
- The management of soil- and tuber-borne diseases.
- The management of viruses and associated vectors (aphids).
- Pest management relating to insects and nematodes.
- Management of potato blight.
- Identifying biosecurity risks and doing proactive research to identify and combat organisms.

Because this 'research tanker' sails at a slow pace, while having to supply new knowledge on time, it is necessary to revisit key focus areas from time to time, allowing experts from universities and research centres to bring suggestions to the table.

Currently, the potato industry provides funding for 25 projects executed by external specialists. For each of these, a proposal was received and evaluated by the research committee.

During the research committee's most recent budget meeting, 24 more projects were recommended for funding. Two of these focus on soil-borne pathogens, one on *Alternaria* species, and the fourth on the management of potato leafminer.

Relaying the information generated by research is a top priority of Potatoes SA's (PSA) research department, and in this regard, CHIPS plays a vital role.

Scientific and/or technical CHIPS articles can be found on PSA's website. Simply visit [www.potatoes.co.za/document-library](http://www.potatoes.co.za/document-library) and go to 'Research', where you will be able to access a series of CHIPS articles.

*Potato greetings,  
Hanrie Greebe*

Epos my gerus by [hanrie@potatoes.co.za](mailto:hanrie@potatoes.co.za) / Feel free to email me at [hanrie@potatoes.co.za](mailto:hanrie@potatoes.co.za)



# PHILAGRO



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