

# AGRI PROBE



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Booklets on climate  
change in three  
languages launched

Tragedy of the  
abalone commons

Plant- and cell-based meat products:  
Are we still eating meat?



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# Setting the SCENE



by Dr Ilse Trautmann

This volume of AgriProbe is a bumper edition of stories of hope, innovation, and inspiration, more than a year since the COVID-19 pandemic came to change our lives in a significant way. Despite the various levels of impact of the pandemic, agriculture remained the cornerstone of our economy and our existence.

Our department's service delivery agenda was once again multi-dimensional and we took our services to the outskirts of our province.

It included an ostrich auction to offer superior genetic material to ostrich farmers, a junior LandCare initiative to bring nature to young people, developing a Rural Safety Monitoring Dashboard, and establishing a Rural Safety Desk for vulnerable rural farmers and agri-workers.

However, we also realised that another challenge is still prominent in our sector, namely climate change and its impact on our sector's sustainability and profitability. Several contributions in this edition focus on this challenge and our department's role in leading the way to make sure our sector becomes more resilient.

One of the most important pillars in our sector is that of youth development, and

we showcase career advancement and the various human capital development initiatives of the department. Initiatives include, among others, inviting farmers to host our graduate interns and engaging with students in a virtual way.

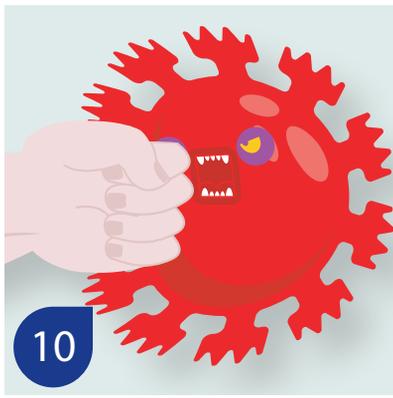
We ponder plant- and cell-based meat products and discuss the future of meat in the world, and consumer preferences. The future of the prickly pear seems bright, and the bumper apple and pear harvest for 2021 fills the fruit baskets of South Africa and the world.

It is then that we realise that agriculture is providing food and fibre every day, despite the challenges. Agriculture is an inspiring and energetic sector. Farmers in our province and South Africa ought to be praised for their indispensable role in our existence and our well-being. #fortheLoveofAgricultureanditsfarmers

A handwritten signature in cursive script, appearing to read 'Ilse Trautmann', written in dark ink.



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## ON OUR COVER

Prickly pears are more resilient than other crops, making them an ideal alternative crop in this climate influenced sector. Read more about how the prickly pear industry and the Western Cape Department of Agriculture successfully collaborated to share opportunities for the industry to become market ready and grow the economy. Considering their various benefits and versatility, prickly pears might not be as 'prickly' as meets the eye.



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# Western Cape agriculture budget 2021 – supporting economic recovery

by Minister Ivan Meyer

When COVID-19 and the hard lockdown hit, agriculture and the health sector had to take steps to ensure the safety of agri-workers. To do this, we made personal protective equipment available to agri-workers across the province. Agriculture also embraced the call not to compromise food security and the sector led from the front.

In 2020 South Africa's economy took a pounding. There was, however, one sector that stood out – agriculture.

Agriculture continued to contribute positively to South Africa's GDP. By doing so, the sector inspired confidence in its ability to lead the Western Cape's economic recovery.

Behind this message of hope lies the hard work, unwavering commitment, tenacity and resilience of our farmers, agri-workers, producers, commodity organisations and exporters. To all of them, a word of thanks on behalf of this government and the people of the province.

A week ago, I tabled the Western Cape Agriculture Budget 2021 in the provincial parliament and announced a total budget of R909,086 million. This will facilitate the critical role that the agricultural sector plays in driving the economy and creating jobs in the Western Cape.

We have allocated:

- R122,724 million to Sustainable Resource Use and Management (formerly Sustainable Resource Management);
- R274,986 million to Agricultural Producer Support and Development (formerly Farmer Support and Development);
- R97,093 million to Veterinary Services;
- R141,115 million to Research and Technology Development Services;
- R46,971 million to Agricultural and Economic Services;
- R57,393 million to Agricultural Education and Training; and
- R28,958 million to Rural Development.

Several key projects will support our contribution to the Western Cape Recovery Plan in the 2021/2022 financial year.

- We will be launching an agri-processing-on-wheels project later this year. R920 000 has been allocated for this mobile unit to extend training in agri-processing to rural communities.
- R4 million will be used for the commissioning of a chemical residue testing facility at our provincial veterinary laboratory to support market access.
- A further R2 million will support our market access initiatives in China.
- R11,5 million is allocated towards establishing a further 1 800 household gardens in impoverished communities across the province to enhance household food security.



The department will continue with the commodity approach as a strategy for farmer support in the province.

We will implement 105 agricultural projects (smallholder and commercial) to the amount of R104,028 million, facilitating the creation of 466 permanent jobs.

- A rural safety summit with a committed budget of R2 million will strengthen our

support to farmers, agri-workers, and agricultural stakeholders.

- A further R6,157 million is allocated towards rural development initiatives to enhance the image and socio-economic conditions of agri-workers, rural youth and women.
- Implementing the SmartAgri Management Improvement Plan to the value of R1 million will improve the sector's resilience against climate change.
- A further R486 000 will be used for drone training of 18 officials to equip them to operate drones as part of their work. The use of 4IR technologies such as drones provides a range of farming solutions. These include remote measurement of soil conditions, data collection, vineyard mapping, and better water management and livestock and crop monitoring.
- R30 million will be spent on alien plant clearing.
- R7,8 million will go to the erection of fencing to support sustainable resource management use and create much-needed jobs in these areas.

The above interventions embody my five ministerial priorities:

- Structured education, training and research
- Market access
- Rural safety
- Farmer support and development
- Climate change

These five priorities are aimed at facilitating the Western Cape Government's objectives of safety, jobs, and well-being of Western Cape citizens.

Agriculture is ready to play its role in the economic recovery of the Western Cape. AP

# MURRAYSBURG

## LOOPBAANUITSTALLING

### verbreed jeug se horison

deur Japie Kritzinger, [japie@elsenburg.com](mailto:japie@elsenburg.com)

Murraysburg is 'n klein plattelandse Karoo-dorpie wat geleë is in die verre noordoostelike hoek van die Wes-Kaap en deel vorm van die Beaufort-Wes plaaslike munisipaliteit. Die groot afstande tussen dorpe in die Karoo en die meer as 600 km vanaf Kaapstad maak van hierdie dorpie 'n relatief geïsoleerde gemeenskap.

Murraysburg het 'n bevolking van ongeveer 5 000 inwoners, waarvan meer as 2 000 onder die ouderdom van 18 is. Met beperkte ekonomiese aktiwiteite, bied die dorp en sy omgewing nie genoeg werksgeleenthede aan jong skoolverlaters nie. Daar is gevolglik 'n geweldige hoë werkloosheidsyfer, veral onder die jeug.

Hierdie situasie het die Departement van Landbou tydens die Wêreldvoedseldagvieringe, wat in Oktober 2019 op Murraysburg gehou is, tot die besluit gelei om 'n loopbaanuitstalling na die dorp te bring. Oor die afgelope vier maande het die departement, in samewerking met 'n aantal provinsiale sustersdepartemente, tersiêre instellings en loopbaangeoriënteerde privaatinstansies, fyn beplanning gedoen om hierdie geleentheid van stapel te stuur.

Op Donderdag 13 Mei het die groot dag

aangebreek. Mnr. Williams, skoolhoof van die Murraysburg Primêre Skool, het die skoolsaal vrywillig beskikbaar gestel vir die uitstalling. Uitstallers moes reeds die vorige dag van regoor die Wes-Kaap na Murraysburg reis om hulle stalletjies op te stel vir die volgende dag.

Die program is na deeglike beraadslaging, koördinerings- en samewerking met die twee skoolhoofde saamgestel om meer as 500 leerlinge oor die verloop van die twee dae aan al die uitstallers bloot te stel. Dit moes gedoen word te midde van die handhawing van COVID-19-protokolle en sou sekerlik nie moontlik gewees het sonder die hulp van die Departement van Gesondheid nie. Onder leiding van bekwame sr. Francis Fass het die plaaslike gesondheidsamptenare 'n reusebydrae gelewer deur groepe leerders vooraf te skandeer en die nodige sanitering te doen. Al die graad ses- en sewe-leerders van die primêre skool asook die leerders van graad nege, elf en twaalf van die sekondêre skool het tydens die twee dae die uitstalling besoek. Leerders het tot hul verbasing by die Departement van Landbou verneem dat landbou 'n wye verskeidenheid loopbaangeleenthede bied;

dat dit baie meer as net 'n plaasbestuurder of masjienoperateur behels. Boonop was die Departemente van Gesondheid, Sosiale Ontwikkeling, Onderwys en Omgewingsake en Ontwikkelingsbeplanning ook teenwoordig om loopbane binne hulle onderskeie departemente met leerders te deel.

Met behulp van die Kaapse Loopbaanuitstallersvereniging is verskeie private opleidingsinstansies na Murraysburg gebring en die uitstalling het gespog met 15 stalletjies. Leerders kon eerstehandse kennis opdoen oor die vakrigtings wat die Universiteit van Wes-Kaap bied, terwyl hulle ook die geleenthede by die Internasionale Hotelskool in Kaapstad kon ondersoek. Vir die leerders wat daarna streef om eendag 'n TV-ster te word, was die Akademie vir Film en Drama Vereniging van Port Elizabeth (Nelson Mandela-kampus) ook teenwoordig om geïnteresseerde leerders se vrae te beantwoord.

Natuurlik was die hoogtepunt van die uitstalling die amptelike opening op 14 Mei deur die provinsiale Minister van Landbou, dr. Ivan Meyer. Minister Meyer is onder meer vergesel deur die Taiwanees regering se verteenwoordiger in Suid-Afrika, Direkteur-Generaal David Yintso Lin. Op sy eie unieke manier het Minister Meyer ook die twee hoofleiers van die sekondêre skool betrek by sy openingswoorde en 'n baie gepaste boodskap van hoop aan die graad twaalfs spesifiek gebring. Minister Meyer het ook 'n vlugtige gesprek met beide skoolhoofde by die hoërskool gevoer.

Op Vrydagmiddag 14 Mei 2021 pak al die uitstallers op en vertrek weer terug na hulle tuistes. Murraysburg se meer as 500 leerders en bykans 80 werklose jongmense wat die loopbaanuitstalling besoek het bly agter, maar is bemagtig met kennis van velerlei loopbaankeuses en 'n hernieuwe hoop om eendag 'n loopbaan en 'n toekoms te kan bou.

Waarnemings van Muriel Verwy,  
'n Graad 12-leerder

Op Vrydag, 14 Mei 2021, het ek baie geleer wat ek nie geweet het nie. Ek het 'n baie groter respek vir dit wat ander doen en ek het ook ontdek dat daar baie meer loopbaankeuses buite die gewone beroepe waaraan ons gewoon was, is. Die verskillende velde wat daar is het my gedwing om baie verder as net Murraysburg, of selfs Suid-Afrika te gaan. Ek het ook weereens bewus geword van die erns en noodsaaklikheid van mense se opvoeding. Ek het geleer dat verskillende loopbaankeuses baie meer is as wat ons dink dit is en dat ons hard moet werk om vir onself 'n goeie leefstyl te laat leef. En die belangrikste van alles was dat respek 'n baie lang pad gaan. AP



# Accolade to Mr Canola 2020

by Dr Ilse Trautmann, [ilset@elsenburg.com](mailto:ilset@elsenburg.com)

The Protein Research Foundation (PRF) awards achievements in different categories annually.

The objectives of the PRF and its predecessors, including funding of research to achieve specific objectives, date back to 1973. Before 1990, certain other objectives had to be achieved using specific funds, but they were terminated in 1989 to make way for a pure research function and related matters. The latter were determined formally in 1990, with the establishment of a research trust now known as the Protein Research Foundation (PRF). The Western Cape Department of Agriculture (WCDoA) and its Directorates of Animal and Plant Sciences have partnered with the PRF for many years. Even though it was as a partner

in the advancement of protein research and use, it also received research funding over many years in support of the departmental research portfolio.

For the 2020 year, Mr Piet Lombard (scientific technician in cultivar evaluation) from the Directorate Plant Sciences received the award for his “outstanding contribution by an individual, who promotes the PRF’s objectives”. This award was not only based on his excellent research on canola, but also for his commitment to publish the popular magazine Canolafokus and author several articles on canola. “This made him a deserving candidate for this prestigious award”, said Mr Gerhard Keun, chief executive officer of the PRF. AP



Mr Piet Lombard (left) receiving the award from Mr Andries Theron, chairperson of the PRF.

# Elsenburg college welcomes first-year students amidst COVID-19

by Daniel Johnson, Daniel.Johnson@westerncape.gov.za



The college campus was abuzz in the first week of March as, amidst strict COVID-19 protocols, excited first-year students arrived on campus for the first time. Two hundred and fifty-three first-year students were welcomed on campus, of which 88 were enrolled for BAgric, 114 for diplomas, and 51 for learnership certificates. The new students were given a couple of days to settle in, while being introduced to their new environment.

In his welcoming message, Minister Ivan Meyer said: "Elsenburg Agricultural Training Institute was established in 1898 and was the first centre for agricultural training in Africa. The institute has an outstanding reputation for equipping youth with the requisite knowledge and skills to contribute to the future of the agricultural economy".

Minister Meyer emphasised that one of his key priorities is structured education and training. "The future of a sustainable agricultural sector is dependent on new information, technology advancement, a generation of agri-workers, and youth

with appropriate skills and qualifications to engage in an inclusive agricultural economy."

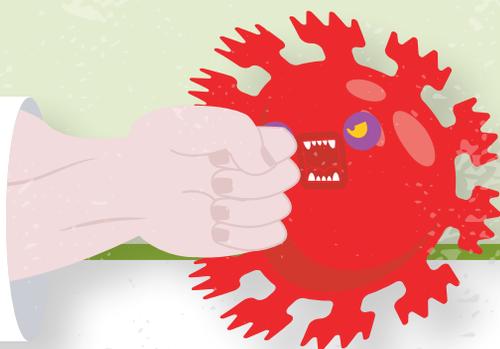
One of the students, Logan Jacobs, is from the farm Zorgvliet outside Stellenbosch. "I will be completing a learnership in plant science. I am the proud daughter of an agri-worker. I cannot wait to begin my journey towards a career in agriculture."

Corné Johnstone, studying for a BAgric degree, comes from Langkloof near Uniondale. He says, "I am very excited to be here and cannot wait to discover what Elsenburg has to offer".

Ceres-born MacNeil Buda, who completed a learnership in 2020, will be starting his national diploma this year. "I am so excited that, based on my academic performance in 2020, I can now progress towards completing my national diploma."

"I wish our students well and encourage them to protect themselves by continuing to wear their masks, sanitise regularly and maintain a safe social distance", said Minister Meyer. <sup>AP</sup>

# Combatting COVID-19 third wave: agriculture speaking with one voice



by Dr Dirk Troskie, [dirkt@elsenburg.com](mailto:dirkt@elsenburg.com)

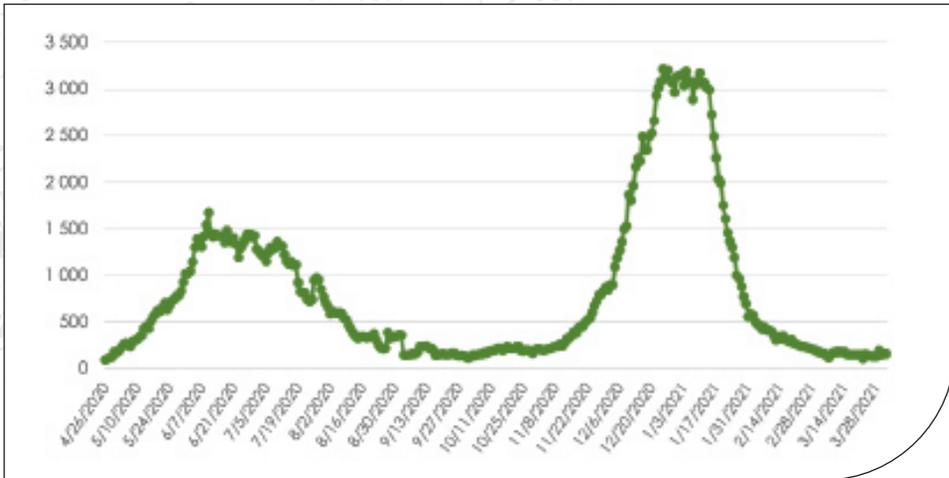
**B**y the end of March 2021 nobody could blame any person who thought the battle against the COVID-19 pandemic was won. After all, following two peaks of the pandemic, with the second much worse than the first, the seven-day rolling average of only about 150 new cases per day were very reassuring (see Figure 1). After a hesitant start, the vaccination programme at national and provincial level was accelerating and the vaccines en route to South Africa were enough to inoculate more than 40 million adults to ensure herd immunity.

However, few things can be more dangerous than complacency. The COVID-19 pandemic is still a global reality with various countries experiencing their third or fourth waves of infection. Furthermore, the higher the infection rate and the longer the pandemic, the greater the chance of the virus mutating with more contagious and/or aggressive variants, and the new vaccines potentially being less effective.

For this reason the agricultural stakeholders of the Western Cape province met online on 4 March 2021 with only one goal in mind: could we stop the third wave? Following a long and intense debate, it was agreed that a special effort must be made to prevent, or at least postpone as long as possible, the outbreak of a third wave. A task team was assembled, comprising representatives from the department, the African Farmers' Association of South Africa, Agri West Cape, Hortgro, the SA Fruit and Vegetable Canners' Association, and the Wine and Agricultural Ethical Trade Association.

At its first meeting, this task team, called the 3rd Wave Team, agreed that by now the principles of social distancing and COVID-19 sanitary precautions were common knowledge. However, it was also agreed that, despite this common knowledge, the only way to combat the third wave was through a concerted communication effort with the partners speaking "with one voice".

Figure 1: Seven-day rolling average of newly reported COVID-19-positive cases in the Western Cape Province.



Source: Compiled from the daily reports by the Department of Health.

Furthermore, since a large number of migrant workers is working in the province, it was also agreed that, along with the three official languages of the province (Afrikaans, English and Xhosa), Sotho material should also be included in the messaging. Three sequential communication messages were developed:

- 1 Confirm and solidify the basics of COVID-19 sanitation principles and provide a link to where additional information can be found.
- 2 Inform recipients that COVID-19 is not over yet and we need to give the final push to prevent the negative impact of another lockdown.
- 3 Emphasise that agricultural workers are essential to the well-being of the province and for that reason we need to keep safe and participate in the vaccination programme.

In conveying this message, four different channels were agreed upon and implemented:

- 1 A simple one-page flyer in four languages consolidating the basics of COVID-19.

- 2 A series of video clips conveying messages 2 and 3 above.
- 3 A series of paid radio slots to convey the message that the battle is not over.
- 4 Radio interviews with various role players in the agricultural sector, providing their perspective, strengthening the core message.

This effort may be one of the positive outcomes from COVID-19. To combat the pandemic, the various players in the agricultural sector were made to work together. The same approach could be followed in future to combat the negative images created regarding agriculture and to convey its positive elements. What is clear from this cooperative effort is that a joint repetition of the common message through the communication channels of each participant could strengthen the general belief. However, only time will tell whether the COVID-19 virus was affected by this concerted effort. AP



# EMPOWERING a rural community through skills development training

by Deona Strydom, [deonas@elsenburg.com](mailto:deonas@elsenburg.com)



In January 2021, the Rural Development Programme of the WCDoA appointed Daleen Turner Consultancy as part of a provincial project roll-out to hold a two-day skills development session in Vleiland, Laingsburg. It focused on labour rights and the rights and responsibilities of agri-workers.

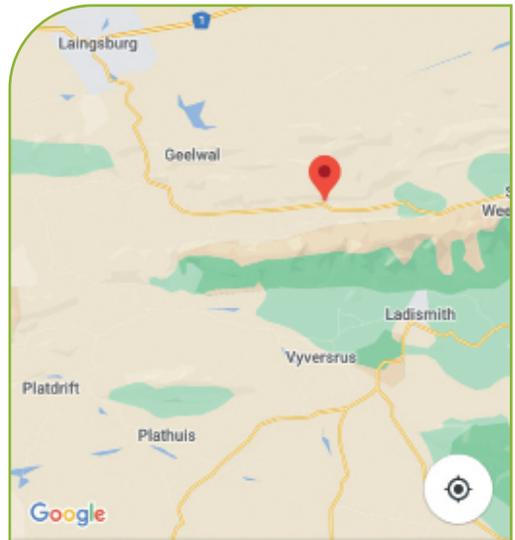
The Vleiland rural community is about 50 km from Laingsburg. It is known for its fertile land and peach orchards and could be described as unique because it is located in the Central Karoo. Unfortunately, this area was not spared the extreme drought that has plagued the district for many years. Farmers resorted to selling their sheep and cattle, no longer exporting fruit, and turning to agri-processing methods like selling dried peaches, to survive. Most of the agri-workers in the rural community have been there for many years and everyone knows one another.

The Laingsburg municipality, as the local government partner and key stakeholder with the department, provided the venue at Vleiland free of charge and one of the local community development workers, Gloria Coakley, assisted with the recruitment and logistical arrangements. Daleen Turner, a well-known expert in the field of labour relations, facilitated the workshops.

To comply with the Disaster Management Act regulations and COVID-19 protocols under alert level 3, the workshop was divided into two days to ensure compliance. Each participant, while observing all health and safety protocols, was trained on nine topics outlined in Working Together: A quick guide for agri-workers, a labour booklet on the rights and responsibilities of agricultural employees regarding legislation. Thirty-three agri-workers were reached, which included many youths and females. Most of the participants were seasonal workers.



Daleen Turner in action.



Vleiland map





Participants with masks and the necessary social distancing.



Registration.

The training was well received and everyone agreed that the information shared was relevant. There were clearly some misunderstandings and/or different interpretations regarding some of the legislative aspects. Some of the questions raised were the following:

- ▶ “Why does the employer deduct UIF for the permanent workers, but not for the seasonal workers?”
- ▶ “Do we as seasonal workers also have the right to payment for public holidays?”
- ▶ “Can the employer deduct money from me if I receive meat (“slagging”) from the employer?”
- ▶ “What happens if there is a public holiday during my annual leave period?”
- ▶ “If I need to go to the clinic for regular check-ups or to pick up my medication, can I expect sick leave payment?”
- ▶ “Do I need to stay away from work if I am waiting for a disciplinary hearing?”
- ▶ “If I want to extend my house on the farm with an extra room, can I ask the farm owner?”
- ▶ “Does the minimum wage differ with regard to how many years’ service you have?”
- ▶ “Whose responsibility is it to make sure my children are transported to school?”
- ▶ “If my child is injured on the farm, whose responsibility is it to take my child to the doctor/hospital and to pay for medical bills?”
- ▶ “What happens if I get sick during my annual leave – will I get paid out for my sick leave?”
- ▶ “If my house on the farm is not in a good condition, is the farm owner obligated to maintain the house?”
- ▶ “How long after a miscarriage should an employee resume work?”
- ▶ “What happens to my years of service and other conditions of employment when a new owner takes over the farm?”
- ▶ “If I have the right to live in the house for as long as I live, can the owner move me to alternative housing without my consent?”

The training facilitator was able to answer all the above questions and provided relevant examples. Some of the feedback to the questions may not have been received well; however, it was based on legislative prescripts and ultimately accepted as such. The agri-workers were provided with

additional booklets to share with co-workers and their employers (producers). An issue that came up during the training days was that there was a need for the same training for producers. Opportunities will be explored for joint training interventions on the same topics to both target groups in future.

AP

# Call for farmers and agricultural entities to host WCDoA's graduate interns 2021/22



by John Constable. [johnc@elsenburg.com](mailto:johnc@elsenburg.com)

The Western Cape Department of Agriculture (WCDoA) started a placement programme for unemployed graduates in agriculture in 2019. This programme places unemployed graduates with agriculture-related qualifications on farms or enterprises within the agricultural value chain. It aims to help them acquire on-the-job entrepreneurial and business skills to establish and manage their own enterprises. The internship programme allows 120 graduates to be placed with external host employers on farms and in agricultural entities for two years. In the first group there were 128 graduates.

Twenty-eight graduates resigned from the programme to take up permanent employment, mostly with the host employers where they were placed.

The second intake for 2021/22 commenced in January 2021 for a new group of 120 graduates. The department has concluded the recruitment and selection process for appointment. Preference was given to graduates from agricultural colleges and students with diplomas in agriculture. To ensure the successful implementation of the current intake, the department is calling on all farmers and agricultural entities to participate in the programme as host employers for the graduates.

Requirements for host employers participating in the programme are the following:

- Placement must be provided for two years.
- Relevant on-the-job work exposure must be ensured for the intern under the supervision of a mentor.
- Graduates must be exposed to various on-the-job training (farm management, production, health and safety, business and entrepreneurship).
- Training space and working tools must be made available for unemployed graduates.
- All persons appointed to this development programme must enter into a specified agreement detailing the expected level of performance.
- Performance must be monitored consistently through quarterly reports submitted by host employers.
- Employers must enter into a memorandum of understanding with the department.

The department will retain all the administrative functions and pay the monthly stipend of the interns while being responsible to:

- identify and determine the number of participants who will be appointed by the WCDoA and placed with the external host employer for a period of two years;
- ensure that each appointed participant enters into an External Workplace

Experience Programme agreement with the department;

- execute all administrative functions, including the drafting of External Workplace Experience Programme contracts, and appointment letters, as well as the administration of all stipends paid by the department to participants;
- assist mentors, managers and supervisors to develop job profiles and learning programmes for participants;
- facilitate orientation and training initiatives for all participants;
- facilitate the training of mentors;
- liaise monthly with the external host employer, participants and mentors;
- ensure that the External Workplace Experience Programmes are conducted within the framework of the department's External Workplace Experience Programme, which is aligned with the National Department of Public Service and Administration's Internship Programme; and
- continuously monitor and evaluate the External Workplace Experience Programme. On-site visits will be conducted at least twice a year. Monthly and quarterly reports supplied by the external host employer will be assessed, and evaluation workshops will be conducted for all participants and mentors in the programme.

Interested parties who want to participate in the programme as external host employers are invited to contact:

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AP



# VIRTUAL CAREER SUMMIT

by Maritjie Cornelissen, [maritjiec@elsenburg.com](mailto:maritjiec@elsenburg.com)

COVID-19 has brought along a great deal of negativity and feelings of hopelessness, but it has also forced all of us to think smart, think fast, act fast and make things happen differently.

It was the same kind of experience with the arrangement of a career summit by Elsenburg Agricultural Training Institute (EATI) and AgriSETA for the 2020/2021 financial year. Fortunately, it was decided

from the start that the career summit would be a combination of a traditional event and a webinar.

Due to the COVID-19 Level 3 announced in 2020, the committee decided to continue with a virtual career summit only. AgriSETA's excellent IT team put together a very good video on all careers within agriculture. In March 2021, EATI conducted the first virtual career summit in collaboration with



AgriSETA. Three schools took part in the webinar, namely Bernedino Heights, Murraysburg High School and Bonteheuwel High School. The students were a bit camera-shy, but the programme manager was able to get a beautiful shot of the scholars of Bonteheuwel with a shout-out to all participating schools.

The executive manager in skills planning from AgriSETA, Mr Frikkie Fouche, reiterated in his opening message that agriculture is not just for old people, but it has various opportunities for young and old. Mr Fouche also mentioned the various career opportunities within the agricultural science and technology environment.

Darryl Jacobs, the deputy director-general of the Agricultural Development and Support Services of the Western Cape Department of Agriculture, welcomed the students and guests. Mr Jacobs alerted the guests that one of the very good reasons to study agriculture is the fact that agriculture is the only sector that has shown positive growth during COVID-19, when every other sector in the economy has shown a decrease.

Another achievement of the WCDoA was the successful training

of fourteen drone pilots, which enables the participants to be an integral part of the investment in innovation. Furthermore, according to Mr Jacobs, agriculture accounts for 17% of employment in the Western Cape. In support of this, he introduced the booklet on fifty career opportunities within agriculture.

As part of the visual information of the webinar, Minister Ivan Meyer also gave a message to the guests and confirmed the fact that agriculture and its value chains contributes 11% to the gross domestic product of the Western Cape Province, which translates to R64 billion farming income in the province. He furthermore said that more than 50% of all South Africa's agricultural exports move through the Western Cape.

The students and guests of the webinar left with the message that agriculture is a sector of hope, filled with many career opportunities for young and old.

Scan this QR Code to watch a recording of the webinar.



# Bumper apple and pear harvest expected for 2021

by Andrew Partridge, [andrewp@elsenburg.com](mailto:andrewp@elsenburg.com)

South Africa's apple and pear producers have much reason for optimism. After struggling because of the recent drought, improved weather conditions have led to an increase in production in 2019 and 2020, which is expected to continue in 2021.

Apples and pears are major horticultural commodities in South Africa. The latest Abstract of Agricultural Statistics shows a total value of production of R6,1 billion for apples and R3,0 billion for pears. Combined, this makes up 11,1% of the total value of horticultural production and 3,3% of all agricultural production. Apple and pear production mostly occurs in the Western Cape. According to the most recent Census of Commercial Agriculture, conducted in 2017, the province is responsible for 86% of the 907 134 tonnes of apples, and 89% of the 355 883 tonnes of pears produced annually.

Both industries are highly dependent on export markets with 50% of apples and 52% of pears being sold to foreign markets. An additional 32% of apples and 36% of pears go into processing, which means the shares of the harvests that are sold locally are only 18% and 12% respectively.

The apple and pear industries felt the

impact of the recent drought severely. The Western Cape flyover survey of 2017 shows 100% of apple and pear production under irrigation, mostly drip irrigation. The drought put a large strain on production, leading to less fruit being produced and reduced quality of produce. The latter is important for key export markets, with strong consumer preferences and stringent quality controls.

Estimates from Hortgro, the national umbrella body for the South African pome and stone fruit industries, show a recovery in South Africa's apple and pear exports, beginning in 2019 and expected to continue trending upwards into 2021. In 2017, South Africa exported 33,4 million cartons of apples and 17,5 million cartons of pears. The combined 50,9 million cartons, which is equivalent to 636 211 tonnes, was 1,7% lower than the year prior. The following year showed an even greater drop of 4,9%. However, with the good rains, 2019 was a much better year with exports increasing by 5,2%, followed by a 5,0% increase in 2020. In 2021, this is expected to increase further, with expected apple exports of 38,1 million cartons (476 645 tonnes)

and pear exports of 17,8 million cartons (221 785 tonnes). The combined 55,9 million cartons (698 430 tonnes) is 4,4% higher than in 2020.

The recoveries in 2019 and 2020 were driven primarily by increasing apple exports of 7,7% and 8,4% respectively. Despite improved weather conditions, pear export growth has been sluggish, increasing by 0,7% in 2019 and declining by 1,6% in 2020. However, 2021 marked a significant increase in the export of both products – apples by 3,9% and pears by 5,5%.

Along with the improved production quantities for 2021, the mild spring and summer have minimised sunburn on fruits and the cooler nights have aided in colour development. This has resulted in a high-quality product that is aesthetically pleasing and will lead to greater demand in international markets.

The drought has not been the only climate-related disaster that apple and pear growers have had to overcome. The

increase in the frequency and severity of extreme weather conditions because of climate change brought other risks. Hailstorms in the Langkloof region, an important production area, damaged a large part of the crops in January. This damage has already been factored into the estimations cited above. More recently, storms in the Grabouw area brought winds, which are unprecedented for this time of the year. The damage was devastating for a handful of apple and pear farms; however, it did not have a significant impact on the projections at national level.

The recovery of South Africa's apple and pear industries after such a bad drought and amid other climate-related challenges highlights the resilience and competitiveness of the industries. With continued support and learning lessons from the challenges, these industries could continue to grow and contribute to economic development in South Africa, create jobs, and generate substantial foreign earnings. AP

**However, 2021 marked a significant increase in the export of both products – apples by 3,9% and pears by 5,5%."**





# TRAGEDY of the abalone commons

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by Nicole Wagner, [nicolew@elsenburg.com](mailto:nicolew@elsenburg.com)

## Introduction

Agriculture must have the ability to cope with a changing climate, competition for water resources, rising unemployment and the ongoing energy crisis. A shift towards more resilient agriculture is required to diversify economic growth and lower dependence on more traditional agricultural resources and practices.

With its important role in global food security, aquacultural operations are set to increase with human population growth (Vasta, 2015). Marine aquaculture is increasingly being recognised for its potential economic contributions. As a result, a need to manage aquatic ecosystems has been prioritised since 2015 under the Sustainable

Development Goals (FAO, 2020). The Western Cape (WC) Province can realise many benefits of growing the potential of aquaculture to contribute to global food production, economic growth, employment, poverty reduction and the sustainable use of marine resources to benefit local communities (FAO, 2016).

Marine resources are a classic example of the tragedy of the commons where ownership is indeterminate and many users have access to marine resources. Though South Africa's aquacultural sector is relatively small, accounting for less than 0,2% of the gross domestic product, the potential for growth in abalone aquaculture has been earmarked by the national government as

a target sector (InvestSA, 2020). Producing high-value products such as abalone presents opportunities for economic growth and development but the sector faces a hugely complex poaching problem with a potentially damaging impact on local communities and marine resources (see Figure 1).

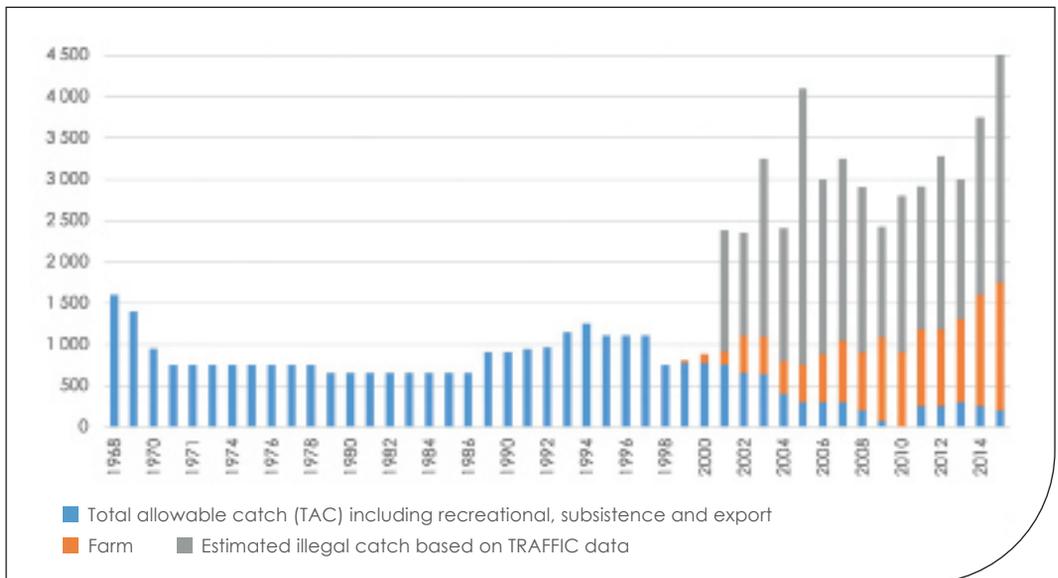
Over time, illegal harvesting and declining stocks, along with changing conditions in the ecosystem resulted in drastic quota reductions. Furthermore, the ecological crisis has also affected seaweed surges with reduced numbers of abalone, giving rise to knock-on effects in seal and shark interaction and other impacts on marine ecosystems (Oxpeckers, 2017). Figure 2 shows the estimated poached abalone in relation to the legal catch between 2000 and 2018.

In the absence of trade regulations for South African abalone, poached abalone becomes legal imports in destination markets. It follows that both regional and international interventions are required

to address the illegal trade of this high-value product. The South African abalone population could face collapse because acting in self-interest trumps protecting the shared resource for the collective good. Ecosystems and social structures that depend on abalone as a resource may subsequently collapse too.



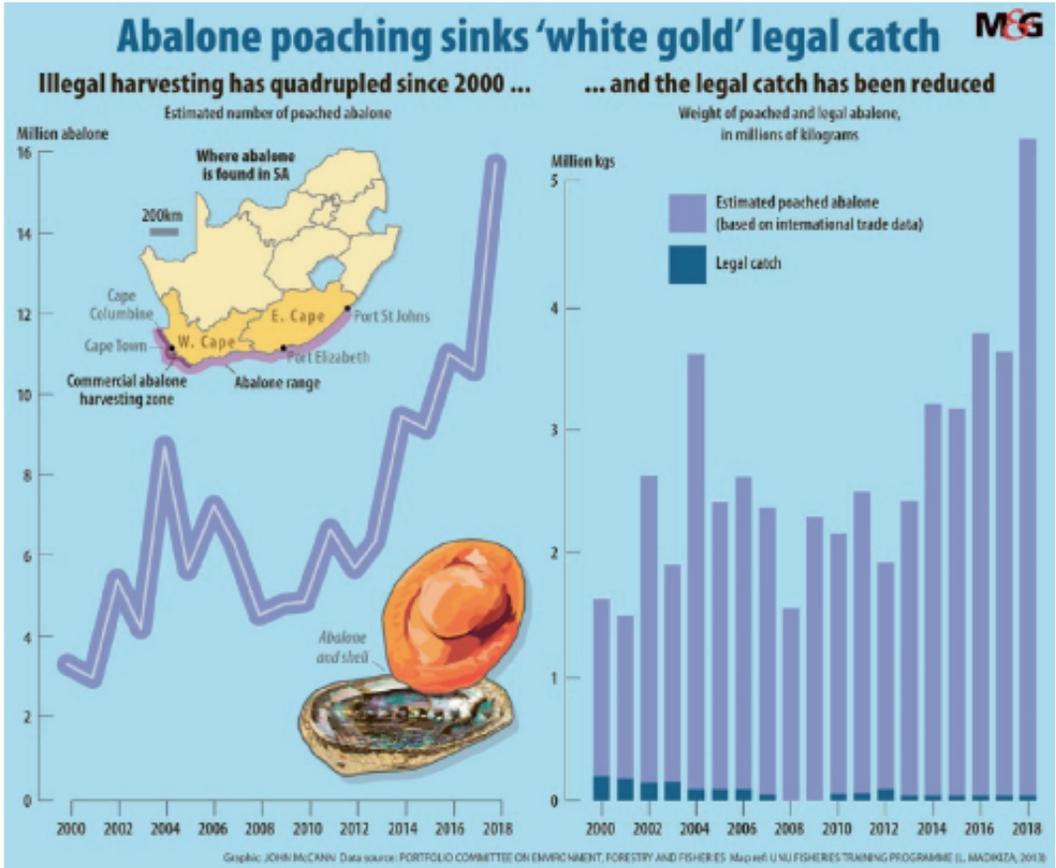
Figure 1: Legal, farmed and illegal abalone fishing in SA (tonnes), 1968 to 2015



Source: Chigumira (2016)



Figure 2: Estimated poached abalone versus legal catch, 2000 to 2018



Source: Smit (2020)

## Opportunities

In addition to policing illegal harvests, improved socio-economic conditions and the upliftment of certain communities may contribute to offsetting environments where illegal harvesting thrives. In order to move towards a shift in managing the tragedy of the abalone commons, the following important elements are required:

- Sustainable employment opportunities
- Skills-based education together with general community awareness of the ecological crisis
- A healthy understanding of natural resource stewardship

The full version of this report looks at trade in terms of production and consumption in the world market, considering the various ways that abalone can be consumed: fresh, frozen, dried, and salted. Therefore, year-round availability of product variations presents opportunities to reduce geographical distance advantages, opening markets further. The brief trade analysis considers the value and volume of traded abalone products and identifies the main markets, highlighting trends and opportunities for South African producers to consider in growing the sector.

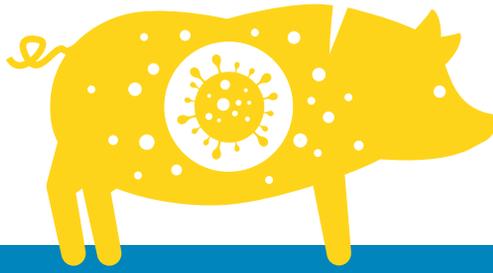


“Agriculture must have the ability to cope with a changing climate, competition for water resources, rising unemployment, and the ongoing energy crisis.”

Opportunities further extend to the abalone aquacultural industry in terms of long-term job creation, combined with agritourism opportunities (particularly in the Overberg region, WC). The integration of food and tourism industries can be a strategy to develop their combined economic potential. Finally, improved (and enforced) international trade requirements as well as traceability technology (i.e. blockchain) may be part of the solution to this very complex problem.

### Conclusion

With the growing demand for abalone products in Asian markets, the tragedy of the abalone commons is not limited to the South African context. The extent of trade that flows through Hong Kong across all abalone product categories indicates the lenient regulatory controls of imported goods and highlights the need for regulatory intervention at an international level. Since such high value is placed on these products, importing countries need to take responsibility for the protection of this resource in crisis and ought to consider the implications and significance of resource depletion. AP



# WORKING TOGETHER IS ESSENTIAL to control African swine fever

by Dr Lesley van Helden, [lesleyvh@elsenburg.com](mailto:lesleyvh@elsenburg.com)

For decades, African swine fever has been restricted to the far north of South Africa, in areas where there were infected warthogs. However, over the past few years, the epidemiology of the disease in South Africa has changed and increasing numbers of outbreaks have been occurring where pig farms have become infected through contaminated objects or the movement of pigs.

In early 2021, the first confirmed outbreak of African swine fever occurred in an informal farming area in Cape Town. How it came into the province is not clear, but it occurred most likely as a result of the movement of people or pigs from an infected farm in another province.

African swine fever is caused by a virus that does not infect people but causes severe disease in pigs. Clinical signs include fever,

skin rash, difficulty breathing, vomiting, diarrhoea, weak hind limbs, and abortions in pregnant sows. Many infected pigs die. However, especially in the early stages of the disease, only a small number of pigs can become sick and die. Therefore, it is important to report all unusual pig deaths, even if only a few have occurred. There is no vaccination available, so the only way to prevent the disease is to stop it from spreading among pig herds. Once the disease infects a pig herd, treatment is not possible, and the resulting deaths cause a substantial financial loss for the farmer.

The pig industry in the Western Cape is the second largest producer in South Africa with production having grown at an average annual rate of 3,7% over the past 10 years. The Western Cape contributes 21% of the total national herd of 3,3 million pigs, making it an important contributor towards growth and jobs.



**If an outbreak of African swine fever is suspected on a property, the local state veterinarian must be informed immediately.”**

African swine fever is contagious and can survive for many weeks in pig pens, in farm waste, and on contaminated objects, so farmers need to protect their livestock by putting strict biosecurity measures in place.

- Farmers should invest in good fencing and access control, to keep unauthorised people and animals out and to keep pigs in.
- Anyone or anything entering or leaving the farm should be cleaned and disinfected, including the wheels of vehicles, equipment, and visitors' shoes.
- Workers should be provided with clean shoes and clothes that are used only on the farm and they should wash their hands frequently and thoroughly while working.
- Pig pens and feed troughs should be cleaned daily, and the pigs given clean and safe water to drink.
- Pig housing should be built out of materials that are easy to clean, for instance a concrete floor instead of soil.
- Pig manure and cleaning water should be collected to prevent it from contaminating water sources such as rivers and groundwater in the area. It can then be used to irrigate and fertilise gardens and farms.



Prevent vehicles from spreading diseases between farms by disinfecting the wheels on entry and exit.





Disinfect the shoes of anyone entering or exiting a farm and provide them with clean overalls to wear.



- Dead animals and waste products after slaughtering should be disposed of safely by burial, composting, or incineration away from water sources and areas where they can be dug up and eaten by scavengers.
- Pigs should be bought from reliable sources that are known to have healthy pigs and take biosecurity seriously.
- When selling pigs, the owner should provide a health declaration with all their details so that the buyer is protected and they can contact them with any problems encountered.
- New pigs should be quarantined for four weeks in a separate pen at least 500 m away from any other animals. They should be kept under observation to make sure they show no signs of disease before they

- are mixed with the rest of the pig herd.
- Pigs should be fed good quality pig feed, and any food sources that could contain pork, like waste food or swill, should be avoided. If swill must be fed, it must be boiled for at least 30 minutes to kill any diseases.

If an outbreak of African swine fever is suspected on a property, the local state veterinarian must be informed immediately. No pigs should be moved off the infected property, sold, or slaughtered, as this can cause the disease to spread to other farms. The state veterinarian will take samples from any sick or dead pigs to confirm whether African swine fever is present and advise on how to control the disease.



Scan this QR Code for the contact details of your nearest state vet in the Western Cape.







# Junior LandCare: When nature does the teaching

Extract from Caring for People and the Planet

Learning about nature in class is good, but a first-hand experience about the wonders of nature while spending time in the outdoors, makes all the difference to levels of enthusiasm and information retainment. Herein lies the success of the approach to environmental education as presented by the Western Cape

Department of Agriculture's Junior LandCare sub-programme. In tandem with the curriculum of the National Department of Basic Education, it aspires to teach young children about topics such as conservation, sustainable agriculture and food security. Whereas various other institutions also offer some measure of environmental education,



DoA LandCare is the only entity that brings this vital information to rural communities that are generally excluded from such activities.

Some 25 years ago, Frikkie Saayman, a LandCare official in Swellendam, initiated the Junior LandCare programme when a local conservation committee deemed it a good idea to reach parents by involving their children. It was so successful that it soon spread to neighbouring towns like Oudtshoorn.

Stefan Pieterse, a LandCare official at Oudtshoorn, then escalated the teaching out of doors to a camp set-up. This approach reaped great rewards regarding behavioural changes towards nature, but eventually

had to stop due to indemnity issues. Along with exposure to subjects such as birdlife, reptiles, soil health – all taught in a fun and interactive way – inter-school competitions and provincial and national conferences contributed to heightened awareness. Attendance of the national biannual Junior LandCare conferences is enjoyed greatly and about 350 children between Grade 4 and Grade 6 benefit from the expertise of international speakers and learning through drama, dance, speech, and debate.

### The Junior LandCare growth curve

Junior LandCare has grown substantially in the Western Cape. Today, this programme





is presented in five rural districts and 7 000 learners in Grades 4 to 6 from 35 schools have been reached annually since the start of the programme. Five illustrated educational books on nature have been published for use in schools and the use of specially developed puppet shows has proven to be a popular tool. “We especially target rural farm schools that are often neglected by other organisations”, says Francis Steyn, manager of the LandCare sub-programme. “These kids are exposed to agriculture in their everyday life and really benefit from the exposure to the concepts of conservation, sustainability, and responsible agroecosystem management, as well as the idea of agriculture as a viable career. We might just be growing responsible agriculturalists in this way.”

The department’s intervention extends to real investment and is used as a platform for interested children to be identified for the bursary scheme. Vanessa Barends-Jones, a qualified agricultural economist,

describes what happens when the flame of enthusiasm is ignited. A former official from LandCare in the Overberg spotted Vanessa’s interest in agriculture and subsequently introduced her to the department’s bursary scheme. “I could have been back in Bredasdorp hitting the till, but Hennis Germishuys saw my potential and introduced me to the opportunities in agriculture. Never in a million years would I have found my way into agriculture without his prodding.”

### It takes a village

Partnerships are one of the blueprints defining the success of the Junior LandCare programme. Farmers, SANParks, the South African Police Service, CapeNature, consultants presenting puppet shows, local governments, and the Western Cape Departments of Environmental Affairs and Development Planning and Education play a critical role in completing the circle of influence.

School nutrition lies at the heart of the



These kids are exposed to agriculture in their everyday lives and they really benefit from the exposure to the concepts of conservation, sustainability, and responsible agroecosystem management, as well as the idea of agriculture as a viable career. We might just be growing responsible agriculturalists in this way.

Junior LandCare programme. Setting up a school food garden is often a natural next step and in partnership with the department's programme Farmer Support and Development, food gardens have been established at more than a hundred schools. The benefits of the school food gardens are mainly the creation of awareness of the environment and the transfer of skills. Such projects also succeed in keeping youth productive and has the benefit of

producing healthy food. The children take full responsibility for working the land and their harvests are bountiful. The programme has also donated 35 water tanks to schools in water-scarce areas.

Thousands of children have been exposed to the LandCare message to date, empowering the next generation with knowledge and passion for the conservation of nature for a sustainable future. AP

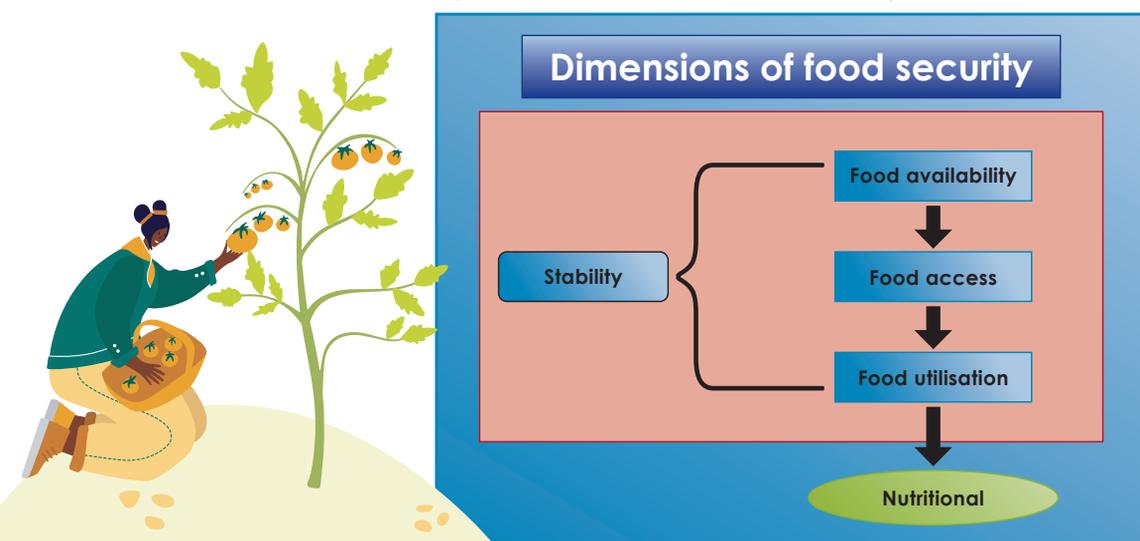
# Face to face with COVID-19: Ensuring household food security

by Vusumzi Zwelendaba, vusumziz@elsenburg.com

In South Africa, the right of access to food is entrenched in the Bill of Rights in Section 27 of the Constitution of the Republic of South Africa, Act 108 of 1996. The government of South Africa has committed itself to promote and protect the right of access to adequate food,

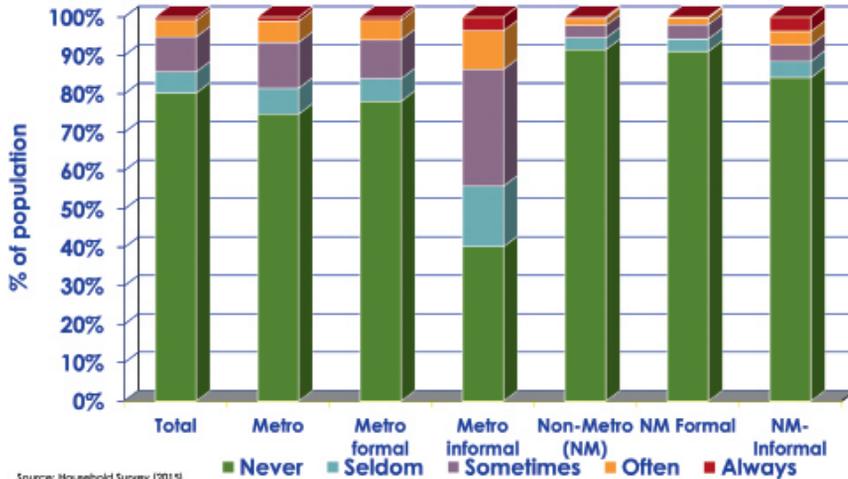
and to make this right directly accessible to people who are unable to enjoy it for reasons beyond their control. Access to adequate food is one of the pillars of food security, coupled with food availability, food utilisation, and stability of food supply as indicated below.

Figure 1: Dimensions (pillars) of food security



## Household hunger in the Western Cape

People experiencing hunger over the past year



Source: Household Survey (2015)



South Africa has always boasted about national food sufficiency through a combination of both own food production and food imports. The General Household Survey indicates that the food access index has been improving, and the incidence of hunger declining. However, secure access to food by all is still not guaranteed. Household food security is greatly affected by many factors such as globalisation, international trade regimes, climate change, poor storage, distribution of food, high food prices, and the COVID-19 pandemic.

The National Policy on Food and Nutrition Security and the Household Food and Nutrition Security Strategy was approved in 2013 by cabinet. It indicates a commitment by government to eradicate hunger and achieve food security. In line with these policies, the Western Cape Department of Agriculture (WCDa) has put in place programmes to respond to this challenge, i.e. household food production and communal and school food gardens.

The department supports household food gardens aimed at:

- facilitating access to enough safe, nutritious, diverse, and affordable food;
- educating and/or encouraging people to feed themselves through own food production via food gardens;
- creating an opportunity to earn an income from surplus produce where possible; and
- equipping people to start, operate, and manage their own food gardens.

In the 2020/2021 financial year, the aim of the WCDa was to roll out 800 household food gardens across the province. Due to the COVID-19 pandemic outbreak early in 2020, the game plan had to change. This was done by augmenting efforts through increasing the targets from 800 to 5 165 household food gardens. Finally, a target of 5 640 was achieved to tackle the pandemic head-on.



The Minister, Dr Ivan Meyer and officials launching One Home! One Food Garden Campaign in Mitchell's Plain.

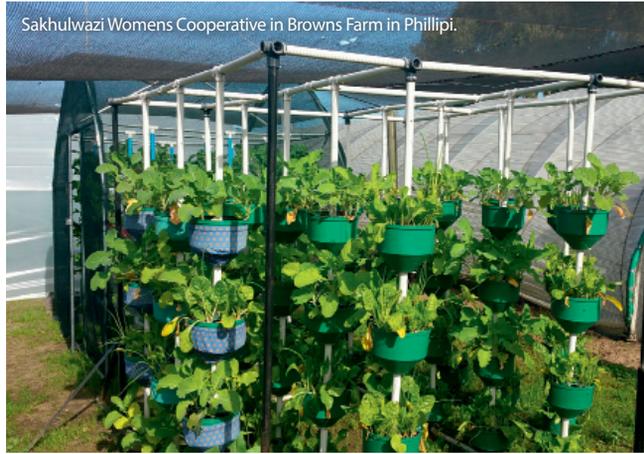
Table 1: Distribution of household food gardens per quarter.

QUARTER	TARGETS	ACHIEVED
Quarter 1	100	146
Quarter 2	300	1 787
Quarter 3	3 765	2 458
Quarter 4	1 000	1 249
Total	5 165	5 640

The department implemented about 40% of these in the Cape Metropole District. In Quarter 3, the Western Cape Minister of Agriculture, Dr Ivan Meyer, launched a campaign called “One Home! One Food Garden”. This was a concerted effort to raise awareness and to promote household food production through food gardens. The process gave birth to the one hundred days deliverable for Quarter 3, which aimed at delivering more than 2 000 household food gardens from 1 October to 31 December 2020. Achieving these targets was not easy. Many challenges were experienced with the

supplies of some material and equipment, since businesses often had low supplies or were out of stock due to the prolonged lockdown. Due to the commitment of the department’s delivery machine, this target was surpassed and delivered on time.

Our “foot soldiers”, driven by a zeal to deliver on the promises made to the people of the province, braved the corona virus. We went out there to deliver household food gardens to the needy and vulnerable across the length and breadth of our province. In Quarter 4, which was during the second wave of the pandemic, officials weathered



Analysis of the most popular in-application events shows functionality that naturally relates to locational analysis or viewing of farms in relation to ancillary data, drawing tools, and map export.”



Beneficiaries working on the household food gardens.



the COVID-19 storm and criss crossed the province delivering 1 000 food gardens. Again, the department went beyond expectations and delivered 1 249 gardens through the Cape Agency for Sustainable Integrated Development in Rural Areas (CASIDRA), our public entity. As the WCDoA, we believe this intervention has made a tremendous impact on the lives of so many vulnerable people, by addressing food insecurity. This would not have been

possible without our key partner in project implementation, CASIDRA – a partner in need is a partner indeed.

We took a bold step and faced a terrifying COVID-19 while implementing this programme. Our staff did not only risk their lives but that of their families, relatives, friends, and colleagues. We did this because we wanted to achieve zero hunger. The love of agriculture inspired us. AP

# PROBING MARKET READINESS for the prickly pear industry

by Robyn Carstens, [robync@elsenburg.com](mailto:robync@elsenburg.com)



The Programme Agricultural Producer Support and Development (APSD) (formerly known as Farmer Support and Development) of the Western Cape Department of Agriculture (WCDoA) and the prickly pear industry collaborated by presenting two successful information days for farmers and agri-processors during March 2021.

The objective was to share opportunities for the industry to become market-ready and grow the economy.

Around forty existing and aspiring prickly pear farmers and agri-processors responded to the open invitation and attended the information days hosted in Oudtshoorn and Wellington, respectively.

The two events included presentations and discussions by experts and other participants in the prickly pear

industry. The topics included alternative crops in the Western Cape, governance of the prickly pear industry, market opportunities and sustainable farming of prickly pears.

Prickly pear cultivation is an enabler of a sustainable green economy, job creation and transformation – especially with the threats of climate change and drought, not only in South Africa but also globally. This makes prickly pears a climate-smart crop with a positive impact on food security. A hectare of prickly pear can yield 20 to 30 tonnes of fruit a year, making it an excellent food source.

Dr Maryna de Witt of the University of the Free State (UFS) shared multiple uses of every part of the plant. Prickly pear has been around for a very long time and is one of the fastest growing alternative crops yielding a variety of uses such as alcohol, beauty products, oil, preserves, ointments, and bio-gas.



Dr Herman Fouché from the UFS demonstrates how to prune a prickly pear cactus.



The group in attendance at Bernheim Farm in Wellington.



The plantation at the farm, Watervlei, in Wellington.



The plant also has many health benefits. It helps digestion, boosts immunity, protects heart health, strengthens bones and teeth, reduces inflammation, and has anti-cancer and antioxidant potential.

The information day in Wellington concluded with an informative plantation visit to the farm, Watervlei, where Dr Herman Fouché, also from UFS, demonstrated how to plant, manage, prune, and harvest the crop.

 **The research has been done, we must just create awareness."**

Other speakers included Jerry Aries (acting chief director of APSD, WCDoA), Pippa Karsen (alternative crops scientist of the Research and Technology Development Services, WCDoA), Dr Karin Badenhorst (director of Footsteps Management), Lisle Svenson (Footsteps Foundation, UWC), Louw Pienaar (the Bureau for Food and Agricultural Policy [BFAP]) and Andriette de Jager from the Pomegranate Producers Association of South Africa (POMASA).

Willem Burger (APSD, WCDoA) attended the Oudtshoorn day and commented: "We had positive feedback from our clients and there was good interaction between specialists, clients and officials."

Dr De Witt and Dr Fouché were part of a prickly pear research study group that went to Mexico, Chile and Argentina in 2012, where they

explored commercial cultivation and opportunities for prickly pear in the South African context. These were some of their findings:

- The knowledge gained about the entrepreneurial potential and possibilities of prickly pear cultivation, processing and uses can be applied widely.
- The prickly pear gene pool in Mexico, Chile, Argentina, and the USA can contribute to the gene pool in South Africa.
- A range of applications are available for prickly pear as human food, including traditional and commercial uses.
- Prickly pears and specifically natural colourants obtained from cochineal, form the basis for several pharmaceutical applications.
- The prickly pear production systems on smallholdings are mostly traditional, but several new initiatives are being developed and implemented.

"The research has been done, we must just create awareness," said Dr Fouché. These words rang true as the WCDoA and the prickly pear industry are working together to achieve this.

Dr Karin Badenhorst, the director of Footsteps Management, said "It is a great privilege to work with the WCDoA, Hortgro, POMASA, BFAP, Agri SA and other industry stakeholders".

All stakeholders involved are excited about the interest and response, and look forward to continue working with the WCDoA to help establish this growing industry in the Western Cape.

The WCDoA is planning more prickly pear information sessions later in the year and more information will be shared in due course, so watch this space!

AP

# Taking the SmartAgri Plan to the next level

by Prof. Stephanie Midgley, stephaniem@elsenburg.com

In AgriProbe Vol. 17 No. 3, the completion of the external evaluation of the SmartAgri Plan and its implementation was highlighted. Seven high-level recommendations were made that emanate from the Plan itself, its institutionalisation within government, to sector role players, and ultimately to farm level where it delivers an impact (Figure 1).

The next step was to develop a management improvement plan (MIP) for SmartAgri. This maps the way forward to address the key areas that require strengthening and updating. The MIP was completed in January 2021.

**Recommendation 1: Undertake a review and update of the climatic information and make related refinements to response strategies underpinning the SmartAgri Plan – particularly at the downscaled level.**

The Plan was based on the best available climate science in 2015. The climate change projections for all 23 agroclimatic zones of the Western Cape need updating with the most recent “downscaled” climate models. The results will be interpreted to assess changes in expected risks and impacts on the agricultural sector.

**Recommendation 2: Undertake an internal review of the projects and detailed activities defined in the SmartAgri Plan to assess relevance and bring up to date where necessary.**

A consultative internal departmental (WCDoA) review of the projects in the Plan will be conducted, assessing their detailed activities and lead institutions. The aim is to assess the relevance of each activity and any need for updating. The recommendations from this review will serve to update the Plan.

**Recommendation 3: Institute, mandate, and resource a formalised SmartAgri Plan management/oversight structure.**

The appointment of Prof. Stephanie Midgley to oversee and coordinate the

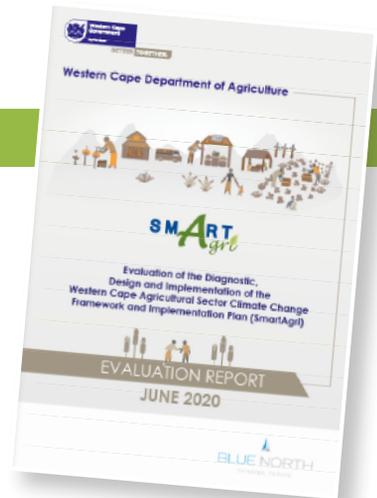
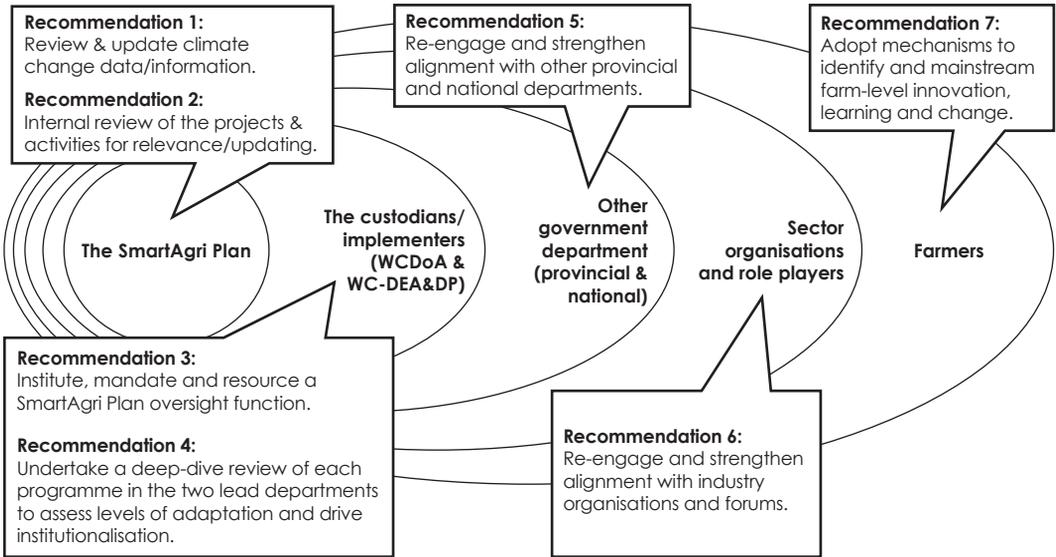


Figure 1: Summary of the recommendations for the SmartAgri Plan



work on SmartAgri was a direct response to this recommendation. The reinstated SmartAgri steering committee will guide the planning and creation of a dedicated unit to drive the institutionalisation and deeper implementation of the Plan.

**Recommendation 4: Undertake a deep-dive review of each programme in the two lead departments to assess levels of adoption of the SmartAgri Plan, and drive towards institutionalisation within programmes.**

Senior staff of each relevant programme within the WCDa will be consulted to review how the programmes have adopted the activities proposed in the Plan. This will help identify any gaps in implementation. Steps can then be taken by each programme to further institutionalise the Plan within its performance areas.

**Recommendation 5: Re-engage and strengthen uptake by other provincial**

**and national government departments identified in the SmartAgri Plan.**

Other provincial/national government departments have important proposed roles in various activities of the Plan. In some cases, these are actively pursued, and in other cases they are not. In each of these departments, the partners will be re-engaged using existing or new dialogue channels, to find ways to align their work streams with the uptake of SmartAgri activities.

**Recommendation 6: Re-engage and strengthen uptake by industry organisations and role players identified in the SmartAgri Plan.**

The same as for Recommendation 5, but focusing on non-governmental role players in the agricultural sector – industry and commodity organisations, value chain actors, and researchers. The approach will be to regularly engage the partners to identify and support any information and coordination

needs, and to encourage the uptake of relevant actions from the Plan.

**Recommendation 7: Adopt mechanisms to identify, promote and share farm-level innovation, learning, and change towards greater adaptation and mitigation of climate change impacts.**

The SmartAgri Evaluation Report states: “It is the adaptation and mitigation activities taken by farmers and other land managers at farm/landscape level that will ultimately determine whether the ‘high road’ scenarios and the strategic goals of the Plan will be achieved”. The online resources/tools

available to farmers will be reviewed and updated. Different forums used by farmers in different agroclimatic zones will be used to raise awareness, support local/regional learning, and document farmers’ innovative climate change responses.

In conclusion, the SmartAgri MIP forms the beginning of a long-term effort to institutionalise the SmartAgri Plan and to drive its implementation deeper across the sector, from farm level to government level, as envisaged by the Plan. This can be achieved with dedicated human and financial resources, and the collective engagement and commitment of all role players.



Prof. Stephanie Midgley joined the department on 1 January 2021 as climate change and risk assessment scientist. Prof Midgley, an NRF-rated scientist and former research associate at Stellenbosch University (SU), was recently reappointed as Associate Professor (Extraordinary) at the Department of Horticultural Science at SU.

She has 29 years of experience in botanical, agricultural, and climate change research in the Western Cape Province, South Africa, and southern Africa. Her main fields of expertise are:

- agricultural production technologies to improve yield, product quality and water use efficiency and to reduce climate risk;
- climate variability, climate change impact, vulnerability and adaptation, as well as climate-related disasters relating to agriculture; and
- climate-smart agriculture and sustainable natural resource use.

Prof. Midgley has a strong record in scientific publications, has conducted technology transfer to the agricultural sector, is an experienced teacher/mentor, and has received several awards. Awards include those for outstanding research and for being part of the team that developed the SmartAgri Plan for the Western Cape agricultural sector. In her new position, she will also be building capacity in climate change research within the department.

AR

# IMPROVING RURAL SAFETY: Rural Safety Monitoring Dashboard and Rural Safety Desk

by Douglas Chitepo, douglasc@elsenburg.com and Byron Jacobs, byronj@elsenburg.com



In the last quarter of 2020, the Western Cape Department of Agriculture (WCDa) hosted a WOW Day at the Percheron Hall at Elsenburg (refer to AgriProbe Vol 18, No 1, 2021). It showcased the latest innovations and technologies developed for the agricultural sector of the Western Cape to improve service delivery and efficiency across the sector. This event was attended by the agricultural media, representatives of the different spheres of government, organised agriculture, agencies like Wesgro (the tourism, trade and investment promotion agency for the Western Cape), and other stakeholders.

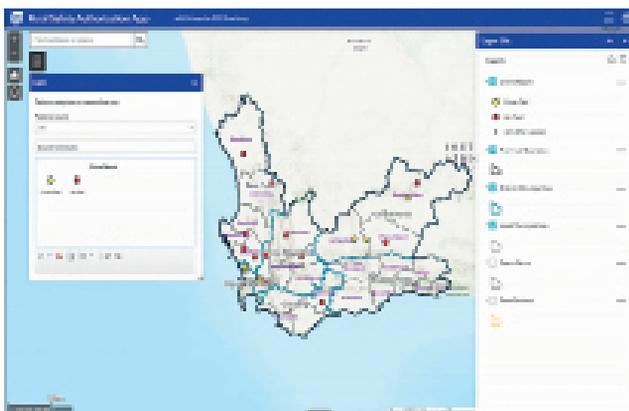
The WCDa established a Rural Safety Monitoring Dashboard and Rural Safety Desk in Programme 8: Rural Development in response to the institutionalisation of the ministerial priorities in the department. The dashboard, developed in conjunction with the internal enterprise GIS-solution, will monitor rural safety incidents reported in the agricultural sector by stakeholders. This interactive digital platform will make use of a combination of tools like mobile- and web-mapping applications. It aims to improve rural safety in rural and agricultural communities across the districts in the province – all towards an overall improved,

protected, and safe agricultural environment.

The rural safety project coordinator, appointed in March 2021, is responsible for the daily management of the Rural Safety Desk and Rural Safety Monitoring Dashboard. This person will also monitor, verify, and track information received via email, WhatsApp messages, or any form of written correspondence about rural safety incidents. Incidents may range from a farm attack, an incident involving the safety of agri-workers and producers including road accidents, or any incident that may potentially compromise the safety of the agri-worker and producers. A dedicated email address has been established for this purpose, where rural safety incidents can be logged by the agricultural stakeholders and the public – ruralsafety@elsenburg.com. The

email address has also been communicated to agricultural stakeholders at appropriate forums, i.e. the Inter-ministerial Committee, and the Technical Rural Safety Committee, to create awareness among the broader agricultural stakeholder base of these innovations.

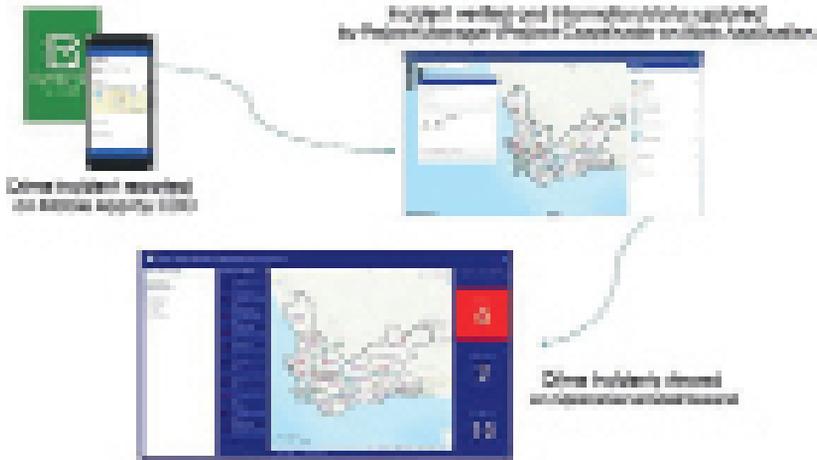
The project coordinator must also liaise with the Department of Community Safety, the SAPS, the Department of Transport and Public Works, municipal safety structures, district law enforcement officers, and other relevant safety forums. The Rural Safety Desk is an integral part of the Rural Safety Monitoring Dashboard as a feeder of data to the dashboard. It will help the project coordinator to track and view statistics per district or at municipality level as reported.



Rural safety authorisation web app

- Managed by project manager/ project coordinator
- View all crime incidents reported
- Add missing incident information
- Update status (verified)
- Update progress





This new technology will be used by the community development officers (CDOs) through the upload of data via the ArcGIS123 mobile application, to report crime-related incidents in the rural areas. The project coordinator will then ensure the verification, monitoring, and tracking of the information logged by the CDO. Once incidents have been verified, such information will be displayed on the dashboard and specific user rights and protocols will be assigned to selected users to access and view such information

The smooth functioning of the Rural Safety Desk involves:

- collating and recording data as received from CDOs and other sources of various

farms and rural communities regarding crime;

- escalating cases to the appropriate law enforcement agencies, i.e. via the Department of Community Safety for investigation by SAPS officials;
- monitoring and tracking of incidents reported;
- providing feedback to the rural safety committees in the form of statistics and progress;
- facilitating the sharing of valuable information with rural communities, agri-workers and farmers via institutional structures by CDOs and DDs; and
- updating the web-based online reporting platform with relevant data.



**Rural Safety Operational Dashboard**

- Monitor crime situation in WC
- View all verified crime incidents
- View various themes (dates, crime)

Through this innovation and technology the WCDoA aims to ensure safety and promote dignity and well-being for all agricultural stakeholders in the province.

## XHOSA SUMMARY



Isisombululo ngeZobuchule ngelokuphucula Ukhuseleko Emaphandleni: Isebe leZolimo eNtshona Koloni (WCDa) limisele i“Dashboard” yokubeka esweni Ukhuseleko Lwasemaphandleni kunye nomnyango weZokhuseleko Emaphandleni

Inkqubo 8: Yophuhliso Lwasemaphandleni kwiSebe leZolimo eNtshona Koloni (WCDa) iseke isixhobo sokubonisa ulawulo (Dashboard) Yokubeka esweni Ukhuseleko Lwasemaphandleni kunye Nomnyango Woncedo ngoKhuseleko Lwasemaphandleni. Esi sixhobo senziwe ngokuhlanganisa ubuchule bangaphakathi i “GIS-solution”, nobuzakubeka esweni izehlo ezingokhuseleko lwasemaphandleni nezixelwe kwicandelo leemveliso zezolimo lu luntu esisebenzisana nalo. Eli qonga litsha longenelelo ngobuxhaka-xhaka bale mihla luzakusebenzisa izixhobo zobuchule ezisebenza nge “mobile ne web-mapping” ngokuhlangeneyo.

Umququzeleli weProjekthi yoKhuseleko Lwasemaphandleni (RSPC) unikwe igunya lokuqhakamshelana neSebe Lezokhuseleko loLuntu (DoCS), SAPS, iSebe Lezothutho Nemisebenzi yoLuntu kuRhulumente, iikomiti zezokhuseleko koomasipala, amagosa omiselo lomthetho kwisithili kwakunye namanye amaqonga angokhuseleko. Le RSPC izakulawula umnyango woncedo ngezokhuseleko emaphandleni kunye ne “Dashboard” yokubeka esweni ukhuseleko ukuze sihlale sinolwazi, siluqinisekise ze kulandwe emkhondweni ulwazi esilufumene kwi WCDa nge “email” nemiyalezo esiyithunyelwe ngo “Whatsapp”. Izehlo ezingezokhuseleko zingaxelwa kubathathi-nxaxheba esisebenzisana nabo kwezolimo noluntu ngokubanzi – [Ruralsafety@elsenburg.com](mailto:Ruralsafety@elsenburg.com).

Umnyango wezokhuseleko Lwasemaphandleni yinxalenye ye Rural Safety Monitoring Dashboard nefumanisa ulwazi yaye uzakunceda i RSPC ukuze ikhangele ze ibone iinkcukacha manani ngokwezithili okanye kumgangatho woomasipala njengoko kunikwe ingxelo. Amagosa Ophuhliso loLuntu (CDOs) luzakuxela izehlo ngokusetyenziswa kwe “mobile ArcGIS123” kwiindawo ezisemaphandleni. Ukusebenza kwesi sixhobo akuxhomekanga ekufumanekeni kwe “Internet” yaye singasebenza nje ngokunokwaso xa sigcina ulwazi. ulwazi oluvezwe ngama CDO luzakuqinisekiswa, lubekwe esweni ze lulandelwe.

Ukuyondelelana kumsebenzi Womnyango Wezoncedo kuKhuseleko Lwasemaphandleni kuquka:

- Ukuqokelela nokudityaniswa kweenkcukacha zolwazi ezifunyenwe kuma CDOs, kwiifama ezahlukeneyo nakwiindawo zokuhlala koluntu, ngokumalunga nolwaphulo mthetho;
- Ukubeka esweni nokulandela izehlo ezixeliweyo;
- Ukunika ingxelo elungiselelwe ngokweenkcukacha manani, inkqubela-phambili, njl njl kwiiKomiti Zokhuseleko Lwasemaphandleni;
- Ukulungiselela ukwabelana ngolwazi olubalulekileyo neendawo ezisemaphandleni, abasebenzi kwezolimo kunye namafama ngokusebenzisa iikomiti ezikumaziko ee CDOs kunye nee DDs, kwakunye;
- Nokuhlaziya iqonga lonikelo lwengxelo ngokusetyenziswa kweKhompyutha ngeenkcukacha zolwazi oluchanileyo

Ngokusebenzisa la macebo matsha nobu buchule, iSebe leZolimo eNtshona Koloni lijonge ukuphucula ukhuseleko ze likhuthaze isidima nokonwaba kubantu esisebenzisana nabo ngezolimo kweli Phondo. AP

# CapeFarmMapper continues to **grow!**



by Dr Mike Wallace, [mikew@elsenburg.com](mailto:mikew@elsenburg.com)



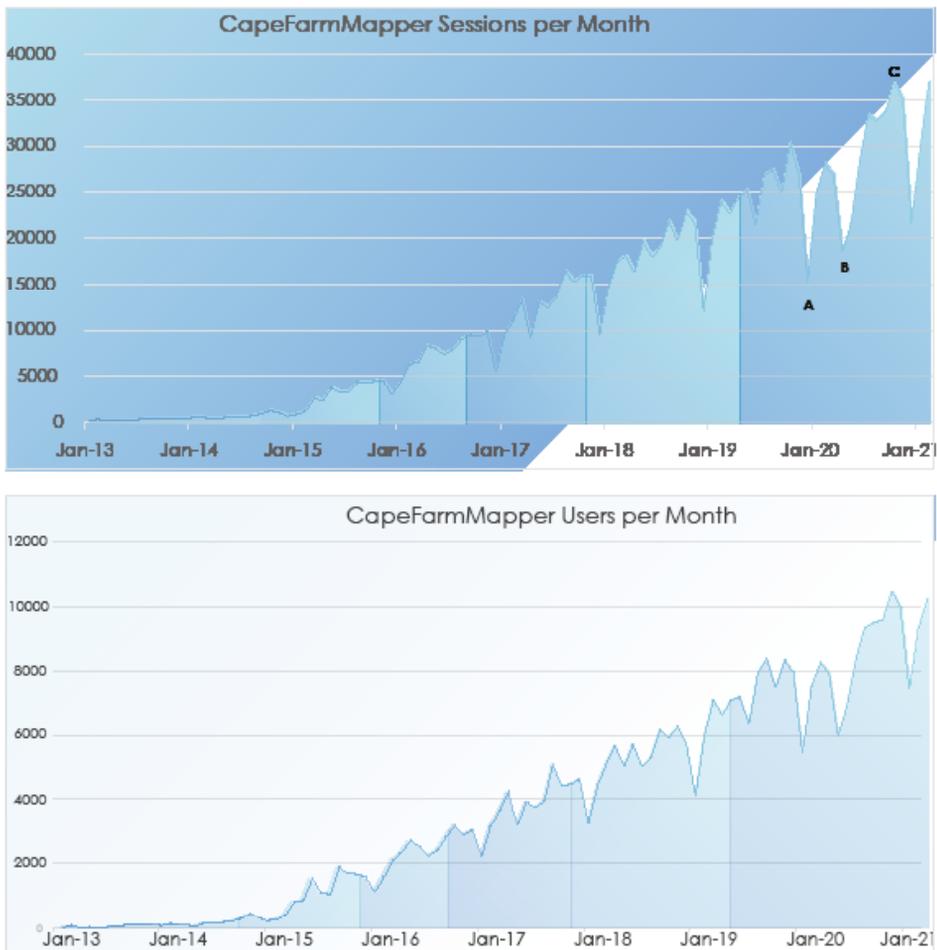
A web-based user interface to facilitate open access to our Western Cape Department of Agriculture (WCDoA) provincial agricultural spatial data, was initially conceived around 2006. The initiative received solid management support. In the years following, the geographic information system (GIS) unit recruited a programmer/developer with the expertise to tackle the new and fast-developing technical field of online access to GIS.

Being able to respond to our users and to develop, test and adapt the spatial website in-house on a continual basis has

been key to the success of this public “window” into the world of the agricultural GIS. Another contributing factor was the rapid concurrent development of the spatial online server, and application development software technologies as was done by the Environmental Systems Research Institute (ESRI), the global market leader in GIS products.

The WCDoA GIS project was named CapeFarmMapper (CFM). It has shown a remarkably steady growth in uptake and received a record number of “hits” (or sessions) in 2020. As can be seen in Figure 1,

Figure 1





usage reached a new high of 30 000 sessions towards the end of 2019, took a dip during the December 2019 holiday period (A), and then showed a steady increase in 2020 until the COVID-19-induced lockdown (B). As lockdown restrictions eased, usage picked up quickly – probably as a result of people urgently catching up on work after the initial strict lockdown. This helped CFM to reach a new peak of over 35 000 sessions during the latter half of 2020 (C) and seems to continue on this upward trajectory in 2021. That the tool can be accessed from anywhere with access to the Internet (e.g. by home-based workers) has added to its growing popularity.

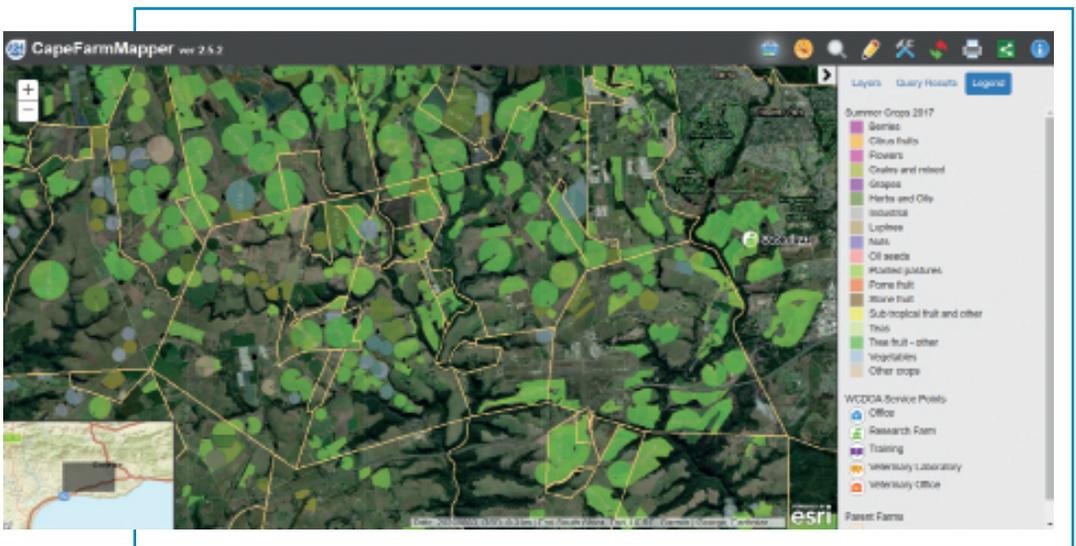
Our Google Analytics statistics show that we have had increasing growth in new users (75 000 new users over the time period) comprising almost half-a-million page views!

We are unable to determine which sectors and exactly what research or operational

activities are involved, or exactly where the hits emanate from. Google Analytics does, however, give a breakdown of country of origin. As expected, by far the majority are local (95,77%) followed by the United States and the United Kingdom. The remainder of countries with CFM users makes for interesting reading and speculation (Table 1).

Analysis of the most popular in-application events shows functionality that naturally relates to locational analysis or viewing of farms in relation to ancillary data, drawing tools, and map export.

Figure 1 gives a broad overview of usage growth since the early versions of CFM in 2013. Initially, the scope of usership was envisaged to be our own officials and regional planning partners, operating at a fairly technical level. However, after various technical presentations, popular publications, demonstrations at agricultural shows and exhibitions, training days, and





## Analysis of the most popular in-application events shows functionality that naturally relates to locational analysis or viewing of farms in relation to ancillary data, drawing tools, and map export.”

telephonic support by GIS staff, the usage has grown well beyond our initial aspirations. In April 2016, a new version of CFM was released with a streamlined and more user-friendly interface, which clearly proved to be popular.

We have seen CFM become part of the regular workflow, not only among researchers and planners, but in many sectors of our farming industry, including technical advisers, conservation partners and farmers. Our analytics show that we have facilitated over one million page views since 2013.

Whereas we try to include specific user needs when applicable in our product development, we cannot accommodate

all requests. The needs of our own officials are prioritised where appropriate. Where third parties ask us to host their relevant datasets, we require full coverage of the entire province – and always strive to provide the best and most up-to-date data in each category. CFM does not facilitate source data downloads, but we do indicate curatorship details of each dataset, if the user should require the actual source data.

As technology advances unrelentingly, we can expect to see exciting innovations incorporated into CFM. It will help to build an even more powerful portal, while striving to hide the complexity from the user and maintaining the ethos of an easy-to-use tool accessible to everyone. 

Table 1: Users by country

Country	Users	% Users
1.  South Africa	75,006	 95.77%
2.  United States	745	0.95%
3.  United Kingdom	347	0.44%
4.  Germany	244	0.31%
5.  Netherlands	226	0.29%
6.  Namibia	127	0.16%
7.  India	109	0.14%
8.  Zimbabwe	97	0.12%
9.  Australia	91	0.12%
10.  Finland	80	0.10%

# Family poultry production as a food security intervention

by Dr Harry Swatson, [harrys@elsenburg.com](mailto:harrys@elsenburg.com)

The question often arises: why should poultry development practitioners promote family poultry production? The potential of family poultry production has been underrated as a vehicle in improving household socio-economic livelihoods or food security.

As a domesticated avian species, poultry are kept for various products including meat, eggs, and feathers. The species includes chickens, guinea fowls, geese, ducks, quails, pigeons, and game birds such as pheasants. However, the term poultry is broadly used for all chickens. In countries such as South Africa, family poultry production refers to the rearing of chickens in rural settings or villages for home consumption and socio-cultural and religious uses.

Family poultry production describes the various types of small-scale poultry production activities conducted in rural, urban, and peri-urban areas. It is sometimes based on free-ranging indigenous breeds such as the Ovambo, Potch Koekoek, Naked Neck, and non-descript chickens. Based on experience of working with indigenous breeds, local breeds of chickens such as the Ovambo seem well adapted to the harsh rural environmental conditions, and able to tolerate some diseases to a greater extent. They are also better able to resist poor husbandry conditions than the commercially



reared breeds under similar conditions. The adult hens can weigh between 1,2 and 1,6 kg, whereas adult roosters or cocks can weigh between 1,4 and 2,6 kg. Some indigenous chicken flocks can lay four to six clutches of eight to fourteen eggs per year, depending on the breed. The breeding of chicken flocks is normally through broody hens laying eggs of about 25 to 60 g. Eggs are incubated by the “mother hen” for 21 days and have good hatching abilities ranging from 75% to 90%. The hens also demonstrate good mothering abilities. With more intensive production, some households make use of selected improved parent stock with desirable characteristics and incubate eggs artificially. Some of these characteristics will include, among others, meat quality and adaptability. Meat from village chickens has comparatively little fat, pleasant flavour,



and a desirably tougher texture. In general, chickens with good mothering, scavenging, and flight abilities are selected. Chickens with the desired feather colour or pattern required for cultural purposes are also selected for breeding. Chickens with good flight abilities can escape predators and roost in trees at night.

The village chicken flocks are reared in a range of husbandry systems. This includes flocks being left to scavenge for themselves and those confined in a semi-intensive system. Unlike commercial flocks, these flocks may consist of chickens of various ages. Supplementary feeding of village chickens in some instances encourages the chickens to return to the homestead at night to roost. Supplementary feeding is also provided to birds during periods where the natural feedstuffs such as termites, weed seeds, and leftover cereals on farmland are limited or scarce. Extra feed and a source of water is also provided when they are confined or kept in a semi-intensive rearing system.

Family poultry are often, but not always, affected seasonally by the Newcastle virus

disease (NCD) and fowl cholera. The use of seasonal vaccination programmes is an efficient way of controlling or preventing the spread of NCD in community flocks.

Women normally conduct family poultry production activities in the household. They are generally responsible for the day-to-day care and management of the chickens. Sometimes children in the household also help with poultry husbandry activities. The gender roles in family poultry production are important to understand and consider. This will ensure effective interventions and approaches when designing and implementing family poultry development projects.

Improving rural socio-economic livelihoods and achieving household protein food security using family poultry interventions are becoming increasingly important, yet often neglected in many parts of South Africa. Future interventions and improvements in household food security should take advantage of the natural competitive advantages of family poultry production. 



A photograph showing Minister Meyer, wearing a blue surgical mask and a dark suit, inspecting a flock of ostriches in a farm enclosure. The ostriches are behind a wooden fence, and the background shows a farm building and trees under a cloudy sky.

Minister Meyer doing a pre-auction inspection of the flock.

# Seventeenth annual ostrich auction bolsters industry with superior genetic material

by Dr Ilse Trautmann, [ilset@elsenburg.com](mailto:ilset@elsenburg.com)

The South African ostrich industry developed largely due to the demand for ostrich feathers in the fashion industry in the late 1800s and early 1900s. A group of dedicated farmers kept their ostrich flocks despite poor market demand and ultimately an ostrich abattoir opened in Oudtshoorn in 1965. This heralded the introduction of ostrich meat as the primary commodity, rather than feathers. Initially, ostrich skins

were tanned abroad, but in 1970 a tanning facility was opened in Oudtshoorn and the ostrich leather industry was born. By 1993 the ostrich industry was strong financially and producer numbers increased in the Southern, Western and the Eastern Cape. A strong export market for meat for the health-conscious and leather products for the fashion-conscious renewed the interest in ostrich farming. Despite less favourable



Scientific technician, Molafelo Mokoeele and Minister Meyer.



On the far right, Minister Meyer, and next to him Piet Kleyn, CEO of the Ostrich Business Chamber at the auction.

market conditions, avian influenza and a severe, multi-season drought, a group of dedicated farmers continue to ensure that South Africa remains the top ostrich-producing country that provides quality meat, leather and feathers to the world.

The Western Cape Department of Agriculture has supported the ostrich industry through research into all aspects of ostrich production since the 1970s. It is the proud owner of the only ostrich research facility in the world on its Oudtshoorn research farm. A prestige breeding flock was established from widely selected breeding material donated by ostrich farmers. The agreement with the industry was that the breeding flock was to be maintained and improved in order to provide the industry with improved breeding material. Researchers implemented a selection programme focused on reproduction and weight from which chicks and breeders are distributed back to the ostrich industry. The department annually sells progeny from the research flock to the industry. This enables the industry to benefit directly from the genetic improvement made through

its research. Since the start of the annual production auctions in 2004, more than 2 500 breeder birds have been sold to the ostrich industry.

Minister Meyer, Western Cape Minister of Agriculture opened the 17th annual ostrich auction at the Oudtshoorn research farm in March 2021. He emphasised that “Lifelong learning, continuous professional development, knowledge production and innovation are central to building the capabilities of the agricultural sector. For this reason, structured training and education and research is one of my key priorities.” He further stated, “South Africa’s ostrich industry is world-renowned. Market access for our products is therefore another key ministerial priority. We must continue to ensure that South Africa remains the top ostrich-producing country that provides quality ostrich meat, leather, and feathers to the world. By doing so, we support the economy and jobs in the Western Cape”.

Seventy-seven adult birds were on offer and the average price realised was R4 500 with the highest price achieved at R7 250.

# The ever-evolving disaster r

by Jody Wentzel, jodyw@elsenburg.com

The Western Cape Department of Agriculture (WCDoA), through its dedicated Disaster Risk Reduction (DRR) sub-programme, has been at the forefront of supporting the farming community during the current drought. With the worst of the drought behind us, it seems, the DRR unit has shifted its focus to disaster preparedness, disaster risk reduction, and disaster mitigation.

Previously, the biannual veld assessments were highlighted and how the outcomes of these veld assessments affected the level of support farmers received. Based on the outcomes of the veld assessments, many areas were categorised as good or

recovered and farmers in those identified areas would therefore not receive drought support. It was realised, however, that the veld assessments only focused on the veld condition in relation to the drought. Whereas the veld assessment could be used as a decision-making tool, it was focused too narrowly on the drought and its impact. What was needed was a holistic approach including all potential hazards affecting the Western Cape.

This approach resulted in the evolution from veld assessment to disaster risk assessment. The veld assessment no longer became the crux for decision-making, but the inputs from officials and farmers

# risk assessment

collectively. With this new way of working, farmers were engaged on a personal, one-on-one basis to fully understand and comprehend the impact of the drought and other disasters upon themselves, their families, their agri-workers, and the community at large. Many of the farmers and their wives have thanked government for its support so far.

The outcomes from the disaster risk assessments continue to contribute significantly to the DRR's implementation plans. Projects identified by the farming communities have been incorporated into the department's plans. Additional areas of concern stemming from the disaster risk assessments are the negative impact of alien vegetation on the scarce water resources and the loss of livestock to predators. In certain instances, farmers were losing as much as 40% of their herds to predators.

The disaster risk assessments incorporate many crucial elements, which allow the DRR unit to plan and prepare better for both future and present disasters. These elements include, but are not limited to:

- personal interactions with affected farmers;
- identification of alternative sources

of income (e.g. farm tourism, solar installations);

- the biannual technical veld assessments;
- the impact of long-term weather patterns in the province; and
- engineering services projects and how they contribute to disaster mitigation.

Disaster Risk Reduction is not the sole responsibility of the DRR sub-programme. DRR principles should and must be incorporated throughout the department. The disaster risk assessment team itself includes many stakeholders representing various programmes in the department. These stakeholders include Agricultural Producer Support and Development, Research and Technology Development Services, Agricultural Economic Services, Veterinary Services, and Rural Development.

The DRR unit has identified the use of information and communication technology (ICT) as a key enabler to remain at the forefront of disaster risk reduction and preparedness. The WCDoA and its strategic partners are obliged to assist and prepare the farming community to embrace the use of ICT as a tool to build resilience in relation to DRR. 

# Booklets on climate change launched in three languages

by Dr Ilse Trautmann, [ilset@elsenburg.com](mailto:ilset@elsenburg.com)

## Die Kwik Styg/The Mercury Rises/I-Mercury Rises

'n Keur van klimaatsveranderingsonderwerpe/  
A selection of climate change topics/  
Ukhetho lwezihloko zotshintsho lwemozulu

Die Kwik Styg, a weekly Afrikaans radio programme on climate change and its consequences for humans, animals, the environment and the agricultural industry was launched in 2018. It ended in April 2020 after 104 programmes (see previous articles in Agriprobe). The series, the first of its kind on climate change on radio, was broadcast on Radio Sonder Grense (RSG) and discussed a range of interesting topics with a variety of experts. The radio

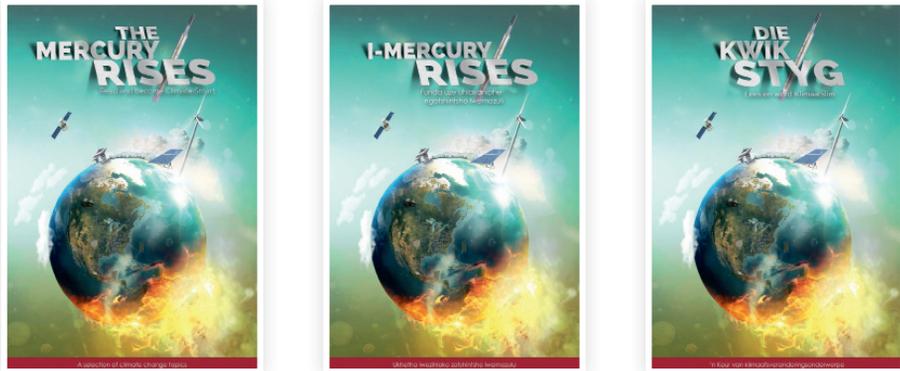
programme was one of the communication tools of the SmartAgri plan, which was completed by the department in 2016. In 2020, Die Kwik Styg was awarded the 2020 Eco-logic Award in the category "Climate Change", after the SmartAgri plan received the same award in 2019.

Dr Ilse Trautmann, chief director of Research and Technology Development Services, was the coordinator of the radio series. It originated from the Western Cape



✦

Dr Ilse Trautmann, Hugh Campbell, Minister Meyer, Bongiswa Matoti and Jannie Strydom.



Department of Agriculture (WCDa)'s SmartAgri plan and sought to raise awareness of the “new” climatic environment. The series was produced and funded by the department. In the series, presenter Lizma van Zyl spoke to people from across the spectrum and sought expert advice on appropriate measures to make South Africa, and specifically the agricultural sector, more climate-resilient. The series also placed great emphasis on the responsibility of every citizen. As Lizma remarked in her weekly greeting: “The earth is precious; let’s preserve it”.

RSG has also announced recently that it will rebroadcast the series from April 2021 due to its popularity and important content.

Fourteen of the programmes were transcribed and translated into the three official languages of the Western Cape, namely Afrikaans, English and Xhosa, and were published in e-booklet format.

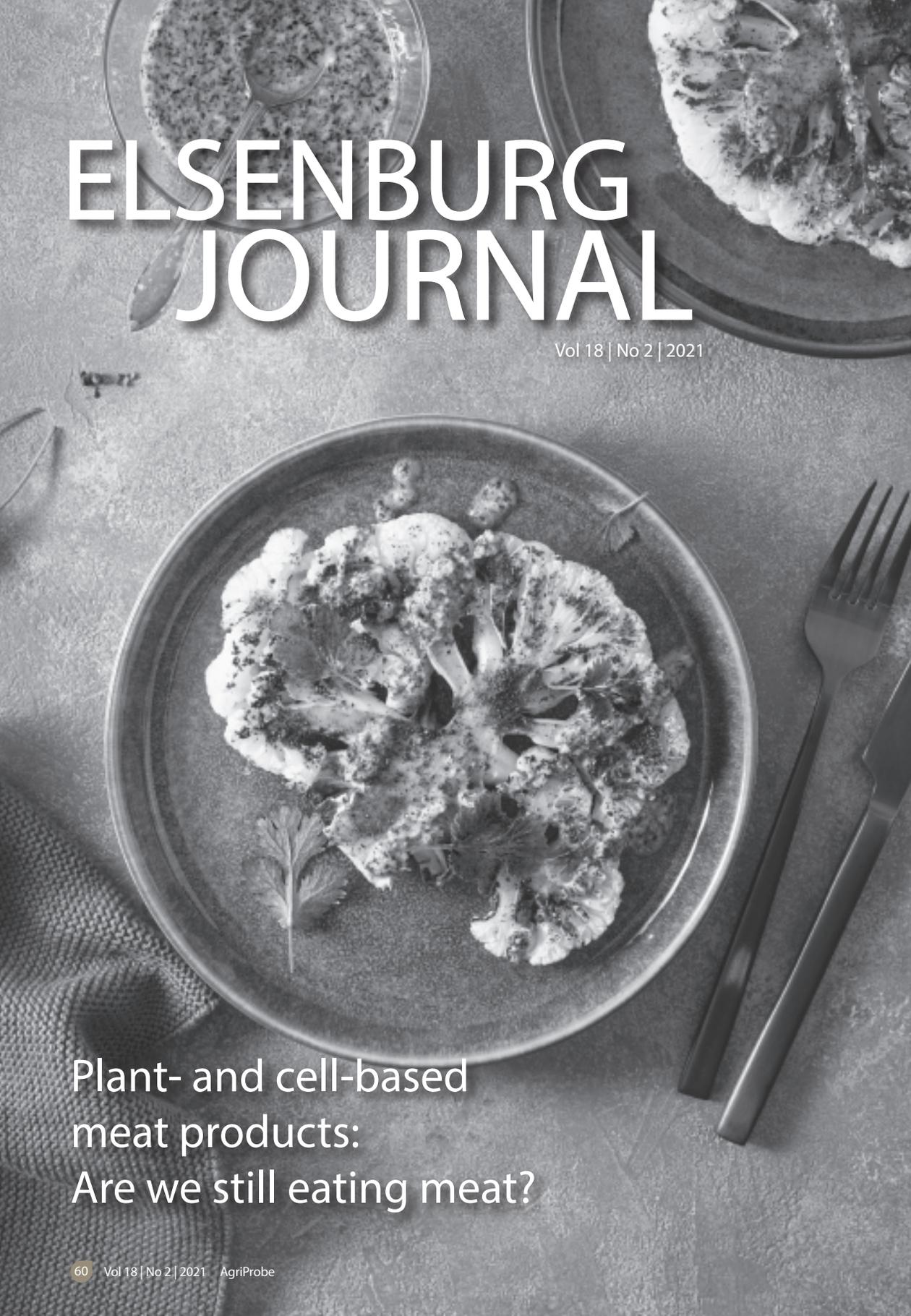
The booklets were recently launched at a stakeholder event hosted by Minister Ivan Meyer, minister of agriculture in the Western Cape. He highlighted climate change as one of his ministerial priorities. “Addressing the impact of climate change is one of my ministerial priorities. The publication of the e-booklets provides another platform to advance a climate-resilient future for the sector”, said Minister Meyer. “We have to increase agricultural production in a

sustainable and climate-smart manner”, he concluded.

Dr Ilse Trautmann, a passionate campaigner for advancing a climate-resilient Western Cape, agrees. She commented: “We must take the lead in ensuring that the agricultural sector becomes a low-carbon, climate change-resilient sector by advocating climate-smart production practices”.

The WCDa’s recently appointed climate change and risk assessment scientist, Professor Stephanie Midgley, will drive the SmartAgri implementation and its management improvement plan. She sees the publication of the e-booklets as a step forward in advancing climate resilience. “The publication of the e-booklets marks another important step in supporting farmers and the sector with accessible science-based local information on how climate change is unfolding, and practical solutions at the farm and household level. I am excited by this opportunity to take the radio programmes to a larger audience.”

Broadcasts of the radio programmes are available on [elsenburg.com](http://elsenburg.com) – click on “Drought portal” and then “Drought media”. The booklets can be downloaded on the same website when clicking on “Resource library and e-book publications”. Embedded radio technology allows the reader to listen to the original radio programme while reading the Afrikaans e-booklet. AP



# ELSENBURG JOURNAL

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Plant- and cell-based  
meat products:  
Are we still eating meat?

# Plant- and cell-based meat products: Are we still eating meat?

by Gareth Williams, Ziyanda Hadebe, and Zaaïd RinQuest  
GarethW@elsenburg.com / Zaa-IDR@elsenburg.com / ZiyandaH@elsenburg.com

## Introduction

According to Santo et al. (2020), interest in the development and production of plant- and cell-based meat alternatives has been growing over the past decade. Meat alternatives<sup>1</sup> are made to mimic the sensory experience and nutritional value of red meat to address the health and environmental challenges of today and tomorrow. Plant-based meat production dates back to between 900 B.C. and 600 A.D. (Bhat & Fayaz, 2011; Castle et al., 2006; Ismail et al., 2020; Kirchhelle, 2018; Pobiner, 2016). The production of cell-based meat was started in 2013 by Mark Post, who made the first commercialised cell-based burger in the lab (Ismail et al., 2020).

Alternative proteins such as plant- and cell-based meat are generally considered healthier and more environmentally friendly than traditional animal-derived proteins. However, the benefits of alternative meat production are still not being fully documented scientifically, particularly with respect to the environment (Onwezen et al., 2021). Moreover, most people are not yet fully educated and made aware of how meat alternatives are processed in a more sustainable way to maximise their benefits

to society. This report compiles most of the necessary information that consumers, farmers, producers, government, and private institutions can use when making decisions about consuming, producing, and advising about plant- and cell-based meat.

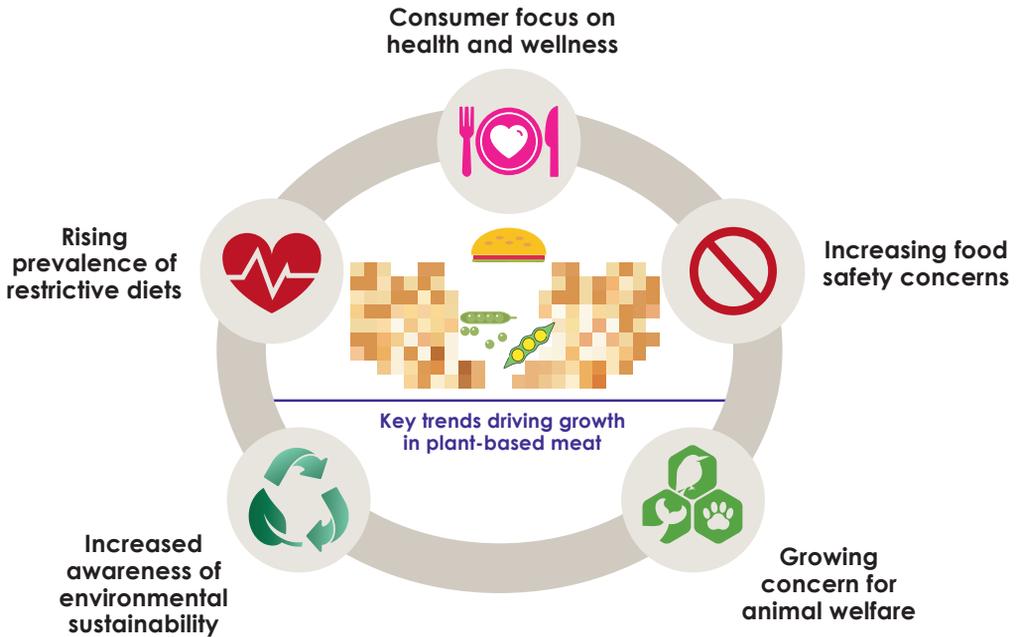
## Key drivers of plant- and cell-based meat

To mimic the sensory experience and macronutrients of red meat, different ingredients, which include plant proteins (e.g. soya, pea, potato, rice, wheat, and/or mycoprotein), fats (e.g. canola, coconut, soya bean, and/or sunflower oil), and other new ingredients (e.g. soya leghaemoglobin, red-coloured vegetable extracts, and/or flavouring agents) are used to make plant-based meat products (Vliet et al., 2020).

The demand for plant- and cell-based meat has been growing dramatically as consumers have become more aware and concerned about health and wellness, environmental sustainability, food safety, and animal welfare (Li, 2020). Figure 1 shows the key drivers accelerating the growth in plant- and cell-based meat products' consumption in the market.

<sup>1</sup> Meat alternatives (also known as meat analogues, meat substitutes, fake or mock meat and imitation meat), refer to the replacement of the main ingredients with ingredients other than meat to make a meat-like product.

Figure 1: Key drivers of plant- and cell-based meat products



Source: Li (2020)

### Processing and applied technology of plant- and cell-based meat alternatives

All plant proteins may be considered for the production process of meat analogues and other alternative products. However, soya and pea proteins (legume seeds or pulses) and wheat gluten (cereal) are mostly used in combination as the basis for alternative plant-based products. Soya and pea proteins are the two principal sources of proteins used in non-meat product manufacture due to their abundant availability and low cost. The most common sources of protein are soya, pea, wheat, potato, mung bean, and rice protein. Animal meat products are a complex bio-system. Aside from the characteristic texture and unique organoleptic properties, meat and meat products offer abundant nutrients and healthy constituents. To create meat-similar sensory attributes and nutritional profiles, a broad range

of additives are incorporated in the alternative product formulations. These non-protein ingredients contribute greatly to the overall physiochemical, desirable organoleptic properties and sensory properties. The non-protein ingredients include fats, thickening agents, adhering agents, colourants, flavourings, minerals, vitamins, antioxidants, and antimicrobial agents. Due to its high productivity, low cost, versatility, and energy efficiency, thermo-extrusion is currently the principal processing technology used to transform plant proteins into structured aggregates or fibrils for subsequent fabrication into meat alternative products (Dekkers et al., 2018).

Another new technology called high-temperature conical shear cell (HTSC) has been developed to prepare plant-based meat analogues (Krintiras et al., 2016). Emerging 3D printing technology, also known as “additive manufacturing”, is a

new concept potentially useful for creating the muscle-like structure through control of plant protein addition. The printing involves the mixing of a protein powder with water to form a paste and then forming it into a structure through layer-by-layer mimicking of muscle fibres (Dankar et al., 2018). NovaMeat, a commercial inverter, has applied the 3D technology to produce beef steaks and other meat analogues resembling the texture, taste, appearance, and nutritional properties of animal meat products using plant-derived ingredients (Lam, 2018).

Despite the above processing technology advances, challenges and opportunities exist. As a result, product development efforts and marketing have led to an increase in plant-based meat alternative production. However, initial growth in this industry is still faced with technological and consumer challenges. The effort to simulate the sensory characteristics (texture and flavour) of animal meat products proves to be difficult, especially with respect to the construction of muscle-like tissue (Weinrich, 2019). Processing technology innovation and creative product formulations will continue to improve meat-like quality characteristics. In addition, a variety of additives are added to produce meat-like texture, juiciness, mouth feel, and flavour. This raises concerns about the nutrition, food safety, clean label, cost, and consumer confidence. The overall production processes of both plant-based and cell-based meat is depicted in Figure 2 and Figure 3, respectively.

### Market prospects

The global plant-based meat market size was valued at USD3,3 billion in 2019 and is expected to grow at a compound annual growth rate (CAGR) of 19,4% from 2020 to 2027 (Grand View Research, 2021). Soya-based meat had the highest market share and accounted for more than 48% of the global revenue in 2019 (Grand View Research, 2021). The plant-based burgers segment led the market and accounted for more than 29% of the global revenue in

2019. Many restaurants, fast-food chains, and casual dining venues are dedicating a section of their menu solely to “meat-free” options due to the rising popularity of vegan and flexitarian diets, which, in turn, are projected to drive the segment growth.

Most of the plant-based meat products are predominantly concentrated in western countries (Ismail et al., 2020). North America had the leading plant-based meat market share and accounted for over 39% of global revenue in 2019. The growth of the regional market is attributed to the growing consumption of meatless meat products, coupled with rising consumer awareness of the potential risk of consuming contaminated meat foods. Furthermore, the consumption of plant-based meat in developing countries continues to rise and is expected to increase by up to 73% by 2050 (FAO, 2011).

### Conclusion

Meat alternatives are unique products and cater for a specific target market. Currently, their market is steadily increasing, and we have seen new market trends that introduce fascinating protein substitutes (e.g. insects and algae) for conventional meat. In modern society we have seen a rise in vegetarian and vegan markets but now we are expecting a new flexitarian diet to accelerate and increase the global market share of meat alternatives.

NOTE: For more information, you can request the full version of the report from the Agri-processing Support Unit (Agricultural Economics Services)

Since no products are currently available on the market, the figure was designed by Santo et al. (2020) using hypothetical inputs proposed by Tuomisto and Teixeira de Mattos (2011) and Mattick et al. (2015) and currently required animal-based inputs (e.g. foetal bovine serum, collagen-based scaffolds) (Stephens et al., 2019; Thorrez & Vandenburg, 2019).



Figure 2: The potential inputs, processes, and final product(s) to be marketed and consumed as plant-based meats

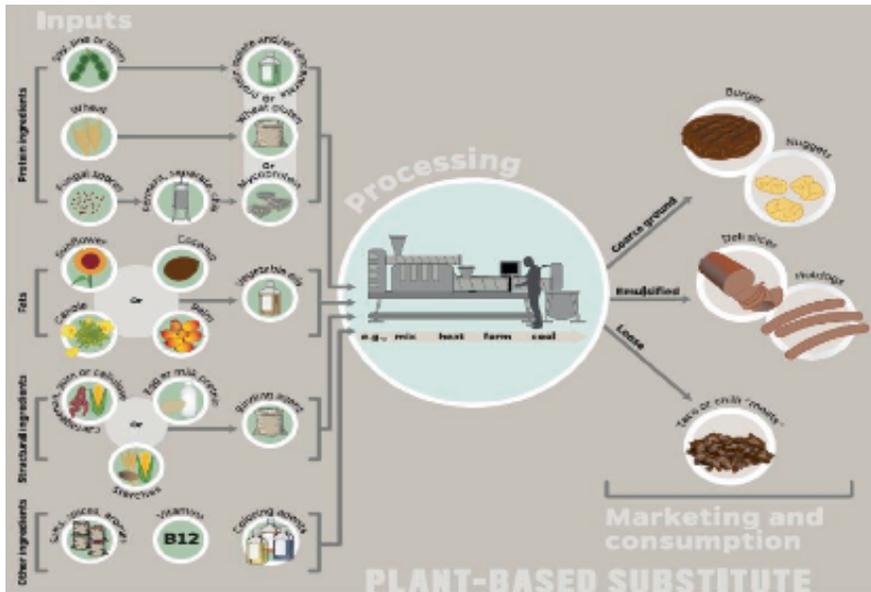
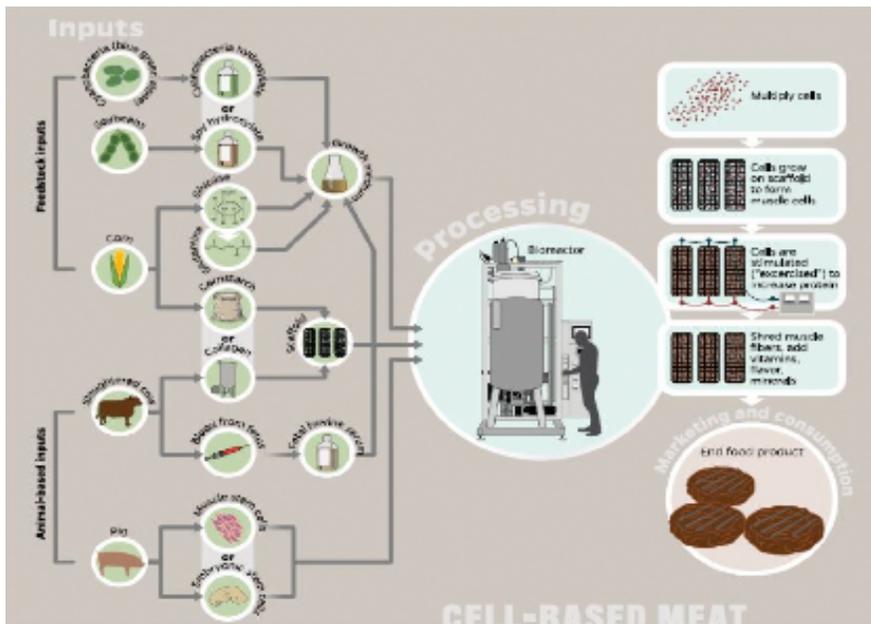


Figure 3: The potential inputs, processes, and final product(s) to be marketed and consumed as cell-based meats



Scan this QR Code for the full list of references.



AP

# Name Changes

There have been some changes to the names of four (4) of the departmental programmes. Please see these changes, in all three languages, below:

## Structured Agricultural Education and Training

- New**
- › Agricultural Education and Training
  - › Landbou-onderwys en -opleiding
  - › Imfundo kweZolimo noQeqesho

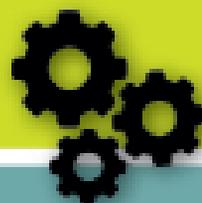


## Farmer Support and Development

- New**
- › Agricultural Producer Support and Development
  - › Ondersteuning en Ontwikkeling van Landbouprodusente
  - › Uphuhliso nokuXhaswa koMvelisi kweZolimo

## Sustainable Resource Management

- New**
- › Sustainable Resource Use and Management
  - › Volhoubare Hulpbrongebruik en Bestuur
  - › Ulawulo Nokusetyenziswa Kwemithombo Yoncedo Ngokuzinzileyo



## Research and Technology Development

- New**
- › Research and Technology Development Services
  - › Navorsing en Tegnologie-ontwikkelingsdienste
  - › Iinkonzo zoPhuhliso kuPhando nobuChule



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