

AGRI PROBE

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**Research dairies
donate milk**

E-learning at the college

**Embracing
virtual technology**



Research and news magazine of the Western Cape Department of Agriculture

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Setting the **SCENE**



by Rashidah Wentzel

This edition of the *AgriProbe* truly inspires me as we see exceptional stories of what the sector was involved in during the COVID-19 lockdown.

It is amazing how one small virus has been able to connect so many people through the power of ubuntu.

With a pandemic that has left us in humanitarian disarray, the agricultural sector has managed to join hands and support those who need it most. This generosity came in the form of farmer support and citrus and milk donations.

Agriculture is a business that is grounded in hard work and plenty of faith. It is risky and those who venture into this space do it because they have a deep desire to create something from nothing – to get their hands dirty and utilise the resources of mother nature. This is something you can only unleash by balancing hard work, knowledge, faith, dedication, and consistency.

The Western Cape Department of Agriculture has always looked for ways to

support our stakeholders, come rain or shine. The reason for this is that no one goes into agriculture if they do not truly love it and to be successful, it needs to be an interest shared between parties.

This sector has the potential to build the economy and ensure that everyone has food security and is economically prosperous in the Western Cape. We see an agricultural revolution with many exciting research projects. This includes farming in the Karoo, sustainable land management, improving landscape management through the FruitLook technology, and the improvement of milk production with the Outeniqua jersey herd. It is also promising to see how the learners and educators at Elsenburg Agricultural Training Institute have managed to adapt to the new blended learning approach.

I hope these encouraging stories will lighten the path for you as it did for me, while we move forward and continue working around the challenges of the COVID-19 pandemic.





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ON OUR COVER

Jersey cows grazing at the Outeniqua research farm near George, Southern Cape.



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COVID-19 a wobble, **but we remain focused** on our key priorities

by Minister Ivan Meyer

When I was appointed as Minister of Agriculture about 15 months ago, I immediately set about formalising my ministerial priorities. "Team Agriculture" started planning and executing our mandate with a sharpened focus on:

- structured training;
- education and research;
- farmer support and development;
- rural safety;
- market access and climate change;
- digital technology; and
- the 4th Industrial Revolution.

Little did we know then that less than a year later the COVID-19 pandemic would confront us.

Since then, we have seen much disruption in our personal and work lives. COVID-19 also brought a series of challenges to agriculture and food supply.

As a result of the ban on wine, tobacco, flower sales and the closure of restaurants, there were disruptions in markets and value chains, caused by bottlenecks in ports and air cargo.

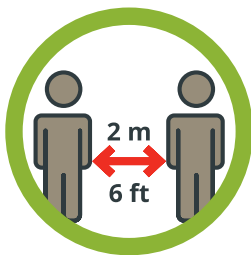
The loss of market share caused by the export ban handed shelf space on a silver platter to our competitors. At the same time, because of social distancing and the cost of personal protection equipment, the increased cost of compliance has led to production inefficiencies.

However, our point of departure has always been that we must protect lives and livelihoods.

For this reason, we responded to COVID-19 in our sector by:

- purchasing and distributing 100 000 reusable cloth face masks to agri-workers;
- issuing permits to farmers in line with regulations;
- developing a frequently asked questions (FAQ) document for the sector, aimed at guiding producers and agri-workers during the lockdown;
- making several representations to Minister Didiza for the revision of the regulations, to allow for harvesting in the table grape and wine industry, as well as the export of wines;





- making further representations regarding the flower sub-sector and the repatriation of seasonal agri-workers;
- getting the Western Cape Provincial Cabinet's approval of a provincial protocol and guideline in respect of the transport and movement of essential seasonal workers;
- continuing to provide a 24-hour service at the veterinary export certification office in Milnerton;
- partnering with Distell for the distribution of alcohol sanitisers; and
- coordinating the Western Cape Government's whole-of-society approach in response to COVID-19 hotspots in the Cape Winelands.

Following the initial success in Witzenberg, the hotspot strategy is accepted as the standard approach to outbreaks of COVID-19 infections. The method has six pillars, namely:

- testing and treatment;

- quarantine and isolation;
- civil compliance;
- slowing the spread;
- humanitarian relief; and
- food security and economic recovery.

It is through this approach that we have managed to achieve a recovery rate of 83%. We have now set a new recovery target of 91%.

Our health teams in the Cape Winelands are doing excellent work. Through mitigation, prevention and protection of vulnerable groups such as seasonal agri-workers they are reducing the transmission of the COVID-19 virus in our communities.

The Western Cape Government has made available a total of 539 beds at quarantine and isolation (Q&I) facilities in the Cape Winelands.

The Red Dot Q&I Transport system transports patients between their homes and the Q&I facility and health facilities if needed.



One such facility, which I visited recently, is the Reeds Country Lodge. Located in Worcester, Reeds Country Lodge offers a safe environment for those who have been in contact with a person who had contracted the COVID-19 virus or are awaiting COVID-19 test results.

I am grateful to the sector for the way it has responded to the call for humanitarian relief support. The decision by the Milk Producers' Organisation (MPO) to donate 1% of its daily milk production is but one example of the sector's generosity. The decision by our research dairies at Elsenburg and Outeniqua in the Southern Cape to give milk to the value of R100 000 has made the department's contribution to COVID-19 social relief efforts all the more special.

COVID-19 represents a wobble in our journey to serve the people of the Western Cape. I am proud, however, of how the department has responded, but also the extent to which we have remained focused

on our key priorities. We remain at the forefront of research through our support for the newly established Tissue Culture Facility of the deciduous fruit industry. The Elsenburg Agricultural Training Institute has continued with on-line learning. Farmer support and development is making its mark through our One Home, One Garden campaign. Through this campaign we have created approximately 1 855 food gardens. The aim is to shift the focus from food relief to food security by empowering households to produce their own food and sell surplus vegetables to generate an income.

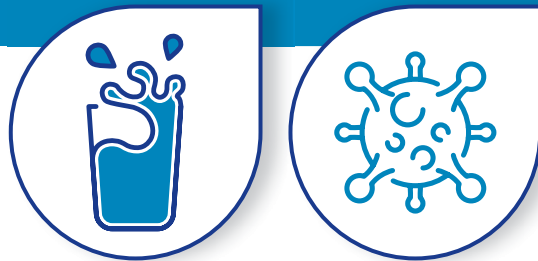
I believe that the agricultural sector is perfectly poised to spearhead the recovery of the Western Cape's post-COVID-19 economy. I am confident that "Team Agriculture" will continue to work towards bettering the lives of the people of the Western Cape as captured in our five key priority areas.

#ForTheLoveOf Agriculture 



RESEARCH DAIRIES DONATE MILK TO THE COVID-19-VULNERABLE

by Dr Ilse Trautmann, ilset@elsenburg.com



The Western Cape Department of Agriculture's research dairy farms at Elsenburg and Outeniqua donated milk to the Milk Producers Organisations' (MPO) Project One recently for distribution among the COVID-19-vulnerable communities in the Western Cape.

At the Elsenburg event*, Dr Mogale Sebopetsa, newly appointed head of the department, mentioned that our nation has been experiencing interesting and challenging times during the COVID-19 pandemic. As a result, there is a need to care for the most vulnerable persons in our communities. The donation is part of the humanitarian relief of the department to needy persons, especially in the hotspot areas like the Cape Winelands.

The Western Cape Minister of Agriculture, Dr Ivan Meyer, highlighted the impact that COVID-19 has had on the poor.

Minister Meyer: "COVID-19 has had a devastating impact on the most vulnerable in our society. No person or family should ever go hungry. We need to work together to ensure that everyone in the Western Cape has access to safe and healthy food. The Western Cape Department of Agriculture's donation demonstrates our commitment to building a healthy society through the consumption of a nutritious, affordable and accessible source of food."

He elaborated on humanitarian relief and support to vulnerable communities and the management of the pandemic in the Western Cape with relentless efforts to stop the spread of the virus. He conveyed his sincere appreciation to the MPO for their contributions and mentioned that compassion, dignity and humanity are most important in these challenging times.

Accepting the milk on behalf of the MPO, Philip Blanckenberg highlighted that milk producers had committed 1% of their daily production to the vulnerable and stated that "there is much goodwill amongst milk producers". The donation sets the example of how government and the private sector work together. The common goal is to provide the vulnerable with access to nutritious milk, which strengthens one's immunity and gives greater food security. Milk producers are also thankful that their nutritious product can help to accomplish this goal. The main aim of Project One was to donate 1% of the producers' milk to address poverty and access to food due to the pandemic. Mr Blanckenberg also thanked the department for the donation and the role the department and Cabinet are playing to stop the pandemic.



Minister Ivan Meyer, Estelle Veldman (Shiloh Community in Action), Connie Fagan (Lactalis, formerly Parmalat), Philip Blanckenberg (MPO), and Dr Mogale Sebopetsa.

Minister Meyer: “COVID-19 has had a devastating impact on the most vulnerable in our society. No person or family should ever go hungry. We need to work together to ensure that everyone in the Western Cape has access to safe and healthy food. The Western Cape Department of Agriculture’s donation demonstrates our commitment to building a healthy society through the consumption of a nutritious, affordable and accessible source of food.”



Philip Blanckenberg talking at the Elsenburg event.



He also thanked the milk processors for processing the milk donations.

With the support of Nestlé (for milk from Outeniqua) and Lactalis (formerly known as Parmalat, for the milk from Elsenburg), the milk was processed, packaged and delivered to the NGOs. Both processors also added to the donation of the department, bringing even more products to these NGOs to distribute to the COVID-19 needy.

The milk will be distributed to vulnerable communities via two NGOs: Life Community Services (George) and Shiloh Community in Action (Cape Town).

Estelle Veldman of Shiloh Community in Action in Cape Town, which provides 2 000

to 3 000 hot meals daily to 33 community organisations, expressed her gratitude to the department and the MPO. Veldman commented that “Shiloh Community in Action is the link between the hearts; those who give, and the most vulnerable, those who receive. Without the support of the Western Cape government and the MPO we will be unable to provide a nutritious meal to those who cannot fend for themselves”.

Maryna de Vries from Life Community Services in George thanked the department with the following words: “Please receive our thanks and gratitude for today. It was indeed a big day for us as it is a dream come true. We have been trying for years to get a steady flow of milk to our children we work with and now we are able to give them milk at least three times a week, thanks to you, MPO and Nestlé. Just know that you are impacting 1 500 children’s lives with this donation.”

Minister Meyer concluded by highlighting that humanitarian support and relief is one of the pillars of the Western Cape government’s COVID-19 Hotspot Strategy.

“I am deeply thankful to the Milk Producers’ Organisation for encouraging milk producers to donate 1% of their production. By doing so, they are not only supporting the government’s humanitarian relief initiatives but also laying the basis to kickstart the recovery of our economy. We do so #ForTheLoveOfAgriculture,” said Minister Meyer.

*Due to the COVID-19 pandemic Drs Meyer and Sebopetsa could not travel to the donation event at Outeniqua. **AP**



Hoven Meyer (Nestle), Maryna de vries (Life community Service), Ben van Greunen (MPO) and Robin Meeske (Western Cape Department of Agriculture).



Estelle Veldman from Shiloh Community in Action, Dr Ivan Meyer from the Western Cape Department of Agriculture, and Philip Blanckenberg from the Milk Producers’ Organisation.



DIS DIE EEN



Kom gesels en luister saam na *RSG Landbou!*

RSG Landbou (RSG 100-104 FM) word Vrydae om 04:45 en Saterdag om 11:45 uitgesaai en word vervaardig deur die Wes-Kaapse Departement van Landbou. Op die Vrydagprogram help ons graag landbouers met tegniese raad en kennis komende van 'n wye verskeidenheid van kenners. Belangrike nuusgebeure word ook op hierdie inligtingsryke program bespreek. Tydens die Saterdagprogram deel ons stories van hoop en inspirasie oor die mense in die landbousektor. Kontak my, Eloise Pretorius, indien jy self 'n bydrae wil lewer, of indien jy weet van iemand wat kan, by eloisep@elsenburg.com.



Listen to *RSG Landbou!*

RSG Landbou is broadcasted on Fridays at 04:45 and Saturdays at 11:45 on RSG 100-104 FM, nationwide. This programme is produced by the Western Cape Department of Agriculture. On Fridays, the programme is filled with useful information from an array of experts with the aim to support and inform the agricultural community. Technical advice is given and newsworthy items are discussed. During the Saturday programme we share stories of hope and inspiration about the people in agriculture. Feel free to contact me, Eloise Pretorius, should you wish to make a contribution on *RSG Landbou*, at eloisep@elsenburg.com.



ARID ZONE ECOLOGY FORUM



At AZEF 2019, Paul Gildenhuys (CapeNature Biodiversity Crime Unit)
addressed the issue of

POACHING

Here's what we learnt...

MOST TARGETED TAXA IN THE ARID ZONE

Reptiles



© Courtney Hundermark

Reptiles are targeted by:

- collectors and international pet trade
- illegal export mainly to Europe and the United States
- shipment to Asia as exotic foods

Succulents



© Seth Musker

Succulents are targeted by:

- collectors of rare plants
- nurseries in the USA, Europe and Asia
- online plant sales

THE MAIN CULPRITS

1 Scientists/researchers/hobbyists

Generally enter the country under the guise of researching their chosen species, then collect and export specimens for international sale



2 Professional traders

Target specific species and collect large quantities for international trade. They often enter and leave the country very quickly, do cash-only transactions, and employ locals to access their target species



3 Crime syndicates

Do highly organised and coordinated planning and are usually involved in other criminal activities



HOW CAN YOU HELP?

The Department of Environmental Affairs calls on members of the public to report any suspicious activities regarding wildlife

Environmental crime hotline: **(+27) 0800 205 005**

South African Police Service emergency number: **10111**

If you suspect illegal wildlife activities in your area,

TAKE A PHOTO and report the following information:

- Vehicle colour, model and registration number (where relevant)
- Number of people involved and descriptions of their clothing (e.g. colour) and physical appearance
- Time and date they were seen
- What they were seen doing

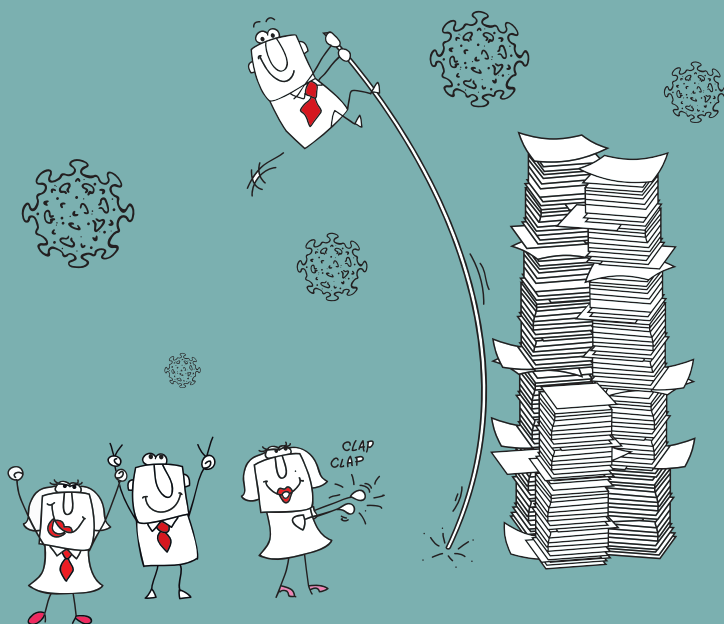


For more information on this session at AZEF 2019:

Website: www.azef.co.za • **Email:** gill@azef.co.za



AP



ELSENBURG AGRICULTURAL TRAINING INSTITUTE EXCELS DESPITE COVID-19

by Maritjie Cornelissen, maritjiec@elsenburg.com

Elsenburg Agricultural Training Institute (EATI), like many other institutions, is facing the challenge of ensuring a successful academic year in spite of the COVID-19 lockdown. EATI had to undergo totally unexpected but inspiring changes to the way it operates and delivers its academic programme.

EATI's "new normal" started with the suspension of all formal classes on

17 March 2020. The hostels and residences were closed on 19 March 2020. To salvage the 2020 academic year, the institution immediately started putting interventions in place to ensure the continuation of the academic programme. The implementation of e-learning was expedited and a fully functional Moodle platform (learner management system) was established. This will ensure an effective, blended learning

approach for the future, where all aspects of teaching and learning will be accommodated, including online assessments.

The blended learning approach allows for a combination of contact and online classes, as well as uploaded learning material and support from lecturers and academic staff. To this end, students were allowed to return to campus for contact classes on a rotational basis. The first group, consisting of final-year students in the Higher Education and Training programmes, including the Bachelor of Agriculture degree and diploma, returned for a two-week winter school on 17 June. A similar winter school followed for the second- and first-year students. It allowed the first semester to be concluded, with full examinations having been written. The students registered for the work-integrated learnership, which forms part of the Agricultural Skills Development Programme, and they are currently completing a four-week winter school rotation. A similar programme will be facilitated for the second semester. Students were allowed to choose whether to return to campus for contact sessions or to continue studying online. A number of students opted for the latter.


However, the shift to online learning has had its fair share of challenges. For online learning to work, students and staff must be adequately resourced. Learners have diverse backgrounds, with different socio-economic circumstances, making consistent access to data and connectivity difficult. Consequently, students have experienced problems engaging with remote teaching and learning programmes offered through a number of virtual channels such as WhatsApp, Zoom, Blackboard, and other interventions. Some students living in remote areas or having limited resources have not been able to participate fully. The EATI tried to mitigate these obstacles as far as possible by providing laptops with monthly data

allocations and printed learner material to certain students, which were delivered by courier to the residences.

Some students who were not able to return to campus were supported through remote multimodal teaching and learning, enabling them to complete assessments and examinations off-campus. The latter by itself was a logistical challenge – various schools, private institutions and individuals had to be approached to allow students to complete their assessments at pre-arranged venues.

In the meantime, EATI is exploring alternative models to implement work-integrated learning and other means of practical exposure, as some farms are not ready to receive the students yet.

Procurement of new IT equipment for staff was fast-tracked to ensure a seamless online learning offering. In addition, available hostel accommodation had to be managed in a way that allowed for adequate social distancing. The mental and physical well-being of returning students and staff had to be managed within the prescribed COVID-19 regulations and health and safety protocols. It was quite daunting for some students to return to campus because they felt vulnerable having been at different levels of the related lockdown measures.

The academic staff members have been able to adjust fairly quickly to the new online mode of teaching, going the extra mile to ensure that students receive all materials needed for self-study, having regular contact with students via different media, while supporting and counselling as and when necessary. EATI is happy to report that students have adapted to and embraced this new blended way of learning. The completion of the academic year is on track. The support received from various individuals and institutions is valued, and Stellenbosch University deserves a special mention for the IT and academic support and advice it provided. 

JOIN US IN COOKING!

During the 2019 South African Cheese Festival, it was “cooking” in the Cape Made Kitchen. The Cape Made Recipe Book 2019 was launched with mouth-watering recipes, meticulously developed by the young chefs of The Private Hotel School. The purpose? To showcase the use of alternative crops in the kitchen.

pear, brie, and honey quesadillas



6 SERVINGS

INGREDIENTS

6	flour tortillas
150 g	brie, sliced
2	pears, thinly sliced
60 g	red onion, thinly sliced
45 ml	honey
5 ml	thyme, chopped
60 ml	cultured cream





MORE DELICIOUS **RECIPES**
will follow in future editions of *AgriProbe*.

[www.elsenburg.com/resource-library/
cape-made-taste-alternatives](http://www.elsenburg.com/resource-library/cape-made-taste-alternatives)



METHOD

- ◆ Heat a 23 cm pan and place 1 tortilla into the dry pan.
- ◆ Evenly arrange the brie slices over the tortilla.
- ◆ Add the pear and red onion slices.
- ◆ Drizzle with honey and sprinkle with fresh thyme.
- ◆ Place the other tortilla on top. Cook for about 3 minutes, until the tortilla is golden brown and crispy, and then flip.
- ◆ Cook for another 3 minutes on the other side, or until the cheese is melted and the tortilla is crispy. Remove from the pan and cut into wedges.
- ◆ Repeat with the rest of the tortillas.
- ◆ Serve with cultured cream, drizzled with extra honey.





INFLUENCE OF VIRTUAL TECHNOLOGY on the work environment



by Japie Kritzinger, japie@elsenburg.com

Introduction

Technology is advancing at an ever-increasing pace. One can make a staggering list of gadgets, appliances, apps and technological tools that have been released into the workplace since the 1980s. These technologies have changed the workplace dramatically over the past 40 years.

One such technology is virtual technology, which has been used with great success over the past decade in a number of institutions all over the world. However, face-to-face communication remained the primary way of doing business in most organisations. Virtual technology was only utilised occasionally in most institutions.

With the outbreak of the COVID-19 pandemic in the Wuhan region of China during late 2019, the use of virtual technology became relevant and very helpful. Companies and governments around the world instantly had to adjust and they turned to the aid of virtual communication.

There is adequate reason to argue that virtual communication will in future be institutionalised as standard practice in the workplace and will become the new norm for conducting meetings. However, as most of us were forced to embrace this technology in a short space of time, it also created an initial degree of scepticism about its effectiveness and practicality within the private and

public environment. Together with virtual communication, the aspect of remote working and social distancing suddenly became relevant and the question may be asked whether this new norm is really as cool as it seems to be, specifically to the millennials and younger generation. Yes, one has to admit there are enormous benefits that virtual communication offers to all the active economic sectors. However, there are also negatives attached to the use of it. Furthermore, the question should be asked what the long-term effect of this way of communication will bring to the workplace – and specifically to working relationships. One would also need to look at practical steps to make virtual meetings most effective. The rest of this article will attempt to look into these aspects in more detail.

VIRTUAL TECHNOLOGY

Its development

Virtual technology originated as far back as the early 1920s when Edwin Link developed the world's first flight simulator, which was designed as a training device for novice pilots. However, it was not until the 1990s when the first commercial virtual headsets were released by video game companies, that virtual technology was available for the use of broader society. Workable virtual communication devices were not released until the early 2000s as applications for communication purposes within the workplace. Since then, it has become popular rapidly, largely due to the benefits offered by the World Wide Web/ internet.

Benefits of virtual communication/meetings

- Virtual communication has a number of benefits that two decades ago were not

available. Let us look at a few positives, which could benefit organisations and make a massive difference in the way they do business.

- Virtual communication can bring huge financial savings.
- Traditional meetings require everybody to travel to the place of the meeting. The travelling costs of such meetings alone are significant. However, with a virtual meeting travelling is eliminated, resulting in a huge saving.
- Virtual communication can save time.



- Often employees who are remotely stationed are required to attend meetings at head office or elsewhere. Virtual communication makes it possible to connect with any person anywhere in the world without leaving the office. Thus, travelling time to and from a meeting is saved and that time can be utilised productively at work.
- Virtual communication can reduce the office space needed for meetings.
- Since meetings are now primarily conducted through virtual contact, the need for an organisation to provide a number of

boardrooms or conferencing space is not so important anymore. The organisation will therefore need less or smaller office space, which leads to further savings.

Disadvantages of virtual communication

Managers and officials chairing meetings should be well aware of the disadvantages that virtual communication can bring about. Let us investigate aspects that are likely to surface during virtual communication.

- The level of distraction is much higher in virtual meetings than in face-to-face meetings.

While traditional meetings in one room always had to deal with distractions such as small talk and office gossip, late arrivals and early departures, side discussions about other work-related issues, and office noise, virtual communication brings other challenges to a discussion. It is obviously a huge challenge to keep everybody at different locations interested in a long discussion, while not in direct contact with everybody at the same time. Distractions in such a case just tend to be much higher.

One survey showed that only 23% of managers gave their full attention during conference calls, while 25% attended to email, and 27% did other work.

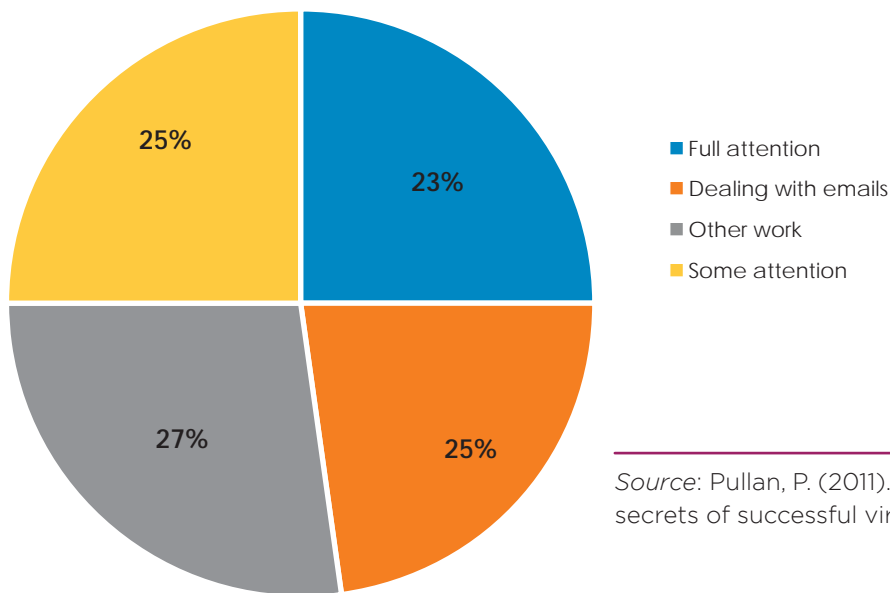
- Losing a certain degree of trust

Engaging colleagues over a virtual platform also allows for a measure of uncertainty and less trust than in the case of a face-to-face environment.

- Continual virtual communication weakens work relationships

Continuing with virtual engagements without any face-to-face engagements





Source: Pullan, P. (2011). The seven secrets of successful virtual meetings

will gradually lead to a weaker working relationship among colleagues. Over time, co-workers start to feel detached since aspects such as eye contact, moods, body language and verbal encouragement like “mm-hmm” are often missing in virtual conversations.

What it takes to have an effective virtual meeting

- As virtual communication becomes institutionalised in organisations, it might be useful to look at ways to ensure that meetings are effective and bring about the required results. Frisch and Greene suggest 12 steps that could guide meeting organisers or chairpersons of meetings to ensure that their virtual meetings will bear fruit.
- Use video. Technology such as Zoom, Skype and MS Team helps to personalise the conversation.
- Always provide an audio dial-in option. Video conferencing can work well, but it relies on a strong and fast internet connection. This may not always be available.
- Test the technology ahead of time.
- Make sure faces are all clearly visible. Ask individuals to sit close to their webcam.
- Stick to meeting basics. Prior to a meeting, set clear objectives, make use of an agenda and communicate meeting ground rules, take breaks during meetings, etc.
- Minimise presentation length. Virtual meetings should be discussions instead of presentations; therefore, it is always good to keep presentations as short as possible.
- Make use of an icebreaker to reinforce interpersonal relationships, as colleagues may feel isolated.
- Assign a facilitator. With virtual discussion it is crucial to have one individual to guide the conversation. It is important that the facilitator be well acquainted with the technology being used in order to be able to resolve basic questions pertaining to that.
- Call on people. In order to prevent excluding people, it is good to periodically call on people to speak, thus encouraging participation.
- Capturing real-time feedback is also recommended and well worth the effort.
- Do not be afraid to tackle tough issues. Once

a team gets used to virtual discussions, you will also be able to discuss tough issues virtually.

- You may need to adjust how your team conducts virtual meetings for them to work better. Practice once or twice while you are still together.

Business in future

Virtual technology and communication have made it possible to continue with most of our work even in the midst of COVID-19, social distancing and working remotely. However, often when a new practice is introduced in a working environment, the impact of that new practice is only recognised after some period, sometimes even only after a number

of years. This is especially true if such a changing environment can influence the behaviour, thinking and the psychological state of employees. It is therefore important to look at what research shows about these issues. Long periods of social distancing together with the use of virtual technology can have a negative impact on co-workers if continuously used as the primary mode of communication.

In future we might need to take careful note of the warning given by Michal Nathanson in his article, "Beware the Long-Term Trend of Social Distancing". He refers to the relationship costs, in other words: social capital and how to get the most from your employees. Social capital describes the bonds colleagues form over time, bonds that enable us to work more effectively and efficiently in a collaborative way. He argues that long-term social distancing and working remotely gradually weakens the bond between co-workers.

If social distancing is to continue in 2021 and beyond and if we are going to





make use of virtual technology and remote working more and more, we will have to prioritise interpersonal work relationships. We need to be aware of the fact that remote working is not beneficial to social capital. We might need to implement what Elizabeth Durrance Hall proposes about maintaining relationships while practicing social distancing. She identified five primary maintenance strategies that are linked to higher quality relationships:

- **Be positive.** Have cheerful and uplifting interaction with others.
- **Be open.** Share and be self-disclosing.
- **Assure co-workers.** Constantly assure colleagues that you care about them.
- **Share tasks.** This will include colleagues sharing relational work and the workload for upcoming events.
- **Use networks.** Maintain a shared network of colleagues you know and connect colleagues to others who can help.

The way in which we are going to make use of and rely on virtual technology will

Engaging colleagues over a virtual platform also allows for a measure of uncertainty and less trust than in the case of a face-to-face environment.

be crucial. There are so many technologies available out there and it is constantly improving or being replaced by a better device or application. It is therefore important for us to keep abreast of the latest technology and we need to apply the most appropriate application for a specific task or action.

Special care should be taken to continue with traditional ways of hosting meetings instead of replacing them altogether with virtual communication. Virtual communication will need to be very carefully institutionalised.



It will be crucial for organisations to adopt protocols or standard operating procedures for using virtual technology in future. Virtual communication will undoubtedly be an effective way of communication in various situations including the following:

- Emergency planning needed in case of crises.
- When decision-making is required urgently and role players required for the meeting are based remotely.
- Where monitoring, feedback and reporting need to take place on a regular basis but a number of people involved have to travel far distances.
- When any decision is to be taken or information needs to be shared, but it is not worth setting up a meeting to get the required results.

On the other hand, face-to-face meetings will remain in the workplace as a way of communicating. Imagine having strategic

planning sessions, interviewing applicants for a vacancy, discussing the performance of colleagues, or conducting a disciplinary hearing remotely. In addition, site inspections/ research and field visits will have to continue. These are examples of instances that in future will still require discussions to take place in one room, location or site.


As we face the future and continue with our daily work, one thing is certain: business in 2021 and beyond will not be business as usual. Remote working with the aid of virtual technology has suddenly become a reality for most of us, arguably for the better. Let us hope social distancing, remote working and virtual technology will not only make the workplace safer, but also more flexible and efficient for doing business. Let's hope this new normal will ultimately create a global village that will be more resilient to future pandemics and challenges, where we will be able to do our work and still enjoy life as we knew it pre-COVID-19.

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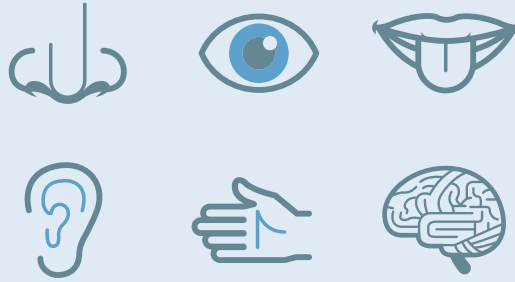
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“DA(I)RING” VIR SENSORIESE SUIWELSMUL- SENSASIE



“Innovation is taking two things that already exist and putting them together in a new way” – Tom Freston

deur Helene Pheiffer, helene@mpo.co.za

Om die wondermiddel, melk, te omskep in 'n aanloklike verbruikersproduk, verg gespesialiseerde kennis, maar om die produkte te beoordeel, verg kennis én sensoriese presisie! Die Wes-Kaapse Departement van Landbou (WKDL) het 'n behoefte aan 'n sensoriese suiwelevalueringskursus geïdentifiseer, en die Melkprodusente-organisasie (MPO) geborg om so 'n nuwe projek die lig te laat sien. Beide entoesiaste in die suiwelwaardeketting én verbruikers baat uit die nuwe kursus. Die kursus bevorder nie net die waarde, gebruik en ontdekking van suiwelprodukte nie, maar skep ook hernude loopbaangeleenthede vir voornemende suiwelevalueerders. Hierdie kursus word ook ondersteun deur AgriExpo, wat verantwoordelik is vir die jaarlikse Suid-Afrikaanse suiwelkampioenskappe.

Sensoriese evaluering

Sensoriese evaluering van suiwelprodukte gaan nie oor “hou van” of “hou nie van nie”, of oor “lekker” of “nie so lekker nie”. Sensoriese evaluering is 'n kombinasie van 'n sensasie of gewaarwording van die primêre sintuie, en 'n persepsie van wat die brein se interpretasie van die sensasie is. Die primêre sintuie wat hiervoor ingespan word, is sig, gevoel,

reuk en smaak. Sig evalueer die voorkoms van die produk. In die geval van kaas, word voorkoms beoordeel op grond van die kors, kleur en simmetrie van openinge in die kaastekstuur. Die tekstuur van die produk word beoordeel deur gevoel in die voorvingers asook spiere in die mond en tong, en geur word deur 'n kombinasie van aroma en smaak deur die neus en tong bepaal. Die sensasie van geur, smaak en aroma kan ervaar word uit verskillende grade van soet, suur en sout; 'n spesifieke geurigheid of pikantheid; rykheid; delikaatheid; asook spesifieke aromas wat herinner aan byvoorbeeld sampioene, neute, vrugte, speserye, kruie of gekookte melk.

Sensoriese evaluering maak gebruik van 'n puntekaart in tabelvorm, wat 'n lys van eienskappe en gehalte aandui wat die spesifieke produk beskryf. Die beoordelaar moet dan in staat wees om 'n objektiewe opinie aan elke eienskap en gehalte-aspek van die produk te gee. Om produkperfeksie te bepaal, moet 'n beoordelaar die korrekte terminologie gebruik om die produkkennis en smaaksensasiedefekte te kan beskryf.

Suiwelprodukte wat sensories geëvalueer word, sluit melk, room, botter, jogurt, gefermenteerde melk, roomys, maaskaas, roomkaas en kaas in.

Kaasklassifikasie

Kaas word geklassifiseer volgens tipe melk, tydperk van fermentasie, tekstuur, produksiemetode, land of streek van oorsprong, voggehalte en rypmaakmetodes. Die hoofkategorieë van kaas is vars kaas, sagte kaas, semi-sagte kaas, semi-harde kaas, harde kaas, ekstra harde kaas asook geprosesseerde kaas. In die geval van kaas speel nie net melkgehalte 'n belangrike rol nie, maar ook die verwerkingsbestanddele, fermentasieproses, temperatuur en voggehalte. Die sensoriese eienskappe van kaas hang af van die afbreek van biochemiese komponente in elke tipe kaasstyl. Die beoordelaar moet dus vertrouwd wees met die produk – sy voorkoms, kleur, tekstuur en smaak – om dit met presisie te kan beoordeel.

Sensoriese waarde

Sensoriese evaluering van spesifieke produkeienskappe en -kwaliteite verseker dat produkte met mekaar kan vergelyk en verbeter kan word. Dit is onontbeerlik by die ontwikkeling van nuwe produkte. Daarbenewens bepaal sensoriese analise ook die swak punte in die vervaardigingsproses, en op grond daarvan word suiwelprodukte geklassifiseer sodat die verbruiker 'n konstante sensoriese waarde aan 'n produk kan koppel, wat die herhaaldelike verbruik daarvan sal verseker.

Kursus in sensoriese evaluering

Die kursus duur twee dae en raak kortliks aan die geskiedenis van sensoriese evaluering, melkproduksie en -prosessering. Studente leer ook hoe om 'n sensoriese ervaring volgens spesifieke produkstandaarde



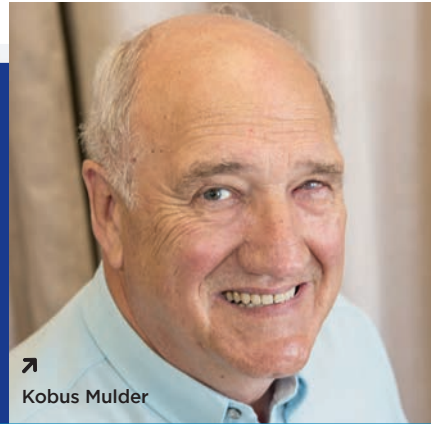
te evalueer en te verwoord. Die eerste kursus is reeds in Februarie 2020 by die Elsenburg Opleidingsinstituut aangebied en is deur verteenwoordigers van verskeie suiwelverwerkers, suiwelkundiges en suiwelliefhebbers bygewoon. Die volgende geskeduleerde kursus in die Wes-Kaap word op 11 en 12 November 2020 by die Outeniqua navorsingsplaas in George aangebied.

Sensoriese webinaar

Ondanks die COVID-19-inperking, wat reeds geskeduleerde kursusse op die langebaan geplaas het, het die MPO gesorg vir 'n virtuele sensoriese webinaar-ervaring in Junie. 'n Reeks webinare wat op die verbruiker gerig is, is in die vooruitsig vir die res van 2020. Die webinare sal fokus op die evaluering van spesifieke produkkategorieë (bv. sagte kaas: brie vs. camembert) of -handelsmerke, die korrekte gebruik van die produk, asook die produk as bestanddeel en as pasmaat.



Aanbieding by Elsenburg.

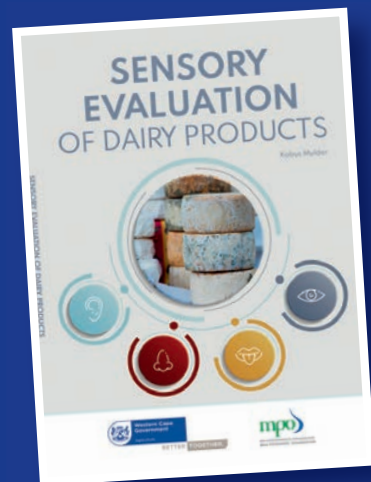


Kobus Mulder

Uitnodiging

Die suiwelevalueringskursus en 'n webinaar van twee uur word deur Kobus Mulder, internasionale suiwelkundige en beoordelaar, aangebied.

Hy is ook die skrywer van die handleiding Dairy Sensory Evaluation, wat deur die WKDL geborg is. Navrae oor die aanbieding van die kursusse kan gerig word aan Julie McLachlan by 083 740 2720 of training@mpo.co.za **AP**





FruitLook as instrument vir hulpbronbestuur



FruitLook is bekend as 'n instrument wat Wes-Kaapse boere help om hulpbronne doeltreffend te bestuur. Dit verskaf deurslaggewende bestuursinligting aan boere in die vorm van satellietgebaseerde dataprodukte om gewasgroei en water- en minerale toestande vas te lê. Verslae oor hierdie verskillende aspekte word weekliks aan die eindgebruiker verskaf deur die webportaal, **fruitlook.co.za**. FruitLook is 'n unieke diens wat skaal en geskiedenis betref. Die diens is in 2010 bekendgestel en het sedertdien aanhou groei. Dit dek nou alle belangrike landbougebiede in die Wes-Kaap en maak data deur die hele jaar toeganklik vir honderde boere, konsultante, navorsers en ander belanghebbendes. Die

diens word ten volle deur die Wes-Kaapse Departement van Landbou befonds en is dus gratis vir gebruikers.

FruitLook is histories gebruik deur boere wat spesifieke gewasse bestuur. Dit kan egter ook toegepas word as 'n breër hulpmiddel vir landskapbestuur om programme wat byvoorbeeld gronddegradasie en verwoestyning aanpak, te ondersteun.

Verwoestyning word geassosieer met die verlies van gesonde ekologiese funksie in 'n landskap, veral die verlies van vier fundamentele en verwante ekologiese prosesse:

- Die watersiklus
- Die mineraalsiklus (nutriëntsiklus)

- Die dinamika van die biodiversiteits-gemeenskap
- Die energiestroom van die ekosisteem



Die verandering van 'n landskap, dikwels deur aanpassing in grondgebruik vir landbou, kan lei tot ernstige ontwigting van een of meer van hierdie prosesse. Aangesien al die prosesse fundamenteel is vir die landskap om gesond te funksioneer, kan hierdie ontwigtings lei tot 'n kaskade van ekologiese verval, wat uiteindelik verwoestyning kan veroorsaak.

Wanneer landbou en landskapbestuurspraktyke probeer om die landskap te regeneer, word daar gefokus op ten minste vier sleutelingrypings:

- Hou grond bedek
- Restoureer en onderhou plantdiversiteit
- Hou lewende plante (en hul wortels) so lank as moontlik gedurende die seisoen in die grond
- Vermyn meganiese en/of chemiese versteuring van die grond

Die maksimalisering van fotosintetiese potensiaal (d.w.s. maksimalisering van plan-

tegroei) is sentraal tot hierdie regeneratiewe praktyke oor die grondoppervlakte.

FruitLook se verskeidenheid satelliet-gebaseerde metings en verslae spreek al vier hierdie regeneratiewe praktyke aan:

- Weeklikse terugvoering oor die mate van plantbedekking van die grondoppervlakte deur die **vegetasie-indeks** (meet vlakke van fotosintetiese aktiwiteit) en die **blaaroppervlakte-indeks** (meet digtheid van blaarbedekking op die oppervlak).
- Weeklikse rapportering van die gesondheid en lewenskragtigheid van plantegroei deur **biomassaproduksie** te meet, asook die opeenhoping daarvan gedurende 'n seisoen.
- Meting van **evapotranspirasie** en **doeltreffendheid van watergebruik**.
- Rapportering van mineraalvlakke oor die gemete gebied d.m.v. **blaarstikstof-** en **boonstelaagstikstofvlakke**.

Al hierdie statistieke verskaf waardevolle inligting om die veranderinge in die bestuur van 'n landskap te evalueer, byvoorbeeld die vlakke van vegetatiewe bedekking teenoor blootgestelde grondoppervlak, of die gesondheid van plantegroei, water- en mineraalsiklusse. FruitLook is dus van onskatbare waarde as hulpmiddel vir bestuurders wat poog om vervalde of woestynagtige landskappe te regeneer. Skandeer hierdie QR Kode om FruitLook se webtuiste te besoek.



Skandeer hierdie QR Kode om FruitLook se webtuiste te besoek.





FruitLook as a tool for landscape management



FruitLook is best known in the Western Cape as the tool that helps farmers to manage resources effectively. It provides crucial management information in the form of satellite-based data products capturing crop growth and water and mineral conditions. Reports detailing these various aspects are provided every week to the end-user via the web portal **fruitlook.co.za**. FruitLook is a unique service in the world in terms of scale and history. The service was launched in 2010 and has grown ever since. It now covers all major agricultural areas in the Western Cape year-round, making data accessible to hundreds of farmers, consultants, researchers and other stakeholders. As it is fully funded by the

Western Cape Department of Agriculture, the service is free of charge.

Historically, FruitLook was adopted by farmers managing specific crops. It can, however, be applied as a broader landscape management tool for programmes that address landscape-scale challenges such as land degradation and desertification.

Desertification is associated with the loss of healthy ecological function in a landscape, particularly four fundamental and interrelated ecological processes:

- The water cycle
- The mineral (nutrient) cycle
- The dynamics of biodiverse communities (flora and fauna)
- Ecosystem energy flows

The modification of landscapes, often through land-use change for agriculture, can result in severe disruption of one or more of these processes. Because they are all fundamental to the healthy functioning of landscapes, these disruptions can result in a cascade of ecological breakdowns, which can ultimately result in degradation and desertification.

Landscape and agricultural management practices that seek to regenerate landscapes focus on at least four key interventions:

- Keeping the soil covered (avoiding bare soil)
- Restoring and maintaining plant diversity
- Keeping living plants (and their living roots) in the soil for as long as possible across a season
- Avoiding mechanical and/or chemical disturbance of soil

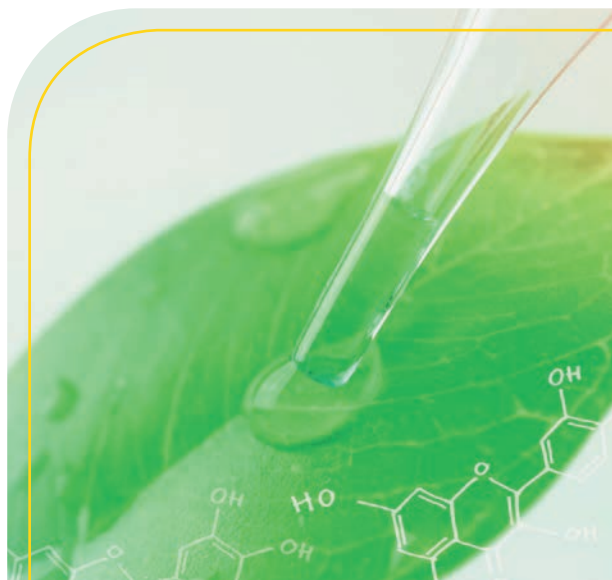
Photosynthetic potential (i.e. maximising plant growth), which is central to these regenerative practices across soil surfaces, needs to be encouraged and maximised.

FruitLook and its suite of satellite-derived measurements and reports speak directly to all four of these regenerative practices:

- It provides weekly feedback on the degree of plant coverage of soil surfaces through its **vegetation index** (measuring levels of photosynthetic activity) and **leaf area index** (measuring the density of leaf cover of the surface).
- It reports the health and vitality of vegetation by measuring **biomass production** each week and its accumulation across a season.
- It measures **actual evapotranspiration** and **water use efficiency**.

- It measures the levels of mineral uptake across the measured area via its **nitrogen-in-leaf** and **nitrogen-in-upper-layer** metrics.

All these metrics provide invaluable information to evaluate changes in how landscapes are being managed, the levels of vegetative cover versus exposed soil surface, the health of vegetation, and the health of water and mineral cycles. FruitLook is therefore an invaluable tool to managers who are endeavouring to regenerate degraded or desertifying landscapes. **AP**



Scan this QR Code to visit FruitLook's website.



Extension and advisory services reignite farmers' faith during COVID-19

by Rendani Murovhi, rendanim@elsenburg.com



Like most industries, the agricultural sector is not immune to the catastrophic effects of COVID-19. The lockdown restriction has led to unanticipated adjustment and compromises for business operations and this has affected the livelihoods of many South African farmers and other small businesses. Small and often overlooked when compared to commercial operations, smallholder and subsistence farmers attest that COVID-19 has ransacked farming communities. The challenges faced by these farmers include labour shortages, inability to source production inputs and services, and rising farming expenses with no income.

Although the pandemic had disastrous effects on farming operations, local farmers in surrounding areas within the Swartland Local Municipality, like Antoinette Boucher and Nomfundo Wojie, say that the pandemic became a connection point between the local extension officials and farmers. Boucher further emphasised that she is "hopeful that this is the beginning of a good relationship between the local agricultural office and the smallholder farmers in Hopefield". The two farmers are part of the beneficiaries for the COVID-19 relief funds initiated by the

Department of Agriculture, Land Reform and Rural Development.

Extension officials took a leading role in championing the department's initiative for household food gardens, aimed at sustaining food security for vulnerable households (yet another connection point). Perhaps the reconfigured and diversified extension approaches adopted during the pandemic might be a long-anticipated intervention – rejuvenating the generational relationship with farmers and reshaping the distorted image of extension over time. AP





↖
Nomfundo Wojie
with her goats in
Moorreesburg.



↙
Frank Bok (extension
official) hands over
household garden
packs in Piketberg.



Antoinette Bouwer feeding the piglets in
her pigsty at Hartebeesfontein, Hopefield.



Feeds from the COVID-19 relief vouchers
at Antoinette Bouwer's farm.

THE OUTENIQUA JERSEY HERD: **A great research tool**

by Prof. Robin Meeske, robinm@elsenburg.com



The Outeniqua research farm close to George in the Southern Cape is where you will find the Outeniqua jersey herd. The herd was started in 1957 and has grown and developed over many years to a registered jersey herd with 400 cows in milk. The fodder flow consists of kikuyu/ryegrass, lucerne, fescue, plantain, red clover and white clover pasture. Cows are fed dairy concentrate in the dairy parlour during milking at an average of 6 kg/cow/day. Average milk production varies from 14 to 20 kg/cow/day depending on pasture quality and level of concentrate fed.

The dairy parlour was upgraded during 2019. The milking machine is a 20-point swing-over Waikato system and the Afikim milking and cow-management system is used. The Afilab system has been installed, enabling collection of individual cow data on milk fat, protein and lactose on a daily basis. Cows are weighed twice a day with the walk-over scale. The feeding system will be doubled in 2020, enabling feeding of two different concentrates to large numbers of cows. This will facilitate large-scale production studies to provide answers to dairy farmers and the feed-manufacturing industry.

The dairy herd is a member of the Outeniqua dairy study group. Contact with dairy farmers and industry is key to ensure that research conducted at Outeniqua is relevant and adds value. The herd participated in the local George jersey show and won the Nestlé trophy for the most uniform group of cows on the 2019 show. The herd ranked 26th of all registered jersey herds in South Africa on the SAINET ranking in 2020. The breeding value of the Outeniqua jersey herd for kilogram and percentage milk fat and milk protein is higher than the breed average for jerseys in South Africa. Jersey bulls selected for the herd should have the following breeding values: milk +200 kg, kilogram milk fat



The herd won the Nestlé trophy for the most uniform group of cows.

+25 kg, milk fat percentage +0,2%, kilogram milk protein +15 kg, milk protein percentage +0,1%. Bulls should also have high genetic values for udder, body, feet and legs. Milk solids are important as the milk price is determined by protein and fat content of the milk. Herd health is protected by managing the herd as a closed herd. In the past 30 years, no new animals have been brought onto the farm.

Close collaboration between the directorates of Animal Sciences, Plant Sciences and Research Support Services at Outeniqua is key to the research output of the farm. The dairy and pasture research teams on the farm are well known in South Africa for their sterling research and research findings are presented at the annual Outeniqua information day and other technology transfer platforms. A new generation of researchers and research technicians is also trained at Outeniqua to ensure that our research programmes continue to support the dairy farmers of the Southern Cape. **AP**

Influence of potassium levels on protein stability of milk

by Prof. Robin Meeske, robinm@elsenburg.com

Milk is subjected to heat treatment during the processing into long-life milk, also known as ultra-heat treatment (UHT) milk. The casein complex in milk must withstand the heat treatment and retain its integrity. If the protein is not stable it will precipitate, manifesting as floccules in the UHT milk and the shelf life of the milk is subsequently compromised. Consumers find the floccules unacceptable and reject the milk, resulting in major financial losses for processors. Milk with poor protein stability that is not suitable for processing as UHT will either be rejected and not be collected by the milk buyer on the farm or be transported to another factory to be processed as cheese or other products.

Milk buyers use the alizarol screening test as an indication of protein stability and may reject milk if it does not pass

the 72% alizarol test. For milk to be suitable for processing into UHT milk it has to pass the 76% alizarol test. The stability of protein in milk is complex and it is affected by many factors like hygiene, proteolytic activity, heat stress and nutritional stress. The genetics of the cow may also play a role. The stability of milk on farms vary daily with the bulk tank passing the 80% alizarol test one day and then only the 72% alizarol test the next.

Unstable milk protein is more prevalent in milk produced by cows on pasture than in milk produced by cows in a total mixed ration (TMR) system. Pasture may contain 3% to 6% potassium. The negative effect of high potassium levels in pasture on Ca and Mg absorption is well documented. The soil potassium levels of paddocks on the farm may differ substantially and this will affect plant potassium levels and possibly the protein stability of milk.

A study was done at the Outeniqua

research farm to determine if high levels of potassium in the diet of cows on pasture contribute to protein instability of milk. Three concentrate treatments containing a low (1,05%), medium (2,93%) and high (4,80%) potassium level were fed to 60 jersey cows grazing kikuyu pasture during summer. The pasture grazed was of high quality:

- Crude protein: 23,8%
- Neutral detergent fibre: 51,8%
- In vitro organic material digestibility: 73,6%
- Calcium: 0,46%
- Phosphorous: 0,49%
- Magnesium: 0,53%
- Sodium: 0,61%)

It also had a high potassium (K) content of 5,2%. This resulted in an average content in the total diet (pasture plus concentrate) of cows on high-K treatment, of more than 5%.

Daily milk yield was recorded, and composite morning and afternoon milk samples were collected. The alizarol stability,

fat, protein, lactose, milk urea nitrogen (MUN), somatic cell count and the mineral content of milk were determined.

The high level of potassium in the diet of the cows significantly reduced the alizarol stability of milk and reduced protein, lactose and the MUN content of milk. Dietary potassium did not affect the fat content of milk.

The high level of potassium in the diet also reduced milk calcium, phosphorous and magnesium content, while the milk sodium level was not affected.

The potassium level in pasture should not be higher than 3% to 4% on a dry-matter basis. Soil potassium levels should not be higher than 130 parts per million (ppm) and can be reduced by making silage and removing pasture. Avoid high levels of potassium in the diet of cows as this may contribute to protein instability of milk and make milk unsuitable for processing as UHT milk. **AP**





SMARTAGRI PLAN EVALUATION COMPLETED

by Dr Ilse Trautmann, ilset@elsenburg.com

The SmartAgri plan for the agricultural sector in the Western Cape was launched in 2016. Several implementation actions within the department and externally followed during the past three years. The plan was developed by the department in collaboration with the Department of Environmental Affairs and Development Planning (WC-DEA&DP) and is a road map to climate change resilience for our sector (find the SmartAgri plan and all its documentation on our own website elsenburg.com or greenagri.org.za).

As part of the external evaluations annually commissioned by the department, the plan was recently evaluated to assess:

- whether the plan was properly designed and relevant;
- to what extent its outcomes had been achieved after three years of implementation;

- whether there were indications that the sector is more resilient; and
- how the plan and its implementation could be strengthened.

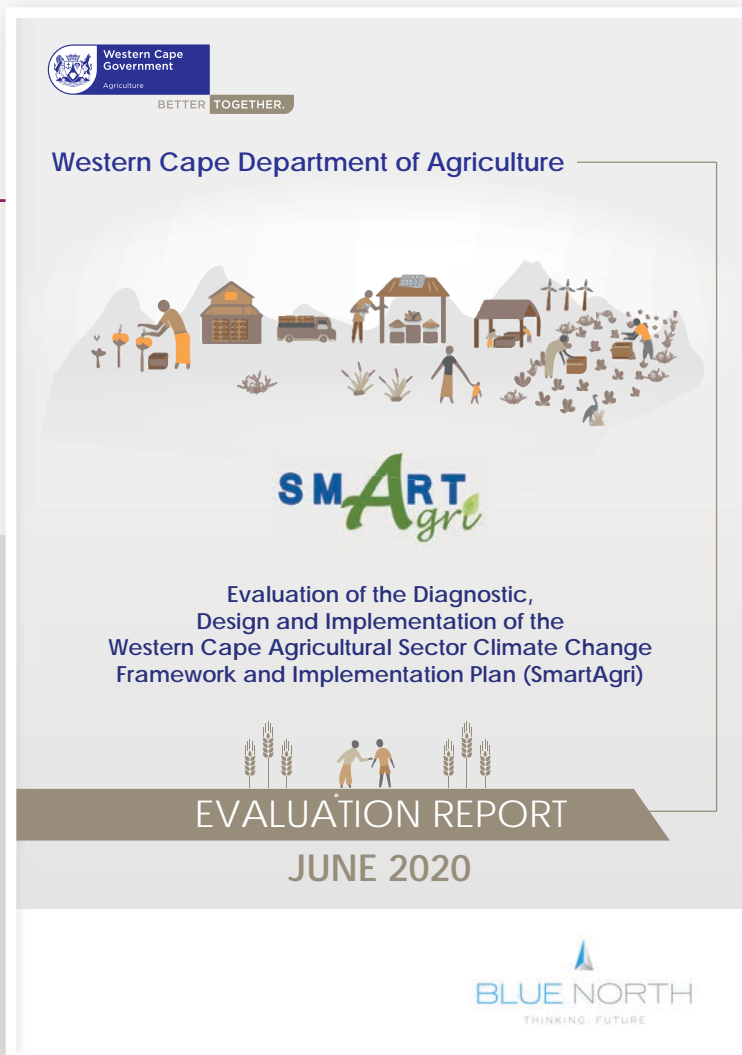
The evaluation was based on data compiled using a mixed-methods approach. Blue North, a specialist consulting practice, concluded the evaluation during March 2020 amid the COVID-19 lockdown and the final report was received at the end of April 2020.

Regarding the diagnostics, the evaluation found that the process to develop the SmartAgri plan was conducted in a systematic and scientifically grounded manner. The diagnostic informing the SmartAgri plan's development was comprehensive and remains valid. The SmartAgri plan response framework and implementation plan was found to be a highly relevant, innovative, well-designed, and scientifically robust plan of action for climate change resilience.

However, a shortcoming of the design phase was that insufficient consideration or guidance was given as to how the plan would be adopted and implemented across the sector and/or the functions and mechanisms required to facilitate this.

The theory of change for SmartAgri, namely that broad dissemination of the plan would result in an uptake of the detailed activities formulated in the plan by stakeholders, was considered relevant. While the outcomes and vision of SmartAgri

encompass the whole sector, an analysis of the implementation plan showed that realisation of the outcomes was strongly based on government action. The emphasis of the theory of change on the adoption of SmartAgri activities by non-government role players in the sector may therefore be misplaced. The plan is better understood as a governmental plan. Through the plan's institutionalisation within government programmes, it encourages and catalyses change within the sector towards its vision





The seven recommendations arise from the excellent foundation established over the implementation phase and are formulated in a way that acknowledges the SmartAgri plan as having its impact at farm level (and the sector) via a series of key role players.

and goals. It is therefore important to emphasise that the SmartAgri plan may benefit role players in the sector without them necessarily having any knowledge of the details of the plan. A thorough sectoral consultation was undertaken during design, coupled with an awareness drive in the early implementation phase (2016 to 2018). Despite this, the evaluation found a consistent lack of knowledge of the plan and its details among key stakeholder groupings in the sector.

Progress with the implementation of the projects and activities varied, and while there was clear evidence of the institutionalisation of the plan within the department and WC-DEA&DP, there are still areas where this can be strengthened. The assessment of the six priority projects found that a catalytic effect could be observed primarily at an institutional level for most priority projects, with some achieving sectoral effects. A gap has been the absence of an appropriately resourced operational structure for overseeing and coordinating the implementation of the plan. A detailed assessment of progress highlighted

successful areas of implementation as well as what may be inhibiting progress and required refinement going forward. A SWOT analysis of the SmartAgri plan synthesised the overall findings of the evaluation and informs seven higher-level recommendations.

The seven recommendations arise from the excellent foundation established over the implementation phase and are formulated in a way that acknowledges the SmartAgri plan as having its impact at farm level (and the sector) via a series of key role players. The recommendations take into consideration the ripple effect from the plan itself, its institutionalisation within the department and WC-DEA&DP, through the sector role players engaged in the projects and activities of the plan, and finally at farm level, where it finds its ultimate impact.

The next step of the process is to unpack the seven recommendations into a management improvement plan (MIP) focusing on the key areas that should be improved/strengthened as indicated by the evaluation. For more information on the evaluation, please contact Dr Trautmann at ilset@elsenburg.com or 021 808 5012. **AP**



Farming the Karoo Forever

by Bonnie Schumann, bonnieS@ewt.org.za

The Karoo is an iconic and timeless landscape that has been farmed for extensive small stock production for more than 400 years. The question is, will the Karoo be able to support agriculture for the next 400 years or more, given the extraordinary current economic and environmental conditions? The Karoo landscape is largely intact, with natural rangeland forming the foundation for its world-class small stock meat- and wool-production systems. However, it bears the scars of the learning curve agriculture has gone through to understand how best to manage this rugged but fragile ecosystem, with loss of species diversity and soil erosion evident across the landscape.

Hard lessons have been learnt. Karoo farmers are of the most resilient, adaptable and resourceful land users in the world. The Endangered Wildlife Trust's Drylands Conservation Programme (EWT-DCP) launched the Karoo Forever project two years ago. The project aims to capture lessons learnt, to spark future farming innovation and share this knowledge. This year we launched a project-specific website (karooforever.org.za) to make this information accessible to the broader farming community.

We, and the farmers we are working with, believe that the Karoo can be farmed forever, and that sustainable land management and farming efficiency, including the diversification of income streams, are key to ensuring that this happens. The Karoo has the potential



to sustain livelihoods in this arid ecosystem indefinitely; unlike alternative unsustainable developments such as uranium mining or fracking – which are “flash in the pan” sources of income, and invariably leave devastated landscapes and impoverished communities in their wake.

With this in mind, the EWT-DCP embarked on the Karoo Forever project to promote sustainable land management (SLM) in the Karoo. This is part of the Global Environment Facility (GEF5) – funded SLM project at the United Nations Development Programme (UNDP), in partnership with the Department of Environment, Forestry and Fisheries and (DEFF) and the Department of Agriculture, Land Reform and Rural Development (DALRRD).

The project website has links to SLM resources, which include a number of topic-specific webinars. Manie Grobler, agricultural advisor for the Department of Agriculture (Western Cape) and Dr Louis du Pisani (all-round Karoo farming expert and consultant) have each conducted a webinar series (youtube.com/channel/UCuIIIF-GGcF6AWt1ew_Sjm1A). Manie

has been involved in the project from the outset, helping to design the Integrated Farm Planning and Management (IFP) training course, which we conducted twice for emerging farmer groups in 2019. The course is now also available online (free) through the Karoo Forever website (karooforever.org.za/index.php/resources-2/handbooks). The webinars form the advanced content component for the basic IFP course.

The first webinar series was conducted by Manie and focused on the intensification of sheep production. Dr Bennie Grobler, veterinarian in Beaufort West (beaufortdierekliniiek.com/), shared his expertise on some of the livestock health aspects as well. Intensification of sheep production has some great ecological spin-offs. While livestock are kraaled (periods vary according to the production system), the veld gains valuable extra rest days, and ewes lamb safely under supervision, avoiding predation during this critical period. The second webinar series focused on the recovery of veld following drought in light of climate change. Dr Louis du Pisani, through the National Wool Growers’ Association,



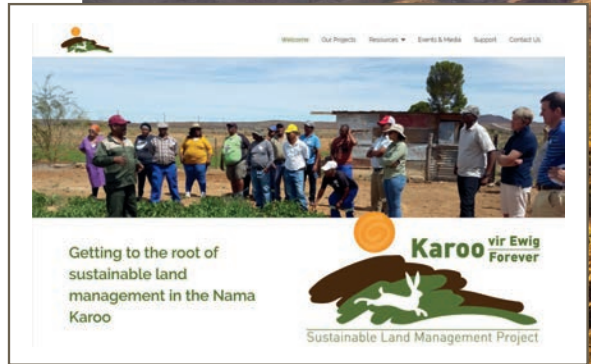
Field trip: Emerging farmers share their experience during the Endangered Wildlife Trust's Integrated Farm Planning and Management training course in Loxton.



Combating alien plants: Loraine van der Berg (Grootfontein Agric Dev Institute) puts farmers through their vegetation paces during the Endangered Wildlife Trust's IFP training course in Loxton.

hosted this webinar series. Louis recently published a book titled *Smart Drought Management for Livestock Farmers* (available at kejafa.co.za). This is definitely a “must-have” resource. Both Louis and Manie have a lifetime of knowledge gained in the field. Their passion for all things farming is evident, and both have a great way of communicating this knowledge, which is inspiring as well as educational. Henk Cerfonteyn guided viewers through a very insightful webinar on accessing seasonal weather forecasts for South Africa, and understanding and interpreting these forecasts. His presentation also helped viewers obtain a perspective on the current climatic and vegetation conditions. Henk, a risk assessment scientist, worked for the Department of Agriculture (Western Cape) for many years. Although Henk has since retired, he is still sharing his passion for weather with farmers.

This digital approach to sharing knowledge not only reduces the carbon footprint, but also allows participants to maintain social distancing, because farmers can join in the discussions from the comfort of their homes. Fortunately, the Drylands Conservation Programme has a strong



A screenshot of the homepage of the KarooForever website.



focus on technology in its approach to conservation, so we were inadvertently ready for the impact of COVID-19, with an already well-developed online platform to reach farmers.

Whether you have a passion for the Karoo, conservation or agriculture, or all three, please visit the KarooForever website to learn more about the exciting partnerships and project activities happening now. **AP**



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Effects of COVID-19 on carbon tax implementation

by Vanessa Barends-Jones, vanessab@elsenburg.com

South Africa is one of the biggest contributors to global greenhouse gas (GHG) emissions and is ranked 13th on the global emissions list (Global Carbon Atlas, 2019). South Africa is committed to a transition towards a low-carbon economy by being a signatory to the Paris Climate Agreement. President Cyril Ramaphosa approved the Carbon Tax Act (No. 15 of 2019) in 2019 and it has recently been implemented. The aim was to encourage behaviour towards reducing South Africa's contribution to climate change and ultimately, to establish a low-carbon economy (South African Government, 2019). This tool is described as a cost-effective and affordable way to reduce emissions sustainably (SARS, 2020), and is deemed much simpler to implement than alternative carbon trading schemes. The carbon tax tool will also result in a "polluter-pays" principle, which will help to address the negative costs associated with climate change. It will also ensure that companies become more environmentally friendly when making future business decisions (SARS, 2020).

The South African Revenue Service (SARS) and Department of Environment, Forestry and Fisheries (DEFF) will jointly administer the implementation and management of the Act (SARS, 2020). SARS is responsible for collecting the tax

revenue, while DEFF will be responsible for reporting on the methodology (SARS, 2020; Partridge, 2019). The Carbon Tax will be implemented in phases, with Phase 1 including most businesses, excluding agricultural and waste sectors due to their complexity (Rodseth, 2019). However, agriculture will be indirectly affected through the use of inputs such as electricity and fertilisers (Partridge, 2019). Phase 1 of the carbon tax came into effect on 1 June 2019 and will run until the end of December 2022 (Rodseth, 2019). The agricultural sector will be directly affected only in Phase 2.

With the sudden onset of the global COVID-19 pandemic hitting South Africa, some adjustments have been made. The Carbon Offset Administration System (COAS) launch has been delayed, as well as the deadline for manual and online mandatory reporting on the GHG emission of the businesses to DEFF, which was extended to 30 April and 31 May 2020, respectively (NBI, 2020). SARS also did not process any carbon tax registrations during the lockdown period and therefore had to extend the payment date from 30 July to 31 October 2020 (SARS, 2020).

The carbon tax rate for the first phase will be calculated at R120 per tonne of carbon dioxide equivalent emissions (CO₂e) and will increase annually by inflation plus



2% until the end of 2022, and an inflation-only adjustment thereafter (SARS, 2020; Partridge, 2019). Industry-specific tax-free emissions allowances have been gazetted to assist emitters to be able to transition their operations to cleaner technologies. This tax-free allowance will range from 60% to 95%, which will reduce the cost of the carbon tax and the payable amount can be

Table 1: Allowable tax breaks.

Allowance	Cost
Process emissions allowance	10%
Fugitive emissions allowance	10%
Trade exposure allowance	10%
Performance allowance (i.e. industry benchmarks)	5%
Carbon budget allowance	5%
Carbon offsets	5%-10%

Source: SARS, 2020; National Treasury, 2019; Rodseth, 2019

anywhere between R6 and R48 per tonne of CO₂e (SARS, 2020). The basic carbon tax rate (60%) of an allowance of R48/tonne CO₂e will be granted, allowing businesses to calculate additional costs that will be incurred with the implementation of the carbon tax (National Treasury, 2019). The list of allowable tax breaks are set out in Table 1.

Although the above allowances have been gazetted, they are still not operational due to the COAS not being in place yet (NBI, 2020). This means that for businesses, their 2020 carbon tax return will not include their offsets as allowances.

Phase 2 of the Carbon Tax Act is to be implemented from 2023 until December 2030, with the agricultural sector to possibly be included in this phase (Rodseth, 2019). The direct carbon taxes that farmers will be responsible for from 2023 and onwards, as well as the indirect carbon taxes relevant to the agriculture sector, in Table 2.

As already mentioned, farmers will initially only be affected indirectly by the carbon tax. However, it should still be noted that farmers will feel this “indirect cost” in

Table 2: Direct and indirect carbon taxes relevant to agriculture.

Direct emission sources	Indirect emission sources
N ₂ O emissions (stationary combustion, manure management, soil management, transport, etc.)	Electricity (paying higher unit rates to power provider)
Urea application	Diesel
Liming	Petrol
Biomass burning	N ₂ O emissions (N leaching and runoffs into ground-water, rivers and surface drainage and fertiliser)
Land use change	
Diesel generator with combined capacity of 10 MW or greater	

Source: Rodseth, 2019

terms of the inputs they use. Higher input costs will lead to increases in production expenses.

Phase 1 registration and payment of the carbon tax is delayed and COAS is not in place due to the COVID-19 pandemic. Hopefully more time will therefore be spent on getting this regulation in place, finalised and operational within the next

few months. The extension provides an opportunity for the carbon taxpayers to get all required documentation in place to claim the carbon tax allowance and to prepare their businesses accordingly. Delayed implementation coupled with lessons learnt from Phase 1 may see a smoother carbon tax transition for the agricultural sector.

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The South African ostrich industry carbon footprint

by Vanessa Barends-Jones, vanessab@elsenburg.com

South Africa has implemented the Carbon Tax Act (No.15 of 2019) to encourage behaviour that will assist in the reduction of emissions, towards a low-carbon economy (South African Government, 2019). The agricultural sector was excluded in the first phase of the carbon tax regulations and will only be directly affected in Phase 2, which is expected to come into effect in 2023. The agricultural sector is already putting measures in place to measure carbon footprints¹ at farm level, and monitoring these footprints to ensure more efficient farming to reduce carbon taxes.

Disclosure of carbon emissions is increasingly becoming the norm. With consumers and retailers being more aware of their impact on the environment, there is increased demand to see products' carbon footprint, which influences decisions to purchase (De Kock, 2018). It is within this context that the South African ostrich industry is seeking to understand its environmental footprint, how it compares to other industries and what carbon reduction opportunities there are. To conduct a carbon footprint for an industry, it is important to understand the whole value chain and all

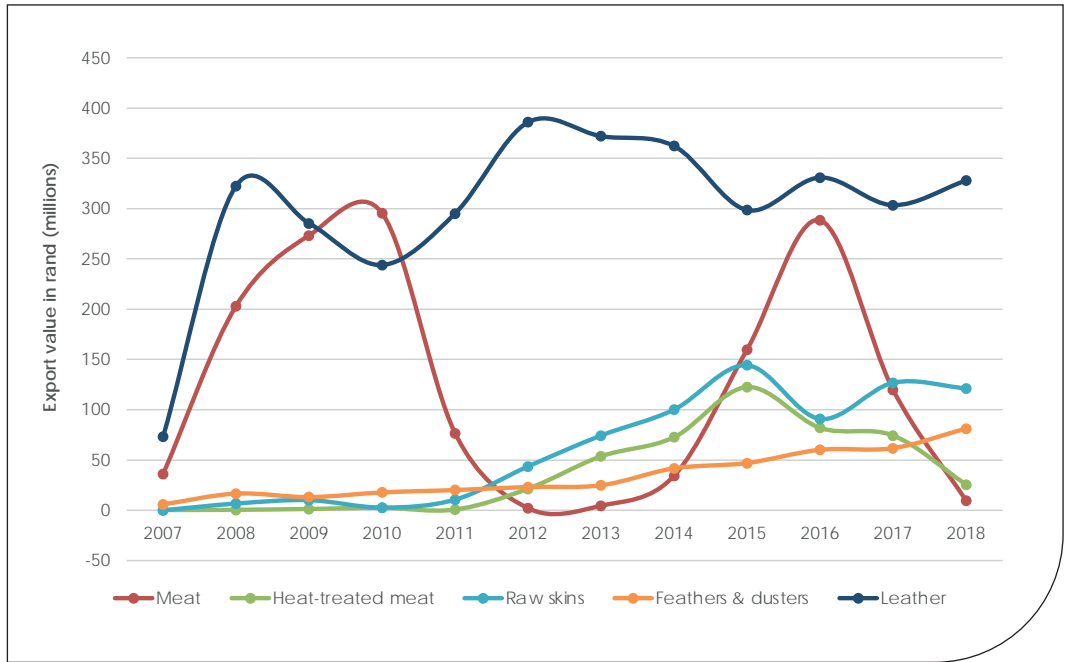
its operations. A comprehensive study was done for the ostrich industry for the 2018/19 period.

The South African ostrich industry produces approximately 70% of the world's ostrich products, including by-products (Brand & Jordaan, 2011). The industry is export-driven, and exports are the main source of income (Barends-Jones & Pienaar, 2020). The geographical spread of suitable growing regions are limited to the Western Cape (73%), the Eastern Cape, Limpopo and the Free State (StatsSA, 2020). The industry faced many difficulties including avian influenza (AI), a three-year drought and the closure of the European market. These caused volatilities for the industry, especially in January 2018 when the European Union (EU) banned South Africa from exporting ostrich and other game meat as a result of the National Department of Agriculture, Forestry and Fisheries' (DAFF) residue testing procedures failing to meet EU requirements (DAFF, 2018).

Figure 1 highlights two peaks before the AI outbreaks in 2011 and 2017. These peaks illustrate an average market value for ostrich meat between R200 million and

¹ The carbon footprint can be defined as "the quantity of greenhouse gasses (GHGs) expressed in terms of carbon dioxide equivalent (CO₂e), emitted into the atmosphere by an individual, organisation, process, product, or event from within a specified boundary" (Pandey & Pandey, Carbon Footprint: Current methods of estimation, 2011).

Figure 1: Value of South African ostrich and related products' exports, 2007-2018.



Source: Quantec, 2019

R300 million. Heat-treated meat exports also grew with an average annual rate of 28% from 2012 to 2017. The effect of market closure in 2018 can be seen in Figure 1, showing a decline for meat and heat-treated meat exports. The ban was lifted in March 2019 and the ostrich industry can once again export heat-treated meat to the EU.

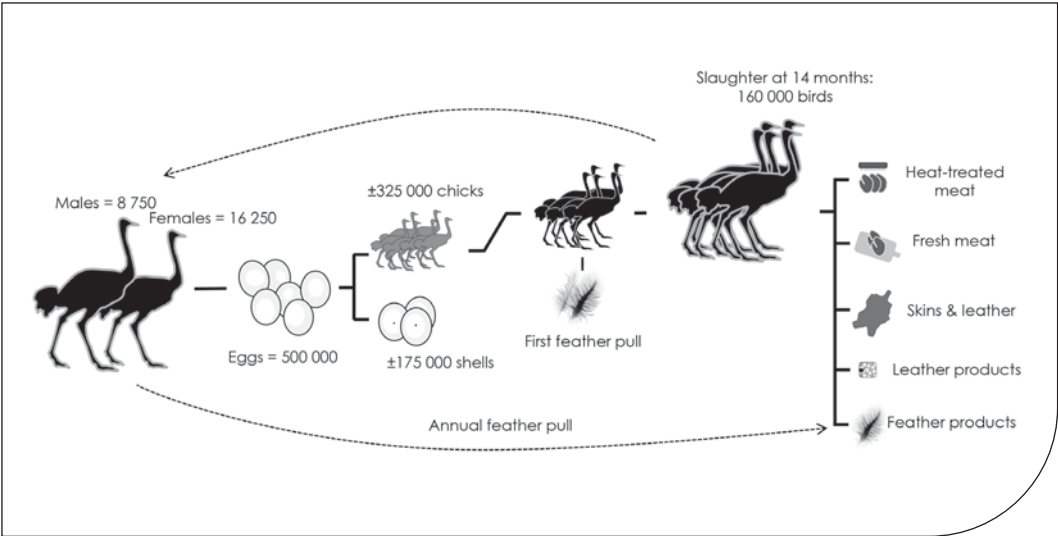
Figure 2 below summarises the process of production through the various stages of the bird's life cycle and into the various product developments.

The production system of eggs within the value chain consists of several farms specialising in the reproduction of ostriches, both extensive and intensive, varying in camp sizes and management practices (WCDoA & SAOBC, 2010). The breeding season for ostriches starts around May and continues until January the following year,

and this period is followed by a four-month resting period. On average, a female ostrich can produce around 30 eggs per year, but productivity can be higher (Barends-Jones & Pienaar, 2020). Figure 2 also shows that the 25 000 breeder birds can produce around 500 000 eggs, of which approximately 325 000 eggs will hatch when using the standard hatchability rate of 65%. The other 35% (infertile eggs), are sold either for consumption or as empty shells that can be used as décor or souvenirs (Barends-Jones & Pienaar, 2020).

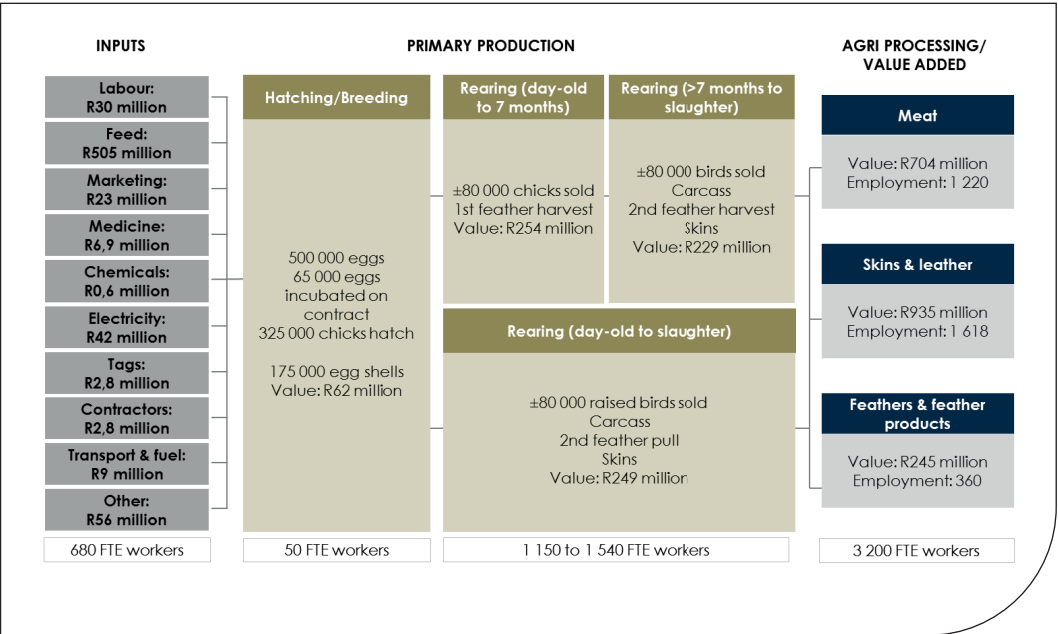
Figure 3 shows the value chain analysis for the industry and highlights the critical role the ostrich industry plays, including 5 500 jobs generated on-farm and in the value-adding facilities (Barends-Jones & Pienaar, 2020). Focusing on the value-added part of the industry, Figure 3 shows

Figure 2: Ostrich population and production process.



Source: Barends-Jones & Pienaar, 2020

Figure 3: Value chain map for the ostrich industry.



Source: WCDa, 2019

² Enteric fermentation refers to the “natural part of the digestive process in ruminant animals. Microbes in the digestive tract, or rumen, decompose and ferment food, producing methane as a by-product” (Morris, Enteric fermentation, 2019).

that for the final products produced (meat, skins and leather, as well as feathers and feather products), the total value of these outputs were around R1,9 billion.

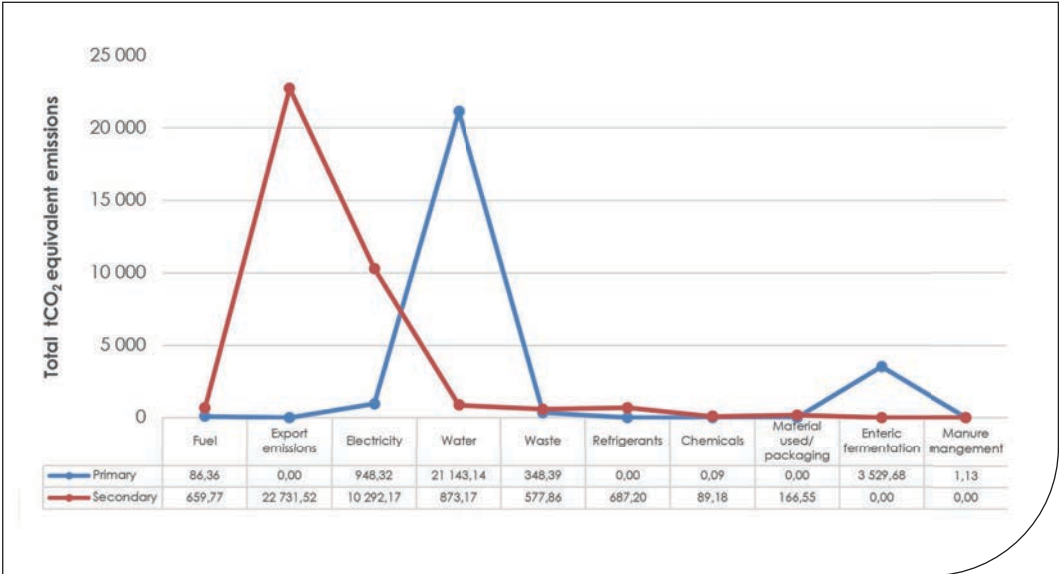
Figure 4 illustrates emissions of approximately 62 134,55 tonnes of carbon dioxide equivalent (tCO₂e) for the industry. Primary production (including activities like breeding, hatching and rearing), contributed 42% to total emissions compared to secondary production (including value-adding activities from leather, meat and feather production), which contributed 58% to total emissions.

Export emissions (22 731,52 tCO₂e) were the highest emitting activity for secondary production, followed by electricity (10 292,17 tCO₂e). Looking at the primary production curve, water (21 143,14 tCO₂e) and enteric fermentation² (3 529,68 tCO₂e) are the highest emitters. Enteric fermentation is minimal compared to export emissions,

water, and electricity. When comparing the water and electricity categories for both primary and secondary production, it is clear that secondary production uses much more electricity units than primary production, whilst the inverse can be seen for water, with primary production using exponentially more water units.

The results from the full report show that ostrich production has an extremely low carbon footprint compared to cattle, dairy, sheep, and other livestock systems. A conservative estimate suggests that for every kilogram of ostrich meat produced, an average of 2,79 kg CO₂ equivalents are emitted. This estimate is much lower relative to the 20,44 kg for sheep, 15,44 kg for beef and 4,62 kg for pork. Ostrich meat was still 0,46 kg CO₂e more per kilogram of meat than chicken meat (2,33 kg of CO₂e). The main reason for this stems from the fact that ostriches are

Figure 4: Total tCO₂e for the primary and secondary production according to emission sources.



Source: Barends-Jones & Pienaar, 2020

non-ruminant animals with comparatively low methane emissions, making it one of the most environmentally friendly meat categories available.

The results also confirm that the ostrich industry has close to zero waste since most by-products are used in the production process, with the major contributor to greenhouse gases coming from water use, electricity and export travel emissions. Exports are the main source of income, and the local market is not mature enough to support the industry. Therefore, it is better

to focus on the “other hotspot emissions” that are easier to decrease. It will have a positive outcome on the financial side of the industry and, at the same time, the overall carbon footprint. These “other hotspot emissions” will lead to carbon reduction strategies that can focus on better energy use, a water recycling and cleaning system, and setting up a manure management system.

To read the full report, please contact Vanessa at **vanessab@elsenburg.com**.

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Assessment of suppressive weed practices

by Dr Mike Ferreira, mikefe@elsenburg.com

Introduction

Weeds are one of the major constraints to crop cultivation that can affect crop yield based on species composition and density (Kropff *et al.*, 1992). The presence of each weed population in an arable field is the result of ecological reactions to previous management practices, soil characteristics of the site and the regional climate (Andersson & Milberg, 1998). A field trial was laid out to assess the weed community composition and evaluate eco-friendly weed-suppressive practices on the vegetable farm of the Department of Correctional Services at George.

Materials and methods

Preceding the field experiment, two weed assessments were conducted on winter and summer weeds. Subsequently, winter smother crops and mixtures were planted annually in the last week of April before the emergence of winter weeds. Planting of teff grass, the summer crop, always occurred

during the third week of November. Crop mixtures and rotations followed various sequences.

Treatment 1, for example, comprised the following sequential production practices:

- Year 2: herbicide applications – saia oats – brush cutting – mulching – herbicide application – teff grass – mulching
- Year 3: herbicide applications – cereal rye – brush cutting – mulching – herbicide application – teff grass – mulching
- Year 4: Braco mustard and vetch – brush cutting – mulching – teff grass – mulching

Treatments 2 to 7 followed the same production practices, but were planted to different crop mixtures, which also included saia oats, lupine and pink serradella. Treatment 8 served as the untreated control.

Brush cutting of all smother crops was performed during the first week of September when optimum plant biomass production was achieved. Mulching followed a month later in October. These practices

Table 1: Final relative winter weed density observed subsequent to the application of different treatments at George.

Common name and botanical name	Treatments							
	1	2	3	4	5	6	7	8
Cape marigold (<i>Arctotheca calendula</i>)	0,0	0,0	0,0	0,0	0,9	0,0	4,8	3,5
Scarlet pimpernel (<i>Anagallis arvensis</i>)	32,3	26,2	34,8	36,0	30,7	27,1	25,9	15,1
Shepherd's purse (<i>Capsella bursa-pastoris</i>)	0,0	0,0	0,0	0,0	2,6	1,6	2,7	2,1
Cape cerastium (<i>Cerastium capense</i>)	1,6	0,0	0,0	0,0	0,9	7,0	2,7	6,8
Twin cress (<i>Coronopus didymus</i>)	0,0	0,0	2,9	4,0	3,5	3,1	3,4	5,0
Devil's thorn (<i>Emex australis</i>)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Musk heron's bill (<i>Erodium moschatum</i>)	3,2	1,2	0,0	0,0	0,9	0,0	0,0	0,0
Wall fumitory (<i>Fumaria muralis</i>)	0,0	0,0	4,3	7,0	8,8	10,1	11,6	2,7
Smooth cat's ear (<i>Hypochoeris glabra</i>)	0,0	0,0	0,0	0,0	0,0	2,3	2,0	5,0
Common henbit (<i>Lamium amplexicaule</i>)	9,7	34,5	5,8	7,0	3,5	6,2	12,9	7,9
Italian ryegrass (<i>Lolium multiflorum</i>)	0,0	0,0	0,0	0,0	0,0	0,8	0,7	0,6
Little mallow (<i>Malva parviflora</i>)	0,0	0,0	0,0	0,0	0,0	2,3	0,0	0,0
Cape sorrel (<i>Oxalis pes-caprae</i>)	11,3	3,6	2,9	2,0	1,8	5,4	4,8	2,5
Ribwort plantain (<i>Plantago lanceolata</i>)	0,0	1,2	1,4	3,0	0,0	1,6	0,7	2,7
Annual blue grass (<i>Poa annua</i>)	21,0	15,5	13,0	8,0	8,8	8,5	8,8	4,6
Wild radish (<i>Raphanus raphanistrum</i>)	1,6	1,2	2,9	0,0	0,0	0,8	2,0	6,6
Curly dock (<i>Rumex crispus</i>)	0,0	1,2	8,7	10,0	27,2	0,0	2,7	20,7
Corn spurry (<i>Spergula arvensis</i>)	11,3	14,3	23,2	22,0	4,4	16,3	7,5	11,8
Chickweed (<i>Stellaria media</i>)	8,1	1,2	0,0	1,0	6,1	7,0	6,8	2,3



extended the period of weed suppression with thick plant mulches. Teff grass was not brush cut, but only mulched in the third week of March.

Weed assessments were conducted over the entire trial area. Subsequent to identification at each sampling point, the number of individuals of all weed species within a 0,25 m² quadrat was recorded separately.

Results

The most common winter weed was annual blue grass with a frequency of 8,4%. Additional winter weeds, which occurred within the quadrats in frequencies greater than 6%, included chickweed, wall fumitory, wild radish, corn spurry, and devil's thorn.

Final weed assessment revealed that scarlet pimpernel, apart from the control, was the most important winter weed across

all treatments and recorded relative densities above 25% in all treatments (Table 1).

The most important weed in terms of relative summer weed density was yellow nut sedge, which maintained a presence of 14,4% or more, across all treatments (Table 2).

The relative weed density of several winter annual weed species increased substantially when compared to the assessment preceding the field experiment. The final relative density of scarlet pimpernel in the weed community was above 25% across all treated plots (Table 1) compared to 2,6% in the preceding assessment. The relative density of yellow nut sedge showed a decrease from 66,1% in the preceding assessment to record final relative densities ranging between 14,4% and 47,6% (Table 2). This provided further proof of the impact of these integrated non-chemical weed-suppressive strategies on weeds.

Illustration of winter smother crop mixtures.



Table 2: Final relative summer weed density observed subsequent to the application of different treatments at George.

Common name and botanical name	Treatments							
	1	2	3	4	5	6	7	8
Cape pig weed (<i>Amaranthus hybridus</i>)	0,0	0,0	0,0	0,0	1,8	1,0	3,1	5,9
Common blackjack (<i>Bidens pilosa</i>)	0,0	0,0	0,0	0,0	5,3	1,0	2,1	0,0
Sweet signal grass (<i>Brachiaria eruciformis</i>)	4,3	0,0	0,0	0,0	0,0	4,8	8,3	0,0
White goose foot (<i>Chenopodium album</i>)	0,0	0,0	0,0	12,7	14,0	3,8	4,2	1,9
Flax-leaf fleabane (<i>Conyza bonariensis</i>)	4,3	4,8	2,9	7,3	17,5	22,1	3,1	3,3
Yellow nut sedge (<i>Cyperus esculentus</i>)	43,5	47,6	47,1	25,5	29,8	14,4	22,9	46,8
Thorn apple (<i>Datura stramonium</i>)	0,0	0,0	0,0	0,0	0,0	4,8	3,1	0,0
Large crabgrass (<i>Digitaria sanguinalis</i>)	0,0	0,0	0,0	0,0	7,0	17,3	21,9	3,7
Paterson's curse (<i>Echium plantagineum</i>)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Goose grass (<i>Eleusine coracana</i>)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Gallant soldier (<i>Galinsoga parviflora</i>)	15,2	9,5	8,8	0,0	1,8	0,0	0,0	0,0
Gnaphalium (<i>Gnaphalium subfalcatum</i>)	0,0	0,0	0,0	0,0	0,0	0,0	4,2	0,0
Milk thistle (<i>Lactuca serriola</i>)	0,0	0,0	0,0	0,0	0,0	0,0	3,1	0,0
Apple-of-Peru (<i>Nicandra physalodes</i>)	0,0	0,0	0,0	7,3	5,3	11,5	0,0	20,8
Evening primrose (<i>Oenothera parodiana</i>)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Prostrate knotweed (<i>Polygonum aviculare</i>)	0,0	7,1	20,6	38,2	10,5	9,6	10,4	11,9
Common purslane (<i>Portulaca oleracea</i>)	32,6	31,0	20,6	9,1	7,0	9,6	10,4	5,6
Spiny sowthistle (<i>Sonchus asper</i>)	0,0	0,0	0,0	0,0	0,0	0,0	3,1	0,0
Devil's-thorn (<i>Tribulus terrestris</i>)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0



Illustration of brush cutting of winter smother crop mixtures.



Illustration of mulching of teff grass.

Discussion and conclusions

Results indicate that similar to earlier reports, weed community composition at George varies in association with different cropping practices. Some weed species are strongly associated with zero-tillage, while others showed higher abundance following treatment with herbicides (Derksen *et al.*, 1993; MacLaren *et al.*, 2019). In addition, mown plots in wetter areas were associated with the native weed Cape sorrel (MacLaren *et al.*, 2019) while musk heron's bill and wild radish showed an association with tilled sites.

Fried *et al.* (2012) concurred that the presence of multiple crops and cropping times may considerably increase the regional weed species pool. The importance of this is that a larger weed species pool improves weed species richness, which

leads to more diversity and inter-species competition in weed communities. Persistent and troublesome weed communities may be controlled in an eco-friendly way by integrating zero-tillage, legume-based crop mixtures, brush cutting and mulching. This can promote more desirable weed communities and suppress noxious weeds like yellow nut sedge.

Acknowledgements

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Scientific publications published in peer-reviewed journals in the field of Animal Science: 2014 to 2015

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Introduction

Seventy-one peer-reviewed manuscripts were published from 2014 to 2018 by the Animal Science Division, Research and Development Services of the Department of Agriculture in the Western Cape. A peer-reviewed manuscript is a manuscript that has been thoroughly evaluated by other scientists and found to be scientifically sound and acceptable to be published in an internationally accredited journal. Twenty-seven manuscripts were published on sheep, 27 regarding research on ostriches, 12 involving dairy cattle, 2 regarding boer goats, 1 on broilers and 1 on technological application. Manuscripts were published on a range of subjects including nutrition, genetics, genomics, reproduction, animal health, meat science, animal behaviour, animal welfare, animal physiology, embryology and technology. Manuscripts were published by project leaders together with postgraduate students and co-workers at universities.

In *AgriProbe* Vol 17 No 2 we published the scientific publications published in peer-reviewed journals in the field of Animal Science for 2016-2017. Please scan the QR code at the end of this article for the complete list.

2015

Bonato, M., Cherry, M.I. & Cloete, S.W.P. 2015. Mate choice, maternal investment and implications for ostrich welfare in a farming environment. *Appl. Anim. Behav. Sci.* 171:1-7.

Brand, T.S. & Brundyn, L. 2015. Effect of supplementary feeding to ewes and suckling lambs on ewe and lamb live weights while grazing wheat stubble. *S. Afr. J. Anim. Sci.* 45:89-95.

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Brand, T.S., Tesselaar, G.A., Hoffman, L.C. & Brand, Z. 2015. Effect of cottonseed oilcake as a protein source on production of breeding ostriches. *Brit. Poult. Sci.* 56:325-329.

Brand, Z. & Cloete, S.W.P. 2015. An exploratory analysis to determine the impact of fixed effects and to establish genetic parameters across six types of ostrich feathers. *S. Afr. J. Anim. Sci.* 45:20-29.

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2014

Bonato, M., Malecki, I.A., Rybnik-Trzaskowska, P.K., Cornwallis, C.K. & Cloete, S.W.P. 2014. Predicting ejaculate quality and libido in male ostriches: effect of season and age. *Anim. Reprod. Sci.* 151:49-55.

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Brand, Z., Cloete, S.W.P., Malecki, I.A. & Brown, C.R. 2014. Embryonic development in the ostrich (*Struthio camelus*) during the first 7 days of artificial incubation. *Brit. Poult. Sci.* 55:68-75.

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Van Zyl, M., Scholtz, G.D.J., Van der Merwe, H.J. & Meeske, R. 2014. The influence of the inside diameter of the coring probe on the chemical composition of lucerne hay samples. *S. Afr. J. Anim. Sci.* 44:S41-S43.

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