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Harvest

Securing South Africa's Food Resources

Feed for success

A formula for thriving lambs

Living soil

Accounting for nitrogen in manure

Mothers of Earth

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Fore word



GERHARD STANDER,
Agricultural Director, CHEP SA

Welcome to Nampo Cape!

Since its earliest origins in 1967, Nampo has been a mainstay of South African agriculture and the South African farming community. As a trade show, Nampo Cape is a unique opportunity for farmers from the region to get up to date with the latest developments in our industry.

However, we all know that Nampo Cape also has the deeply human function of bringing people together. Producers get to compare notes and to renew friendships. Policymakers and politicians get to strengthen relationships with role players on the ground to better understand their interests.

Perhaps more than other industries, agriculture is about relationships, and at Nampo Cape we get to build on these relationships.

CHEP SA is intimately involved in agriculture, and has been facilitating the fresh supply chain in sub-Saharan Africa for decades. This year, we celebrate 40 years of business in South Africa. As a global organisation with a presence in more than 60 countries, CHEP helps growers to export within Sub-Saharan Africa and across the world.

Our pallets, crates and containers form the invisible backbone of the global supply chain. As pioneers of the sharing and circular economy, CHEP created one of the world's most sustainable logistics businesses through the share and reuse of platforms under a "pooling" model. CHEP serves fresh

produce industries extensively. We pride ourselves in being a sustainable company, committed to meeting the imperatives of the UN Sustainable Development Goals.

CHEP employs approximately 1 556 people in Sub-Saharan Africa and owns more than 10 million pallets, crates and containers through a network of more than 64 service centres, supporting customer touchpoints for both local and global brands.

For 40 years, CHEP has been helping growers move their product from the farm to the retail floor or the fresh produce market. From the orchard to the packhouse, to the fresh produce market or the retailer, our bins, Reusable Plastic Containers (RPCs) or pallets are part of the process, meeting the stringent import/export regulations of most countries.

CHEP makes smart farming possible by helping producers track and manage their bins within the farm environment and beyond, using RFID tracking. Data mining and analyses obtained from the tracking devices can give growers in-depth data on their operation, so they can make better-informed decisions on anything from the health of orchards to produce forecasts.

CHEP is represented at 18 of South Africa's fresh produce markets, where we service growers, market agents and cash buyers by returning CHEP equipment to our service centres. CHEP is in the business of making agriculture more successful—exactly like Nampo Cape. We're proud to partner with you to make this happen.



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EDS NOTE



GREG PENFOLD
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It is the best of times, it is the worst of times. The worst is that images of forests burning around the globe are waking the world up not only to the clear and present danger posed by climate change but also the undeniable role played by agri-business in undermining the natural environment on which all planetary life depends.

Entire industries will have to rethink their approach to business or undergo the risk of tremendous reputational damage. The

best is that all the resources necessary to embrace a paradigm that feeds the world's billions sustainably are available. As PMA's regional vice-president Anouk Sijmonsma pointed out at PMA's 9th Fresh Connections: Southern Africa Conference and Trade Show, held 30-31 July in Cape Town, the international and Southern African produce industry is being shaped by an array of positive trends including "technology innovations in stores and restaurants; science and technology disruption; talent management opportunities; and consumer trends. Her examples covered the opening of unmanned supermarkets and smart stores; automated warehouses; 'plastic' and package free fresh produce; food robots in restaurants; food safety breakthroughs; investments in Agri tech; the creation of alternative proteins; and opportunities for the industry to attract, develop and retain talent".

Of course, as Tatjana von Bormann, the programmes and innovation lead at World Wide Fund for Nature (WWF) South Africa, emphasised, producing enough food to feed 73 million people in South Africa by 2050 will entail a complete transformation of the system that will nurture human health and the environment. Practical actions proposed by the WWF to drive the necessary transformative change include "inclusive regenerative farming; optimal water use; responsible sourcing; reducing food waste; and dietary shift".

We look forward to the solutions that South Africa's ever innovative producers and retailers come up with at Nampo Cape.

Erratum. The name of one of the co-authors of the article "Nature's Gift" published in the previous edition of Harvest SA was unfortunately omitted: Dr Busiswa Ndaba, PhD (ARC Postdoctoral fellow). Email: ndabab@arc.agric.za



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Turnerland was founded in 1994 with the dream and vision to help S.A. farmers achieve success. In the beginning the focus was only on potato farmers, but later onion farmers were also included.

Over the past 25 years farmers have been offered the ability to mechanize their farming operations and become less dependent on human labour.

Turnerland is the only manufacturer of potato planters and harvesters in Southern Africa. Turnerland remains committed to the continued innovation and development of the potato farming industry.

Processing facilities have also developed, making scale of economics the key to financial survival in South Africa. Our Kompak® bunker packing facility is the first and only of its kind in the world. Its patent description puts it best: A sizing arrangement on top of a storage arrangement and by gravity feeding and filling packing arrangement. With its optical sizers and electronic grading instruments mounted on the top it is truly a world class set of equipment. The ability to quickly and efficiently sort between multiple potato sizes is crucial in a country like South Africa where there are no fewer than 16 grade sizes.

Turnerland's potato planters are also very popular and are produced in a range of two-, three-, four- and six-row configurations. This wide range of planting configurations ensures that every potato farmer's needs are met without issue. Our two-row planter has no equal and is a top seller. Turnerland is the only manufacturer in the world that offers a two-row "min till" towed planter to its customers.

Turnerland's range of potato harvesters has a firmly anchored base given their tried and



tested "scissor gradient" patent. Compared to the other conventional potato harvesters available in South Africa our machine is without equal. Our TL 170 CWM harvester is proof of this unparalleled superiority in the unforgiving conditions of South Africa. Our single-row mass tank harvesters and double-row elevator towed models (TL 170 CEM/CES) compare favourably to imported potato harvesters in terms of technology and craftsmanship.

As far as tip trailers are concerned Turnerland leads the industry with our seven-ton capacity models. For conditions that would prove too challenging for other types we recommend our 10 ton model with air suspension.

Turnerland also produces a wide range of mass processing equipment which includes: chevron loaders, gooseneck loaders, spiral cleaners/sizers and many more. This wide range of available equipment ensures that the needs of any potato or onion farmer can be satisfied.

There have also been plenty of challenges for Turnerland over the past 25 years, but none as severe as the rising steel prices. The ever climbing costs of acquiring good

quality steel have put a stranglehold on the South African equipment manufacturing industry. Turnerland's continued survival is a testament to our ability to overcome these odds. Another challenge for us is farmers that refuse to support their local equipment manufacturers. By choosing to purchase machines produced overseas they undermine the development of the South African farming equipment industry. The stunted growth of local equipment manufacturers will be to the detriment of future generations that will face an ever more challenging economic situation in South Africa.

What does the future have in store for Turnerland? We are engaged daily in the research and development of exciting new projects. Our aim has always been and always will be to produce ever greater equipment to ensure that our trusted clients can improve their productivity and success. We do this amidst a hostile economic climate and uncertain future. For Turnerland it is an honour and a duty to serve the farmers of the African continent to the best of our ability. ■

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From farm to fork

Sustainable practices boost the agri value chain

As smoke from jungle fires darkens the Brazilian megacity of São Paulo, bringing into question the desirability of large-scale industrial agriculture and the nature of its relationship with the natural ecosystems that support life on this planet, the importance of sustainable agriculture comes to the fore as never before.

The question is how to feed billions of human beings without destroying the basis of life itself. Some answers as to the role of the fresh produce sector were suggested at a panel discussion on sustainable agriculture at the PMA Fresh Connections conference, which took place at the Century City Conference Centre on 30-31 July.

Sustainable supply chains

The concept of “sustainability” has to be applied throughout fresh produce value chain as it affects growers, suppliers, and consumers alike.

“Sustainability in the value chain is to look after every step, from farm to fork. It is to ensure that the value chain is not only as efficient as possible environmentally, but that it also has a positive social impact on the community surrounding the operations by achieving a financial benefit for all involved,” says Siglinda Lösch, Group Sustainability Manager at Food Lover’s Market, who spoke at the event.

Fortunately, technology has progressed to the point that sustainable supply chain development has become a practical possibility.

“There are many technological developments in the supply chain, such as robotics and achieving more results from data mining which will develop into the artificial intelligence needed to improve sustainability within supply chains. This will advance the process to become more streamlined,



Siglinda Lösch, Group Sustainability Manager at Food Lover’s Market

quicker and more efficient by consistently delivering the correct product in the supply chain,” says Lösch.

What approach a company adopts towards sustainability will however depend on its own particular circumstances.

“Finding the right balance is always the challenge. There is also no specific way to

promote sustainable outcomes - the right time and place is key to promoting and achieving success,” says Lösch.

Sustainable farming adaptations

Retailers cannot sell sustainable products unless they are grown sustainably, so it is just as well that South African agriculture is



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Jason Scarpone, President and CEO, African Fertilizer and Agribusiness Partnership (AFAP)
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Tatjana von Bormann, Programme and Innovation Lead at WWF South Africa

embracing more sustainable farming practices such as Conservation Agriculture.

"Over the past 15 years, Conservation Agriculture (CA) has been adopted by sugar and grain farmers in KwaZulu-Natal, winter grain farmers in the Western Cape and summer grain farmers in the Free State and North West provinces. The KwaZulu-Natal No-Till Club has been conducting research since 1997 and ascribes the success of CA to favourable rainfall and high clay-content soils. Grain SA has a dedicated programme on CA for smallholder grain farmers. In the Western Cape grain production areas, the adoption of conservation agriculture has increased from 5% in 2000 to 60% in 2010," says Tatjana von Bormann, Programme and Innovation Lead at WWF South Africa, who also spoke at PMA Fresh Connections.

"However, it must be noted that CA is not always recognised as based on agro-ecological principles and is sometimes seen as a Trojan Horse for agri-businesses to continue to push products such as 'improved' seeds, pesticides, and so on."

Another important farming adaptation is that of sustainable intensification.

A recently published paper in the US provides evidence that America's agricultural landscape is now almost 50 times more toxic to bees, and other insects as a result of pesticides

"This means growing more on the land currently under production. Sustainable intensification was identified in the IPCC's 2018 report as a critical means of increasing the efficiency of inputs and enhancing health and food security. This requires sophisticated farm management and the use of precision-farming tools, such as GPS fertiliser dispersion, advanced irrigation systems and environmentally optimised crop rotations. These methods can increase yield and reduce the over-stressing of resources. Sustainable intensification can prevent the depletion of groundwater and the destruction of fertile lands through the over-use of fertiliser. Given the sophisticated technological requirements these practices are largely confined to large commercial farms," says Van Bormann.

No margin for error

If nothing else, rising input costs will be an important driver of more sustainable practices in future.

"Improved practices help to address both the unpredictable changes in the weather conditions as a result of climate change and rising input costs. Farmers are having to seek new ways of growing as a result of ecosystem and resource degradation, particularly soil and freshwater, but cost increasing are also pushing farmers to adopt more agroecological practices," says Van Bormann.

"A recently published paper in the US provides evidence that America's agricultural landscape is now almost 50 times more toxic to bees, and other insects, than it was 25 years ago, as a result of pesticides. The disappearance of pollinators is already pushing informed farmers towards less toxic input use. We've been able to work outside of the natural system because there was sufficient redundancy in the system to allow an extractive approach to resources. That space for mistakes is gone."

The consumer's choice

One sound commercial reason to embrace sustainability is that consumers increasingly prefer sustainably produced products.

"WWF's Conservation Champions, in the Cape Winelands, has already demonstrated the powerful additional tourism attraction of intact fynbos on farms. (One farmer says that when he takes people to see the

vineyards they marvel only at the sunbirds and proteas.) There is evidence of multiple improvements in ecosystem function, disease management and fire control through better practices. For the consumer there is also the advantage of eating more nutritious food as a result of better soil health and reduced chemical use," says Van Bohrmann.

Collaboration required

A large-scale shift towards sustainable practices to occur would have to be supported by government and coordinated planning is needed across different government departments.

"In addition to policy certainty so that farmers feel free to invest in their operations, we need integrated planning for our

landscapes, linked to a mix of policies that address barriers and opportunities for the land sector. This means balancing critical biodiversity and water reserves with essential agricultural land, prioritising the roll-out of new technologies and improving access to agriculture services and access to market for diverse and nutritionally rich crops. This cannot be addressed through a single policy, but rather requires a mix of activities that fall under the remit of different government agencies. It's not an easy task because if there is really to be a sustainable virtuous cycle then implicit in all these actions is the need to create youth employment, uplift women, improve livelihoods and support smallholder farmers and small businesses," concludes Van Bormann. ■

For more information, visit PMA's social media platforms.

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PMA Fresh Connections: Southern Africa took place on 30-31 July in Cape Town. Over 600 people engaged with PMA during this 9th annual event. Activities included networking receptions, conference sessions, new connections roundtable and a trade expo. The Center for Growing Talent (CGT) hosted a Career Pathways programme, Women's Fresh Perspectives Breakfast and dialogue, as well as a Young Professionals Breakfast. For more highlights, visit <https://www.pma.com/events/fresh-connections-southern-africa>.



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Women take the lead

The Agricultural Research Council celebrates the contribution of women in agriculture and food security

South Africa is celebrating National Women's Month, highlighting the role that women have played during the years. The Agricultural Research Council (ARC) is also celebrating the women in agriculture and science and the role that they play in food security. Women continue to play a leading role in the agricultural space. The ARC has developmental programmes such as Professional Development Programmes.

Petronella Chaminuka (PhD)



Dr P Chaminuka is the Senior Manager and Principal Economist in the Economic Analysis Unit of the Agricultural Research Council (ARC). She holds a PhD from the Environmental Economics and Natural Resource

Economics Group of Wageningen University & Research (WUR) in the Netherlands and an MSc in Agricultural Economics from the University of Zimbabwe.

Her PhD research focussed on economic modelling of land use options for rural communities living at the border of the Kruger National Park. She estimated economic losses associated with wildlife/livestock interactions for livestock farmers and explored the potential for integrated wildlife/livestock land uses.

Dr Chaminuka was awarded research grants by the International Foundation for Science (Sweden) and Wildlife Conservation Society (USA). She has taken numerous career-building short courses including

Leadership Development, Gender Integrated Planning, Multi-stakeholder processes of rural Innovation, Interactive Learning Competency for Rural Innovation and Veterinary Extension Communication.

She has more than 20 years' international experience working as an academic, researcher and facilitator in rural development processes. Before joining the ARC, Dr Chaminuka was a senior lecturer in Agricultural Economics at the University of Limpopo and an associate of the International Centre for development oriented Research in Agriculture (ICRA).

Dr Salmina Mokgehele (PhD)



Dr Salmina Mokgehele grew up in Limpopo, South Africa. She received her PhD from the University of KwaZulu-Natal. Dr Mokgehele is a researcher at the Agricultural Research Council Vegetable and Ornamental

Plants (ARC-VOP). Her research focuses on water management, phytochemical profiling of medicinal plants, essential oils analysis and nutritional water productivity of indigenous leafy vegetables.

Indigenous leafy vegetables and medicinal plants play an important part in alleviating hunger, malnutrition and major systems of indigenous medicine to treat several common ailments. The research has implications for indigenous plants production and conservation, especially for endangered indigenous species.

Dr Mokgehele's research can help explain the significance of medicinal plants in drug

development and promote indigenous knowledge and adoption of the plants due to high micronutrients including iron, zinc, vitamins A and C.

Dr Mokgehele shared her research findings with several scientific communities, published in peer-reviewed journals, is contributing in training postgraduate students and received best presentation award at the 5th International Conference on Agriculture and horticulture and the 10th African Crop Science Society (ACSS).

Dr Ashira Roopnarain (PhD)



Dr Ashira Roopnarain is presently a researcher and acting head of the Microbiology and Environmental Biotechnology Research Group at the Agricultural Research Council —Soil, Climate and Water (ARC-SCW).

She obtained her PhD in Molecular and Cell Biology from the University of the Witwatersrand in 2014, focussing on bio-diesel production from microalgae. She continued working in the field of bioenergy generation during a postdoctoral fellowship at ARC-SCW under the mentorship of Prof Rasheed Adeleke.

During her post-doctoral tenure, Dr Roopnarain gained expertise in various research areas including soil beneficial microbes, waste-to-energy research and biofertilizer research, and made a significant contribution to the establishment of a biogas research laboratory at ARC-SCW. She is currently involved in the management and upkeep of the laboratory, supervising



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postgraduate students and conducting research projects.

Dr Roopnarain has published scientific articles in international, peer-reviewed journals as well as chapters in books and has presented her research at national and international conferences. She is the recipient of several awards/achievements: Carnegie Women's Scholarship for Undergraduate Studies (2005), Member of the Golden Key International Honour Society (2005-present), National Research Foundation (NRF) Scholarship (MSc & PhD) (2009-2012), University of the Witwatersrand Postgraduate Merit Award (2010-2013) and NRF Scarce Skills Postdoctoral Fellowship (2015-2017).

Dr Roopnarain aspires to excel in her career as a researcher and to conduct research that will result in environmental remediation, upliftment of communities as well as food and energy security.

Dr Farai Muchadeyi (PhD)



Dr Farai Muchadeyi is the Senior Manager: Research for the Biotechnology Platform of the Agricultural Research Council, South Africa. She holds a PhD in Animal and Molecular Genetics from Goettingen

University, Germany.

Dr Muchadeyi's research interests are in the characterization, sustainable utilization and conservation of livestock genetic resources. She has worked on Animal Genetic diversity and characterization of indigenous animal genetic resources since 2004 and has published over 50 peer-reviewed articles in this field.

Her current research involves the application of genomics and population genetic tools in unravelling the genetic diversity and identifying adaptive features associated with livestock species from marginalized farming environments. She is passionate about investigating how genetic adaptation

can be harnessed in mainstream commercial agriculture. Her other projects involve the identification of the causal mutations of genetic disorders and the inclusion of molecular genetic marker information in selection programs. She also heads the Animal Genetics and Genomics research group at the Biotechnology Platform (ARC) managing various projects on livestock and wildlife genomics. She has mentored and supervised to completion 7 PhDs, 8 MScs and 1 BTec. She is currently a supervisor and mentor to 1 PostDoc, 8 PhDs and 2 MSc students who are training in advanced and statistical genomics relevant to the livestock industry of the smallholder and commercial farming sectors.

Kgabo Martha Pofu (PhD)



Dr Pofu is a Researcher at ARC-Vegetable and Ornamental Plants, born in Moletjie Moshate Sefateng sa ga-Maseba, Limpopo Province and matriculated at Mmakgabo Senior Secondary School. She

completed a B Agricultural Management and B Agric Mgt Honours degree in Plant Production in 2002 and 2003, respectively, at the University of the North. She then entered the Agricultural Research Council under the Professional Development Program (PDP) where she completed her Master of Agricultural Management in 2008 and PhD in 2012.

Dr Pofu completed her PhD at the University of Limpopo, where she used *Cucumis africanus* and *Cucumis myriocarpus* to illustrate that these indigenous plants to South Africa were resistant to the widely distributed and highly injurious *Meloidogyne* species in South Africa. The ultimate aim was to use the two plant species as nematode-resistant rootstocks in watermelon (*Citrullus lanatus*) production since watermelon cultivars have no genotypes that are resistant to *Meloidogyne* species. Also, she

demonstrated the first relationship between an insect and nematodes, whereby an insect breaks nematode resistance in plants.

She joined the ARC-Vegetable and Ornamental Plants as a researcher (Plant nematologist) in 2013, where she established a nematology laboratory with the help of postgraduate students. Her research focus is towards the use of nematode-plant resistance since the area has gained increased interest as one of the nematode control intervention strategies upon the global withdrawal of fumigant synthetic nematicides in 2005. She developed various projects with the aim of coming-up with an integrated nematode management strategy (INM), which would entail chemicals, bionematicides, phytonematicides and biological control agents. INM would benefit both smallholder and large scale farmers in terms of nematode management in crop production leading to sustainable food security.

Furthermore, she is engaged in community development projects through raising awareness of the damage caused by plant-parasitic nematodes in crop production through farmer workshops. She released the first report on the screening of sweet potato cultivars in South Africa, published in *Acta Agriculturae Scandinavica-Soil and Plant science* (Pofu et al., 2017).

In terms of research funding, she receives support from the private as well as public sectors. Her work has generated more than 30 journal articles, shared internationally and nationally. She already presented her work in more than 10 international conferences. She already trained more than 50 postgraduate students from BSc Fourth year to MSc and PhD levels. She has taken career-building short courses such as Senior Manager Programme (UP) and Advanced Operations Management (UCT).

The ARC wants to comment on the role that women are playing in the agricultural space and encourage more women to follow careers in agricultural and science. Young women are encouraged to apply for development programmes in the ARC to develop and further their studies. As we celebrate Women's Month, it is through platforms like the development programme that we can empower women and conquer poverty through science. ▲

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Accounting for manure nitrogen value

The application of animal manure in crop-producing agricultural fields is of great importance, especially for maize, wheat and other agronomic crops. It is the right of every modern-day farmer to know this important fact.

Animal manure adds organic carbon to the soil, which consequently improves soil health, fertility and then productivity. The microorganisms that are in the soil feed on organic carbon that is added to soil when we apply animal manure. For this reason, by adding animal manure to the soil, you are supplying food to the microorganisms that improve your soil health, fertility and quality.

Agricultural fields that are low in fertility status and poor productivity potential as a result of poor soil structure, high bulk density, and low nutrient and water holding capacity can potentially benefit from animal manure applications. While animal manure is known to improve soil quality and health (Moshia et al., 2015; Moshia et al., 2016), farmers must ensure that they do not apply manure more than two consecutive seasons in the same field.

When manure is applied to the soil, it continues to react with the soil to release nutrients and feed soil microorganisms for years. One risk of over application of animal manure or repeated application of animal manure on the same agricultural land is a threat of salt accumulation in the soil that can potentially change or break soil structure and limit microbial activities, crop growth and development.

Manure contains all essential plant nutrients, especially nitrogen, which is a chief nutrient in agricultural crop production. There have been uncertainties about how much nutrients in animal manure are available to the crops in the first year following field application where manure is applied to the soil and then mixed or incorporated into the soil. It is recommended that farmers

do not exceed 44 tons/ha (17 tons/acre) of manure application per years and must not apply manure for a period exceeding two years on the same field.

Always remember to take a sample of the manure and send the sample to the accredited laboratory for analysis for Total Solids (%), Moisture (%), Organic Matter (%), Ash (%), Ph, Soluble Salts (Ec), Total Nitrogen, Organic



Nitrogen, Ammonium Nitrogen, Nitrate Nitrogen, C: N Ratio, P, K, Na, Ca, Mg, Fe, Cu, Mn, Zn, B, And Al.

Let's assume a farmer is applying 44 tons/ha of feedlot or dairy manure to the soil in 2019. When animal manure is applied to agricultural lands to meet the nitrogen requirement of the crop, 40% of nitrogen from animal manure become available to the crops in the first year of application, and from the same manure applied, 20% N becomes available to the crops in the 2nd year, and 10% N become available in the third year. That's because animal manure is a slow nutrient release fertilizer through a process of mineralization. Feedlot manure is less moist than dairy manure, so assume a feedlot manure that has 5.94% moisture, and 1.343% nitrogen.

Manure applied = 44 tons/ha
Moisture content = 5.94%

Therefore, dry matter = 44 tons/ha (100 – 5.94%)/100
= 41.39 tons/ha

Nitrogen present in manure on dry basis = 1.343 % (from lab. Manure analysis results)
Therefore, N applied through manure = 41.39 * 1.343%/100
= 0.556 tons/ha

Only 40% of applied N through manure is available for in the 1st year of manure application.
= 0.556 * 40/100
= 0.222 tons/ha * 1000kg/ton
= 222 Kg N/ha (first year)

To see how many bags of urea would this be equivalent to, use the following formula:

$$\frac{\text{weight of nutrient (N)}}{\text{weight of fertilizer (Urea)}} = \frac{\% \text{ nutrient } (\% \text{ N in Urea})}{100}$$

$$\frac{222 \text{ Kg N}}{\text{weight of fertilizer (Urea)}} = \frac{46\% \text{ N}}{100}$$

$$\text{Weight of fertilizer (Urea)} = \frac{222 * 100}{46}$$

$$\text{Weight of fertilizer (Urea)} = \frac{222 * 100}{46}$$

This is equivalent to = 483 Kg urea (10 bags of urea fertilizer). ■

*M.E. Moshia, Dept. of Agronomy, The University of Fort Hare, and FAO-Intergovernmental Technical Panel on Soils, Rome, Italy, N.M. Mushia, Eastern Cape Dept.: Rural Development and Agrarian Reform, and A. Manyevere, Dept. of Agronomy, The University of Fort Hare
Matshwene.Moshia@Fulbrightmail.Org*

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The future's in the bag

Going digital with fertilisers

The world is currently undergoing radical digital transformation, which is viewed as an implementation of digital technologies in all sectors, including the fertilizer industry.

As a company that continuously strives to exceed customer expectations, Bagtech continues to develop its products with the latest in digital technology. "From basic level sensors, Servo controllers, loadcell amplifiers, right through to the central plant controller, all devices are connected to a high-speed industrial network and accessible via the internet," says Fred Coelho, CEO of Bagtech.

The core of digitalization is the vertical integration of business value chains and the horizontal integration of production, using internet services. The objective is the

ability to produce customized products in small lot sizes. Imagine, in the future, every product will have a digital counterpart—a digital twin—which contains all information pertaining to the real product. Machines and plants change their parameters and settings on-the-fly based on the type of product they are running without any human intervention. Let us imagine a scenario in the future: A precision farmer requires a specific fertilizer blend for a small section on farm based on data received from soil testing. The farmer opens an app and places an order for that particular blend. An ERP and MES system automatically plans and sends a BOM to the fertilizer blending plant. The farmer is notified when the blend will be ready based on current production and order pipeline. Production is executed based on the farmer's requirements without human intervention.

For systems mentioned above to run flawlessly, maintenance needs an entirely different outlook. Waiting for something to fail before replacing it is not an option. However, replacing something before it fails means you may not have used its full life cycle.

Digitalization allows for everything to be monitored, and its data logged to cloud servers, right down to a simple sensor. Simple algorithms can monitor devices and pinpoint anomalies before they become critical. Perhaps the maintenance department would like a notification when a specific part has done a set number of cycles to schedule a replacement. This is digital maintenance.

All Bagtech solutions are ready for this digital era and the next industrial revolution, Industry 4.0. Make sure your future investments are ready too. ■



Increasing quality with innovative design

With fertilizer granules, size matters

The chemical fertilizer market has become increasingly competitive, which is why it is essential for suppliers to ensure they can deliver a premium quality product while still maintaining a competitive price. Part of what determines granular fertilizer's quality is the granule's size and distribution, the acceptable size range of granular fertilizer having evolved in recent years.

Today granular fertilizer is typically expected to be between 2mm and 4mm in size with an acceptable distribution of between 95% and 98% in this range. This is quite high considering 90% was once considered acceptable.

Undersized granules, commonly known as fines, cause caking which can affect fertilizer handling equipment and create blockages for the end user out in the field. Additional to this, a uniformly sized granule ensures



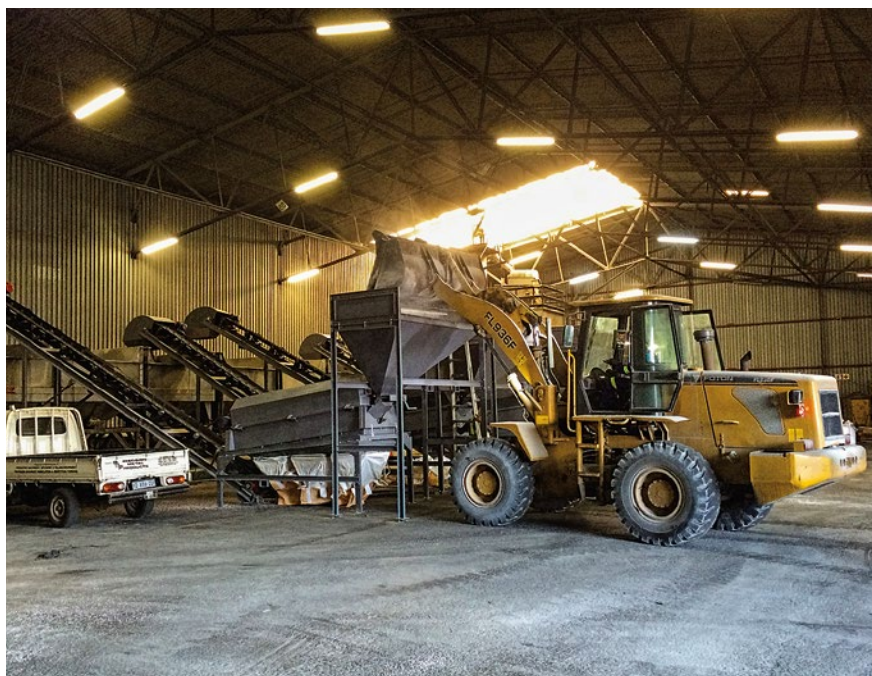
consistent and sustained release of nutrients into the soil. Fertilizer fines reduce efficiency as the dust is easily blown away or dissolved and carried away by first rains.

In a granulation system, fines and over-size screens are generally installed after the

dryer in order to recycle over- and under-sized product back into the system. Market pressure has resulted in most granulation facilities installing additional "polishing screens" which are installed downstream of the cooler in order to ensure a good particle size distribution.

Despite these improvements on the side of the manufacturer, fertilizer quality can be negatively affected by factors such as transport, handling systems, air temperature and humidity.

This makes it essential for blending or bagging operators to ensure they have the appropriate screening systems in place to ensure a quality final product. Incorporating a fines screen into a warehouse receiving process is fundamental to ensuring your operation has a premium quality product as a starting point. Precision Metal Products (PMP) have developed rotary screens specific to the fertilizer industry that are very gentle on product, efficient and require minimal maintenance. These screens can accommodate a wide range of capacities, and are easily incorporated into a warehouse distribution system. They have also designed mobile screening systems which offer versatility and





or bagging process; however, a rotary screen is not always feasible due to space constraints or cost. For this reason, with its experience and knowledge of blending and bagging operations, PMP have developed a wedge wire gravity screen as a more compact and cost-effective solution. The innovative wedge wire screen

system which gently and efficiently coats the granular fertilizer with a dust suppressant liquid with the use of a paddle mixer and automated spray system. This process is beneficial as it greatly reduces product breakdown between the bagging facility and the end user. The coating systems can also be used to add a wide range of liquid additives which can increase fertilizer efficiency and stability and optimize product yield for the end user.

The fertilizer industry has shifted its market expectations for increased product quality to improve efficiency and yield for the end user. Screening and coating systems have become essential in meeting market demand and end user requirements. This is why PMP continues to design and develop equipment capable of meeting market demand. PMP keeps the end user in mind and assures that the best solutions are implemented in a cost-effective manner. If quality fertilizer is your main concern, then PMP will be able to assist you, from small operations to large volume distributors. Visit www.pmpproducts.co.za or contact them directly so they can tailor a solution to suit your requirements. ■

allow operators to pre-screen problematic products prior to blending or bagging.

During storage it is still likely that the granules will create further undersized particles even after screening. Again, this depends on multiple factors such as how the product is handled, air conditions and duration between the pre-screening and the blending or bagging process. Additional rotary screens can be incorporated in line with the blending

design can be easily incorporated into a bagging or blending system without greatly increasing the system's footprint. The wedge wire screen can also be used in conjunction with a dust-extraction system to increase efficiency and air quality.

Another process which can contribute significantly in reducing complications from dust is to coat the fertilizer with a dust suppressant. PMP has developed a coating

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The missing middle

Young South Africans want to farm, but the system has to focus on their needs

Persistent unemployment has become synonymous with the youth experience across South Africa. Youth unemployment rates are almost four times higher than the regional average – 62% of South Africans between 15 and 35 years are unemployed and of these 60% have never been employed.

Add to this the fact that even those who have jobs are earning below what is considered to be a monthly living wage and what emerges is youth employment crisis.

The agricultural sector could be a key source of job creation for young people. But conventional opinion has it that they are

turning their backs on the sector despite high levels of unemployment. So what gives?

Drawing on personal narratives collected from 573 young people across three prov-

Overall, the prevailing notion that they are turning their backs on the sector seems to hold true. Over 60% of respondents felt that it was harder to make career decisions relating

There aren't enough farmers who fill the space between subsistence agriculture and large-scale agri-businesses

inces in South Africa, recent research has begun building a picture what young people think and feel about work in agriculture.

to agriculture than other careers. But our research dispels the view that this is because of a lack of interest.

Based on our interviews, more than half of those surveyed suggested that they saw a place for agriculture in the long-term visions for their lives. This was either as a useful stepping stone, or as an exciting option in its own right.

The problem wasn't a lack of interest: rather it had to do with the fact that jobs in agriculture were either back-breaking and financially unappealing—at the subsistence level—or they were in large agri-businesses where workers are often treated appallingly.

These voices present a clear mandate to those interested in the future of youth, land and employment in South Africa: open up an economic space for viable family farming in South Africa and young people will throw their energy into the sector.

Stigma, risk and reward

Unsurprisingly, agriculture appears to carry a stronger set of negative stigmas than other careers. Examples included themes around agriculture being for poor and elderly people, on the one hand, or, on the other, for wealthier white people.




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Agriculture was also perceived by many as a risky career path that involved a lot of hard work for little financial reward.

One 27-year-old put it this way:

I was 17 and had to put through my university application. I sat my parents down and told them that I wanted to do farming as one of my career choices. They said no, farming was for old people and they didn't put me {through} school to get dirty running after pigs.

They wanted me to do an office job. I had to choose between my parents funding and career.

Other themes that emerged included peer pressure, shaming, racism and substantial family pressure when considering agriculture as a career choice.

A 20-year-old from Limpopo said:

I once went to a certain farm to buy tomatoes, while I was there, there was a huge argument between the white boss and a worker who put wrong grades of tomatoes, she was kicked and fell on tomatoes in front of the customers, I started to have questions about working in agriculture.

Nevertheless, over a third of the young people we spoke to expressed positive views about working in agriculture.

Many want to work in agriculture. But they said they battled to navigate the spaces between their own vocational motivations, the available work opportunities and the pressures they encountered from friends and family.

A 25-year-old from Kwa-Zulu Natal put it this way:

I studied agriculture at university. It was a very good career path. I enjoy doing it a lot while my friends were against it, but I carried on {to} finish my year.

But the problem came when I have to apply for a job. I didn't get any job and that was painful to me and it felt like it {was} a waste of time because my parent have faith in me now I'm sitting home with my degree. But I still have hope.

Context

Stepping back to look to contextualise youth narratives within the broader food system presents good news and bad.

The bad news is that there aren't enough farmers who fill the space between subsistence agriculture and large-scale agri-businesses. This "missing middle" leaves young people feeling trapped.

They either feel trapped by the poverty, isolation and backbreaking drudgery associated with rural subsistence agriculture. Or they face the unappealing prospects of unskilled minimum wage jobs on increasingly industrialised (and often racialised) commercial farming operations. Seen in this light, it's not surprising that young people are turning away from agriculture. The choices they are making simply reflect the fact that they are avoiding work that is demeaning.

There is some good news: many young people see potential. They aspire to entrepreneurial work with a deeper social purpose. Encouragingly, many believe that the act of working on the land to produce food is meaningful work. ■

*Luke Metelerkamp, Post-doctoral research fellow, Rhodes University.
theconversation.com*



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Feeding for success

The lamb's first 48 hours are determined four weeks before birth

Research indicates that as many as 90% of all lamb fatalities up to and including suckling can arise during the first 48 hours. Being moved from a protected environment to the harsh exterior is extremely stressful for the lamb. The colostrum requirement for a high lamb survival rate is 200 cc within the first 30 minutes after birth.

Regardless of the location where the ewe gives birth, she needs to have been fed correctly to meet the colostrum requirement.

Norms

Google "ewe feeding" and you will instantly have access to 2.14 million articles. Despite the overwhelming amount of information available, the first 48 hours remains a period fraught with lamb-related problems. Table 1 shows the point of departure for a quality ration for a ewe that is about to lamb or is lactating early. The ration is tasty (lucerne and molasses), with more than 15% protein, of which at least 26% is high-quality bypass protein. The mixture contains urea necessary for cellulose digestion and as a bonus, it helps keep the rumen pH constant, which is critical for a constant flow of milk. It has enough energy to deliver a viable 4–6 kg birth-mass lamb without making the ewe too fat. The phosphate content of 0.3% ensures an up-to-standard energy transfer of 0.7 % Ca, which is adequate to ensure the muscular contraction of the womb.

Table 1. Highly productive ewe fodder

Ingredients	Kg
Wolmeester concentrate	250
Mealie meal	450
Lucerne	300

The abovementioned values stem from a great deal of research and practical studies on ensuring the ewe has 3+ condition score during lambing. These ewes' lambs have a survival rate during the first 48 hours 15–20% higher than those of ewes with a 2-2.5 condition score. Ewes with a low condition score manifest behaviour patterns including rejection of the lamb, acting more aggressively and spending less time with the lamb and more time at the feed trough. This hormonally driven behaviour stems from her condition and the lamb does not receive the best care. If the condition score is 3+, a 5 kg viable lamb is born and the ewe has enough quality colostrum to meet the newborn lamb's needs immediately and completely.

A distinction must be drawn between condition and fat. A ewe fed on mealies only will present well but will not achieve the lamb-fatal-ity-reducing condition score of 3. The right condition score for milk production is achieved by providing protein, energy and minerals in the right proportion.

4 + Condition score

Surely a condition score of 4 is even better? Theoretically this is the case with twins, but the danger of animals being overweight before lambing time is the threat of ketosis ("domsiekte"). This condition can manifest when ewes are overweight during late pregnancy. The lambs become too large, the birth canal accumulates fat, the rumen volume becomes too small as a result of the large lambs and fat accumulation. The ewe fills her rumen physically with food but there is too little energy available for her needs during late pregnancy. To compensate, her body begins to break down the excess fat, releasing ketones into the bloodstream, which can lead to brain damage. The name "domsiekte" comes from ewes that walk stupidly ("dom") in circles. If it is noticed in time, molasses can be helpful, but the animals usually die. The only solution is prevention by thoroughly preparing the animals in the last 6 weeks before lambing, drawing on expert advice and practical observation to ensure ewes achieve a condition score of 3. The lambs of ewes with ketosis normally do not survive the critical 48-hour period.

Milk fever

Milk fever and ketosis are sometimes confused because they have similar symptoms, with ewes lying down and being unable to stand up again. Milk fever is caused by a (possibly induced) shortage of calcium that makes womb contraction take longer. Intravenous calcium administration normally solves the problem quickly but prevention is best. The primary cause is normally a grain-based diet in which the calcium layers are incorrectly applied. A high-potassium diet can also play a role. Adding Epsom salt to the feed can help prevent milk fever but it must be mixed thoroughly or the situation can worsen. Make use of expert ruminant nutrition services to help.

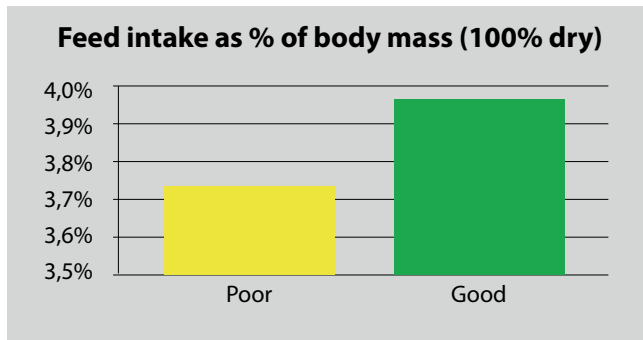
Ewes close to lambing usually produce a transparent white mucus membrane after which their waters break. After oedema release, the ewes must lamb within 60 minutes or at least 45 minutes after the hooves appear. Sub-clinical milk fever can arise when ewes take longer than normal to lamb. The extended period spent in birth stresses the lamb unduly and it enters the critical 48-hour period in a weakened condition that could easily have been prevented.

Influence of raw materials

What about a ration that meets all the nutrition requirements on paper but does not deliver? Figure 1 shows data from research by RCL Animal Feed where two test groups were fed rations with identical raw materials except for a 15% component of either good and poor roughage. Intake of the poor roughage source was 6.2% lower than the good one. The net effect was that the poor roughage yielded an 18.2% poorer feed conversion ration, with animal performance poorer by R124 / lamb.

Under normal circumstances, the ewe's intake of dry material is reduced during the last couple of days before lambing. It is obviously important for the ewe to take in the maximum of what she is prepared to eat without the hindrance of external factors like poor roughage.

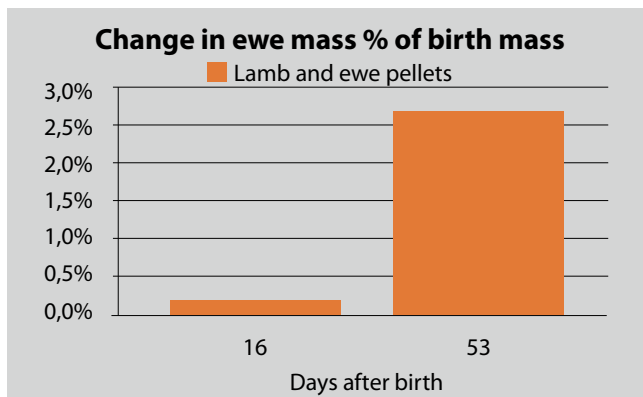
Figure 1. Influence of roughage quality on voluntary intake with different types of roughage (15% content)



Another RCL study evaluated ewes in an intensive system with complete feeding (Epol Lamb and Ewe pellets). After application, ewes had *ad lib* access to the feed in pellet form.

Figure 2 shows the post partum mass difference of ewes that lambled in a condition to recover sufficiently for fast reconception, a critical factor in intensive systems. This did not take place at the cost of the lamb – Figure 3 shows that viable lambs (4.8kg at birth) were born that, in the case of both single lambs (422 grams/day) and twins (340 grams/day), grew by more than 2% of their birth mass daily, realising a positive margin of R440 / ewe within the context of the study.

Figure 2. Change in ewe mass with correct feed management

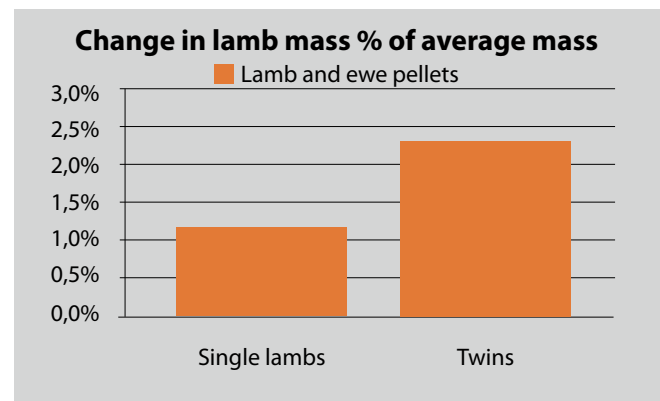


Lambs in the study with optimal ewe feeding



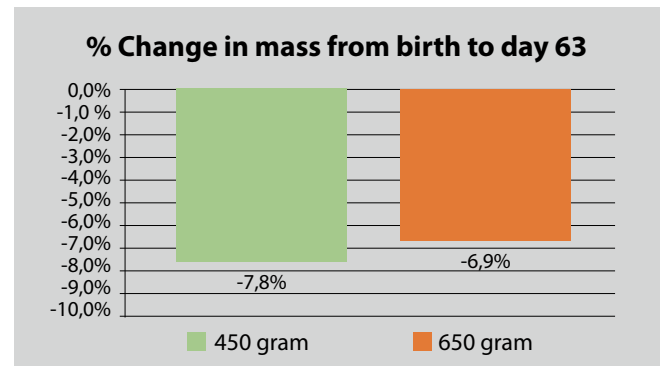
Ewes with condition score of 3 before lambing

Figure 3. Change in lamb mass with correct feed management



In a parallel study, the same raw material was used, with ewes receiving a 26 % supplement at 450 and 650 grams per day with teff hay freely available. Figure 4 shows mass reduction in ewes after lambing given that lambing ewes were not at condition point 3. Lambs did not receive their full portion of milk in the first 48 hours. Lambs grew by less than 2% of their body mass daily (single lambs 271 grams/day, twins 211 grams/day) despite creep feeding being provided. The primary cause of the poorer animal performance in this case was the quality of the teff, which comprised 3.75% protein. The value of the high-quality supplement to give lambs their best chance in the first 48 hours was nullified by the poor quality of the rest of the roughage. The value of a complete high-quality diet even in extensive conditions cannot be overemphasised. Grazing must be managed so as to offer the best quality. Poor quality grazing annuls the value of good supplements.

Figure 4. Change in mass of ewes with sub optimal feed during birth



Conclusion

The lamb's critical 48 hours after birth are determined by the preparation of the ewe in the preceding 4-6 weeks. A condition score of 3 is not enough—it must be achieved through the specific preparation of appetising feed with the right protein, energy and mineral balance. ■

Johan Mouton, RCL Animal Feeds (References available on request).

Net surplus

Sheltering the world from hunger with shade net farming



Between now and 2050 it is estimated that the world's population is likely to rise from 7.3 to 9.7 billion. In order to feed everyone, agricultural role players will need to solve problems such as poor and seasonal crop production and damage caused by sunburn, hail, insects and drought.

Shade net is an option that can be implemented fairly quickly to not only overcome many of these impediments, but to also increase production, yield and income. Many farmers have already made the choice to erect large-scale shade net structures and are reaping the benefits from it.

In hot climates vegetables and cut flowers are grown under shade cloth to reduce heat and light intensity. With the help of science, innovative light manipulation and UV management, photo-selective colour netting create an environment that can be manipulated into optimal growing conditions for crops to flourish in.

In the short-term, shade net structures boost farmers' profits, by cutting costs and increasing their quantity and quality of yields. Over the longer term, it may even contribute to the solution of feeding the world's growing population.

Protect and enhance

A well-constructed shade house can provide the grower with a protected microclimate, ideal for seedlings, vegetables, cut flowers and pot plants. In hot climates, vegetables and cut flowers are grown under shade cloth to reduce heat and light intensity. With the help of science, innovative light manipulation and UV management, photo-selective colour netting creates an environment that can be manipulated into optimal growing conditions for crops to flourish in. Shade netting can also help benefit water efficiency as it reduces the amount of evaporation from free water surfaces.

By using the correct mesh size to manipulate air movement through the shade house the user can control the humidity and therefore also the transpiration rate.

Shade net can be used to manipulate plant growth, for example to get stem length, use a net that allows far-red wavelengths through. This will force the plant to stretch to the light. White shade net or a combination of black and white has been used very successfully on various vegetables, especially when grown hydroponically. Light spectrums can help determine the right colour and percentage for your crops.

It is very important to note that there is no universal shade net to manipulate light. Each plant has its own unique requirement, and each region and crop has its own challenges.

A well-constructed shade net structure will provide protection against adverse weather conditions. It is imperative that some components relating to the structural elements be taken into consideration when planning its design.

Tensioning the net

The net should always be tensioned in the length first, then the width. It must be neatly and tightly stretched, but not too rigidly. If the net is not tensioned tight enough, abrasion may occur on the cross cables and the net could be torn by wind. However, if the net is too rigid it may be mechanically damaged and even possibly tear.

It is recommended that nets be tensioned mechanically with a chain and block and tackle. As this is a complex procedure, they suggest that customers contact their sales staff for an in-depth explanation. It is important to remember that the bigger the surface

area between the poles, the riskier the ratio becomes between the surface area in relation to the circumference around each pole. The poles should therefore not be planted too far apart.

The most appropriate time to erect nets is at the coolest time of day. Net not tied securely may shrink up to 10% when exposed to heat for a short period.

Anchors

The anchors are the most important component of the structure. Anchor failure will cause the structure to collapse. In 95% of structures with storm damage, it is the anchors that break, pull out or move.

The anchors should preferably be installed at an angle of 45° or less with the horizon. At 45° a force of 3.5 ton is exerted on the anchor when the tension on the top stay wire is 2.5 ton. Should the anchor be planted at 60°, the force on the anchor increases to 5 ton with the same 2.5 ton tension on the top stay wire.

Anchors should be planted at least 1.5 m deep. It must be able to handle a force of

± 7 tons in order to carry the weight of the structure and withstand the strength of the wind against the sides of the structure.

The wind force against the sides is determined by the density of the net and height of the structure.

The soil around the anchor must be compacted layer for layer using rock or stone for optimal compaction. Where necessary, the anchor should be buried under the wall (undisturbed ground) so as to prevent it lifting against the wall in wet conditions. ■

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Citrus talent shines at AGT awards

"I tell my students, 'When you get these jobs that you have been so brilliantly trained for, just remember that your real job is that if you are free, you need to free somebody else. If you have some power, then your job is to empower somebody else.'" Toni Morrison



Nonkululeko Sambo

Agri's Got Talent (AGT)

When Anton Rabe, the force behind AGT, approached CGA to co-sponsor AGT and get the citrus industry involved, it was a no-brainer. For the past five years we have watched from the sidelines as this brilliant initiative supported by VINPRO, SATI and HORTGRO has grown and blossomed. In 2019 the citrus industry was added—and citrus industry workers were invited to join their deciduous and grape industry compatriots in sending a short clip showcasing their musical talent. Over the past five years' workers in the grape and deciduous industry have been buoyed by the recognition that this competition brings. In the first year of involvement the citrus industry was thrilled to have two finalists in the top ten; Mario Christoffels (who has the stage name Mario Blunt) from Zandvliet Indigo, and Nonkululeko Sambo from KMI Farming in Nelspruit. A press release from AGT:

An agricultural worker in the citrus industry from KMI Farming in Nelspruit, Nonkululeko Sambo, walked away with the Agri's Got Talent (AGT) 2019 crown in what was described as the toughest competition yet. Magdaleen Philander from Nonna Estate in Worcester was

second, and Zenobia Pietersen from Marianne Wine Estate, near Stellenbosch, was third.

Eight days ago Sambo, who has never flown in an aircraft before, boarded a flight to Cape Town to join nine other talented agricultural workers to prepare for the gala evening final that was held at the Lord Charles Hotel in Somerset West on Friday night.

And the talent shone through. Sambo won the judges and the crowd over with her version of the Leonard Cohen song, Hallelujah.

Over the past five years' workers in the grape and deciduous industry have been buoyed by the recognition that this competition brings

Sambo who started as a general worker on a citrus farm worked her way up to complete an agricultural diploma and is currently an intern at KMI Farming.

"I didn't really have big singing dreams, but it was my friends and family who encouraged me to enter. So I took a chance," an overwhelmed Sambo said.

She won a cash prize of R5 000, clothing, make-up and life-skills and voice training, as well as a recording contract worth R15 000 from Wynand Breed, owner of Traxtudio in Worcester.

Congratulations Nonkululeko, the citrus industry is proud of you.

Dam levels

Growers in Letsitele are facing the same challenge as Western Cape did with day zero forecast for October/November 2019; the Tzaneen dam stands at 12% (2018 – 36%). Elsewhere in the country things are a lot better—the massive Gariep dam (4 903 million cubic metres) that feeds Sundays River is at 89% (91%); Loskop dam in Senwes is at 87% (99%); Flag Boshielo in Hoedspruit is 63% (93%); Berg River dam in Boland is 100% (86%); Clanwilliam near Citrusdal 92% (99%) and Kouga in Patensie has recovered from 7% in 2018 to 44% now. A full report on dam levels of importance to the South African citrus industry can be found on www.cga.co.za ■

Justin Chadwick, CEO, Citrus Growers Association

Packing with a punch

Ensure your packer runs at maximum efficiency

Maintaining pack house productivity and efficiency is the number one priority for fresh produce packers and growers in order to remain competitive.

This is especially important during short growing seasons, where an abundance of fresh produce may have to be packed within just a few weeks. The most important parameter in measuring pack house productivity is units packed per worker hour. The main factors that affects productivity can be divided between actual packing line and operational 'downtime' issues, both reducing available packing time.

The key factors affecting productivity is the lack of product at a line. Implementing the PP-300 range of auto packers with the soft bin tipper integrated will ensure your packer



runs at maximum efficiency, eg A15C, 72 count, 16kg, 4 layers @ 300 cph/ 4.8 tons p/h. The dry bin filler DBF-C has a production capacity of 6 tons per hour; integrating 42x DBF-C fillers will up your production to 40 tons per hour. The fastest dual stage tray

erector TE-800D will eliminate your lack of packing material at the line, erecting at a speed of 2400 cartons per hour. Knowing Gossamer design and manufacture all equipment locally will give you the peace of mind to operate at top efficiencies. ■

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- JP LANDGOED -

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DBF-C



DBF-1



DBF-2



TE-800D



Wine revival underway

Smaller crop delivers great quality

While parts of South Africa continue to suffer from severe drought conditions, there is a revival in the wine industry, characterised by reinvestment, strategic partnerships, upward price trends, focused marketing actions and water-wise practices.

According to SAWIS (South African Wine Information & Systems), the 2019 wine grape crop was the smallest in 14 years due to the after-effects of the preceding drought and variable weather conditions. However, experts say the smaller wine grape crop has delivered one of the best vintages yet, has contributed to a hike in wine prices and compelled producers and cellars to relook their business models.

"The smaller berries of the 2019 crop had very good flavour concentration and were characterised by good acidity, sugar and elegance," former Vinpro consultation service manager Francois Viljoen said in the wine industry organisation's 2019 Harvest Report.

Although wine producer income was under pressure from a series of small yields in the past few years, coupled with annual cost hikes, lower wine stock levels locally and globally granted the industry the opportunity to negotiate higher prices. The average prices of bulk and packaged wine increased by 24% and 5% respectively in the course of 2018, and the average net farm income doubled from a low R6 644/ha in 2017 to R14 949/ha in 2018.

"We hope to build on this momentum to ensure a sustainable environment for investment, despite strong global competition and the fact that pricing relies on availability, especially in South Africa's counterparts in the southern hemisphere," says Vinpro MD Rico Basson.

According to Siobhan Thompson, CEO of WoSA (Wines of South Africa), the industry focuses on both volume and value growth in Asia, Africa and North America, while

maintaining market share and growing value in traditional European markets. This, while Vinpro and Salba (South African Liquor Brand Owners Association) are actively working towards establishing favourable trade agreements with these and other prominent export markets.

"Wine grape producers continuously adapt to climate change by converting research into practical, innovative solutions in the vineyard and cellar," says Gerard Martin, executive manager of Winetech (Wine Industry Network of Expertise and Technology). This includes precision soil water monitoring, adaptive irrigation practices and a focus on drought-resistant wine grape cultivars. Producers are reinvesting in their vineyards following a slump, by planting high quality grapevines that have been earmarked for specific brands and markets.

"The South African wine industry is entering a new phase of repositioning, partnerships, consolidation and investment," Basson says.

"We're smaller, but more focused, confident and ready to invest in our future. It starts with every link in the value-chain. Build and maintain relationships with the right partners for a stronger, more sustainable wine industry," says Basson.

The industry remains committed to investing in its most important partners—those working and living in wine industry communities—through initiatives aimed at training and development, socio-economic support and curbing the harmful effects of alcohol misuse.

"We support entrants to the industry, including black farmers, wine business owners and entrepreneurs in the wine industry value-chain in our strive towards an inclusive, transformed industry," says Wendy Petersen, operational manager of Witu (South African Wine Industry Transformation Unit) ■

Vinpro

Did you know?

South Africa is the eighth largest wine producers globally and produces 4% of the world's wine.

The wine industry value-chain contributes more than R36 billion to the country's GDP and employs close to 300 000 people.

19 million glasses of South African wine are enjoyed world-wide every day.





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We grow people in the wine industry through training, ethical trade, socio-economic upliftment and BEE support.



2015

2016

2017

Accelerating adaptation

Risk management is an integral part of the agricultural landscape

MC Loock, senior manager of agribusiness at Standard Bank, gives insight into risk management and explains why it should be an integral part of farming.

Seasoned South African farmers are well acquainted with long-time risk factors that go hand in hand with the agricultural landscape. However, in a fast-changing environment with catalysts like cutting-edge technological advancements and climate change speeding up the evolution of this industry, there is an even greater need to manage risk effectively within these changing circumstances.

The nature of risk management

MC Loock, senior manager of agribusiness at Standard Bank, recently spoke on Grootplaas on kykNET, giving valuable insight into risk management. He explained why risk management should be an integral part of farming.

"Risk can be defined as the point between absolute certainty and absolute uncertainty and is intertwined in the agricultural supply and demand chain. In the agricultural sector, risk originates from of a myriad

of factors such as complex biological processes, market globalisation, established price-forming mechanisms and the strategic nature of food security.

"When looking at factors that further complicate the South African agricultural landscape, farmers are increasingly subject to global warming and shifts in consumer preferences. Growing concern towards ethical production as well as food security, a deregulated market environment and policy uncertainties regarding land reform, is but a few of our current risk role-players."

Risk identification

Loock explained that risk management starts with a process of risk identification. "We identify relevant risk factors through an environmental analysis that looks at the political, economic, social, technological and legal sectors, and how they impact your business environment.

"When it comes to risk management pertaining to factors in the political environment specifically, the bank analyses the government's impact on your business with regards to economic management and the efficacy of state departments in creating and maintaining new markets. Economic

environmental factors that are assessed can include the per capita gross domestic product (GDP) growth rate, inflation, interest rates and of course exchange rates.

"Social factors that impact agricultural companies the most, are often dependent on population trends and can include variables such as education, mobility and the availability of knowledgeable workers within the agricultural industry," he added.

The most critical environment within the agricultural sector that is really fostering growth and advancement, he explained, is technology. "Global positioning and information technologies, in particular, helps us to apply new growth techniques and allows for sufficient monitoring throughout the value chain, which also contributes enormously to traceability and risk management."

Risk management techniques

Loock explained that when it comes to risk management techniques available to farmers, there is a huge emphasis on diversification that should be implemented throughout various phases in the farming process.

"Diversification can be applied to a myriad of different fields which include production, marketing and investment. Ultimately, we



also look at diversification within the management of your income and how best to invest your money to manage risk effectively."

He also elaborated on the second risk management technique which has to do with vertical integration that enables farmers to take control of more than one production or distribution phase. "The goal of vertical integration is to shorten the communicative distance between the producer and the consumer, thereby capturing critical information that often gets lost within the production or marketing value chain. This can be achieved through product value addition or investment."

The last risk management technique that Loock touched on, had to do with pre-season contracts. "Pre-season production contracts can specify the type of product to be planted, production techniques, the date of availability, product price and terms of payment. Through implementing these contracts, we can accurately establish a supply and demand chain strategy which leads to greater price stability."

Establishing a solid business plan

Loock says that one of the most sought-after requirements when it comes to

financial institutions is finding a bank that truly understands your unique business. "We understand that a business begins with a bank's ability to accurately determine the impact of various risk factors on that business's environment."

Establishing a solid business plan helps to identify these risk factors, which can then be further discussed during the credit application process.

"However, the most crucial factor when it comes to successful risk management, relates to the competency of the company owner to effectively apply risk management techniques to the various sectors within the company. The bank will normally analyse financial risk in terms of the company's financial position."

"Once a risk assessment has been performed, there may also be additional terms and conditions set forth by the bank. In some cases, the bank may invest in additional security to make the proposed credit application worthwhile for that specific financial institution."

Adapting in a changing environment

With South African farmers being continually exposed to the impact of climate

change, Loock said that current predictions regarding global warming are estimated to affect the spread of rainfall throughout the country.

"We are expecting an increase in the duration of drier periods throughout the year and increased, short bursts of rainfall during wet periods, which could exacerbate flooding. Farmers are at risk of falling victim to an increase of water shortages, which means water will have to be used strategically and sparingly."

"This can be done by creating greater storage capacity on farms; by using cultivars that are better suited to drier environments; and by implementing production techniques that prioritise moisture retention. When it comes to managing risks associated with flooding, attention to weather patterns can help farmers to pro-actively herd livestock into safe environments."

"Risk management pertaining to climate change should also include the maintenance of certain infrastructures to curb preventable problems such as soil erosion," Loock concluded. ■

*Claudi Nortjé, Plaas Media,
on behalf of Standard Bank*

Miraculous mutations

South Africa's own Fuji Royal now available to plant

Ever since the Fuji apple was bred in 1939 in Japan, there has always been a search for better coloured red fruit. Over the years many mutations have been found all over the world.

The assumption that redder is better is also true for Fujis. All the better-coloured mutations of this variety planted in South Africa had their origins in other parts of the world.

This was until in that miracle year of 2011 when both farmer Robert Zulch of Wakkerstroom in the Witzenberg Valley of Ceres and Buks Nel of Tru-Cape Fruit Marketing found two full-red mutations. Zulch found his in a Fuji orchard on his farm and Nel found his mutation on a farm in the Elgin area.

They both applied for Plant Breeder's Rights (PBR) for these two mutations. After the required testing period of at least two

years by the Department of Agriculture, both clones were found to be significantly different from any other Fuji clones. This, in itself, qualified them for potential Plant Breeder's Rights.

Most interestingly it was also found that both these clones did not differ significantly from each other. It was then recommended that the PBR application should be applied for under one name only i.e. Fuji Royal. Plant Breeder's Rights were granted for Fuji Royal in 2018.

The joint owners of Fuji Royal are Robert Zulch and Tru-Cape Fruit Marketing. First large scale commercial plantings will happen this spring, i.e. 2019. Fuji Royal is similar to the standard Fuji strains we know except for its full, non-striated red fruit colour.

An interesting fact about the two gentlemen who found the Fuji Royal mutation is that they are also responsible for finding the two main improved red Gala strains in

our apple industry. Zulch found Royal Beaut in the early 1990s while Nel found Bigbucks in 2011.

"Interest in new apple varieties started in 1989 when Buks and I went on an 'extensive' European visit to investigate just that," Zulch says of the early days.

Tru-Cape Fruit Marketing managing director Roelf Pienaar says that the company's new-varietal development programme, headed by Buks Nel, is one of Tru-Cape's competitive advantages. "We are proud of the contribution that Robert Zulch, Buks Nel and our other growers have made to secure Tru-Cape as the leading apple and pear exporter," he ends.

The local licensee for Fuji Royal is SAPO Trust in Stellenbosch. ■

Brian Berkman

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CRUMBLING PILLARS

Fixing the economy starts with voters

The crucial pillars on which the country should function are showing major cracks and are on the edge of crumbling. In the process, the critical infrastructure is demolished piece by piece.

One aspect should enjoy the highest priority to solve the severe problems of our country, and that is economic growth. Moreover, for economic growth to flourish, it is crucial to create a healthy environment for investors to invest in South Africa.

Apart from that, South Africa should be a safe environment for its residents. It is worrying when a country has a murder rate of more than 50 people per day, but politicians keep quiet, thus not honouring their primary responsibility of looking after the safety of its residents.

Analysing these pillars leads to several serious questions concerning all of them. Look at infrastructure, security services, health care and social services with more than 17 million people dependent on social grants, but only 7 million paying taxes. It could be less strenuous to name only the pillars standing strong and adding to healthy economic growth. Undoubtedly the list will be much shorter.

Of course, people want to be positive and constructively build on the future of our country and its residents. However, to achieve this, there should be an environment where everyone can make a contribution and where investments would be safe.

When a country sends a message to the world announcing it will amend the constitution to expropriate its residents' belongings

without paying for it, it can just as well be called nationalisation or legal theft. Which person in their right mind will consider investing in that country?

This is probably the most serious aspect endangering the future of the country.

The attack on the assets of the country is a desperate effort of the ruling party to try and convince the voting masses that riches will grace them soon.



With a population of more than 60 million people and a surface of around 122 million hectares, the government's promise of land for everyone will result in roughly 2 hectares for each person. Where will the food come from when everyone has their own little piece of land?

The government has a track record of an admitted failure rate of 90% for redistributed land. More than 67% of the population has urbanised.

How empty must the shelves be and how expensive must food become before the

government realises the country's biggest asset is its productive commercial farmers?

The attack on land and assets is the last straw the desperate ruling party is clutching. It is based on lies about the history of how land-ownership evolved over the years.

TLU SA has some time ago offered a reward of R100 000 to any person who can prove a TLU SA member stole their land. The kitty is still safe. The history of land ownership should

be tested in the future by independent historians, and should preferably be done under the guidance of a lawful process in the international area.

The uncertainty around policy paired with the unacceptable safety situation is forcing people who can afford it out of the country. These are the people with the skills, investment potential and entrepreneurial spirit. How do you want to fix the knowledge base without them?

Can South Africa be cured of the environment where the country is looted, corruption is the norm, and life means nothing?

There is only one place to start fixing this situation, and that's with voters.

The governing party guides the country's political will, and voters give them their mandate. If we prefer to not build a future for our descendants, it is correct to keep up with the current voting pattern.

However, somewhere the voting public will start realising the empty promises of the government are not executable. We can only hope this happens before the food shelves are empty, and our inflation rate surpasses that of Zimbabwe. ■

Bennie van Zyl, General Manager, TAU

THE NEW TOUGHER-ER HILUX LEGEND 50



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The Hilux Legend 50 is a celebration of 50 years of tougher-er, with both technological and design updates and 13 models to choose from. The exterior boasts a more aggressive grille and front bumper, unique wheel design, black styling bar, roof rails* and a tow bar, while the interior has a larger, integrated multimedia display and smart entry* with push start*. Legend 50 badging inside and out ensures the legendary legacy continues. *Available on selected models.

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LEGEND 50

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Hilux – 50 years of legendary performance



History provides a record of iconic figures, events and “things” in an attempt to preserve the memory, status and essence of the subject at hand. Some call it iconic, others remarkable, memorable or even epic. At Toyota we simply call it Legend.

The Hilux nameplate has obtained legendary status globally, forged by adventures, expeditions, quests and even over-ambitious television shows. The humble bakkie in ‘4x4’ guise has reached all corners of the globe and gained a cult-like following in the process.

In South Africa the story is no different, first launched in 1969, Hilux has firmly rooted itself in the SA motoring landscape and become the best-selling bakkie. As a tribute to the success and rich heritage of Hilux, Toyota South Africa first created a bespoke limited-edition model - aptly named Legend 35 - in 2004. This was followed by the Legend 40, built on the global IMV platform, and Legend 45 in 2009 and 2014 respectively. The Legend 45 model was extremely well received by the market and remains a standout in the Hilux lineage.

With the calendar rolling over to 2019, the time for a new Legend has arrived – to celebrate 50 years of local Hilux. Welcome Legend 50!

Exterior enhancements

The front upper and lower grille has received the full black-out treatment (in gloss finish), with matching stylised fog-lamp surrounds. A stylish silver accent line frames the vertical fog-lamp garnish with matching silver lower bumper guard. Legend 50 badging, offset to the left, rounds off the front façade, complemented by the LED headlamps incorporating daytime running lights (DRL).

The side profile is enhanced by black side protective mouldings (X/C and D/C), chrome exterior mirrors and door handles as well as black side steps. A customised rear styling bar with matching Legend 50 badging and a textured, heavy-duty tonneau cover add rugged appeal. Sleek satin-silver roof rails (X/C and D/C) elevate Legend 50's presence.

In the rear, a black rear bumper, smoked taillamps and tailgate badging, complete the visual package. A low-profile towbar is fitted as standard – enhancing utility.

The wheel and tyre package consists of Legend 50-specific two-tone 18" alloy wheels shod with 265-60-R18 all-terrain tyres.

Inviting interior

The interior space of the Hilux Legend 50 invites occupants to enjoy the journey ahead. Black leather trim (on X/C and D/C) with blue perforation and stitching create a premium feel. A stylish chrome accent strip runs across the dashboard, offset by gloss-black panel trim. Branded silver door scuff plates and carpet set, lend both a protective and aesthetic hand.

The instrument cluster features stylish white-faced dials with orange needles and a cog-shaped motif. A 4.2" TFT Multi-information Display with steering wheel control, relays a variety of information to the driver (including audio, compass, navigation prompts, trip info and fuel consumption).

Multi-media upgrade

The infotainment system has also been upgraded, featuring an enlarged 8" (20.3cm) display (now flush mounted and integrated into the dashboard) with additional rotary dials for volume and tune functions. The unit also features key-function shortcut buttons, touchscreen interface, on-board satellite navigation, DVD, USB, Bluetooth and Aux interfaces. Steering wheel operability and a reverse camera adds comfort and convenience.

Safety and specification

All Legend 50 models are based on the Raider specification grade and therefore feature a

comprehensive specification list. Smart entry (keyless) and push-start ignition functionality now join the specification inventory on Xtra Cab and Double Cab Legend 50 models.

All Legend models come with a full suite of active and passive safety features – including driver, passenger, knee and curtain airbags (body-type dependent). ABS, VSC, EBD, Brake Assist and Hill-assist Control round off the electronic safety aids.

Model line-up

The Legend 50 package has been applied to 100% of Raider models across all three body shapes (Single-, Xtra- and Double Cab). All S/C and X/C Legend 50 models are powered by the formidable 2.8 GD-6 engine delivering 130 kW and 420Nm (450Nm on Auto

variants). These can be paired with both 4x2 (Raised Body) or 4x4 drivetrains. Double Cab Legend 50 models are available with either the 2.8 GD-6 or 4.0 V6 (exclusively 4x4 auto) powertrain, whilst the diesels can be had in either 4x2 or 4x4 configuration.

Warranty and maintenance

All Hilux models come with a three-year/100 000 km warranty. A 9-services/90 000 km service plan is standard on all models. Customers can also purchase extended service plans via their Toyota dealer.

Key performance in Kinsey Report

The Hilux double cab, in automatic transmission guise, walked away with the gold medal in the just-released 2019 Kinsey Report. The single-cab model sampled, achieved bronze status, while the Fortuner SUV once again claimed victory in its category.

Fortuner infotainment system upgrade

Fortuner 2.8 GD-6 models also receive the infotainment system upgrade – inheriting an enlarged display (from 6 to 8"). A change to traditional rotary dials for volume and tune functions, allow ease of use. The unit also features key-function shortcut buttons, touchscreen interface, on-board satellite navigation, DVD, USB, Bluetooth and Aux interfaces. Steering wheel operability and a reverse camera adds comfort and convenience. ■





A fruitful relationship

Boschendal's truck fleet brings in the harvest

Founded in 1685, Boschendal is South Africa's second oldest wine farm. Situated between the Simonsberg and Drakenstein mountains, roughly an hour's drive from Cape Town, it has for centuries produced a range of carefully crafted, award-winning wines.

Surrounded by dramatic mountain landscapes, lush gardens and vines, the original farmstead complex is now a national monument with a rich and intriguing history of more than 300 years.

Since 2016, the upmarket Boschendal farm, which has become something of a Winelands icon, has operated a fleet of five 8-ton FAW 15.180FL freight carrier trucks with standard 7.2m dropside bodies, and one FAW 15.180FD 6m3 tipper.

These trucks all sport a 132kW/ 650Nm Euro 2 turbodiesel engine and 6-speed manual synchromesh transmissions.

Hennie Snyman, maintenance manager at Boschendal, says the farm is happy with the performance of the FAW trucks and the service it has been receiving from FAW Cape Town, a full FAW sales and service dealer.

"Firstly, FAW is a good, established brand in South Africa and secondly, it is more affordable than most other commercial vehicle contenders. Of course, the more vehicles one buys, the more the purchase price influences the buying decision," he states.

Apart from the trucks, Boschendal operates an impressive mixed fleet of 94 tractors.

The 8-ton FAW trucks are used to transport grapes, plums, pears and citrus fruits primarily over gravel roads in the Franschhoek Valley, deep inside the Cape's Floral Kingdom.

"They also get used every day to transport our people in the morning and evenings. We try to do the best for the trucks, but



sometimes the roads in this area are a bit rough," he says. We also do a lot of trips on tarred roads to Malmesbury, Wellington and to our pack storerooms in nearby Simondium and Banhoek," he explains.

"With FAW you get good quality for the price you pay, and the service we get is great, too. Colin Buckley, sales executive at FAW Cape Town, is our go-to guy and ensures that sales, services and repairs are done to our complete satisfaction," motivates Snyman.

Snyman adds that staff from FAW Cape Town went through the products with Boschendal in order to give the drivers a better understanding of the vehicles, despite the fact the trucks are easy to drive and do not require special skills to operate.

"The controls are basic enough and the ergonomics are functional. We also have no complaints in terms of fuel consumption rates, which are tracked and reported back to us by a third-party telematics provider.

"Over the years we have received good service from FAW Cape Town; they try to accommodate us as much and as soon as possible. If we inform them that a truck needs to be fixed, they send someone straight away to fetch it. In this business, we cannot wait a half or full-day for something to get repaired or solved, because the freshness of the fruit is paramount to us," he continues.

"Overall we haven't had any major problems with the FAW trucks. The after-sales response is always really quick and the trucks perform well in challenging conditions, conditions that are tougher than normal tarred road environments," he says.

Asked if Boschendal is likely to purchase more FAW vehicles in the future, he says the probability is good, given the affordable pricing.

"Also, if you have more than one brand of truck in your fleet, you have to deal with more than one service team," he explains. ■



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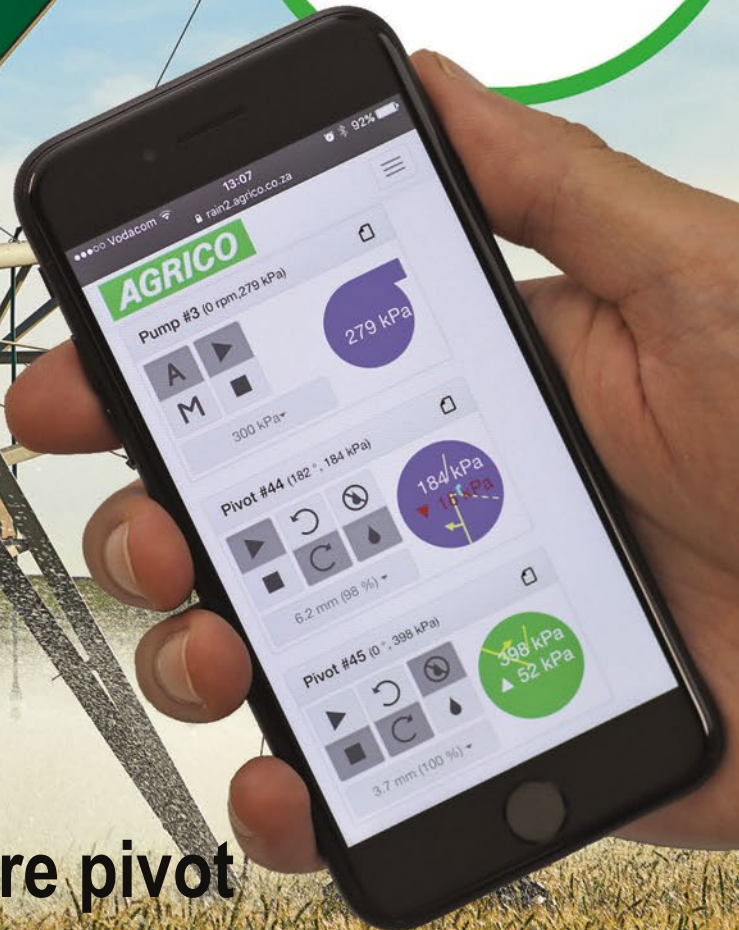
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