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Harvest SA

Securing South Africa's Food Resources

Banking on the land

Facilitating economic transformation and social inclusivity

Facing the dragon

True entrepreneurship needed to energise the economy

ISSN 2305-0551 ***Harvest SA*** **wins gold at the international Tabbie Awards 2013 in the Best Single Edition Category**

TABBIES 2013 Award Winner

TABBIES 2014 Award Winner

Indigenous knowledge and information technology converge to address food insecurity

Meeting the continent's food security needs

Masinde and Naledi Pandor, Minister of Science and Technology during the 2016 WISA Ceremony

According to the United Nations Development Programme's 2015 Human Development Report, 35 of the world's 45 poorest countries are in Africa. Most African governments are still struggling to meet the basic needs of their people, especially food security. The report identifies sub-Saharan Africa as faring particularly badly: "Of the ten countries with the highest levels of hunger, and of the ten whose scores have actually increased since 1990, nine are in sub-Saharan Africa in both cases".

The situation is worsened by the fact that over 70% of food produced in these countries comes from vulnerable rainfed small-scale farms, which operate in fragile environments that are ecologically, geographically and economically marginalised, and, therefore, especially hard-hit by droughts.

There is a close link between climatic patterns and production outcomes, and timely, accurate and reliable information on weather can contribute to food security in Africa.

From Africa to Asia, Australia to Latin America, small-scale farmers have, for centuries, made use of indigenous knowledge systems to make decisions on what crops to plant and where and even how to plant and harvest their crops.

In the context of weather forecasting and drought monitoring, farmers observe the

behaviour of animals, insects and birds, and the fruiting and flowering patterns of trees to indicate important weather phenomena.

This knowledge about the sensibility and reactions of fauna and flora to atmospheric variations and climatic conditions has been handed down by word of mouth for generations. Since time immemorial, communities in Africa have used their knowledge to prepare themselves for any eventuality—adapting their agricultural practices and food storage practices to cushion them against food insecurity.

While mainstream science has well-developed methods for generating seasonal climate forecasts and has tailored these to feed application models such as crop models, these forecasts generally produce forecast information at 'coarse spatial resolution'. The probability of seasonal rainfall is presented as being "above normal", "below normal" and "normal" compared with historical trends. Small-scale farmers in Africa do not relate to this kind of information. First, it is disseminated using channels (newspapers, television and websites) to which the farmers do not necessarily have access and, secondly, the farmers do not understand the language used.

This is where information and communication technologies (ICTs) can help. Droughts cannot be prevented but their effects can be mitigated through community-driven sustainable and effective early warning systems using appropriate ICTs.

Dr Muthoni Masinde, a computer scientist, as part of her PhD studies at the University of Cape Town, developed a system that integrates indigenous knowledge and scientific drought forecasting approaches using mobile phones, wireless sensor networks and artificial neural networks. The name for the system, ITIKI (Information Technology and Indigenous Knowledge with Intelligence), was inspired by an indigenous bridge used by the Mbeere people in Eastern Kenya.

Masinde's doctoral thesis showed that ITIKI produces forecast models with accuracies of 70% to 98% for lead times of one day to four years. ITIKI comes with a language translation service that enables farmers to access the tool in their local languages. Sound files are also available for the farmers who cannot read or write. Her employer, the Central University of Technology, is currently working with the South African Weather Service to roll out ITIKI in South Africa, Mozambique and Kenya.

Masinde with her accolades

The novelty and relevance of ITIKI were recognised by the International Telecommunication Union, the BBC, Reuters and the New York Times, and saw Masinde emerge as the 2016 winner of the Distinguished Young Woman Scientist: Research and Innovation category of the South African Women in Science Awards. In May 2017, Masinde received funding of US$500 000 from the USAID's Securing Water for Food programme. This will enable her to convert the drought tool into a viable business.

Masinde with some of the Wireless Sensor Networks that form part of ITIKI

Author: Dr Muthoni Masinde works as a senior lecturer and Head of the Information Technology Department at the Central University of Technology.

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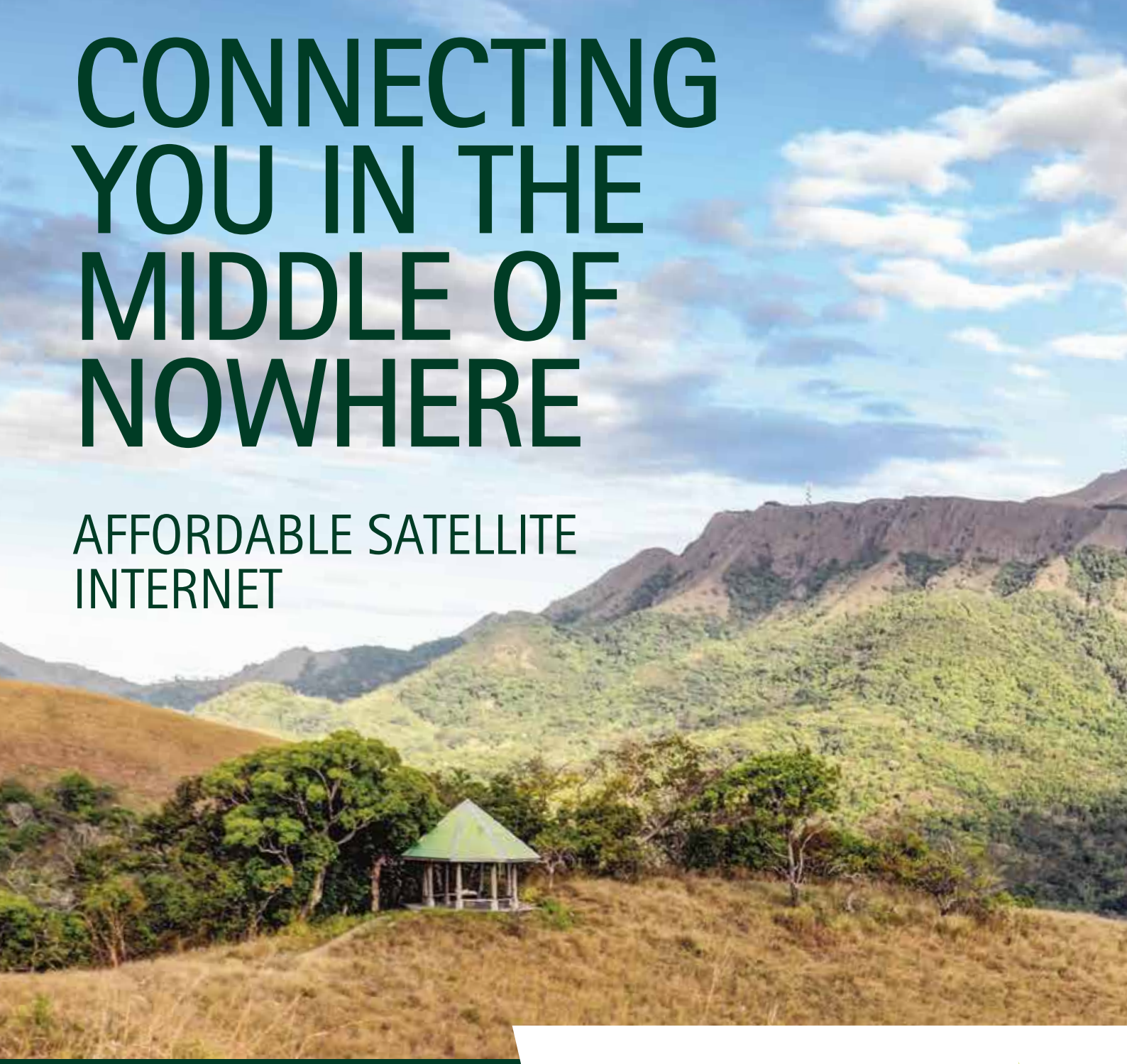

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EDS NOTE

GREG PENFOLD
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Businesses are waking up to the opportunities of a rapidly growing food market in Africa, which may be worth more than that may be worth more than R15 trillion each year by 2030. According to the latest Africa Agriculture Status Report (AASR), agriculture is a quiet revolution in the making. SMMEs and smallholder farmers will create the high productivity jobs and sustainable economic growth that extractive industries have signally failed to deliver. The key is an inclusive approach to transformation to goes beyond the farm to agri-business. Millions of small famrs have to be linked to agribusinesses in order to create extended food supply chains and employment opportunities. This approach contrasts to the norm that applies in established industrial agriculture, which is capital intensive and employs relatively few people. while also contributing to horrific animal cruelty.

By improving the productivity and global competitiveness of its agribusiness and agriculture sectors, Africa can feed itself with food grown in Africa. The private sector is key in effecting this transformation, but government support is needed to both stimulate and guide the transition. The first priority is the creation of an enabling business environment. Measures such as s increasing infrastructure investment in secondary cities and towns, improving the reliability of energy and water supplies, building more wholesale market spaces, promoting open regional trade, identifying and investing in first mover crops and introducing stricter standards for food safety and quality can help nurture a globally competitive food production sector.

Innovative financing and insurance provision can be provided by new private public partnerships. Improved financial regulations, better credit-reporting processes, special economic zones, digital warehouse receipt systems and sharing risk with lenders through credit guarantees and matching funds are further measures that government can facilitate.

Smart support such as satellite tracking and big data can be used to find new high value agri-economic zones and drive smarter financing and food security polices. This is especially relevant in the face of climate change.

In short, Africa as a whole has to turn from net food importer to exporter. Does South Africa have the political will to meet the challenge?

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From dead zones to green pastures

Biodiversity need not be sacrificed to feed the planet

As the human species continues to grow in a world of depleting resources, can it feed itself without killing off the rest of the planet? Not without a significant shift away from business-as-usual, arguesPhilip Lymbery, head of head of Compassion in World Farming and author of Dead Zone: Where the Wild Things Were. Harvest SA chatted to him recently about the case for embracing conservation agriculture and turning away from industrial farming.

The chicken on your plate seals the penguin's fate

The African Penguin is an iconic bird that draws millions of visitors every year to Cape Town's Boulders Beach penguin station, but its numbers are in severe decline. One important reason for this: the fish it depends on for its food are diverted to the food on your plate.

"The link between industrial farming and the plight of the penguin is very clear," Lymbery explains in his soft-spoken, emphatic way. "Vast quantities of small fish—anchovies and pilchards —are ground down into fishmeal to feed intensively farmed fish, chickens and pigs, leaving penguins and other marine life starving. That's the simple analysis. A hundred years ago, the African Penguin was the most numerous seabird off the coast of Africa. They numbered millions.

By 2000, their numbers had plummeted down to about 170 000. You could say a big driver there was the plunder of their breeding grounds for eggs, meat and guano, and pollution such as oil spills do have an occasional massive impact, but there is no doubt that large-scale

commercial fishing of small fish has an effect on penguins."

There's a terrible irony at play. The bulk of commercially extracted fish meal goes to animal feed. On the international market, fishmeal is used heavily in the production of farmed salmon and trout as well as pigs. Yet, in order to feed the animals we intend to kill to eat, we are starving ourselves. Seem complicated? Not really: "Those small fish are also a vital link in the food chain for the bigger fish we put on our plate," Lymbery points out.

"These have dwindled to 10% of their historical populations, to the point where scientists predict that if we carry on as we are, there will be no more commercial fishing by 2048. If we ever want those fish to sustain our food supply, we had better give them something to eat. The penguins are the marine sentinel, the canary in the coalmine. It's a lot easier to understand that penguins are in decline than to do some heavy-duty counting of fish. If the penguins are in trouble, then our whole marine system is in trouble, which means that our food supply is in trouble. All of that to produce cheap meat that actually comes at a huge cost."

Lymbery has travelled the world studying the link between industrial farming and species decline. In Peru, he studied the world's largest single-species fishery, that of the anchovetta: "Since that fishery took off commercially, about 50 years ago, the number of seabirds has crashed 90%, including the closely related Humboldt Penguin. Over the same period, the world has lost half of its wildlife, and it's still in free-fall," he says.

The association with factory farming is not limited to marine species. In fact, vast swathes of biodiversity are being eradicated for the sake of industrial agriculture. "The mixed-farm habitats of well-known species such as barn owls, skylarks and storks are being stripped away to make space for chemical-soaked prairies of cereals. The rain-forest homes of jaguars and Sumatran elephants are being razed to make way for vast prairies of soya and palm-nut plantations, harvested for the oil and the edible kernel. The kernel is largely used to feed factory-farmed animals. The European Union imports 50% of the entire world production of palm kernel for animal

feed, particularly to produce cheap beef and milk."

Industrial inefficiency

A bizarre disappearing act takes place whenever the industrial agricultural value chain colonises another territory.

"Farm animals are taken off of pasture and into confinement," Lymbery elaborates. "This looks like a space-saving idea, but it isn't – you have to grow their feed somewhere else. In so doing, not only do the farm animals disappear from the countryside, but so do the trees, bushes and hedges, to make way for bigger fields. The chemicals put paid to wild flowers, which means that birds, bats and bees also disappear. We rely on insects to pollinate a third of the world's crops. Even worms disappear, which affects soil fertility. The UN warns that the world's soils have only got 60 years left of the world's soils. In the end you're left with little else but the crop, which you feed to factory-farmed animals."

This, Lymbery claims, leads to the biggest disappearing act of all: the majority of the food value—calories and protein—disappears in conversion to meat, milk and eggs. This gross nutritional inefficiency should concern even those for who shrug off the fact that factory farming is "the biggest cause of animal cruelty on the planet".

At the heart of the conundrum lies the myth that industrial farming is the most efficient way of feeding the planet. Lymbery calls this attitude "madness on a plate":

"Arable land is scarce compared to pasture, which covers a quarter of the planet's surface. Arable land is much scarcer; to produce more of it, we have to cut down forest. Yet here we are transferring food production from the ubiquitous pasture to a reliance on scarce arable land. How much arable land is being used to grow industrial feed to feed industrially reared animals? If we put it all into one field, it would cover the entire surface of the European Union, or, if you prefer, half the United States. However, if we backed away from this madness on a plate, the arable land could produce extra food for four billion people on the planet.

"There's the rub: factory farming is often justified as being necessary—an efficient way of feeding a growing world population—but that is nonsense. Factory farming wastes food, it does not make it. Four billion people's worth of crops is fed to industrial animals and the majority of the nutrition is wasted in conversion to meat, milk and eggs."

The most genuinely efficient way to produce meat and milk, maintains Lymbery, is "a cow on a grassy hillside": "The cow is converting something we can't eat (grass) into something we can (meat and milk). The only problem is that the cow provides no business for the animal feed industry because she doesn't need grain. She provides no business for the chemical and fertilizer industry, in fact she takes it away because she naturally fertilizes the land. She provides no business for the pharmaceutical industry because she gets a lot less sick. Thanks to these vested interests which benefit from the continued expansion of factory farming, the efficiency of a cow on a grassy hillside has been reframed and that the hugely wasteful business of feeding confined animals with grain and fishmeal has been promoted for decades as a necessary evil. It's an illusion that it helps us to feed people – in fact it makes it harder. And every billion more people requires an additional ten billion farm animals to feed."

Regenerating the land

Business-as-usual is a straight line confronted with the problem that the world is round: those who continue to pretend otherwise are doomed to shoot off at a tangent. As Lymbery explains, "We have an economic system which relies on infinite growth in a finite world. We also kid ourselves that sustainability is going to save the day, in a world of depleting resources and growing demand.

"Sustainability is about treading water: it's old hat. In a world of increasing demands and shrinking resources, what we're going to need to feed people decently and provide the chance of a decent lifestyle for future generations is a regenerative approach to food and farming that puts back soil fertility, promotes pollinators and brings wildlife back.

What you need for that is an essential, future-proof fusion between food, farming and nature."

In drought-stricken South Africa, conservation farming makes a lot of sense. "It takes forty times more water to grain-feed farm animals than rear them on pasture," says Lymbery. "The biggest human use of water is agriculture, accounting for 70% of all fresh-water use.

Irrigating crops with precious water to feed factory-farmed animals makes no sense.

"Conservation agriculture is much more future-proof," he continues. "It's also cheaper, more resilient and more reliable. Being labour-intensive, it also employs more people. It's also a way of spread-betting. As an industrial farmer, you put all your eggs in one basket because you specialize. If the bottom drops out of your commodity, that's you up the gum-tree."

What about the stock argument that we need factory farming to feed the poor?

"How can it ever be acceptable to expect people on low incomes to have to feed their children on poor-quality factory-farmed food? It's the most outrageous suppositional justification I've ever heard," fumes Lymbery.

"They pay for cheap meat three times: the first at the check-out, the second through taxes that go into industrial subsidies, and the third is the massive clean-up cost in terms of health and the environment. This is undermining the future for their children.

"Our future quality of life as a species on this planet is faced with drastic decline. We are the last generation that can turn that round and leave a planet worth living on for our children.

Why wouldn't we want to do that?"

Greg Penfold

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*Inspired by a William Blake poem

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Sort it out

The importance of grain cleaning

Harvested grain is usually fairly clean—"usually" being the operative word, as this is dependent on a number of critical factors: the correct settings and capacity being used, the grain being dry, no heat damage taking place and kernels not being broken during the harvesting process. So many factors are difficult to control. In addition the quality of grain begins to deteriorate as soon as it has been harvested, so it is imperative that dirt and impurities are removed to delay the deterioration process and ensure that the stored grain is of a high quality for end users.

It is therefore highly recommended that harvested grain is passed through a grain cleaner and/or pre-cleaner in order to ensure that the quality of the grain is optimised before it goes into storage.

Pre-cleaning grain before storage plays two vital roles:

1. Adding value to the grain through the removal of dirt, impurities and damaged particles.
2. Ensuring a longer life of the grain whilst it is in storage.

The importance of cleaning grain before storage is important for a few reasons. Foreign matter, also referred to as fines (any dirt or particles smaller than the grain), can collect in areas inside the storage silo. These pockets of fines can cause hot spots inside the silo, which has a negative impact on the aeration of the grain. This can also result in moisture collecting in these areas, which can cause rot, mould and other damage to the grain.

The additional impurities also take up valuable storage space inside the silo—an unnecessary cost that can be avoided if the grain has been cleaned before being taken into storage. The impurities can also contain harmful or poisonous seeds or particles which can cause further damage, negatively affecting the quality of the grain.

Clean grain is of a higher quality and therefore fetches a better price than grain that is full of impurities. Even if a grain producer does not have their own storage facilities, clean grain will bring a higher return on investment for the producer. Grain that is rejected by a buyer or co-op usually results in the costs of cleaning and re-submitting to be carried by the seller, costs which can ultimately be avoided.

Grain cleaners are the first and most important piece of equipment used to clean any type of grain, seed or beans. When analysing all of the elements that can have an impact on grain quality, it makes good business sense for a grain producer to seriously consider procuring their own grain cleaner. It is estimated that the cost of a grain cleaner can generally be recouped over two to three seasons, making it a viable purchase, even for smaller grain producers.

Innovation in the field of grain cleaning

Facet Engineering is an innovator in the field of grain handling and cleaning, and has been for over 30 years. Over this period they have developed a range of conveyors and grain cleaners that can process grain at capacities of as high as 120 tonnes per hour.

Their range of grain cleaners includes four models, all locally manufactured in South

Africa in their state-of-the-art workshop facility. All these models can be used to clean a variety of different grains, either for pre-cleaning or fine cleaning. This is achieved by virtue of the ability to change the settings on the machines as well as fitting different screen sizes on the removable screens.

These easily-operated machines work on the tried and tested principle of vibrating screens and air extraction to separate the grain from impurities. These impurities include anything larger than the grain such as sticks (also known as overs), and anything smaller than the grain like broken kernels or sand, as well as anything lighter than the grain such as husks and dirt (also known as fines).

All the models can be supplied with an optional air extraction fan, galvanised ducting and receiving cyclone for the collection and recovery of all of the light impurities.

Facet Engineering also offers other machines for the cleaning, separating and sizing of grain, seed and cereals. These include:

- ***Destoner*** – used to separate and remove stones which are of a similar size to the seed or grain kernel. This machine works on the principle of separating by specific density or weight of the particles.
- ***Gravity table*** – another machine in the range which separates grain into different fractions based on specific densities. This machine is ideal for the removal of kernels which are rotten inside or eaten away.
- ***Electronic colour sorters*** – highly specialised machines designed to separate or grade products such as seed, grain, beans and nuts, by virtue of their colour differences which can be configured/calibrated using pre-programmed colour parameters.

Facet Engineering's process division works extensively in the Agri-food sector and offers solutions for: storage, conveying, cleaning, separating, grading, mixing, sorting and bagging of grain, seed and cereal products.

Colin Fairweather, CEO, Facet Engineering

Achieving full potential

Collaboration crucial in unlocking South Africa's agriculture sector

The National Development Plan (NDP) sets out a clear vision for creating an integrated and inclusive rural economy, with the agricultural sector at the centre of this development. It goes further to state that the agricultural sector has the potential to create an additional one million jobs, an ambitious target for all sector players to work towards achieving.

There can be no doubt about the strategic nature of the agricultural sector in as far as its potential to contribute to economic growth and job creation. However, for the sector to grow and safeguard the country's food security, it must seize the opportunity to open up and become much more accessible to emerging farmers. Inclusive participation will certainly lead to sustainable growth, ensuring that as many people as possible contribute and benefit from the economic benefits driven by the sector

The Land and Agricultural Development Bank ("Land Bank") is one such organisation whose mandate is to facilitate economic transformation and social inclusivity in the agricultural. While creating access to financing to grow the agricultural sector is a core part of what the Bank does, it believes that funding alone is not the sole catalyst for growth. The transfer of skills from large commercial farmers to emerging farmers, including vulnerable groups such as women and the youth is a key component for driving growth of the South African agricultural sector. For this to happen, there must be greater collaboration between established players and new entrants so they become integrated into existing value chains.

Land Bank is already working with a range of stakeholders to achieve transformation and social inclusivity in the agricultural sector. In addition to the direct debt and equity funding provided to both commercial and emerging farmers, this collaboration is seeing an increase in development financing through established commercial business in the sector who act as intermediaries, on-lending to emerging farmers around them. This move towards a more blended finance approach is ensuring that funding gets to those who really needs it, enabling organisations such as Land Bank to better manage the risks associated with this type of lending.

Zolarity (PTY) Ltd

Where: Limpopo

Zolarity, in Limpopo, is a joint venture between Limpopo Dairies and their Workers' Trust, a majority black grouping who own 51% of the business with Limpopo Dairies owning a 49% share.

Financed by Land Bank, Zolarity acquired unutilised land adjacent to the dairy upon which to expand and diversify its operations.

With an off-take agreement in place through Limpopo Dairies, the initiative received the boost that it needed. In addition to a guaranteed off-take agreement, Limpopo Dairies provides technical assistance to the farmers to ensure that they meet the stringent commercial standards required by the Dairy.

The project also has a comprehensive crop diversification plan in place, which is to be rolled out in three phases over five years that will see maize production, blueberries and alternative energy generation becoming the focus of the venture.

Land Bank's involvement from a development impact perspective is focussed on sustainably increasing the commercialisation of underutilised to deepen economic transformation and social inclusivity in the sector.

Some of the benefits already realised include the employment of eight permanent employees who are all registered for UIF, receive a Provident Fund and have access to bursary schemes. Moving forward, Zolarity is looking to create 150 jobs by the end of 2018 and a number of new businesses while continuing to provide skills training in operations management to grow this emerging farmer base.

The Ndwandwa Community Trust

Where: Mpumalanga

Land Bank is one of the financiers of the Ndwandwa Community Trust in Badplaas who acquired 29 farms on 9800 hectares through successful land claims in 2003. By facilitating a partnership with a commercial farmer who provides the necessary technical support to the community trust, a total of 555 hectares has been brought under production with a mix of maize, soya beans and dry beans already planted. The Banks support has served as a catalyst for further development, with more land being earmarked for production in a phased approach.

Akwandze Financial Services

Where: Mpumalanga

Akwandze Agricultural Financial Service was established in 2006 after land was transferred from the previous owners to a newly established Community Property Associations (CPA). The project was set up to provide financial services to these property associations, strategic partners and small-scale farmers in the sugarcane production industry.

Akwandze is backed by a unique partnership between TSB sugar and the Liguguletfu Co-operative. The organisational shareholding structure consists of a 50 - 50 partnership between TSB Sugar RSA and Liguguletfu Co-operative Limited, the latter representing the sugar cane growers in the region (currently 889 members). Both shareholders have invested a total of R25 million in Akwandze and have extensive knowledge and experience in sugar cane milling and production.

Land Bank has partnered with Akwandze Financial Services in Mpumalanga to bring this communal land in the area under production. Working through Community Property Associations and Strategic Partners as well as Small Scale Growers in the sugarcane production industry, the partnership has already seen the creation of nearly 4000 jobs, the establishment of 17 new businesses along the agri-value chain and an off-take agreement with RCL Foods for the emerging farmers.

The Sernick Group

Where: Free State

The Sernick Group, a specialist business involved in end-to-end beef production, approached the Land Bank for assistance in supporting 59 emerging black livestock farmers who are currently supplying into the business.

Managing Director Nick Serfontein noticed that some of the livestock being supplied by these farmers did not meet Sernick's quality standards and as such, he sought to put in place a solution to address the issue head on.

Land Bank extended a R25-million credit facility to The Sernick Group in order to support these 59 emerging black farmers to manage 3,500 wieners during 2016. The Sernick Group acts as a financial intermediary, borrowing on behalf of these farmers who would ordinarily be viewed as too high of a risk to qualify for traditional financing from the commercial banks. The Group then on-lends to these farmers, who enter into a three-year repayment agreement replete with a comprehensive technical support programme to ensure that quality standards improve. Farmers are able to access quality animals, The Sernick Group's feedlot as well as the educational and technical support offered through the programme. All profits earned are shared between the farmers.

The sole objective of the facility is to commercialise these farmers and give them access to established value chains while they benefit from the intellectual property and technical support of an established commercial player. Land Bank recently (May 2017) extended an additional R25-million-credit facility to expand the programme due to its successful implementation during the initial phase.

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Financial inclusion

Improving the lives of migrant farm workers with mobile money solutions

Sending money from Bloemfontein to Harare takes 22 hours on a bus trip or ten seconds using a mobile money solution. Low cost mobile money solutions offer a fast, reliable way to transfer money and is changing the lives of agricultural migrant workers.

Before mobile money solutions, migrant workers had a few options to get their hard-earned money home to loved ones. They could either send remittances home by taking it home themselves, at considerable time away from work, or to send money home with a third party who may well be unregulated and charge a high fee for this service. This is also a risky option especially if it was a large sum of money.

Bank accounts offer a potential solution but are unsuited to low income earners working in rural areas. Banks operate in towns and cities, in working hours and charge high fees[ii].

Mobile money transfers are a better way to transfer remittances and bring low income earners into the regulated financial services sector.

Both the International Labour Organisation and the World Bank have recognised the need for greater financial inclusion in rural areas. World Bank statistics show that 70% of the world's poor live in rural areas, where agriculture is the predominant occupation, and 42% of the world's farmers are unbanked.

Financial inclusion is an imperative in the National Development Plan, and in this case it starts with a migrant worker being offered a solution that can improve his quality of life by catering to an immediate financial need. It starts with how to send money home safely and quickly at as low a cost as possible.

Mobile money solutions allow workers to transfer money across borders at any time on any day. Unlike mobile banking apps, mobile money transfers don't require a smart device—they can be done on any mobile phone.

These solutions benefit workers, their families and employers. Workers don't have to take time off to travel or go to a bank. They don't have to hand over cash in the hope that all of it will be delivered and they have a record of their transfers.

Mobile money transfers are cheaper than banks. Hello Paisa transfer costs an average of 5% versus the 15-20% fee charged by traditional channels. Add these savings to the savings in fees and travel costs other options incur, and migrant workers have more in their pockets for items like food and school fees. We estimate R150 million has been put into the hands of families of low income migrants from these savings.

Mobile money solutions aren't as well known as the big banks—yet.

In the communities we serve Hello Paisa is a household name with over 350 000 customers.

Importantly, we are regulated. Hello Paisa was awarded the first independent money transfer operator licence by the South African Reserve Bank in 2014.

Mobile money transfers don't just offer a safe way to transfer funds, they introduce workers to other financial services, financial literacy improves, and workers start to use products like savings accounts.

Low income earners shouldn't be excluded from the formal financial sector, with the right products and services we can improve their lives and give them safer, cheaper ways to manage their money and gain control of their finances.

In conclusion I would like to echo the wise words of Muhammad Yunus – who calls himself the 'banker to the poor': "It is the ability to control capital that gives people the power to rise out of poverty."

Moosa Manjra, CEO, Hello Paisa

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OF SHAPING THE FUTURE OF AGRICULTURE WITH SMART IRRIGATION SOLUTIONS

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A quarter century of irrigation innovation

25 YEARS

Since its launch 25 years ago Netafim has developed high-end irrigation technology and is now at the forefront of providing solutions for a sustainable future. Here's to the next 25 years! By Wanda Augustyn

When Naty Barak opened Netafim's doors in 1992 he had one employee, Johan Visser. Levy Schneider was appointed as the company's first managing director the following year. The firm's core crops at the time were wine, tomatoes and melons.

Naty, who is now chief sustainability officer at Netafim Headquarters in Israel, describes the beginning years as both difficult and easy. "It was difficult because we introduced a new technology which was a real revolution: irrigating trees and other crops with a slow flow of drops of water next to the trees. It was challenging because we faced many technical challenges with the products and technology. We had to find answers to the challenges, develop manufacturing processes, and design and engineering methods, overcome water delivery issues and more. But in a sense it was also easy because we believed in the system and had support from the community. Looking back at the early years we never took huge risks. We always calculated our steps carefully."

Netafim started as a kibbutz business in Israel, so they adhered to the values and principals of a kibbutz, Naty says. "We always invested only within our capabilities. During Netafim's early years we employed only members from our kibbutz." These employees shared horizontal responsibilities, so one worker would be responsible for sales in a certain region in Israel, manage an export territory and work one shift a week in the production line.

"Back in 1993, when I was appointed MD, our core business philosophy was to provide South African farmers with irrigation technology that would enable them to be commercially successful, while maintaining environmentally sustainable practices to preserve water and healthy soils," says Levy Schneider, who took over after Naty left.

"The biggest challenge we faced back then was to earn the trust of irrigation dealers and farmers and to prove to them that we weren't a fly-by-night company. We did this by showing them that we were genuinely interested in them. We wanted to see them being successful and that we would support them for many years to come."

There were many highlights at the company during his tenure, Levy says, but it was the team he worked with that impressed him most. "Having people who, apart from building a fantastic company, developed themselves personally, seeing dealers and growers experiencing success, and pioneering changes in crop-growing practices were but some of the highlights during my time at Netafim," he says.

In 1995 agronomist Chris Malan was appointed to introduce drip technology to dealers and growers and following a strategic study a local factory was completed in 1999.

The first local Netafim pipe was made in 1999. Until 2002 the main products the company focused on were RAM™, Arkal Filtration, A.R.I. valves, Tiran

and Streamline. In 1997 however subsurface drip irrigation (SDI) was introduced to sugarcane. This lead to a huge spike in the market as big volumes were sold. Over the years sugarcane and SDI helped introduce Netafim's various products to the market and the company continued to grow.

From 1996 to 1998 South Africa experienced a wine boom. Back then the Ram™ drip line was known as the "golden" drip line for the wine industry and its crops, but from 2005 to 2006 the company experienced difficulties as a result of a recession in the agricultural industry. In April 2006 Etienne Erasmus was appointed as MD after Levy left Netafim SA to go to Netafim Australia. Soon after Etienne's appointment Ram™ was phased out and UniRam was introduced to the market.

"Our core business philosophy was and still is helping our farmers to get more from the scarce resources they have," Etienne says. "Water is scarce but we can reuse or desalinate it, while land is absolutely limited. The more we can produce per hectare using less water, the more we're contributing to our global challenge of feeding more people through using less land and water. "Our purpose is to help the world grow more with less. To this end we'll drive mass adoption of smart irrigation solutions to fight scarcity of food, water and land."

During 2008 the international recession affected Netafim worldwide, but South Africa was doing well and the company continued to grow. But the recession prompted management to rethink and research crop development, which resulted in a strategic shift in focus.

With the nut boom from 2009 to 2010 more farmers became interested in using drip irrigation and micro sprinklers on trees. Lucern hectares also increased due to the success of crop trials and projects. The Hartswater area became a huge success story in 2013 when producers started using micro sprinklers and drip irrigation on pecan nut trees.

During the early years, Netafim SA had only three employees, but after the factory became operational in 1999 the workforce grew to 16. Netafim SA bought shares in Vegtech, which increased its market share due to the use of its products in greenhouses. This was followed by the procurement of Gyro Sprinklers in 2016 to manufacture and distribute Netafim's own range of micro sprinklers.

Today Netafim employs 90 people and the company is still going from strength to strength.

"Over the past 25 years Netafim SA has grown in every aspect of the business, from manufacturing machines to developing enterprise resource planning systems, but our biggest growth has been in experience and knowledge," Etienne says. "The team we have in the field today is a good mix of young and old. The older guys have been with the company for more than 20 years and the strength of the company lies in this team. We're just as proud of them as we are of our products.

"Our biggest challenge is to get involved and apply what we learned over the years in the new emerging farming community in South Africa and the Southern African Development Community (SADC). But we also have to balance the time we spend on this with the rest of the business because in the end business is driven by profit, which is connected to how you spend your time and other resources."

As for where Netafim is going in the next 25 years, Levy says, "I hope the company will be in a situation where drip irrigation will be the irrigation method of choice for all crops and Netafim the company of choice for every farming entity."

Etienne agrees. "I would like Netafim SA to be the preferred supplier in our market segment in the whole of the SADC region. We'll strive to achieve this through ethical behaviour and sound internal and external relationships and by training our people, not compromising on quality, focusing on the customer, exceeding expectations, being agile and keeping it simple.

"Good leadership is also of the utmost importance for the success of a business. A good leader must have the ability to optimise employee satisfaction. As Brand Pretorius, former CEO of McCarthy, said, 'Leaders need to be hard-headed when it comes to results, but have a gentle heart when it comes to people.' This helps to create a healthy culture in which people will grow and develop to their full potential and serve the customers and the company because they want to.

"It also helps having the simple basics in place – basics such as integrity, good intent, performance drive, fairness, aligned values, training, know-how, good planning and execution. And last but not least, to never compromise on quality and constantly encourage innovation."

This article first appeared in the July 2017 Wineland issue & was written by Wanda Augustyn

Facing the dragon

Only true entrepreneurship can energise the economy

In 2017, crime in all its repugnance is taking a devastating toll on South African farm life. Not only are innocent and irreplaceable lives being lost or permanently disfigured, but the physical and mental repercussions on the families and communities are felt long after the crime has become just another South African statistic. The once-peaceful rural lifestyle which the country enjoyed for so many years is now so vulnerable that it is subjected to circumstances which require a 24/7 awareness, instant preparedness and a state of mind constantly alert to any indication—no matter how small—that all is not well. During some attacks, as many as thirteen assailants armed with military assault rifles have been known to suddenly appear at farm homesteads at any time, day or night.

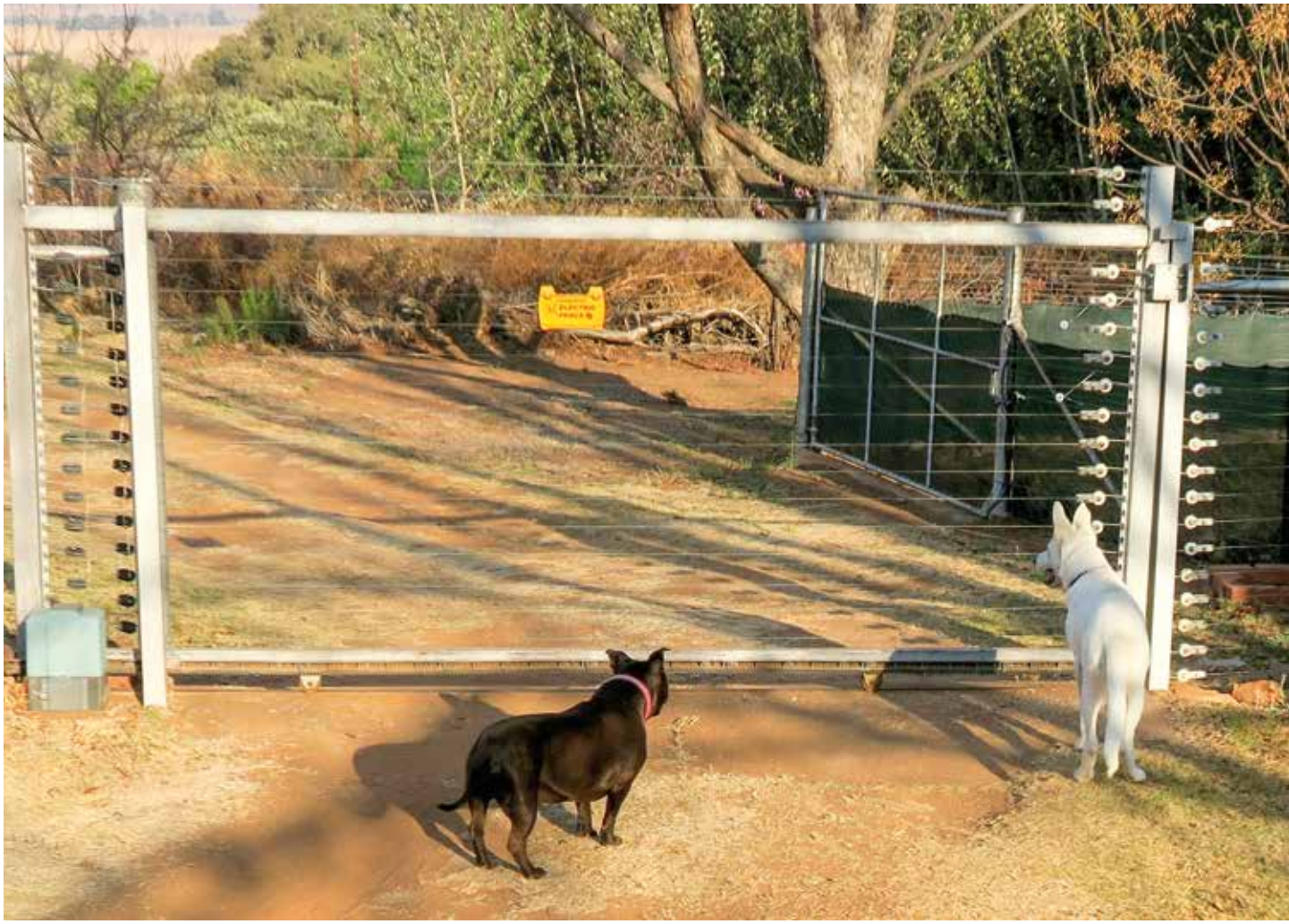
This mandatory way of living is a reality for most farm dwellers despite the fact that violent crimes on farms have been declared a National Priority Crime since 1998. Current reality indicates that murders on farms and agricultural smallholdings have steadily increased since 2011, according to statistics garnered by TAU SA. Recent incidents have confirmed an ominous trait manifesting itself during these crimes—the fact that, increasingly, victims are subjected to gratuitous brutal torture. Reports of victims having holes drilled in their limbs with electric drills, being burnt with blow torches, and boiling water, hot oil and dripping burning plastic poured over their skin are most disturbing. This tendency provides food for serious thought: while the SA Police Service (SAPS) declares that these vicious crimes merit the classification of "national priority", this criminal tendency is not handled by the SAPS accordingly. This puts into question the validity of this proclaimed and confirmed status within SAPS ranks..

Statistics tell another story. If it were not for farmers and their workers, who must of necessity accept responsibility for their own safety and security, plus the collective efforts of fellow farmers and farm dwellers in this regard, the consequences of this criminal activity would have been much worse. Because of these extenuating circumstances, many homesteads have been transformed into "fortresses" capable of being defended by early warning alarm systems, security barriers and the physical protection needed to provide a relatively safe environment. When a farmer is confronted with a situation where a stranger indicates an interest "to buy a sheep", the alarm bells start ringing and the crucial question then arises: what should the reaction of a reasonable person to this request be, bearing in mind the current state of rural criminality? Many a farm dweller victim has been lured beyond the safety of his "fortress homestead" or has been ambushed when required to open a farm gate.

What complicates the current situation is the added problem of so-called "normal" crimes", which in themselves have a most detrimental effect on commercial agriculture. Whilst the definition of a "farm attack" reflects several specific crimes (murder, attempted murder, rape, assault to do serious bodily harm, common assault, arsons), rural safety and security and, as a consequence, sustainability are also seriously affected by stock theft, common theft (produce, fuel, chemicals, tools, etc), and trespassing (often including illegal hunting). Unfortunately, these crimes are often ignored yet the growing impact thereof contributes in no small degree to further complicating life on a South African farm.

Recent developments reflect an increasing tendency for disgruntled citizens to display their disgust with local authorities or other service providers by blocking national roads or deliberately allowing protest action to spill over into residential areas or CBDs. Many actions are cloaked under the guise of "protest", but they in fact represent a blatant transgression of the laws of the land. Very little is being done by the authorities to apprehend the instigators and transgressors. On national routes like the N1, the N2, the N3 and the N4, innocent travellers have been caught up in road blockages, notwithstanding the fact that such actions are blatantly illegal. The less said about the carnage caused by uncontrolled looting, the torching of historical buildings, other edifices and vehicles belonging to innocent citizens, and the concomitant disruption of citizens' normal routines, the better. The fact of the matter is that these disruptions contribute to a state of affairs which can only be described as "approaching anarchy and chaos".

Much is said about the South Africa's land "reform" question: indeed, a former cabinet minister declared he was a staunch supporter of the view that "angry landless people" could not be controlled. The current reality is that the country's status regarding food security is continuously being eroded. But has thought been given to the question of how many more "angry people"



there would be if they had no food? Not only are primary food and fibre producers being subjected to the full scope of crimes which, without doubt, have an impact on food production, but this state of affairs has a deterrent effect on young people who may have been willing to enter a sector which in fact could actually threaten their income as well as life and limb.

Whilst recent reports by Stats SA confirm an increase in poverty levels in South Africa, especially in rural areas, the very sector—agriculture—which could contribute so much to alleviating this poverty by way of employment, is suffering beyond anything considered normal in the developed world.

Fluctuating scales of economy, rising input costs, poor maintenance of infrastructure (especially roads and sewerage works) and the substandard credit ratings of local, provincial and national government sectors promote an atmosphere of doubt and precariousness.

This insecurity within the commercial farming sector is exacerbated by subtle and not so subtle propaganda typecasting farmers as brutal racists. No wonder, then, that cases like the "Middelburg Coffin Case", concerning the youngster who was apparently killed from the back of a truck near Coligny, plus repeated accusations by employees and tenants (who enjoy security of tenure on farms which they don't own!) that the land-owner is inhuman, quite frankly appear to dominate media coverage. Despite these provocations, the remaining farmers carry on regardless, feeding a population of which a large proportion firmly believe that the food they eat is produced in the factories of the various supermarkets.

Amidst the current internal strife within the ranks of the governing alliance and the jostling for election candidacy in the next round of general elections in 2019, the time has come to understand that this country's resources are being stripped to such an extent that a clinical redistribution of current assets will never be able to bring about positive change. Like never before, true entrepreneurship which will energise the economy, and thus promote employment, is needed—no other alternative is feasible. If South Africa is to move forward with a booming economy and a healthy and happy population, it needs to understand that the maintenance of law and order and a sound free market approach encouraging and unlocking private initiative supported by state policy is urgently required to bring about a positive turn-around.

Bennie van Zyl, General Manager, TAU SA

Filling a void in the wool market

Introducing the JSE Merino Wool futures contract

The JSE has made pioneering forays in the market through listing a range of commodity derivatives, the latest being a cash-settled merino wool futures contract. This is yet another price risk management tool that allows market participants to hedge their wool price ahead of time.

The contract allows wool growers with a mechanism to limit the risks associated specifically with the price of wool. There are also many other role players subjected to price risk in the wool industry, including buyers and processors who can also benefit from the contract. In addition to the key groups of participants, the contract is open to speculators, who bring in much needed liquidity into the market. This enables market participants an opportunity to trade in and out of the market effectively. This contract gives an opportunity to hedgers and speculators to participate as well as allowing people not necessarily involved in the wool industry an opportunity to acquire insight into how well wool is performing.

The difference between hedging and speculating can easily be identified. The participant

who hedges is able to link back their futures position to their exposure of the underlying physical wool, e.g. a wool grower that produces 500 kg and has 5 futures contracts is hedging 500 kg of his/her wool. Hedging replaces an unknown price with a known price, removing uncertainty about the future price of a commodity. A speculator on the other hand, is a participant who does not have a link to the underlying physical product. Speculator starts without price exposure, buys or sells contracts, and takes on price exposure. It is important for participants to be mindful of the risks associated with speculating.

One of the big challenges experienced by wool growers is that they cannot accurately envisage the specific type of wool they will produce. Characteristics that determine the quality of wool such as fibre diameter, staple strength and microns will vary with some subjective faults such as colour and type. For this reason, the JSE had to shy away from the challenges associated with physical delivery for now and instead opted for an index. In essence the JSE contract is an indicator traded merino wool futures contract and not a contract for physical delivery. The JSE contract is cash settled; it is based on an index which includes a basket of different wools as captured on an index basis and created by Cape Wools SA.

Perhaps a common question that is frequently asked is: "How is the JSE contract going to change the way we currently do business in the wool market?" Well, it is business as usual in many respects, except for the added benefit of bringing certainly to your cash flow. When the marketing season for wool opened in the second week of August 2017, prices jumped by nearly 20% from last close. It could have been a drop of the same magnitude, and these sporadic fluctuations in prices may be one of the reasons that forced many wool producers in SA out of business, judging from the nearly 100 million kgs of wool that was once produced here in our country. The JSE wool contract is here to fill that void by providing certainty and forward planning to the business operation because market participants are now able to lock in a favourable price well ahead of physical delivery of the wool.

Physical delivery of the wool will continue to take place at Cape Wools SA auctions as is currently the case. However when hedging position on the JSE expires, instead of getting the actual wool, you will receive the cash equivalent based on the merino wool indicator. When the contract was initially launched, the nominal size of the contract was 1 000 kg. Following further consultation with Cape Wools SA and key stakeholders in the wool industry, the JSE decided to reduce the nominal contract size from 1 000 kg to 100 kg. The rationale behind this change is to accommodate small players to partake. Although the market is considerably commercial, there are communal farmers who are small participants and who do not have the capacity to produce large volumes of wool. The exchange looks forward to working closely with the wool industry to build a liquid market for the new contract. To focus on the liquidity of the contract, four hedging months are available for trading namely March, June, September and December. As the market matures and liquidity picks up, the JSE will be happy to add the other months to the mix and thereby provide continuous hedging to the SA wool industry.

Important to note is that hedging is not the only motivation for trading derivative instruments on the exchange. This could also help participants in the wool market to obtain better financing terms with banks. For example, banks would often offer more favourable financing terms to those wool growers, buyers and processors that have reduced their market risks through hedging activities. This could also lead to further support investments in increased production.

Finally, clients can get access to this product by signing up with a JSE approved commodities broker. With a registered client account open, clients will be protected by the rules and regulations of the JSE. For more details on the list of JSE brokers and their contract details, please visit our webpage https://www.jse.co.za/trade/derivative-market/commodity-derivatives/wool or email commodities@jse.co.za.

Vuyo Mpumza, Commodities Officer, Johannesburg Stock Exchange (JSE)

Market bounces back

A snapshot of the agricultural sector and its recovery from the drought

South Africa's (SA) agriculture is divided into three main commodity sectors. Livestock accounts for 47% of the country's gross producer value (GPV), followed by horticulture and field crops whose share stood at 29% and 23% respectively in 2016.

SA's top five agricultural commodities:
Poultry accounts for 16% of the agriculture GPV, followed by beef (12%), maize (11%), deciduous fruits (8%) and Citrus (6%). Together these account for 54% of the total agriculture GPV to the tune of R132.80 billion during the 2015/16 season.

The distribution of the production regions in SA:
Poultry – Chicken (broiler and layers) distribution in SA is led by the Western Cape at an estimated 21.9% share, followed by the North West (21.3%), Mpumalanga (15.8%), KwaZulu-Natal (13.8%), Gauteng (10.3%), the Free State (6.8%), the Eastern Cape (5.6%), and the Northern Cape at 0.2% of the total according to industry estimates.

Beef – The Eastern Cape accounts for 24% of the total beef herd of 13.69 million, with Kwazulu-Natal the second at 20%, the Free State (17%), the North West (12%) and Mpumalanga (10%). The shares of other provinces are 7% for Limpopo, the Western Cape and Northern Cape both with 4%, and Gauteng at 2%.

Field crops – Mpumalanga leads with maize production at 29.8% market share, followed by the Free State (28.5%) and the North West (14.7%). The Northern Cape produces 9.1% of the total and mainly under irrigation, followed by KZN (6.7%), Gauteng (5.7%), Limpopo (4%), the Eastern Cape (1%) and the Western Cape (0.6%).

Deciduous fruits—These are mainly produced in the Western Cape and Eastern Cape Provinces, all under warm, dry summers and cold winter conditions. Others such as the Northern Cape have a small market share.

Citrus – Citrus is mainly produced in Limpopo (42%), Eastern Cape (26%), Western Cape (16%), Mpumalanga (18%), KwaZulu-Natal (3%) and Northern Cape (2%).

Citrus and deciduous fruit are major export earners and have helped the country to record a positive agriculture trade balance in 2016.

Agriculture's contribution to employment numbers:
SA's agricultural labour force stood at about 835 000 heads during the second quarter of 2017.

The Western Cape has the largest share and accounts for 22% of the total agriculture labour force, followed closely by Limpopo at 17%, KZN (15%), MP (11%), EC (11%), FS (10%), the NW (6%), the NC (4%) and GP (4%).

State of recovery from the drought
The expected grain harvest is now expected at a record high of 18.91 million tons according to the latest crop estimates report, which is 101% higher relative to last year.

The maize harvest is now estimated at 16.41 million tons, up by 111% year-on-year (yoy). Maize accounts for 87% of the total grains in SA and is not only used for human consumption but also livestock feeding where it constitutes over 70% of feed.

The horticulture industry was the least affected by the drought due to irrigation as many on-farm dams did have sufficient water.

The relatively weaker rand exchange rate also helped with export earnings as the industry is largely export driven.

The total contribution to SA's GDP
Agriculture has over the past few years contributed less than 2.5% to GDP per year. However this could even be higher if one considers its forward and backward linkages to other sectors of the economy as in the case of manufacturing where about 70% of the agricultural output is utilised as raw material.

Agriculture GDP reached R65.84 billion at constant 2010 prices in 2016 from R71.42 billion in 2015.

Recent forecasts showed that normal rainfall is expected for the 2017/18 crop season as the El Niño weather pattern has dissipated. The strength or weakness of the rand will influence agriculture's contribution to the economy in terms of import parity prices and export revenues.

Paul Makube, Senior Agricultural Economist at FNB

Potatoes South Africa for **you**

PSA is well aware that **market information and intelligence** is the backbone of decision making. It therefore continuously strives to improve the alignment of the information sources and the variety of information with the needs of industry. All workable and available communication channels are therefore used to make the market intelligence available as quickly as possible. Of the channels that are used are mobile phone SMS, WhatsApp messages, newsletters and the website.

PSA's **research** is currently focusing on the following aspects:

- Cultivar evaluation to increase yield
- Soil health, soil improvement and natural resource conservation
- Quality
- Virus and aphid control
- Water use and quality
- Cultivation / agronomy, especially fertilization and volunteer control
- Management of soil-borne diseases: common scab; root-knot nematodes; powdery scab and soft rot
- Potato moth management

PSA's **marketing** division has two pillars.

- The first pillar, Generic Product Promotion entails projects aimed at stimulating demand in the local market through classical product promotion mix elements of above the line advertising, Public Relations, and digital marketing.
- The second pillar, Market Access and Development endeavours to expand the total market for potatoes through market development and market penetration strategies.

PSA's **Transformation** ensures the development of new black farmers who have an interest in becoming commercial farmers. It also addresses food security by engaging with rural communities and assisting them with demonstration plots where they are taught how to plant potatoes economically for consumption.

Transformation progress is visibly increasing. The number of hectares of potatoes planted by black farmers supported by PSA is on the increase and there are farmers who have already been identified as having the potential to farm commercially.

PSA focusses on the following projects:

- Enterprise Development
- Small Grower Development
- Tertiary Skills Pipeline
- Farm Based Training
- Commodity Projects Allocation Committee (CPAC) in the Western Cape

PSA focusses on the following:

- Market Information and Intelligence
- Research and Development
- Market Access and Development, Generic Product Promotion
- Transformation

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Potato production in South Africa

The humble spud beats inflation

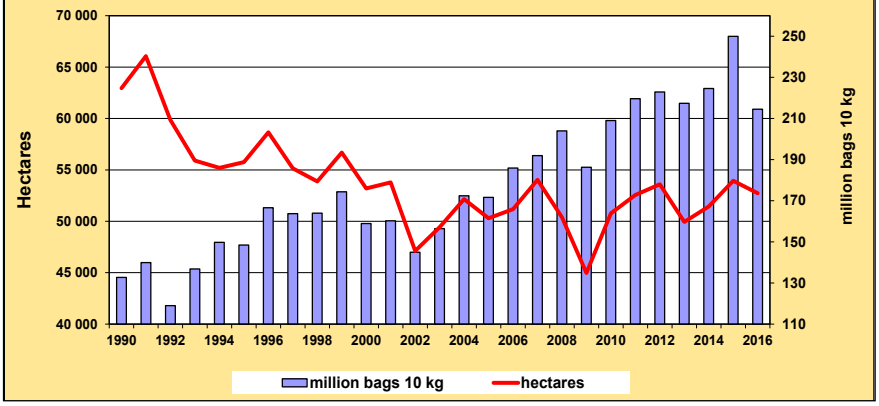
The number of hectares planted with potatoes declined from about 65 000 hectares in the early 1990's to around 50 000 to 54 000 hectares from the mid-2000's onwards. Production expanded significantly notwithstanding the decline in hectares as a result of, amongst others, the introduction of new cultivars, an increase in the number of hectares planted under irrigation, better soil practises and chemical control of pest and diseases. Important to note is that South Africa is self-sufficient in the production of potatoes, and this is done on less than 1% of the land utilised for agricultural purposes.

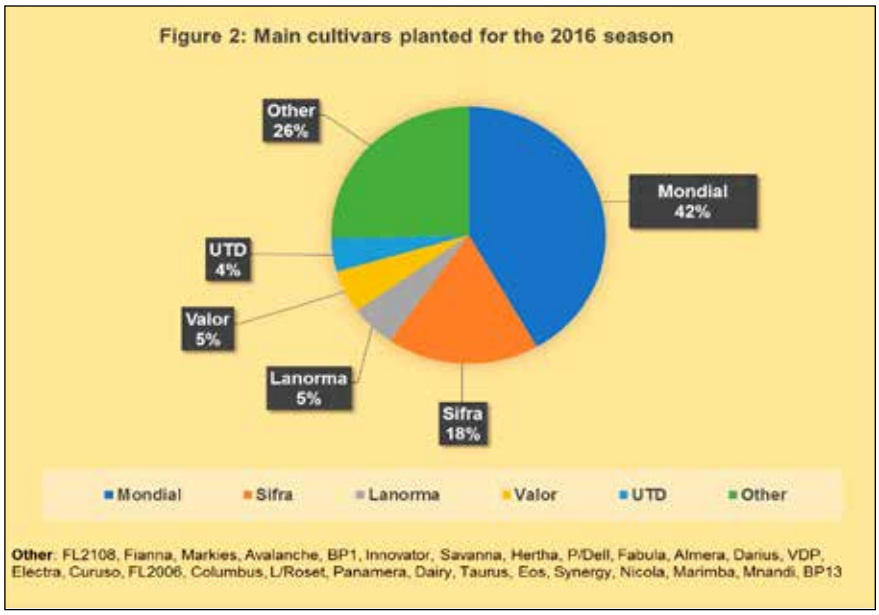
In total, the industry employs between 45 000–50 000 people, which includes permanent and seasonal labour. Given this, the potato industry is a major contributor to employment opportunities in rural areas with significant socio-economic multiplier benefits to people in rural areas.

Potato production in South Africa takes place in 16 production regions with the 4 major regions, namely Limpopo, Eastern Free State, Western Free State and the Sandveld contributing to between 65%–70% of the total annual production.

The main agro-ecological influences are climatic conditions and availability of irrigation resources. The impact of climate conditions is illustrated by the bumper crop in 2015 as a result of good climate conditions, whereas the significant decline in the crop during 2016 was due to unfavourable climate conditions;

Figure 1: SA potato industry - Hectares and crop size

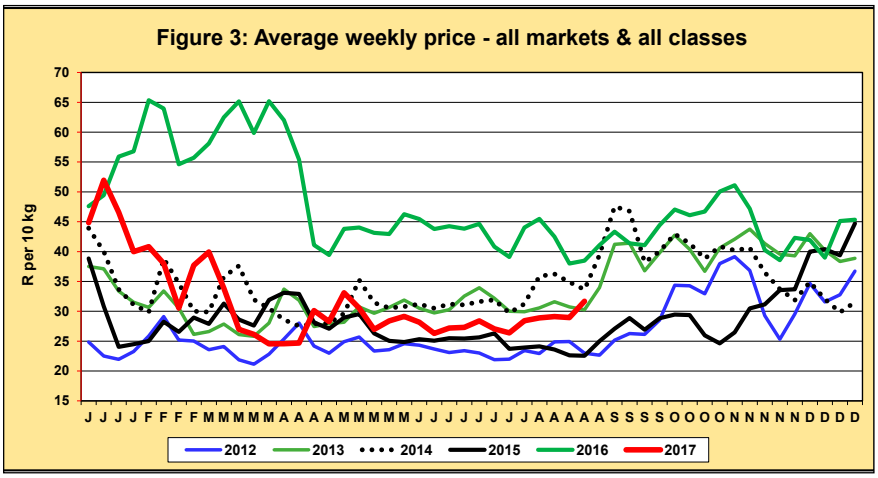




more specifically the drought and high temperatures.

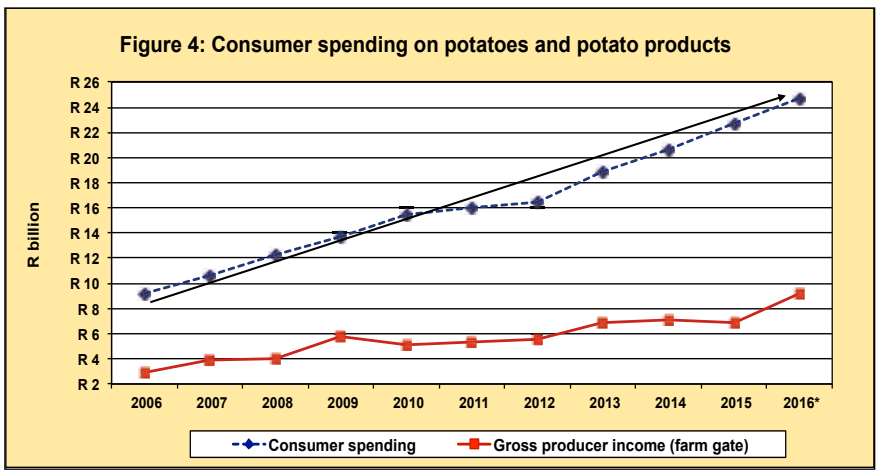
Figure 2 shows the main cultivars planted in 2016.

With South Africa consuming more than 90% of the total annual potato production, along with a long-term increase in production, total and per capita consumption of potatoes increased. Several factors have an influence on consumers' demand for potatoes, including, but not limited to, population growth, the price of substitutes, potato imports and exports, potato marketing campaigns, shift in consumer demand as the demographics of the major LSM (Living Standard Measure) groups in South Africa are changing, urbanization and changes in per capita income.



Five major marketing segments consume the South African potato crop with the formal and informal markets consuming approximately 64%, processing 20%, seed potatoes 8%, and exports a further 8% (mainly to neighbouring countries). From the total potato crop, the percentage sent to fresh produce markets throughout the country has decreased over the past few years as more producers are marketing directly to the formal and informal markets. The percentage of the total crop sent to fresh produce markets has decreased by 9% over the past 10 years and for the 2016 season 46.7% of the total potato crop was sold through fresh produce markets.

Figure 3 shows the average market prices for all classes of potatoes on all fresh produce markets since 2012. In August of 2017 prices were 36% lower than at the same time in 2016. This was due to the favourable production season with volumes on markets at 16% higher than at the same time in 2016.

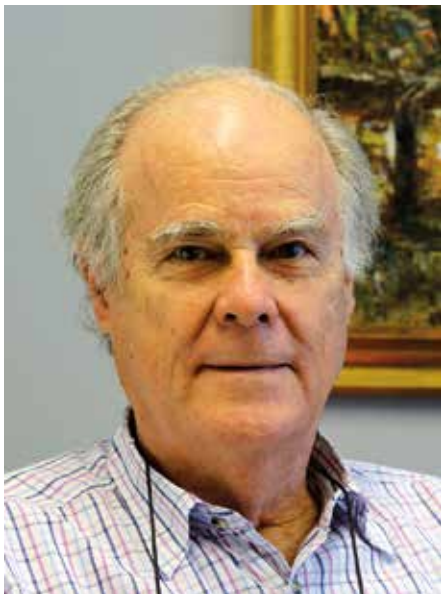


When comparing market conditions during August of 2017 to 2015's market prices, prices were realistic considering the volumes handled by the markets. In 2015, a record production year, prices were 26% lower than market prices up until August 2017.

The total value of the domestic potato industry can be derived from the total amount of consumer spending on an annual basis. The total value of consumer spending for 2016 was close to R25 billion (Figure 4). There has been an annual increase in total consumer spending on potatoes and potato by-products from 2006 to 2016, with an average annual increase of 8.9%. Thus, the industry is outperforming inflation, adding to the fact that the demand for potato products is increasing annually as seen in Figure 4.

In the bag

How to pack potatoes perfectly



Trevor Reardon, Packhouse Systems Director at Goldpack

Choosing a packhouse system for potatoes can be a daunting task. Automatic or semi automatic weighers? Automatic or manual bagging? Silo size? Do I need an optical grader and sizer as well? All of these questions need to be asked and answered and fortunately Goldpack is on hand to help.

So let's get down to the basics of potato packhouse systems and discuss potential yields, savings and efficiencies.

The weigher

The weigher is the heart of the pack-house system, as it will determine the speed at which the potatoes can be processed and is capable of a high degree of accuracy when weighing out portions of the product. Goldpack is proud to be the South African agency for prestigious Newtec weighers and can supply machines that are suitable for potatoes and onions (which many farmers plant as an alternative crop). Bringing in a Newtec weigher offers significant and immediate benefits. Firstly, the weigher will eliminate overweight giveaway. Even the most conservative estimates project that manual weighing gives away between 7-10% of a total crop. Over a year that figure can add up to hundreds of thousands of rands.

Let's take a real example. One of the latest Goldpack installations at VTV Boerdery in Christiana processes up to 210 tonnes of potatoes per day. Over a month, that adds up to 4 620 (22x210) tonnes. Over a year that is approximately 36 960 (8x4620) tonnes. The Newtec weighers ensure that every kilo is weighed accurately. A 7-10% loss would cost VTV Boerdery between 2 587 and 3 696 tonnes of crop per year! Secondly weighers also ensure that crops are processed steadily and quickly and they are not subject to sickness, labour disputes or strikes.

Bagging options

Basically potatoes are bagged in two ways: net or paper, and these options can be configured in-line with a Newtec weigher.

Bagging systems can be manual or automatic. The difference between the systems is the amount of labour required.

For example, a Newtec weighers can be fitted with sack clamps and with sufficient labour, manual bagging can operate as fast as automatic bagging.

VTV Boerdery uses just this method. However, even manual bagging will require a machine stitching system for closing the bag. However, in situations where labour is scarcer or not suitable, an automatic bagger can take over. All it requires is one person per bagger to load the pallet with the sealed bags. This is the preferred option at Goedemoed at Koppies, another Goldpack installation in the Free State, which processes 128 tonnes per day on Newtec weighers and Emve BE 6000 bagger and stitcher.

The type of bagging chosen will depend on the weight selected. For up to 3kg, net bagging is popular and can be done on Goldpack-supplied Daumar machines, which bag and label simultaneously. This option is especially good for supply to high–end retail stores and works with onions as well.

Weights between 4 and 10kgs can use paper-bagging systems with or without carry handles, depending on the end user market.

Grading

Grading machines can be supplied to grade at various levels from simple sizing to sophisticated and simultaneous optical grading and sizing. The advantage of advanced grading is that it ensures that the crop receives the best possible market prices and protects the reputation of the supplier at all times.

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Trevor Reardon is the pack-house systems director at Goldpack, which is a major supplier to the South African root crop industry. Based in Durban, he is able to access and supply the most cost effective local and international solutions. Goldpack has a national footprint through branches in Cape Town and Johannesburg.

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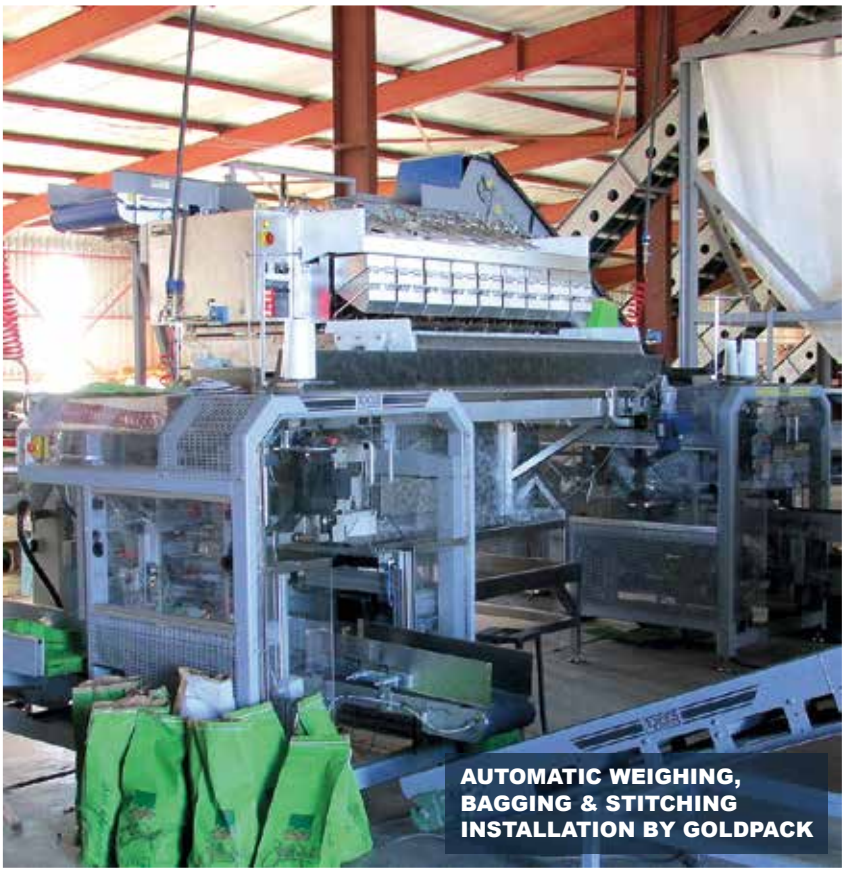

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Enabling a cost-effective conscience

Relentlessly enabling a better world through responsible biotechnology

Ask anyone in the agricultural sector how seriously they take their responsibility to create a sustainable and environmentally friendly environment and you'll get a fair bit of nodding, some mumbling about future plans but not a whole lot of action.

One of the reasons for lack of change, up until now, has been costs. There's no question that changing from the current toxic, corrosive chemicals commonly used, to environmentally friendly options has in the past meant high prices. Whatever the thinking has been up to now one thing's apparent for the very near future, and that is with upcoming EU legislation looming the industry will be forced to make changes.

Don't wait to be pushed…

"It's a pity it takes legislation to 'force' people to change their way of operating," explains Humberto Rodrigues, CEO of Biodx Chemical Technologies. "This will mean huge challenges for the local agricultural industry but people are going to be caught with their pants down if they're not already leaders in their market."

To compound the issue of providing food and goods that meet the EU criteria, another serious problem is the resistance that pathogens have developed to conventional chemicals. Our delicate ecosystems are being affected, with the cumulative side effects of harmful chemicals becoming immeasurable. There has been much 'window-dressing' in this regard but has there been real change?

Green washed

The 'green industry' up to now has been plagued by what's been dubbed 'greenwashing'—false or misleading claims made for products that don't perform or are proven ineffectual. Terms such as organic and natural are often unclear and can be misleading. "These types of claims need to be clear and unambiguous," explains Rodrigues. "After all there are clear objectives—to ensure our planet and the people who live on it are not harmed."

The bottom line is that without sustainable agriculture, future generations will be unable to meet their needs. Everyone in the agricultural chain can play a role in ensuring sustainability, from the growers and food processors to distributors, retailers, waste managers and ultimately the consumer.

Game changers

These early adopters, innovators - are leading the way with their approach to finding practical, environmentally friendly solutions that won't harm our fragile ecosystems. Some companies have successfully implemented change by using eco-friendly microbial control 'green' biocides, disinfectants and alternative methods for water treatment. "For the first time there's a viable alternative for a real change without weighing heavily on costs. With recent innovations and advancements made in technology and biotechnology the outdated stigma that responsible practices are more expensive has all but fallen away. Now there's no excuse," explains Rodrigues.

The good news is that gradually more organisations are making an effort to find real solutions, setting themselves apart in the fight for real change and long term solutions.

The cost factor

"If there can be money-wise solutions to industry that are valid for all economic areas, there will be adoption," explains Jeannette van der Lith, Managing Director of Fisol. "Some 'green' options in the past came at an unaffordable price. But in the end consumer driven awareness will see people taking their spend somewhere else if manufacturers and farmers don't become more environmentally conscious," she adds.

Biodx, with technical support from the CSIR and financial support from the TIA (Technology Innovation Agency) has spent the last 12 years researching and developing antimicrobial technologies using a natural citrus extract. "With the critical focus on protecting our environment and responsible

business practice we believed a natural disinfectant would be an invaluable alternative to the current market offering in this space," says Rodrigues. "And at the same time make this cost effective."

Working in harmony with the natural environment

"Nature is remarkable," says Rodrigues, "It holds the answers we need, and we mess with it at our peril. In our arrogance, we thought we could improve on nature, exploit it for our own ends, and it has cost us dearly in the remedial measures that need to be taken to clean up the damage we have done. The ridiculous truth is that working with nature benefits everybody, financially as well as morally. We need all other forward-looking, courageous companies to lead the way to a new kind of thinking."

According to van der Lith, "These new environmentally friendly products are absolutely crucial. We need South African developed solutions for a wide range of industries, which not only offer future export potential, but are an immediately available solution to the food and agriculture industry with immediate cost benefits and quantifiable environmental results."

Over-exposed

Vineyard volatility amid a changing climate

Climate disruptions are increasing in volatility throughout the world, impacting many sectors and industries. Among one of the hardest hit is agribusiness—specifically wineries—which depend on stable soils and climatological consistency to deliver a viable product. How will raging wildfires, searing temperatures and flooding rains change the business? And how can insurers assist worried vintners and their customers?> Wineries, dependent on stable soils and a consistent climate, are especially volatile to wildfires, drought, floods, increasing temperatures and other byproducts of a changing climate

When you think of the world's most renowned wine regions, what do you picture? Soaring mountain peaks, sloping hills, lush valleys and sprawling open fields? Part of wine's inimitable charm is the power a glass of refreshing rosé from Provence or a rich Cabernet Sauvignon from Napa Valley has to momentarily transport the drinker to a fantasy world of breathtaking vistas of vineyards and the quaint comfort of winery tasting rooms.

The very same geological splendor that makes "wine country" feel so extraordinary is potentially the industry's greatest Achilles heel. The world's best winemakers have put down their roots in volcanic soil, transported their treasured old world vines to dizzying new heights and even created entirely new wine regions in the middle of desert sands.

They—and the millions of oenophiles who collect and enjoy the fruits of their labor—know that altitude, soil content and climate are as important to winemaking as butter is to baking pastries.

But these geographic characteristics invite plenty of risk. In an increasingly volatile global climate, winemakers and vineyard owners must contemplate their insurance programs more carefully than ever before.

Mother Nature against the vine

In recent years, natural disasters and catastrophes in wine regions have featured prominently in industry headlines.

In South Africa's winelands, a two-year-long drought has begun diminishing recent vintage production volume. Just as South African wines were gaining renown and respect from wine critics and sommeliers around the globe, the El Niño-Southern Oscillation (ENSO) occurred and brought

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excessive heat and dryness to the country. The 2016 ENSO, a recurring weather phenomenon that causes below normal rainfall in southern Africa, was the worst in 50 years. Meanwhile, on the other side of the world, formerly drought-impacted Californian appellations were drenched with rain and impacted by floods as nearby rivers overflowed — some for the first time in 10 years.

In Chile, in January 2017, the worst forest fires in a century damaged or destroyed parts of at least a hundred vineyards, including some with century-old vines across the Maule and Colchagua valleys. Anguished winemakers were pained to witness the destruction of vines that their families had tended with love and sacrifice for years. Chilean authorities declared the damage as the worst forestry disaster in the nation's history. Wildfires also diminished 2016's crop in France's Languedoc appellation in September, only a month after "golf-ball sized" hail destroyed hundreds of acres near Montpelier. Additionally, a late frost caused between $1.1bn and $2.2bn in damages to vineyards in Bordeaux in May 2017.

Climate change and catastrophe risks in the world's major wine regions

Meanwhile, in November 2016, New Zealand lost five million liters of wine in under three minutes when a magnitude 7.8 earthquake shook the southern island with an estimated force of "40 atomic bombs". The loss equaled approximately 2% of New Zealand's annual production.

Many wines in the Marlborough region were moved to avoid damage from 1,785 aftershocks.

While, in general, a grape harvest during a hot year in a warm climate can produce a great vintage, excessive heat can be disastrous, causing sweeter and higher alcohol content wines, which isn't always desirable. Problems due to climate change can range from irrigation difficulties to disease to soil erosion caused by excessive rainfall or flooding. Some climate specialists see southern parts of Europe and California as being particularly susceptible to the threat of global warming. In fact, some are predicting that in California by the end of the century only coastal areas cooled by the sea breeze may be able to successfully grow grapes as a result of rising temperatures.

"I recently spent a good deal of time in the Stellenbosch, Constantia and Swartland regions of South Africa, as well as the Hemel-en-Aarde region along the south coast," says Dan Pastore, Distributor and Manager, Kings Fine Wines & Sprits, Short Hills, New Jersey. "The general consensus is that the Western Cape is facing climate change that will be detectable as early as 2030. These predications are very complex, of course, but the overall sense is that great challenges are here now, forcing winemakers to respond immediately."

Pastore adds that most areas in South Africa are in the midst of a two-year drought. "Water shortage is the crucial component of the effect of climate change on the wine industry there. Some old vines, which in South Africa are 30 to 50 years old, like Chenin Blanc and Semillon, are true survivors and have adapted very well."

An issue now confronting wineries is their 'carbon footprint', a problem that goes far beyond the wine industry. A few wineries are moving towards achieving carbon neutral status—though many more need to address this issue. The bottom line is that times will be tough for grape growers in general as time moves on. Most fine wineries are moving to organic and sustainable methods. The hope is that the tools for survival will be found in the vineyards, giving time for survival and adaptation in a harsher environment.

Article courtesy of Allianz

2017 WATER RESEARCH COMMISSION SYMPOSIUM

18 - 20 SEPTEMBER 2017

This year, the WRC will host its 3rd Symposium with the theme **"Adaptation to the new normal."** In response to the occurrence and frequency of extreme weather events such as drought and flash floods, that have placed even more stress on an already limited water resource, opinion leaders, industry experts, government officials, public and private sector decision makers, young water professionals and innovators will convene to exchange knowledge and map out bold interventions that will facilitate our adaptation to a new normal.

When: Monday, September 18, 2017 -
Wednesday, September 20, 2017
8:30 AM - 4:00 PM

Where: Birchwood Conference Centre

Websites: www.wrc.org.za

For more information:
Ms Khosi Khosi Jonas
Head: Marketing and Communication
khosij@wrc.org.za
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A coordinated effort

Driving the Water – Energy – Food nexus in the context of sustainable development

The Water—Energy—Food (WEF) nexus refers to the interconnections that exist between the water, energy and food sectors. Since 2011, the WEF nexus approach has been promoted as an integrated and sustainable approach to managing key sectors related to water resources, energy and food security. These three are critical to sustainable development, with synergies and trade-offs, that if not managed well can derail sustainable development efforts. This realisation led to global leaders meeting in 2011 at the World Economic Forum in Davos, Switzerland, agreeing to drive the WEF nexus in a sustainable or integrated way.

Although the Millennium Development Goals missed an opportunity to clearly factor the WEF nexus especially in its targets, there is hope that the approach will be adopted under the Sustainable Development Goals (SDGs) framework. After the Sustainable Development Goals agenda was established by the United Nations (UN) in 2015, the WEF nexus activities were factored as part of the SDGs, especially goals 2, 6 & 7 (Fig 1). Based on the decisions taken by the UN on the SDGs, various countries including South Africa are at various stages of driving the WEF nexus both at technical and policy levels.

Figure 1. Shows the 17 Sustainable Development Goals agreed upon by 193 countries in UN General Assembly in 2015 (Source: UN 2015).

In response to the global trend in adopting the WEF nexus approach, in 2012, the Water Research Commission (WRC) initiated its WEF Nexus Lighthouse with a goal to start championing water, energy, food planning and development for South Africa in a sustainable manner. Since then, the WRC through its Research & Development (R&D) branch, has organised various activities under the banner of this lighthouse. For example:

a. Profiled WEF activities championed by the WRC and its partners to facilitate knowledge sharing, and coordinate and align activities;
b. Hosted a series of dialogues involving key stakeholders aimed at improving understanding of the WEF nexus and the opportunities for integration of knowledge and solutions for improved uptake;
c. Hosted a series of dialogues and workshops on specific thematic focus areas such as biogas and biofuel generation in relation to water use and food security;
d. Hosted international workshop & science-policy dialogues with key strategic partners and global communities of practice; and
e. Published scientific papers for knowledge dissemination.

As a knowledge generation organisation, the WRC has a responsibility to drive alignment of its thrusts and programmes or focus areas linked with national priorities such as the National Development Plan (NDP) and other policies. This also extends to alignment with regional initiatives such as the SADC Secretariat's programme 8 on the WEF and the African Union's (AU) Vision 2063 among others.

As a country, South Africa has a responsibility to champion the WEF nexus. The challenges that South Africa is facing make it urgent for the country to adopt sustainable development approaches such as the WEF nexus. These include, but are not exclusive to:

- the poverty-unemployment-inequality nexus
- rapid population growth,
- rural to urban migration due to lack of job opportunities in rural areas,
- water scarcity, which is being exacerbated by climate variability and change,
- increasing demand for food due to population growth and dietary transitions and increasing food insecurity among the rural poor,
- increasing energy demand to meet South Africa' economic development goals, and
- The focus on agriculture, specifically expansion of irrigation, as a driver of rural economic development and employment creation

Tackling these challenges will require coordinated efforts among different economic sectors, mostly water, energy and agriculture. The WEF nexus emphasises the inextricable linkages between the three sectors and that actions in one area often have impacts in one or both of the others. There are key challenges that are being faced across these three sectors.

For example, conversion of productive agricultural land for industrial or residential use threatens food security. Other examples include the expansion of coal mining activities linked to energy generation in Mpumalanga, which threatens both water resources and food security. Other examples include the drive to increase irrigated agriculture, which places pressure on available water resources and creates new demand for energy for pumping water. What these highlight is that, while all these initiatives have good intent to develop the country, lack of WEF nexus trade-offs could threaten their ability to translate into meaningful and sustainable development. The WRC therefore has a responsibility to raise awareness about the WEF nexus interlinkages and to create a platform for discussion of practical solutions that include the negotiation of synergies and trade—offs linked to the WEF nexus issues.

The WEF nexus presents an opportunity to promote integrated planning in a sustainable manner. It also presents a framework for directly achieving some of the SDGs such Goals are 2, 6 and 7 with indirect potential to achieve SDGs 1, 8 and 9 through job creation and innovations linked to the WEF nexus sensitive planning.

The WRC, for its part, will continue to drive research, development and innovation linked to knowledge generation on the WEF nexus. The translation of this knowledge into an actionable plan that can be adopted by policy makers remains the next frontier.

This year, the WRC will once again host its 3rd Symposium with the theme "Adaptation to the new normal" in response to the occurrence and frequency of extreme weather events such as drought and flash floods, that have placed even more stress on an already limited water resource.

A parallel discussion session will also take place during the symposium focusing on managing the links between "Water Energy Food Nexus Sustainable Future". More information on the symposium is available on the WRC web site that will take place from 18 to 20 September 2017 at the Birchwood hotel in Boksburg.

The symposium will be a significant thought leadership event in the water calendar in partnership with the Department of Science and Technology (DST) and the Department of Water and Sanitation (DWS).

Compiled by Dr Sylvester Mpandeli
To find out more about the WRC go to www.wrc.org.za

Infinite growth

The right medium makes all the difference

Infigro Natural Technologies encompasses three strategic areas: "insulate, filter and grow", which guide our value-add product development. Infigro Natural Technologies supplies a variety of products to the agricultural and horticultural markets and is able to customise products to each grower's specific needs. The products offered include various grades of horticultural perlite, vermiculite and both peat moss and coco peat based hydroponic Gro-blends®. Growing medium is usually rated by users according to two parameters, namely, cost and specific crop requirements.

Technically speaking, most growing mediums can, in general, support seedling development. The difference is on what scale, in what climatic conditions and which type of plant. The intelligent way to approach it is to first understand the plant: its requirements, behaviour and its nature. The next step is to carefully analyse whether the investment in growing medium (minimal as it might be) really supports the specific plant and will ultimately produce a better seedling. In fact, a medium that is structured and designed for a specific crop will result in a better and higher yield.

To appreciate the above statement: an experienced grower who specialises in propagation of, for example, hazelnut tree cuttings will not use "just any medium" just because they can all work or because it is less expensive. The cutting in this case requires a specific Gro-blend that will support the hazelnut's nature in the most optimal way; therefore, the grower knows that to get best results, he will need to use the best Gro-blend® (irrespective of cost) and this will be non-negotiable.

The development of each plant is directly affected by the ability of the young plant (seedling) to develop a healthy root zone, which is a result of correct moisture, oxygen, temperature and availability of nutrients. Since roots are entirely dependent on the "medium" surrounding them, their performance will be accordingly. If the medium supports the roots in an optimal way, the roots' response will be optimal. If it is not optimal, they will adapt but will compromise on function, resulting in less developed upper parts and eventually low-quality seedlings.

The role of the Gro-blend® is to provide optimal root conditions. If the main portion of the growing medium is too porous and its WHC (Water Holding Capacity) is considerably low, it makes sense that blending it with a material with strong WHC will improve the root zone by creating a moister environment (for example: 60% Perlite blended with 40% Vermiculite). But if other characteristics are required, the supporting other materials should be added in the correct proportion to create an optimal Gro-blend®.

Enormous efforts and resources are invested in producing optimal growing Gro-blends® for specific seedlings and cuttings for no other reason than to provide optimal material that can produce the best results for the growers. Gro-blends are "tricky" in a way; going through trial-and-error while trying to get it right is sometimes costly and time consuming. It is a better proposition to invest in a quality Gro-blend®and thereby improve production and yield.

Infigro Natural Technologies was established in South Africa in 1961 and has evolved from a single product manufacturer into a supplier and partner to industry of specialised products. As a wholly-owned subsidiary of AECI Ltd, we are a medium-sized, dynamic and versatile company, with the backing of a large multinational corporation. Infigro Natural Technologies is OHSAS 18001 certified and is committed to the safety and health of our employees, our customers, the community and the environment through the Responsible Care Initiative.

Kevin Cilliers, NCPC-SA Regional Manager

Zero water waste

Driving water efficiency in the agro-processing sector

The global water crisis has brought water-intensive industries under the spotlight, as every means of saving water is explored. At the forefront of the drive toward water efficiency in South Africa is the National Cleaner Production Centre South Africa (NCPC-SA). We spoke to Kevin Cilliers, NCPC-SA Regional Manager, to find out more about water efficiency within the agro-processing sector.

Please describe the nature of the NCPC-SA water project and what it intends to achieve.

The NCPC-SA's Industrial Water Efficiency (IWE) Project seeks to create better awareness and understanding of water use and water management practices in order to shift industry towards a more holistic approach when dealing with the management of water in their organisations and operations. The project has initially being designed with an initial term of three years, however given the current constraint of South Africa's water resources it is likely to extend beyond that. Whilst a core focus is around building knowledge and capacity through proposed skills development training modules which will be used to help transfer key critical water skills into the industry sectors and consulting fraternity. At the same time, the skills transfer initiatives will be complimented with practical application and demonstration through detailed In-plant assessments. The outcomes of the assessments will subsequently be used to inform policy decision makers around the direction and focus of future water policies and legislation. The NCPC-SA will assist in formulating a standardised approach and methodology towards addressing water efficiency and water management within the South African industry. We will also go on to demonstrate to industry the benefits and impact of applying water efficiency and management initiative within operations.

I understand that the agro-processing sector is among the beneficiaries of the project. Which types of agro-processing specifically?

The Agro-Processing sector is well known to be a water intensive user and significant employment provider. Coupled with the current Cooperation Agreement between South Africa and the Kingdom of Denmark, the NCPC-SA has elected to leverage the Danish expertise in the Food and Beverage sector and more specifically the poultry and dairy sub-sectors. However this does not exclude other sectors from being considered where there is a similar demand or need.

How does water go to waste in the course of these activities?

There are a number of areas where water goes to waste, most notably related to washing or cleaning operations. Very often the water is used once and discharged to drain. The Resource Efficient and Cleaner Production (RECP) approach looks for ways to maximise the use of water and ensure it can be used more than once if possible.

What techniques does the NCPC-SA encourage in order to save and reuse industrial waste water?

The NCPC-SA follows the RECP approach which attempts to emulate the waste hierarchy approach of first Avoiding or Reducing the need to use water, followed by exploring ways to Reuse water internally and once exhausted, then looking at options to process the water for recycling and final treatment before discharge to drain. The approach seeks to first identify the no cost human behaviour interventions to achieve quick-win payback and gain traction for water efficiency. Once this has been achieved, emphasis can then be placed on the more capital intensive solutions.

Does the NCPC-SA provide training in this regard?

Part of the project schedule includes skills knowledge transfer. The project over the next year will undertake a skills gap analysis to assess the current critical skills needed in South Africa and start the process of developing appropriate training modules to address these gaps.

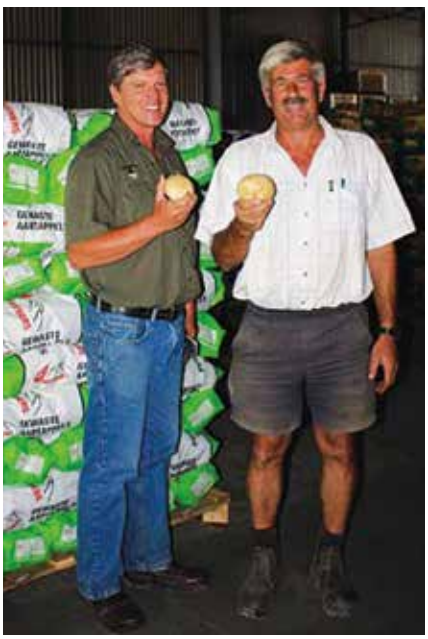
What other ways can the NCPC-SA help agro-processing companies?

Apart from assisting the companies with assessments that can provide them with a better understanding of their water use and opportunities to reduce usage, and the proposed training the Centre is also targeting to provide support to the industry sectors with implementation either through project management support or feasibility analyses or by linking companies to respective financing mechanisms and partners.

Interested companies wishing to participate in the Industrial Water Efficiency Project activities can either contact the NCPC-SA through the IWE Project Chule Qalase or via its website at www.ncpc.co.za

Aphids can suck it

thanks to Dow AgroSciences' Closer™



This is what healthy potatoes look like, says Vernon Finger van Nulandis and potato farmer Barend van Greunen.

Sap-feeding insects, no matter how tiny, can cause a huge amount of damage to potato crops when feasting on the juicy green potato leaves. "The damage may not be visible immediately", says Barend Van Greunen of George, "but aphids open the way for other pests and viruses".

The Van Greunen brothers are widely known as dairy farmers, but their 4 Brothers Potato Shed just outside George is also a landmark in the area. The potatoes are grown under irrigation, mainly for seed production to other commercial farmers, but also for table potatoes, which are distributed in the region.

Barend says that aphids occur sporadically; last year they had a major infestation and urgent action was needed to prevent severe damage to the produce. "The aphids suck the juice from the leaves, the leaves begin to curl and the plant is placed under enormous pressure. We needed help but since we are extremely conscious of the environment, we were looking for a treatment that would not have a harmful effect on the ecosystem or the environment," he says.

Vernon Finger of Nulandis introduced 4 Brothers to Closer™. Developed by Dow AgroSciences and registered for use on potatoes, Closer ™ dissolves quickly and easily, making management simple and keeping spray costs low. "It works like a dream!" says Barend.

Vernon Finger explains that Closer™ is a systemic insecticide, which penetrates the leaf's juice and causes the aphids to fall off within hours of application. The active ingredient is Isoclast™, winner of an AGROW award in 2014 for Best New Crop Protection Product. Isoclast™ uses a revolutionary mechanism to prevent resistance among parasites. Gone are the days when pests could simply build up resistance to a pesticide—sap-feeding insects such as mealybugs, leaf hoppers, aphids and stink bugs will "meet their maker" when they come into contact with Closer™.

How it works:

- The systemic property of the formula causes it to be absorbed by the leaf to immediately kill the insect pest on ingestion.
- The translaminar properties cause it to spread over the surface of the leaves to kill the insect on contact.
- The residual effect and special resistance to rainwater and UV rays make Closer™ effective for up to 14 days after administration. The product has also been tested in water at various pH levels to ensure that it remains stable even if the properties of the solvent change.

Dirty water, however, is undesirable. As a general rule, if it's not good for a farmer's spray, it's not good for use with Closer™.

The impact of Closer™ on the rest of the agricultural ecosystem is minimal. Beneficial and predatory insects are not affected and neither are animals.

Vernon says it's always a good idea to alternate any chemical remedies to ensure that the pests are not able to build resistance but potato, citrus and grape farmers cannot go wrong by including Closer ™ in their spray programmes when they are faced with an infestation of sucking insects. Nulandis can help farmers work out a full application programme for the season and assess when it's necessary to act against sucking insects.

Barend says he trusts the experts at Nulandis to give him the right advice for controlling any pest. "We've relied on them for years. Vernon visits regularly to check whether everything is under control so that we can act quickly to address any issues as they arise."

For more information on Closer™ or any of Dow AgroSciences' crop protection products, visit www.dowagro.co.za or contact Johan Janse Van Rensburg on 021 860 3620, or at JanseVanRensburg@dow.com.

Thanks to ProAgri for the use of the article.

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Solutions for the Growing World

Transforming agriculture

Facilitating the entry of black participants

The agriculture sector has been identified as a key platform for both transformation and growth and job creation which could create one million jobs by 2030. "Let me emphasise that that such transformation does not mean destroying what we have and what works. It also does not mean that we want to destroy commercial agriculture. We fully support all our farmers, black and white, established and emerging," said President Jabob Zuma on Monday.

He was speaking at a gala dinner hosted by the African Farmers' Association of South Africa (Afasa) in Boksburg on the East Rand.

To advance this goal in agriculture, President Zuma said government will continue to provide support to smallholder farmers.

"We declare 2017 the year of the commercialisation of the black smallholder farmers.

Indeed government has committed itself to support the commercialisation programme for 450 black smallholder farmers per year," said President Zuma.

Government is also finalising the AgriBEE Enforcement Regulations to enforce Broad-Based Black Economic Empowerment through the government levers such as licenses, permits, concessions, authorisations, grants and incentives.

The AgriBEE Sector Code provides guidelines for transformation in the agriculture sector and some of the significant aspects in the Amended AgriBEE Sector Code is the inclusion of farm workers under ownership scorecard.

Government also recently established the AgriBEE Fund, which is geared towards increasing black entrepreneurs in the sector.

The fund covers the funding of qualifying enterprise development initiatives, which are targeted at creating economic access and participation for black people in the agricultural sector.

Furthermore, the Department of Agriculture, Forestry and Fisheries, in partnership with the Forest Sector Charter Council, is working on the development of a Funding Scheme for Black Foresters.

Other existing government programmers include the Comprehensive Agriculture Support Programme, Ilima/Letsema, LandCare, and MAFISA, the Micro Agricultural Financial Institutions of South Africa which all seek to address the financial services needs of the smallholder farmers and agri-businesses. In addition to these, government has also introduced innovative programmes such as the Agricultural Parks or Agriparks in all 53 District Municipalities which provide much needed markets for emerging farmers.

President Zuma said with all these initiatives in place, they are also aware of the need to invest in recruiting, training and supporting agricultural extension officers, who should be knowledgeable and able to assist farmers.

However, for these interventions in agriculture to succeed, the President said all sectors must work together.

"It is for this reason that we developed the Operation Phakisa in Agriculture, Rural Development and Land Reform programme in agriculture, which we launched in February this year in Tshwane. It brings together government, business, labour, academia and the agricultural sector to find solutions and boost the agriculture sector."

President Zuma went on to assure the association that government is committed to rooting out the scourge of corruption to restore investor confidence.

"We remain fully committed to clean governance. Funds that are allocated for public services must be used for public services and nothing else. There must be no deviation in this regard.

"I therefore wish to assure you all that law enforcement agencies have been authorised to deal decisively with corruption and crime in both the private and public sectors," added President Zuma.

Broadband to transform rural economies

Broadband has the potential to transform rural economies to overcome many of the challenges of distance and isolation, says Deputy President Cyril Ramaphosa.

Speaking at the OR Tambo Broadband Project launch in Mhlontlo and King Sabata Dalindyebo municipalities in the Eastern Cape, the Deputy President said the project is of great significance for the country as a whole.

He said farmers are able to check the prices of the goods they produce almost anywhere in the world and to track weather patterns using information technology.

"Broadband provides them with information, access and choice. More than

that, broadband creates the potential for the emergence of new industries in rural areas.

"In many of the sectors of the economy that are undergoing rapid change as a result of the fourth industrial revolution, it is possible to provide services to global clients from almost anywhere—be it Mumbai, Mombasa, Munich or Mhlontlo. Broadband provides opportunities to improve the provision of services to communities.

"Universal access to broadband is critical to inclusive economic growth," he said.

He said the launch of the project marks a milestone in government's efforts to ensure access by all communities in urban and rural settings to broadband internet and information technology.

"This is a priority for government because technology holds the key to economic freedom. Technology provides us with a powerful tool in our struggle to overcome the legacy of apartheid dispossession and exploitation, to address our skills deficit, to create jobs and to eradicate poverty."

Broadband rollout will facilitate the delivery of many government services digitally, and it will facilitate the expansion of e-government.

The Deputy President said broadband is being rolled-out first in schools and clinics, and that e-health solutions will be available at all the clinics, improving both productivity and the quality of care.

"We are only beginning to appreciate the massive potential of technology in improving the quality, affordability and outcomes of education."

He believes that with effective application, alongside a firm commitment to learning and teaching, information technology could trigger a skills revolution.

Progress in transforming Irrigation Boards

The Department of Water and Sanitation is strengthening inter-sectoral planning between land, water and agricultural sectors to ensure rapid transformation of irrigation boards in line with the Constitution, Water Act and National Development Plan (NDP).

The department was briefing the Parliament's Portfolio Committee on Water and Sanitation on Tuesday about its progress on the transformation of irrigation boards.

Historically, irrigation boards were established to support farming among poor, white farmers before democracy.

The department said that it has since initiated reforms in the functions of irrigation boards that now ensure that it supports water resources management in the country.

The functions currently include the prevention of unlawful abstraction or storage of public water, among others.

"Currently, there are 278 Irrigation Boards across the country and only 99 of these boards have met the transformation requirements as set out in the Water Act. The core of these transformation requirements include amongst others, access to water for the previously disadvantaged communities and representation in gender, race, youth and people with disabilities," the department told the committee.

The department also presented its interventions to ensure the rapid transformation of irrigation boards, in line with the Constitution of South Africa, the Water Act and the NDP.

Among the interventions include water allocation reform, compulsory licensing and water user authorisations.

"The department is already strengthening inter-sectoral planning between Land, Water and the Agricultural sectors to effectively address transformation objectives.

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It is also developing a pro-active design of a land-water strategy that will support accelerated agrarian reform and integrated funding models for previously disadvantaged individuals," the department said.

The department added that it is also undertaking a legislative review that will see the repeal of the Water Act as part of its interventions to speed up transformation in the sector.

Barberton youth fight poverty with agriculture

The community of Barberton in Mpumalanga is using its donated land to bring about change especially among its youth.

The 2.5 hectares of land which was donated by the Correctional Services Department in 2015 was meant to be utilised for agricultural purpose, poverty alleviation and developing the settlers of Barberton particularly youth.

The youth from the area went on to partner with the Department of Corporative Governance, which employed the Seriti Institute to assist in transferring agricultural skills to community members. To date, the project has managed to employ more than 85 community members, among them parolees, probationers and ex-offenders who use the land effectively to produce vegetables.

All employees receive a monthly stipend which is paid by the Department of Corporative Governance.

The produce, which include spinach, beetroot, cabbages and tomatoes were harvested and donated to the destitute, child headed families, old age homes and care centres.

According to the Project Manager, Sarah Mabuza, the project benefitted 25 households and 18 care centres within the borders of Umjindi.

Mabuza further said that they are delighted to see people going to bed with something in their stomach.

"We have managed to harvest and donate more than 500kg of vegetables to the needy, some of the beneficiaries include Umjindi ECD Centre ward 45, Ligcabho Lesive Centre, Ekujabuleni Disable Centre, Sihlulile Mhola Old Age Centre, Busy Crèche, Siyakhula Day Care centre, Siphosetfu Crèche, Thandanani Home Base Care, Happy little minds Creche, Salvation Army Crèche, Masibambisane Drop-In-Centre," Mabuza said.

Mabuza called on other institutions to continue initiating programmes like this since they contribute to poverty alleviation.

"Poverty continues to strike our community, as a result our youth is turning to crime in order generate income and this cripples the future of our youth," Mabuza said.

In making sure that the project runs smoothly, the department of Correctional Services ensured that water is supplied to the project, and also availed the tractor which assisted in tilling the land.

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Opportunity for sustainability

Aquaponics yields abundant harvests

Air Products and INMED South Africa, an in-country affiliate of US-based INMED Partnerships for Children, started a partnership a number of years ago to establish aquaponics systems and traditional vegetable gardens in schools in the Gauteng area. The launch of the latest system at the Laerskool Kempton Park in Ekurhuleni marks the start of another successful aquaponics system, destined to deliver abundant harvests.

This initiative not only provides an educational platform for learners and a regular supply of vegetables and fish for the school's feeding schemes, but also creates an opportunity for sustainability for the entire community.

Aquaponics is an agricultural technique which combines aquaculture and soilless crop growing. The system is a custom size, which consists of three fish tanks and five grow beds. Each tank consists of 600 fish and the grow beds will have 1 x 7 meters of grow space each for a variety of vegetables and herbs. The traditional and sensory garden will be in a space of 25 x 10 metres.

This system exposes teachers and learners to the importance on health and nutrition and teaches them the skills to grow their own vegetables in a way that is quick, energy efficient, environmentally friendly and chemical free.

The first aquaponics system Air Products invested in was at the Carel de Wet Technical High School in Vanderbijlpark five years ago, close to the company's flagship production facility, followed by a system at the Randvaal Primary School in Daleside, Midvaal. At both these schools, the aquaponics systems were complemented by traditional gardens, and they have celebrated a number of successful harvests over the years.

According to Rob Richardson, Air Products' Managing Director, Air Products believes in the concept of educating learners about health and nutrition as it is the key to a balanced education and future. "Our corporate social investment (CSI) strategy focuses on the youth and education, and INMED's programme proves to educate learners in a way that is enjoyable and rewarding for the learners. We find the continued partnership extremely rewarding."

Richardson highlights that Air Products also places an emphasis on making a difference in the communities in which the company operates. "The fact that the system provides vegetables for the school's feeding scheme is an added benefit. Even more importantly, in the current strained economy, we perceive the opportunity of transferring skills and assisting communities to become self-sustainable as a socio-economic development advantage."

"INMED has pioneered aquaponics to improve the nutrition and food security of children and families and develop economic opportunities in disadvantaged communities in South Africa for more than 10 years," says Dr. Linda Pfeiffer, President and CEO of INMED Partnerships for Children. "Air Products was our first and has been our most consistent partner to expand aquaponics to primary and secondary schools. Both INMED and Air Products understand the direct correlation between child nutrition and performance in school. We want all children to have access to nutritious food and opportunities to succeed in life and are pleased to facilitate this beautiful project."

Besides the CSI aspect of the partnership, the innovative and environmentally friendly method further aligns to Air Products' culture of embracing innovation and technology.

National Arbor Week, which calls on South Africans to plant trees as a symbolic gesture of sustainable environmental management, takes place from 1 – 7 September and the planting of lemon trees at the Laerskool Kempton Park formed part of the formalities of the day.

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The data doctor

Helping farmers optimise crop performance and reduce input costs

Aerial data-analytics specialist Aerobotics made the news recently by securing a joint R8 million seed-funding round from 4Di, an independent early-stage technology venture-capital firm in Cape Town, and the Savannah Fund in Kenya.

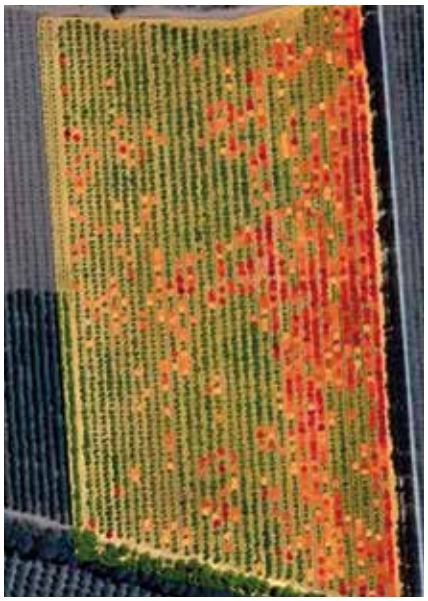
Aerobotics has developed data-analytics platform Aeroview, which uses satellites, drones and artificial intelligence to help farmers optimise crop performance and reduce input costs. This provides farmers with the data to track crop health, growth and moisture levels down to individual plants, and to action this data through variable-rate fertiliser maps and yield estimates. We spoke to COO Andrew Burdock to find out more about this innovative service.

Year 4 Projection *(full production)*	
Per Hectare	
Gross Income	R375,000
Production Costs *(excl. packing)*	R180,000
Gross Profit	R195,000
Total Orchard – 3.74 hectares	
Gross Income *(assuming all trees healthy)*	R1,402,500
Production Costs	*R(673,200)*
Lost income - trees under severe stress (905 trees / 30.6% of total orchard)	***R(429,240)***
Gross Profit	R97,3195

All figures in South African Rand

What technologies do you use and what are the applications for agriculture?
We use aerial imagery to help derive crop insights. The aerial data is captured by either drones (controlled using our flight planning application) or satellite, using visual and multispectral imagery. Using photogrammetry, image processing and machine learning, we then convert this imagery into analytics, such as health metrics or biomass on a per-tree basis. Our standard drone package is the DJI Phantom 4 drone with the Parrot Sequoia multispectral camera, this platform is extremely reliable and produces high quality imagery. This helps farmers with early problem detection, yield optimization and better resource management. All data is available through our cloud platform AeroView, where it can be interacted with or exported for use in third party software (such as variable rate fertilizer applications).

How would a farmer typically use your services as part of their practice?
Depending on the crop, farmers would typically capture drone data on a monthly basis. This is either done through using their own drone system or by connecting with



one of our service providers throughout the country. Alternatively, satellite data is available typically every 10 days, depending on cloud-cover. Data is processed automatically and available to view within AeroView. The farmer can use various tools here to help interpret the data and identify things like problem areas within his fields. Further, he can download this data into our mobile application, walk into the field and make notes or take photos from the ground. All of this can be used to make better data-driven decisions and track change over time (benchmark performance throughout the season, compared to previous seasons, on a plant-by-plant or field level)

Farmers would use the Aeroview data to help him identify early stage problem areas in a field based on the health level of the plant or the moisture level of the plant. The farmer would then know where to focus his efforts instead of spreading equal effort and cost across an entire farm. Farmers can now manage their farms on a much more precise basis being able to even track individual trees over time. The Aeroview software automatically identifies orchard tress and places indices to each one of the trees including, location, health, volume, height and canopy area. This will allow a farmer to really focus on problem trees in an orchard and yield as much as possible from the farm.

Case study

Aerobotics carried out a case study on yield loss at a 3.74 ha peach orchard in Citrus Valley. NDVI analysis revealed severe stress on a number of trees. Tree-specific analytics identified 905 trees producing unusable fruit for export (size and quality issues). Analysis revealed that:

- Aerobotics' per-tree analytics identified 905 trees under severe stress, or 30.6% of the total orchard
- The severe stress impact meant the fruit from the affected trees was unusable
- Stress was caused by Phythophthora root disease
- Pythophthora is easily treatable at low cost using fungicide

The fact is that the R430,000 yield loss was largely preventable. Early problem detection via Aerobotics would have detected issues early, allowing early treatment and significantly reducing yield loss. Fortunately, farmers will be able to harness this new technology to their advantage in the future.

Farmer's heart, entrepreneur's spirit

A world first in undersea cable recycling by a world leader

One would think a company that uses massive naval ships to recover thousands of kilometres of undersea cable was started by a marine engineer; someone with an affinity to the sea. But the truth is a little more unexpected. Mertech Marine was in fact, started by a Paarl farmer who asked a single question, and when he saw an opportunity in the answer, set in motion the actions that would take him from terra firma into unchartered waters.

In 1999, van Wyk van Niekerk attended an auction at the Cape Town Harbour, hoping to perhaps find steel materials that would prove useful on his farm. He won a bid on a particular lot, which happened to include 21km of undersea analogue cable from a system that became redundant in 1993. Once he had stripped back the cable and saw the possibilities for recycling and repurposing the raw materials, van Wyk wondered just how much cable might be lying – unused – under the sea. this simple question was to be the catalyst that led to the ignition of van Wyk's entrepreneurial spirit and ultimately, the formation of Mertech Marine. And then van Wyk had a crazy idea. What if he were to start a company that retrieved undersea cables, dismantled them and then resold the components to farmers and other industries that would benefit from access to the raw materials?

Partnership

Van Wyk went to speak to the one person he knew who shared his entrepreneurial genes and big idea way of thinking – his brother, Francois van Niekerk, founder of the Mertech Group. They spoke about the possibilities and decided to establish Mertech Marine. From the initial stripping of the original cable to the first retrieval mission, everything was a learning curve; there simply is no textbook on the subject.

In 2004, the company entered into a contract with the original owners to acquire the SAT-1 cable connecting South Africa with England, which had been out of use since fibre optic technology came to South Africa in 1993. With the sale concluded, Mertech's next task was to acquire a suitable vessel for the retrieval of their newly purchased cable. In August 2008, a cable ship of Orange Marine was chartered to recover a piece of the SAT-1 cable as a trial. Various challenges meant an extremely lengthy retrieval time and by the time the 350km of retrieved cable arrived back in Cape town, the copper price had dropped considerably amidst the credit crunch and any hope of a profit had vanished. However, Mertech Marine's team focused on the positive. They had proven that retrieving and offloading the

cable was possible. They had proven that their own-built dismantling machinery worked. Mertech Marine was in business!

Post-recycling possibilities and steel components

The components which are being recycled at present are cable, wire, copper, polyethylene and aluminium. At this point, Mertech Marine has already recovered and recycled 25 000 km of undersea telecommunication cable and attributed 875 000 metric tonnes towards the volume of CO^2 emission savings. Since 2009, Mertech Marine's factory added two dismantling machines and a self-designed state of the art steel cable and wire factory.

Steel components such as cable, wire, anchors (galvanised), droppers (galvanised), offset brackets (galvanised) and turn-and-pegs are marketed under the brand Mertech Cable and Wire, and offers an economical alternative for farmers building cattle kraals, erecting hail nets over fruit orchards, and for vegetable and vineyard trellising, and livestock and game fencing.

Thanks to a stroke of luck, entrepreneurial vision and the tenacity of a farmer, Mertech Marine is today leading the way in sub-marine cable retrieval and recycling and continues to learn, grow, improve and pioneer.

For more information, phone 021 981 8266, 081 549 1109 or 076 784 3205, or send an email to info@mertechmarine.co.za.
Visit www.mertechmarine.co.za to learn more.

Superior breaking force

Steel cables that are currently available vary in diameter, namely 6 and 7mm. Results of tests done on the cables show a breaking force on the 6 and 7mm cables of 52kN (5,2 metric ton) and 79kN (7,9 metric ton) respectively.

Another handy feature of these cables is in the form of hail nets erected over vineyards, citrus and fruit orchards.

Many such enclosures, especially in the provinces of Limpopo and Mpumalanga, are covered with nets which are supported by Mertech Cable & Wire's cables.

Two new cables which will be available soon are presently in the development stage, using respectively 3 x 1,2mm and 4 x 1,2mm wire strands.

Steel wires, which are ideal for fencing and trellising vegetables, citrus, vineyards and fruit orchards, vary in diameter: 0,75; 1,0; 1,2; 1,3; 1,4; 1,6; 1,8; 1,9 and 2,64mm. Another new development is the annealing of the wires mentioned above to create binding wire.

Thicker wires are also available in the following sizes: 3, 4; 4,9; 5,1 and 6,96 mm.

These wires are galvanised and applied as offset brackets in electric fences to keep jackal away from a farmer's sheep. Among other uses, these thicker wires can be incorporated into anchors used at the ends of trellised rows in vegetable fields, vineyards, citrus and fruit orchards.

The Mertech range includes straight and peg (also known as turn and peg) wires, which can be employed during the young and growing phase of vineyards, citrus and fruit trees.

Mertech Cable & Wire for a range of products of excellent value and quality

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for the building of cattle pens, erecting game fencing as well as hail nets to cover fruit orchards and vineyards

STEEL WIRES OF VARIOUS THICKNESSES
ideal for trellising vegetables, vineyards and fruit orchards

BINDING WIRE - BLACK ANNEALED
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the ideal product for fencing off farms

ANCHORS- GALVANISED
used at the start and end (head and graft) of trellised rows of vineyards and fruit trees

OFFSET BRACKETS- GALVANISED
used when erecting electrified fences on sheep and game farms

TURN & PEG
are harnessed to trellis vineyards and trees in the young growth phase to the cordon wire

For more information

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