



Scan for Capital Harvest

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This is a monthly environmental scanning document with extracts from a range of press articles deemed to be of possible strategic importance to Capital Harvest. The articles are arranged according to a framework of topics. For each article its title, author (where available) and source are stated.

Editorial

Agriculture

French insect farming start-up Ÿnsect has raised \$125 million in the largest early-stage agtech funding deal ever in Europe. The company has now raised over \$160 million since it was founded in 2011. Ÿnsect farms mealworms to produce ingredients for fish feed, pet food, and organic crop fertilisers. Insects can form a core component of animal feed, but is presently still combined with other feeds. Ÿnsect is one of 50 insect farming groups that have collectively raised \$480 million to date. The company will use the funding to construct the largest insect farm in the world, based in Amiens in northern France, with the first phase able to produce 20 000 tonnes of insect protein per year. The present pilot factory uses sensor technology, automation, data analysis and predictive modelling to measure and respond to temperature, insect growth and weight, and Co2 emissions. Stiff competition for Ÿnsect comes from Cape Town-based AgriProtein, the UK-South African venture that farms black soldier flies and has raised over \$130 million to date. AgriProtein focuses on using pre- and post-consumer food waste to feed its flies. AgriProtein has been listed on the Global Cleantech 100 for three consecutive years, and was selected as one of *Time Magazine's* Genius Companies in 2018.

Scientists warn that nearly half of all insect species worldwide are in rapid decline and a third is threatened with extinction. The main culprit is habitat change (deforestation, urbanisation and conversion to farmland), followed by pollution and agricultural pesticides. In Europe flying insects have declined by an estimated 80% in three decades, causing bird numbers to decline. One-in-six species of bees have gone regionally extinct somewhere in the world.

Politicians in Germany are planning an insect protection law that will reduce the use of pesticides and fund research. The bill could, however, face opposition from parties loyal to farmers, who generally support the use of pesticides. Many German farmers feel strongly that production costs will rise to unacceptable levels if pesticides are banned. In February 1.75-million Germans in Bavaria signed a petition for a referendum to "save the bees", calling for more organic farming and green

spaces and increased protection from agricultural chemicals. The petition was strongly opposed by the local farmers' union.

In the past three years, the number of US meat and poultry products claiming to be antibiotic-free increased by 117%. In February agricultural company Perdue announced that it would take further steps to treat chickens humanely. \$20 million is being invested in the installation of a fully-integrated bird transportation system at its Delaware plant, moving chickens to slaughter by machinery. This comes after widespread criticism of the industry from animal rights groups, who say human interaction creates the potential for the abuse of animals. Perdue will now use a catching machine, which slowly advances down the length of a barn, nudging birds onto conveyor belts and then into roomier crates than previously used. The crates are moved by a forklift onto a trailer, which protects the chickens from the elements during the drive to the processing plant. The crates are unloaded and the birds allowed to rest before entering Perdue's controlled atmosphere stunning system, which uses a combination of carbon dioxide and oxygen to render them senseless within five minutes. The new process is also better for workers, who no longer have to work in the dark to keep the birds calm.

Companies fighting food waste in the US attracted \$125 million in venture capital and private equity funding in the first 10 months of 2018. Innovations include smart tags that change colour when milk goes bad, a mist to prolong the shelf life of fruit and software to help grocery stores order the right amount of produce so they discard less. Other examples are FoodMaven, which moves discounted surplus food and imperfect produce to restaurants and commercial kitchens, and Ovie, which says its Smarterware combines Tupperware and sensors that show consumers how long they can keep leftovers. Walmart works to get produce from the farm to the store faster, and lowers prices on items that will expire soon. Increasingly – and often through specialised start-ups – leftover food is donated to food banks.

Scientists in Dubai are developing a multitude of crops that can thrive in difficult terrain. The dry United Arab Emirates uses mainly groundwater for crops, but aquifers are becoming depleted and infiltrated by seawater in coastal areas. Through selective breeding, five varieties of quinoa have already been developed to tolerate salty soil. Quinoa is more expensive than wheat and farmers can earn up to 20% more in profits. The main challenge is to convert consumer tastes world-wide from wheat to quinoa, which has thus far proven difficult to achieve on a significant scale.

Ranchers in north-east Australia endured a prolonged drought last year, and this year fell victim to severe flooding. The Australian military dropped fodder to cattle stranded by floodwaters in Queensland, parts of which received a years' worth of rain in only 37 days. Drought-weakened cattle are more susceptible to being caught and drowned in floodwaters or dying of exposure.

The world's first Centre for Doctoral Training for agri-food robotics is being established at Lincoln in the UK. The centre, heavily supported by industry, will provide funding and training for at least 50 doctoral students who specialise in areas such as autonomous mobility in challenging environments, the harvesting of agricultural crops, soft robotics for handling delicate food products, and 'co-bots' for maintaining safe human-robot collaboration and interaction in farms and factories. The wide-scale engagement with industry will enable the students' research to be absorbed rapidly in real-world applications in the agri-food industry.

Swedish software company IFS and Pretoria-based Matsei Technologies have launched a digital aquaponics farming project in SA. The Internet of Things, Enterprise Operational Intelligence and analytics are combined to help impoverished communities farm fish and vegetables. The companies

believe that while starches are readily available, developing affordable protein sources is crucial to feeding Africa.

SA drone operator companies – many of whom serve the farming community – complain that red tape is hampering the commercial drone industry. The SA Civil Aviation Authority (CAA) requires commercial operators to have a remote operator certificate and a licence for each pilot and each drone. To comply, a company must produce a comprehensive technical manual on operational compliance. The application process takes long – often many months – and is expensive. There are presently 37 approved commercial drone operators in SA. The use of a drone on one's own property does not require a license in SA, while flying over private property requires permission from every owner.

On *News24*, researchers argue that many people hold the erroneous view that SA's agriculture is dominated by large commercial farms. Small-scale family farms have traditionally been the dominant form of farming in SA commercial agriculture, and still account for the bulk of the industry. In recent years, Stats SA has based its count of farms on the number of farms registered for VAT (while VAT registration is not mandatory for farms with a small turnover). Statistics from Stats SA can therefore create the impression that the number of farms declined, so farm sizes must have increased significantly. While this is true in some areas, more detailed research shows that average SA farm sizes have remained relatively stable. The scale of business on farms has, however, increased rapidly over the years due to vertical expansion, increased productivity and sustainable practices. Some commentators tend to confuse the size of the business with the size of the land. It makes sense to use the size of the business (measured as net farm income or turnover) as a way of classifying farms. Using the size of the land makes less sense due to the variation of land quality and the productive potential of different pieces of land. If the Department of Trade and Industry's official definition of small, medium and micro-sized enterprises is applied to farms, 96% of commercial farms are classified as small and medium-sized enterprises.

Statistics showed a significant decline in the number of SA farms sold in 2018 compared with 2017. New mortgages for farms also declined. Most commentators agree that uncertainty around land reform is a factor, but attribute the decline mostly to the poor economy and the drought. In the present buyer's market, agents are seeing large commercial farmers buying up smaller farms at discount prices. This is a common occurrence in the wake of a drought. Over the last few years there has been an upward trend in the number of farms purchased by black farmers.

An independent evaluation of the Western Cape's land reform projects (those that receive support from the Department of Agriculture), has shown that 72% of the province's 105 projects from 2014 to 2019 have yielded a positive outcome. The study classifies 56% of the projects as 'succeeding' and 16% as 'highly successful'. An area earmarked for improvement is farmers' access to water, as many land reform beneficiaries in the province battle with irrigation and water rights. The farms also, in general, scored low on environmental indicators (such as the use of renewable energy and waste recycling), so additional support is required in this regard.

In 2018 SA's agricultural exports reached a record level after recording a 7% year-on-year increase. Increased export volumes were seen in products such as oranges, grapes, wine, maize, apples, wool, lemons, mandarins and pears. Measured in value terms, the African continent (39%) and Europe (27%) continued to be the largest export markets, followed by Asia (25%), and the Americas (5%). According to Agri SA, SA is among the world's top exporters of citrus (second place), wool (third place), pome fruit (fourth place) and stone fruit (sixth place).

In the past season Spain's citrus sector was in crisis, with prices below production costs and multiple plantations left unharvested. Prices mostly moved between 5 and 10 euro cents per kilo, while production costs were over 15 cents per kilo. This has been the case before – in those earlier crisis-seasons lower demand within the EU, production increases, pressure from retailers and the weather were blamed. In the past season, however, the blame was almost exclusively fixed on imports from SA. Of all countries outside of the EU, SA supplies the most citrus to the EU by far – approximately three times that of its closest rival, Turkey. In addition, an agreement is in place that will reduce tariffs on imports of sweet oranges from SA to zero by 2026. Despite SA's strong showing, Spain still supplies 4 million of the 7 million tons of citrus that EU countries import each year. Some have therefore questioned whether it is fair to fix all of the blame for Spain's citrus woes on SA exports.

Dutoit Agri, Hortgro and Kromco agree that last season's drought taught the fruit industry to permanently survive on less water. Significant improvements were made in water-efficient irrigation and mulching. Some growers allowed longer intervals between irrigations, others used less water during each irrigation, and drip irrigation became very popular. Kromco believes there is no longer a question as to whether apples and pears can flourish with the use of drip irrigation, which is of long-term benefit to the industry.

WOSA reported a 4% growth in the value of wine exports in 2018, despite the drought. The value of exports was helped by the depreciation of the rand against the dollar and an increase in global wine prices.

Three leading global developing financial institutions have announced an investment United Exports to support a 180-hectare blueberry farm expansion and infrastructure upgrade in SA. The three are the International Finance Corporation, FMO of the Netherlands and Denmark's Investment Fund for Developing Countries. The instrument was specifically designed to assume the early-stage risk that commercial banks typically do not offer. The funds will help boost availability of new varieties and improve technology. United exports accounts for 30% of SA's blueberry exports.

Amanteco Almonds of Montagu is the largest almond producer in SA, having planted almonds for over three decades. It has now partnered with Olyfberg Vrugte (which includes the Van Loveren Group and Prof Mohammad Karaan) and an international exporter to establish an almond-processing plant near Robertson. The new plant, Amandel Afrika, started production in November 2018. Amanteco Almonds delivers 130 hectares' worth of almonds to the plant. An additional nine farmers who will deliver to the plant have already planted 210 hectares, and will expand by another 250 hectares over the coming year. The plant is located on the land of Bussell Boerdery, where 70 hectares of almonds have been planted. Global demand for almonds is increasing steadily, with California supplying over 80% of the world's almonds. SA's production costs are lower than that of California. It will take seven to eight years for SA to produce enough almonds to meet local demand. Almonds is a way for farmers in the Breede River Valley, Klein Karoo and Olifants River Valley to diversify and supplement their existing wine grape and canned fruit production. It costs R120 000 per hectare to establish almonds, which the farmer can sell for approximately R85 per kilogram. Almonds have about 125% the water requirement of wine grapes. Trees are shaken with a machine that can harvest up to five trees a minute. A second machine then sweeps the almonds into a row, where they dry for up to a fortnight. To lower costs, Amandel Afrika wants to establish a contract harvesting company in the Breede River area to help farmers during their first few years of production.

Some politicians are concerned about the significant decline in wheat production in SA due to high production costs, fluctuating commodity prices, climate change and outbreaks of pests and diseases. Government says it is trying to encourage wheat production with the help of organisations such as the Agricultural Research Council and the Wheat Breeding Platform. The agriculture department says

it supports wheat producers with technical advice regarding cultivar choice, production site selection, soil preparation, cultivation practices, pest and disease control measures, harvesting and post-harvest practices.

At the same time, Grain SA says peanut production in SA is at its lowest recorded level. This is mainly the result of drier conditions at the start of planting season, which ran from October to December 2018. Peanut farming is labour intensive and the cost of mechanising the operations is high. The world's main peanut producers are Argentina, India, Brazil, Malawi, Mozambique, Turkey, the US, and Zambia.

Each year, Hortgro selects one UK retailer to receive the award Stone Fruit Retailer of the Year. Supermarket chain Tesco is the latest winner. It is the third time Tesco has received the award. SA's peaches, nectarines and plums sold very well in Tesco stores, and the chain launched various promotional activities to increase sales.

Hortgro's chairman, Nicholas Dicey, has been elected president of the Brussels-based World Apple and Pear Association (WAPA). He is a deciduous fruit farmer from Wolseley. WAPA's members are Argentina, Australia, Austria, Belgium, Brazil, Chile, China, France, Germany, Italy, Moldova, the Netherlands, New Zealand, Poland, Scandinavia, Slovenia, South Africa, the UK, Ukraine and the USA. WAPA encourages members to share production figures, hectares planted, research and promotional activities.

Capespan has announced that it has grouped together its logistics infrastructure – port terminal operator FPT, Tradekor, Port Stevedoring, Mozambique operation MCT, freight forwarding service provider Contour Logistics and technology-enabled The Logistics Company – into The Logistics Group (TLG) as a focused and separately managed business. TLG continues to be managed by Capespan's logistics management team. For a number of years now, Capespan has taken steps to structure itself into two focused business units, namely fruit and logistics.

The Swartrivier farm in Prince Albert, now operating as Wolwekraal Boerdery, was purchased by government in 2009 and given to eight families as part of the national land reform programme. Over the past decade, the project has proven quite successful in terms of livestock units farmed and job creation. Four consecutive years of drought in the Great Karoo has been the families' biggest challenge thus far, which they have dealt with – in part – by taking on more drought-tolerant Angora goats to replace sheep. Government initially helped the families to get on their feet, and has provided some drought relief. Local farmers have helped by exchanging ideas and advice, but apart from this the farmers say they have been able to keep the business running on their own through hard work.

Banking and Capital Markets

Deutsche Bank is rebuilding its SA workforce, after scaling back staff and cutting costs as part of global restructuring last year when 50 SA jobs were cut. The latest expansion is in areas of global and local strengths, namely fixed income and corporate treasury solutions. In 2018 Deutsche Bank was the fourth-biggest arranger of bond sales in sub-Saharan Africa. It has had a presence in SA since 1979 and opened a branch in SA 1998, offering corporate finance advisory services, equities research and trading, foreign-exchange and fixed-income trading as well as global transactional banking.

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Banking & Capital Markets

Deutsche Bank plans to rebuild South Africa staff after cuts

Agriculture

French insect farming startup Ynsect raises \$125m Series C breaking European agtech record

Ynsect, the French insect farming startup, has raised \$125 million in Series C funding in the largest early-stage agtech funding deal on record in Europe. This takes the company's total fundraising to over \$160 million since it was founded in 2011.

Ynsect farms mealworms to produce ingredients for fish feed, pet food, and crop fertilizers in an effort to capture some of the \$500 billion animal feed market. The startup is one of 50 insect farming groups that have collectively raised \$480 million to-date, according to the International Platform of Insects for Food and Feed (IPIFF), an EU-based association for the industry. In 2018, members of the association produced 6,000 tonnes of insects in 20 countries.

Insect farming, long an industry in developing nations for human consumption, has picked up pace in developed nations in recent years as a sustainable source of protein, particularly for the livestock industries.

Aquaculture, for example, still relies mostly on fishmeal, which is made up of wild-caught fish representing over 25% of global fishing and contributing to declining wild fish stock globally.

Ynsect is also offering a premium product to its customers, providing health benefits that translate into improved animal growth performance and boosted immune systems, according to Antoine Hubert, cofounder and CEO of Ynsect.

"Farmers can essentially produce more with less with our premium feed ingredients," he told *AgFunderNews* adding that the company's organic fertilizer product is also yielding great results for plant growth across types from grains to vine crops.

While Ynsect's products will represent a core component animal feed, they are one ingredient and not a complete solution at this point, meaning that existing feed sources will still be used, Hubert added. However, he imagines a future where Ynsect's mealworm products could be combined with other types of insects with other beneficial nutritional profiles and sustainable sourcing methods.

The investment round was led by Astanor Ventures, a new food and agriculture impact investment fund based in London. The majority of Ynsect's existing investors including Bpifrance Ecotechnologies, managed on behalf of the French Strategic Investment Plan, Demeter, Quadia, and Singapore's Vis Vires New Protein Ventures are participating in this latest round, alongside Bpifrance Large Venture, Talis Capital (UK), Idinvest Partners, Cr dit Agricole Brie Picardie, Caisse d'Epargne Hauts-de-France and Picardie Investissement (France), Finasucre and Compagnie du Bois Sauvage (Belgium), Happiness Capital (Hong Kong) and a Singaporean family office as new investors.

Ynsect will use the funding to construct what it says will be the largest insect farm in the world, based in Amiens in northern France with the first phase able to produce 20,000 tonnes of insect protein a year.

The company already has a demo facility producing its three main products — YnMeal and YnOil, feed ingredients for pet food as well as several seafood species including shrimp, salmon, trout, and sea-bass, and YnFrass, a premium fertilizer for a variety of crop types.

And the company says it has \$70 million of aggregated orders to fulfill, which it will start to fulfill at the pilot facility that has the capacity to produce hundreds of tonnes.

The Amiens factory is expandable beyond the initial 20,000 tonnes, according to Hubert as it is situated on a large reserve area in an industrial park with all the necessary supplies and facilities including energy and wastewater treatment. And Ynsect is also surveying options to expand to North America, particularly the Midwest of the US, after partnering with a real estate group JLL that's currently scouting locations.

After two years of operating the pilot facility, and over five years researching the business before that, Ynsect has refined its farming and extraction processes using state of the art technology and

resulting in 25 patents. The factory uses a combination of sensor technology, automation, data analysis and predictive modeling to measure and respond to temperature, insects' growth curve, and weight, and Co2 emissions.

"We are very much like a vertical farming business in how we operate, and we have the same issues around the HVAC systems we use to control the environment," said Hubert. "We've developed a deep knowledge and process in this area that could be useful for other sectors at a high level. We have very complex systems for temperature, moisture control; conveyor systems to feed and harvest the insects as well as collect the frass and mature for our fertilizer product and remove the dead with various separation technologies."

The extraction technologies are very similar to those used in oilseed crushing with some innovation in how to handle the products and separate out the protein.

Unlike many of the large groups in the vertical produce farming industry, Ynsect has partnered with existing tech companies to build its systems, and it has long term contracts with groups such as Total, which is big in HVAC systems.

Ynsect decided to rear the *Tenebrio Molitor* beetle not only for its premium nutritional value in animal feed compared to other insects but for its potential to achieve industrial-scaled production. As non-flying insects, they are easier to contain, and they consume natural crop-based by-products, free of unpleasant odors or contaminants. It's also "a gregarious, non-flying, communal insect that prefers to stay close to its colony for added warmth," and it's nocturnal, saving on lighting costs, according to Ynsect.

Nutrition-wise, Ynsect undertook several research projects to determine the efficacy of its products and discovered increases to the overall body weight of shrimp while being fed Ynsect products and a reduced amount of fishmeal. YnMeal also improved the feed efficiency and weight gain in seabass.

Other well-funded insect farming startups are rearing other types of insects such as AgriProtein, the UK-South African venture that's farming black soldier fly and has raised over \$130 million to-date. AgriProtein focuses on using food waste to feed its insects. Canada's Enterra Feed is also growing black soldier fly for animal feed and says it is building the world's largest insect farm, while EnviroFlight, the Midwestern company that was acquired by Intrexon, says it has the biggest black soldier fly factory in the US. The race is on!

Louisa Burwood-Taylor, *Agfundernews*, 20 February 2019

World seeing 'catastrophic collapse' of insects

Nearly half of all insect species worldwide are in rapid decline and a third could disappear altogether, according to a study warning of dire consequences for crop pollination and natural food chains.

"Unless we change our way of producing food, insects as a whole will go down the path of extinction in a few decades," concluded the peer-reviewed study, which is set for publication in April.

The recent decline in bugs that fly, crawl, burrow and skitter across still water is part of a gathering "mass extinction," only the sixth in the last half-billion years.

"We are witnessing the largest extinction event on Earth since the late Permian and Cretaceous periods," the authors noted.

The Permian end-game 252 million years ago snuffed out more than 90 percent of the planet's life forms, while the abrupt finale of the Cretaceous 66 million years ago saw the demise of land dinosaurs.

"We estimate the current proportion of insect species in decline - 41 percent - to be twice as high as that of vertebrates," or animals with a backbone, Francisco Sanchez-Bayo of the University of Sydney and Kris Wyckhuys of the University of Queensland in Australia reported.

"At present, a third of all insect species are threatened with extinction."

An additional one percent join their ranks every year, they estimated. Insect biomass – sheer collective weight – is declining annually by about 2.5 percent worldwide.

"Only decisive action can avert a catastrophic collapse of nature's ecosystems," the authors cautioned.

Restoring wilderness areas and a drastic reduction in the use of pesticides and chemical fertiliser are likely the best way to slow the insect loss, they said.

The study, to be published in the journal *Biological Conservation*, pulled together data from more than 70 datasets from across the globe, some dating back more than a century.

By a large margin, habitat change - deforestation, urbanisation, conversion to farmland - emerged as the biggest cause of insect decline and extinction threat.

Next was pollution and the widespread use of pesticides in commercial agriculture.

The recent collapse, for example, of many bird species in France was traced to the use insecticides on industrial crops such as wheat, barley, corn and wine grapes.

"There are hardly any insects left - that's the number one problem," said Vincent Bretagnolle, an ecologist at Centre for Biological Studies.

Experts estimate that flying insects across Europe have declined 80 percent on average, causing bird populations to drop by more than 400 million in three decades.

Only a few species of insects – mainly in the tropics – are thought to have suffered due to climate change, while some in northern climes have expanded their range as temperatures warm.

In the long run, however, scientists fear that global warming could become another major driver of insect demise.

Up to now, rising concern about biodiversity loss has mostly focused on big mammals, birds and amphibians.

But insects comprise about two-thirds of all terrestrial species, and have been the foundation of key ecosystems since emerging almost 400 million years ago.

"The essential role that insects play as food items of many vertebrates is often forgotten," the researchers said.

Moles, hedgehogs, anteaters, lizards, amphibians, most bats, many birds and fish all feed on insects or depend on them for rearing their offspring.

Other insects filling the void left by declining species probably cannot compensate for the sharp drop in biomass, the study said.

Insects are also the world's top pollinators – 75 percent of 115 top global food crops depend on animal pollination, including cocoa, coffee, almonds and cherries.

One-in-six species of bees have gone regionally extinct somewhere in the world.

Dung beetles in the Mediterranean basin have also been hit particularly hard, with more than 60 percent of species fading in numbers.

The pace of insect decline appears to be the same in tropical and temperate climates, though there is far more data from North America and Europe than the rest of the world.

Britain has seen a measurable decline across 60 percent of its large insect groups, or taxa, followed by North America (51 percent) and Europe as a whole (44 percent).

AFP, 12 February 2019

Germany plans tougher law to protect insects, reduce pesticides

Germany plans an insect protection law to slash the use of pesticides and pump tens of millions of euros into research, a minister said on Sunday, as global concern grows over the impact of human beings on the crucial invertebrates.

"We human beings need insects, they deserve to be protected with their own law," environment minister Svenja Schulze told weekly *Bild am Sonntag*.

Her “action plan for protecting insects”, seen by news agency DPA, would provide annual funding of €100m for the cause, including €25m for research.

Germany would also stop covering new land with concrete for roads or home construction until 2050, and limit light emissions at night to avoid disorienting the six-legged creatures.

The federal government would set rules for “environmentally and naturally bearable application of pesticides and significant reduction of their input and that of other harmful substances into insect habitats”, according to the document.

Schulze’s scheme would include a ban by 2023 for hotly debated herbicide glyphosate, overtaking neighbour France, which has yet to set a firm date.

But the Social Democratic Party (SPD) minister could face difficulty pushing her law past members of Chancellor Angela Merkel’s Christian Democratic Union (CDU).

The senior coalition partner in Berlin holds the critical agriculture ministry and is traditionally closer to farmers.

“We wouldn’t only be protecting stag beetles and bumblebees, but above all ourselves by preserving insects,” Schulze said.

Campaigners worldwide have highlighted the risks of declining insect numbers, noting the arthropods are vital for pollinating plants — including food crops — and as food sources for larger animals like birds.

Last week, a record 1.75-million people in prosperous south German state Bavaria signed a petition for a referendum to “save the bees”, calling for more organic farming and green spaces and increased protection from agricultural chemicals.

The referendum campaign was opposed by the powerful regional farmers’ association, which warned of potential financial costs to the industry and urged the population to “stop bashing farmers”.

AFP, 17 February 2019

Perdue unveils a more humane chicken slaughter process

Just as Big Meat bent to demands for organic and antibiotic free products, the new challenge is persuading consumers their dinner was treated nicely before slaughter. Here’s news of an interesting move by one of the biggest US chicken producers.

For a new generation of concerned consumers, every stop their food makes between farm and table matters.

In the not too distant past, chickens raised without antibiotics were a niche product. Now, they’re everywhere. The number of US meat and poultry products making antibiotics-related claims rose 117 percent over the past three years, according to data from research firm Mintel.

“Consumers are expecting that companies are doing the right thing behind the scenes,” said Melanie Bartelme, a global food analyst for Mintel.

In a recent survey of 1,871 consumers by the firm, 29 percent said “humanely raised” is a top attribute, and 28 percent said they’d be willing to pay more for meat with the label.

Those numbers increase for younger consumers, Bartelme said, driving companies to do better — and talk about it. “There are a lot of different things that these companies are doing to stand out a little bit,” she said.

Perdue and its subsidiaries already sell organic and antibiotic-free birds and products certified by the nonprofit Global Animal Partnership.

Last week, the company announced it’s further improving the final hours of its chickens’ lives with a more than \$20-million investment in the installation of a fully-integrated bird transportation system at its Milford, Delaware plant.

Rather than being handled by humans, the Perdue chickens in this system will be moved from barns to slaughter by machinery.

“Any time you have human-animal interaction, you have the potential for abuse to happen,” said Lauri Torgerson-White, an animal welfare specialist at Mercy For Animals. Countless videos online show the mishandling of birds by catchers, who are trained to grab chickens by the legs, several animals in each hand, before putting them in crates for transport.

“Not everybody knows how to handle animals,” said Mike Levensgood, Perdue’s chief animal care officer. The introduction of the new system will help the company avoid the problem entirely on the farms where it’s used.

Perdue is starting to use a catching machine, which slowly advances down the length of a barn, nudging birds onto conveyor belts and then into roomier crates than the company previously used. The crates are moved by a forklift onto a newly-designed trailer, which protects the birds from the elements during the drive to the processing plant.

After the truck arrives, the crates are unloaded and the birds allowed to rest before entering Perdue’s controlled atmosphere stunning system, which uses a combination of carbon dioxide and oxygen to render them senseless over a period of five minutes.

The CAS, which the company finished installing late last year, is used in just 5 percent of slaughterhouses, according to the National Chicken Council, and is considered more humane than older methods of stunning birds.

Only after the chickens emerge will they be touched by human hands as they’re shackled and prepared for slaughter.

Standard catching and transport resulted in about 6 percent of the chickens ending up with broken wings, according to Perdue, which says the new system results in 1 percent wing breakage.

The new process is better for workers, too. Employees responsible for loading the birds into shackles are no longer forced to work in the dark to help keep the birds calm. The more protective trailers use 32 percent less fuel as well, according to the company.

Animal welfare groups are on board. The system is a “dramatic improvement” over others in the country, said Chris Liptrot, director of corporate relations at the Humane League, who visited Perdue’s facility earlier this year.

But don’t expect Perdue to produce a slaughter-centric advertising campaign anytime soon. The company doesn’t plan to tout the new process on its packaging, the way it does with an organic seal or a “no antibiotics ever” label.

“The focus is going to be on how we raise the animals,” said Eric Christianson, chief marketing officer at Perdue. For consumers who want to know more about the last step of the process, information will be on the company website.

“What happens at the plant,” he said, “is part of the best care possible.”

Deena Shanker & Lydia Mulvaney, *Bloomberg*, 26 February 2019

Big money joins fight against \$1 trillion in wasted food

There’s gold in keeping bananas yellow.

Companies fighting food waste in the U.S. attracted about \$125 million in venture capital and private equity funding in the first 10 months of 2018, according to a report from ReFED, a coalition of nonprofits, businesses and government agencies. This amount is expected to rise.

Luring funding are products like smart tags that change color when milk goes bad, a mist to prolong the shelf life of fruit and software to help grocery stores order just the right amount of produce so they throw less away.

The solutions have skeptics, but the problem is generally acknowledged as an economic and ethical calamity. Every year, 1.4 billion tons of food—a third of global production—ends up in landfills. By

some estimates, this adds up to nearly \$1 trillion of annual squander and the production of about 8 percent of all human-caused greenhouse gases. At the same time, nearly 800 million people go hungry every day.

“Investors are seeing that food waste is a big business opportunity,” said Michelle Masek, head of marketing at Apeel Sciences Inc., which formed a partnership this month with a major European supplier of avocados that will use a water-based solution the company says extends the ripeness as many as four days.

The challenge is that individuals—not restaurants, supermarkets or farms—are among the main offenders. In the U.S., about 43 percent of all the waste happens at the end of the supply chain, in home kitchens, according to a 2016 ReFED report. A study from the Natural Resources Defense Council found 68 percent of what’s trashed is still edible.

People are aware of their shortcomings, according to a 2016 survey. They feel guilty, but not guilty enough to make a difference.

But not everyone is sold on the idea that the answer lies in more stuff.

“I worry about this food-tech, food-waste boom becoming a food-waste bust,” said Elizabeth Balkan, director of the NRDC’s food-waste program. If consumers want to throw away less food, what they have to do is plan better and store smarter, she said. It does “require lifestyle adjustments, but it shouldn’t be things that require a lot of costs and newfangled devices.”

The hope for serious change, and the greatest opportunity for investment, rests with grocery stores, where narrow margins and tough competition from Walmart Inc., Amazon.com Inc.’s Whole Foods Market and European transplants Aldi and Lidl provide bottom-line incentive. Not only is revenue lost from tomatoes gone mushy and expired cheddar, there’s the added expense of getting rid of it.

“When they started to realize the cost of food waste, we started to see a change,” said Anne Greven, global co-head of food and agriculture innovation at the Dutch lender Rabobank.

Startups have stepped in. FoodMaven, which sells discounted surplus food and what it describes as “imperfect produce” to restaurants and commercial kitchens, announced \$10 million of investment in January, from members of the Walton and Pritzker families, on top of \$8.6 million from a first round of funding. Afresh Technologies, which taps machine learning to help retailers buy just enough to keep inventories in balance, followed a \$1.7 million seed round in January 2018 with an undisclosed, but larger, funding round that closed in December.

Other companies include Bluapple, maker of a gas-absorbing device for refrigerators that claims to add a few more days to berries and greens, and Ovie, which says its Smarterware combines Tupperware and sensors to let you know how much time that leftover fruit salad or beef stir-fry has left. Companies like Copia and Goodr are making food donations easier.

Older companies, too, see the benefit of new products to address the problem. Newell Brand Inc.’s Rubbermaid advertises the containers in its Fresh Works line as capable of prolonging the life of items like strawberries and leafy greens.

Walmart “looks at food waste in a more holistic way,” said Stephanie Feldstein, population and sustainability director for the nonprofit Center for Biological Diversity. For example, the biggest U.S. retailer cut strawberry delivery time from farm to store by 50 percent, adding two to three days to the berries’ usable lives.

Through its Customer Value Program, Walmart reduces the price on items that will expire soon to increase the likelihood they’ll be purchased and created a standardized date label to lower the chances anything goes bad at home. Walmart donates to local food banks what doesn’t get sold.

“Waste, at its heart, is an expense,” said Laura Phillips, Walmart’s senior vice president for global sustainability.

Scientists breed salt-loving crops, but world is slow to bite

Scientists in Dubai are developing crops like quinoa that can thrive in the salty soils intruding into the world's croplands. Winning over enough people to eat them is proving a greater challenge.

At an experimental farm within sight of the world's tallest skyscraper, researchers at the International Center for Biosaline Agriculture are trying to help farmers in the Middle East and beyond earn a living from unlikely plants known as halophytes. These plants, from trendy quinoa to obscure salicornia, flourish in salty and arid environments where staple crops like wheat or rice would wither.

Concerns about climate change, population growth, and the degradation of fertile farmlands add urgency to the work of ICBA, which runs on a shoestring budget of \$15 million a year. The United Nations estimates that food production must increase 60 percent in thirty years to meet demand, while gains in crop yields are slowing.

"You can see the disaster coming. I can't understand why more people aren't acting to prevent it," says Ismahane Elouafi, ICBA's director general. Governments are reluctant to invest in new foods and remain tethered to staple crops that "are just too demanding on water."

Through selective breeding, the non-profit research institute developed five varieties of quinoa -- a protein-rich, gluten-free grain that tastes like nutty rice -- that grow especially well in salty soil. The center is introducing them in Egypt and Morocco.

Agronomists at ICBA cultivate a patchwork of sandy plots on the fringe of Dubai's desert interior. A vault where the temperature is kept at 2 degrees Celsius (36 degrees Fahrenheit) safeguards the fruits of their efforts: 14,000 types of seeds from more than 250 plant species.

These seeds are enough for trial use, but a breakthrough to large-scale halophyte production requires government or business support. Planting a new crop is only the first step for ICBA, which operates projects in 28 countries from Senegal to Bangladesh and counts the U.S., Sweden and the United Arab Emirates among its top donors. The center has to transform laboratory wins into commercial successes.

"The marketing aspect is vital," said Dionyssia Lyra, a halophyte agronomist at ICBA. "We need advertising. We need chefs."

Quinoa is often more expensive than wheat, and many people are unfamiliar with products made from it. To make headway in rural Egypt, ICBA organized cooking workshops for 120 women to train them to prepare food from salt-tolerant crops. Changing palates has proven difficult in other markets.

Wajih Syed, co-founder of Kinwa Foods Pvt Ltd., spent more than two years persuading farmers in Pakistan to plant ICBA-supplied quinoa seeds in salty soils. The grain can earn these farmers up to 20 percent more profit than wheat, and some growers have started to cultivate it on land no longer fertile enough for traditional crops, he said. Yet the grain remains a niche product.

"Changing the eating habits of a thousand years is not an easy job," Syed said. "I don't see quinoa becoming a staple food in Pakistan for at least the next decade."

ICBA also breeds salt-tolerant sorghum and pearl millet, as well as salicornia, known as sea asparagus or glasswort. Salicornia can be used in salads, animal fodder and even biofuel. Etihad Airways PJSC, the Abu Dhabi carrier, recently used jet fuel blended with locally produced oil from salicornia in a commercial flight.

The research center's modest profile and resources belie its importance in the quest for food security in nations like the U.A.E., which has little arable land and imports as much as 90 percent of its food. Like other oil-rich countries in the region, the U.A.E. is scouring the planet for farmland to help ensure supplies.

Many farms in the Middle East rely on underground water reserves for irrigation. Aquifers are rarely replenished in the arid climate, and as groundwater levels decline, the reserves become dense with salts that can kill traditional crops. In coastal areas, seawater often intrudes into diminishing aquifers, making salinity worse.

And still, this international organization is struggling to drum up cash to develop crops the world needs.

“It’s so hard to fund-raise for research when you are in the U.A.E. because the donor thinks you are swimming in oil money,” Elouafi said. “When they see these high skyscrapers and luxury and what have you -- the images of Dubai that are portrayed everywhere -- it’s super-hard.”

Bruce Stanley, *Bloomberg*, 28 February 2019

Australian farmers ponder what is worse: drought or floods?

Australian ranchers who struggled to keep their cattle alive during a prolonged drought last year are now battling to save herds from record-breaking floods inundating the northeast of the country, officials said on Wednesday.

Australia’s military has been called in to drop fodder to cattle stranded by floodwaters in Queensland state to stop them from starving, agriculture minister David Littleproud said, with their owners still marooned on their farmsteads.

“This is absolutely heart-breaking for producers who have expended enormous amounts of money and energy keeping their herds alive through the drought, only to see them now devastated by floods,” said Michael Guerin of the farm lobby group AgForce. The losses for farmers from the floods are likely to be in the “hundreds of millions of dollars”, he said.

Swathes of Australia’s eastern inland, including Queensland, have been plagued by a severe and prolonged drought that pushed farmers to breaking point as they struggled to keep their cattle and crops alive. While the late arrival of the monsoon in mid-January initially sparked joy among graziers as it brought much-needed rain to the parched lands, celebrations turned to horror as incessant downpours destroyed herds and washed away properties.

“Stock losses will be much higher than normal, because drought-weakened cattle are more susceptible to being caught and drowned in floodwaters or dying of exposure in the wet, cold winds,” Guerin said.

Bureau of Meteorology forecaster Vinord Anand said some drought-affected communities received hardly any rain in December and the start of the year before the heavens opened. “It’s like the flicking of a switch — it’s been dry, dry, dry and then suddenly you get a year’s worth of rain in 37 days,” he told *AFP*.

Farmer Rachael Anderson said she expected that some 200 cattle at a station she manages near Julia Creek township have so far died. “We thought that they would have been OK, but with the way this flood has come, we really don’t think there is much hope,” Anderson told national broadcaster ABC. “If I were a cow I would have chucked the towel in two days ago. What’s really getting to me at the moment is people saying: ‘You asked for the rain, you got it’. We’d probably almost have been better off in the drought.”

Some towns cut off from the deluge started to mop up on Wednesday as the monsoon trough drifts south and moves offshore in the next few days. Australia’s tropical north typically experiences heavy rains during the monsoon season, but the recent downpours have flooded highways, towns and turned roads into rivers.

AFP, 6 February 2019

World's first expertise centre for agri-food robotics

The world's first Centre for Doctoral Training (CDT) for agri-food robotics is being established by the University of Lincoln, UK, in collaboration with the University of Cambridge and the University of East Anglia.

The Engineering and Physical Sciences Research Council (EPSRC) has awarded £6.6 million for the new Centre, which will see a massive influx of high-level robotics expertise at a vital time for the agri-food industry. The CDT will provide funding and training for at least 50 doctoral students, who will be supported by major industry partners and specialise in areas such as autonomous mobility in challenging environments, the harvesting of agricultural crops, soft robotics for handling delicate food products, and 'co-bots' for maintaining safe human-robot collaboration and interaction in farms and factories.

Professor Tom Duckett, Professor of Robotics and Autonomous Systems at Lincoln, is the new Centre Director. "Automation and robotics technologies are set to transform global industries - within the UK alone they will add £183 billion to the economy over the next decade. Agri-food is the largest manufacturing sector in the UK - twice the scale of automotive and aerospace combined - supporting a food chain, from farm to fork, which generates a Global Value Added (GVA) of £108 billion, with 3.9 million employees in a truly international industry."

"However, the global food chain is under pressure from population growth, climate change, political pressures affecting migration, population drift from rural to urban regions, and the demographics of an ageing population in advanced economies. Addressing these challenges requires a new generation of highly skilled RAS researchers and leaders, and our new CDT will be dedicated to delivering those expertise. It will be a real focal point for robotics innovation in the UK."

At Lincoln, the CDT represents an important partnership between robotics researchers from the Lincoln Centre for Autonomous Systems (L-CAS) and agricultural experts from the Lincoln Institute for Agri-food Technology (LIAT), as they work together to combat these pressing issues facing the global food chain.

The Centre brings together a unique collaboration of leading researchers from the Universities of Lincoln, Cambridge and East Anglia, located at the heart of UK agri-food business, together with the Manufacturing Technology Centre, supported by leading industrial partners and stakeholders from across the food, farming and robotics industries. These include John Deere, Syngenta, G's Growers, Beeswax Dyson, ABB and the Agricultural and Horticultural Development Board.

It is one of 75 new CDTs to be funded by the EPSRC (part of UK Research and Innovation (UKRI)) in what is hailed as one of the country's most significant investments in research skills, designed to equip the UK with the next generation of doctoral level researchers it needs across the breadth of the engineering and physical sciences landscape.

In the new CDT in Agri-Food Robotics, all 50 students will follow a common foundational year, studying on the new MSc Robotics and Autonomous Systems at the University of Lincoln. Then 20 of the students will carry out their PhD studies at Lincoln, 20 at Cambridge, and 10 at UEA. The wide-scale engagement with industry will enable the students' research to be pushed rapidly towards real-world applications in the agri-food industry.

FreshPlaza, 6 February 2019

Partnership to address malnutrition with digital aquaponics

A global enterprise software vendor has partnered with a local IT company to address malnutrition in South African through innovative smart agriculture solutions.

Senior executives from the Sweden-headquartered IFS and Pretoria-based Matsei Technologies and Consulting launched the digital aquaponics farming solution in Johannesburg yesterday.

The initiative uses technology such as the Internet of Things, Enterprise Operational Intelligence and analytics to automate and monitor fish aquaponic operations in real-time.

It is aimed at helping communities to be self-sustainable by farming fish and vegetables and selling them to the informal market to address malnutrition and create employment.

Company executives described the programme as an African turnkey solution that encouraged good nutrition for human development and behaviour, while also being a sustainable community aquaponics solution for the continent's future.

Leon van Deventer, an agricultural engineer and director at Matsei Technologies and Consulting, said African food production was expected to decrease by 28 percent in the coming years due to climate change.

Van Deventer said the African continent would house 50 percent of global undernourished people by 2080. Food production needed to be increased 70 percent to meet the requirements of the continent's estimated population of over 1.2 billion.

He said that aggression, theft and antisocial behaviour declined in communities that were nourished. "It's been shown that assaults decrease by 82 percent, aggressive and antisocial behaviour by 42 percent, and depression, anxiety and social withdrawal by 62 percent."

"In Africa it's not difficult to cultivate starch, the problem is protein," Van Deventer said, adding that they were bent on integrating smart technologies with rural realities.

The two companies expressed their commitment to transfer digital farming skills to communities, especially to the youth, saying they had an obligation to give back to the communities in which they operated.

"We need to prove to investors that projects are under control and are sustainable," Van Deventer said. "We intend to establish regional operation control centres to address challenges."

Luyolo Mkentane, *Business Report*, 9 February 2019

Cape Town company makes global list of top clean-tech companies

Cape Town-based company Agriprotein has been named among just two companies hailing from Africa in the Global Cleantech 100, a list of the 100 companies best positioned to solve the future's clean-tech challenges and make an impact on the market.

Agriprotein is a waste-to-protein solution provider that uses black soldier fly larvae to process pre- and post-consumer food waste into insect protein, used in fish and livestock feed.

From a humble shed in Phillipi, AgriProtein has expanded globally in just a few years, with operations across the world. In addition to being selected to the top 100 three years in a row, this innovative company was also selected as one of Time Magazine's "Genius Companies" in 2018.

In total, 13 900 companies from 93 countries were nominated for the Cleantech 100 list.

"The Agriprotein team continues to make us proud here in the Western Cape. The business, which has grown in leaps and bounds over the years, has had a long relationship with the Western Cape government and its partners at GreenCape and Wesgro," Minister of Economic Opportunities, Beverley Schäfer said.

GreenCape has been supporting AgriProtein since 2015. In the early stages, GreenCape helped develop a business case for AgriProtein and facilitated linkages to animal feed markets in Norway.

GreenCape's Western Cape Industrial Symbiosis Programme (WISP) team helps to link AgriProtein to organic waste suppliers, and through ongoing synergies have diverted over 3,000 tonnes of organic waste to AgriProtein since 2015.

The team also provides ongoing ad hoc supply and demand, and red tape reduction support to AgriProtein's provincial operations whenever requested by AgriProtein.

The work to support AgriProtein's expansion across South Africa, has also been recognised internationally. In 2018, InvestSA, Wesgro and GreenCape won a top United Nations Investment Award for their role in supporting three of AgriProtein's projects.

"As the company has grown, we've seen them create a number of new jobs, with many of their staff hailing from the Philippi area. The work that they do as a team is so exciting because they are using innovation to tackle some of the biggest problems we face globally-creating food security in agriculture, and managing waste" Minister Schäfer said.

Business Report, 12 February 2019

Regulation stifles lift-off of drones in SA

It was a story that captured the world's imagination — emergency blood supplies delivered to remote locations in Rwanda by drone. A joint initiative between the government and a technology company called Zipline used drones to overcome delivery problems and save lives.

The 2018 story prompted renewed interest in the application of remotely piloted aircraft (RPA) or drones. SA operators say this particular success story relies on a specific set of conditions which wouldn't apply here, but the consensus seems to be that red tape is holding the industry back, limiting experimentation towards innovative uses.

In this country, drones are used commercially for surveying and data collection in mining, agriculture, property and construction — plus image and video processing. This is managed by the SA Civil Aviation Authority (CAA), which requires commercial operators to have a remote operator certificate (ROC) and a licence for each pilot and each drone.

To qualify for the ROC, companies must also produce a comprehensive technical manual on operational compliance.

Gary Mortimer, the editor of sUAS News, a popular digital publication on unmanned aviation, says: "The issue with SA regulation is twofold. It takes too long to get anything done, and the cost is stopping people coming in at an entry level." Mortimer believes Australia provides an excellent example of simpler regulation. "There, if your craft weighs less than 2kg you just need to tell the authority that you are operating commercially. This allows people to start cheaply and see if their drone business idea is feasible."

Warren Witte is a co-founder of Integrated Aerial Systems (IAS), an ROC holder that works in mining, mapping, agriculture and film. He says: "It took us 21 months to get fully licensed, and that was doing everything according to the CAA spec. We expected this to be a six-month process but we think there is a capacity issue."

Mortimer and Witte are pro-regulation in principle, and Witte says IAS has a good relationship with CAA staff it has dealt with. "But ... to get a single aircraft licensed [is time-consuming]. Some [licensed operators] are waiting eight to 12 months to get a standard drone approved and added to their licence. If we want to scale up our business for two months' time, we literally cannot do it," he adds.

According to Witte, pursuing IAS's full licensing cost it two years without income. "This meant starting off financially on the back foot." Witte argues that as a result "there is absolutely no transformation in the drone sector. I don't think there is one fully licensed, black-owned drone company in SA today. Many existing operators were already entrenched in the manned aviation space. Someone coming from a disadvantaged background, without aviation experience or the resources to throw at this for months, is going to face an unbelievable challenge to become a legal operator."

The CAA provides an open list of all ROC holders. Currently 37 companies are listed. Realistically, then, there is an untold number of commercial users operating illegally. Spokesperson Kabelo Ledwaba says limited private use — such as using a drone on your own property — doesn't require a

pilot's licence or registration. On the commercial side, he says: "Any notion or suggestion that ... the amount the CAA charges for its approval processes is exorbitant is simply flawed. The CAA was not designed to be a profit-making entity. The amount ... for processing licence/approval applications is negligible and barely covers administrative and related costs."

The CAA's list of fees includes: adding an aircraft to the ROC at R790; initial issuing of the ROC at R3,960; and certificates of approval for the operations manual at R3,990. Several hourly costs are listed, including evaluation of the manual at R750 an hour.

"The crux of the matter," says Ledwaba, "is that the quality of the documentation submitted has a bearing on how quickly the approval process is finalised. The fact that some owners may not have [a] background in aviation could also be one factor that contributes to submission of documentation that does not meet the set standards."

Some sources the *FM* spoke to talk about paying R200,000-R300,000 to get everything submitted, approved and certified, including third-party costs.

After registration, there are limitations based on privacy and safety concerns, such as not flying near an airport and written permission from municipalities, traffic departments or harbour masters.

Flying over private homes requires permission from every homeowner. This can limit the cost-effectiveness of smaller jobs, reduce the time-saving aspect of using drones, and in some cases put legal use out of the reach of smaller operators.

Johnny Miller is the founder of africanDrone, a nonprofit organisation that helps "African drone pioneers" with skills development, seed funding and advocacy. Miller says: "Drones are becoming so safe with improved sensors, geofencing and better batteries; they simply don't fall out of the sky any more. In the past two to three years, drones have come a long way.

"There has been no recorded downing of any aircraft with a drone strike anywhere in the world. Private and public entities are managing air traffic and drones in the air in real time. So there are multiple reasons why you could agitate for deregulation and still keep manned aviation safe."

Kate Ferreira, *Financial Mail*, 21 February 2019

Is South African agriculture really dominated by big commercial farms? Evidence suggests not

Behind some of the policy proposals and discussions on land redistribution in South Africa is a persistent notion that the country should establish 'small-scale farms' so that there could be more participants, and increase in productivity. This view was further shared by some participants at a conference organised by the Institute for Poverty, Land and Agrarian Studies (Plaas) at the University of the Western Cape on 4-5 February 2019.

What we drew from the discussions is that this notion of 'small-scale farms' arises from the perception that most commercial farms in South Africa are large-scale and perceived to be inefficient compared to their smaller counterparts, implying therefore that these large-scale farms should be capped and subdivided. What the proponents of the 'small-scale farms' notion quite often forget is that small-scale family farms have been the dominant form of farming in South African commercial agriculture since the early years among all racial groups.

The general wisdom in South Africa regarding farm sizes is that most large-scale commercial farmers are white and most small-scale farmers are black – as if there are no white small-scale commercial farmers and no black farmers farming on a larger scale.

We have discussed what makes small-scale commercial farms on *Business Day* on 17 October 2018, generally arguing that turnover, or rather the level of net farm income, determines the farm size category, not the land size.

Before we digress, the data in Table 1 tell us that for most of the 20th century, around 50% of the so-called large-scale white commercial farmers operated on farm holdings smaller than 428 hectares on average (with more than 12 000 units below 86ha in 1993). Obviously these aggregate numbers do

not tell us where these farms are located since many large-scale operators could farm on as small area as 20 hectares while very small businesses could be operated on very large tracts of land. So we always need to caution against using land size as a point of debate.

Most of these small family farms only survived through massive government support programmes in the form of various subsidies, exploitative labour legislation and practices and controlled marketing. But also, and very critically, expansive and well-staffed agricultural technical service centres in each farming district. The extension service and other government programmes supported these farmers and helped them to eke out a simple, but decent, livelihood. It was enough to sustain families and to send children to the local schools and universities.

Afrikaner empowerment through the apartheid system also helped these poor rural families to climb the social ladder to eventually move to non-agricultural jobs and sell their family farm to the more successful neighbour. This led to consolidation, increases in the size of farming units, concentration of farm ownership and eventually an increasing depopulation of the former 'white' rural areas. Banks, businesses and schools closed down as more and more families urbanised.

The Agricultural Census reports since 1993 have not presented any details on farm size and therefore it is not possible to track farm numbers and farm sizes. It is nevertheless true that there has been some form of consolidation but how much that has increased farm sizes are not known since the data is not available.

This situation is due to the fact that Stats SA has included only farmers registered to pay VAT in their more recent census reports: the most recent, for example, only reporting 39 900 farms. When one accounts for non-VAT-registered farms (VAT registration is only compulsory if the business turnover exceeds R1 million), the total number of commercial farmers is closer to 69 000, as shown in Table 2. This number of 39 000 farmers has been quoted widely as the illustration of a drop in farm numbers from the 57 000 in 1993 to 39 000 in 2007. This naturally then leads to the logic that farm sizes have increased.

The reality is – as we argue above – this is not correct since the 39 000 number only refers to the VAT paying farmers. Interestingly the Stats SA sample frame for the 2018-2019 agricultural census is again based on the register of VAT paying farmers. This is now a total of 57 000 which suggests that there has been no drop in the number of commercial farmers since 1993.

It is however true that there has been increasing farm sizes for a small number of extensive grain and extensive grazing regions. But for the rest, farm sizes remain the same but the scale of businesses have increased rapidly due to vertical expansion, vertical integration and very importantly increasing of on-farm productivity through technological change and sustainable practices.

Here in lies the theoretical trap most commentators fell into when they talk of farm sizes – land vs business size. Classifying the scale of farming operations (small-scale versus large-scale) merely based on the size of the farmland also does not really make sense due to the variation of land quality and the productive potential of different pieces of land. For that reason, the assessment of turnover provides a much better indication of the scale of the farm operation.

Fortunately, all the agricultural censuses and surveys in recent years have used gross farm income (or turnover) to classify commercial farms. If we apply the Department of Trade and Industry's official definition of small, medium and micro-sized enterprises – which is a turnover of R5m and below – then 96% of all commercial farmers can officially be classified as small and medium-sized enterprises.

This confirms again the fact that South Africa is a nation of relatively small family farms, many of them not providing full-time livelihoods to their owners. Therefore, the argument that South Africa is dominated by large commercial farms simply ignores the data or evidence, and is therefore misplaced.

Land reform not driving farm sales

Farms that are being put on the market in South Africa have more to do with financial challenges and the impact of droughts, rather than fear around land expropriation without compensation.

That's the view of agricultural economist Johann Bornman, who says statistics show a decline in the number of farm properties sold in the country last year. New mortgages granted for farms have also declined.

Other agricultural economists shared similar views when questioned by *Moneyweb* this week on farm sales trends.

Bornman, founder of Agri Development Solutions, says the number of farms sold declined from 4 331 in 2017 to 3 757 sales in the first 11 months of last year. He says even with December stats still to be vetted, 2018 farm sales will show a significant decline.

His statistics correlate with data from research group Lightstone, which also shows a decline in farm registrations. Lightstone's research, which is based on property erf numbers through title deeds registered at the Deeds Office, showed farms registrations declining by more than 1 300 last year compared to 2017.

The decline in sales has been accompanied by a sharp decline in new mortgage loans granted for farm properties, with the SA Reserve Bank's Quarterly Bulletin reporting a 44.2% decrease for the third quarter of 2018.

However, FNB property sector strategist at John Loos told *Moneyweb* that with quarterly data being volatile, he prefers to look at a "four quarter moving average". Using this measure, there was a 15.7% year-on-year decline up to the third quarter of 2018. Figures for the fourth quarter are yet to be released.

Bornman says he is not surprised by the corresponding decline in new mortgage loans for farm properties.

"While uncertainty around land expropriation is a concern for farmers, most farm sales and farms going on the market have to do with the poor economy and financial challenges due to the droughts we've been having. The land expropriation debate is not the key driver behind farm sales," he says.

"Unless you are under financial pressure, it would be silly to just sell farm land, especially with prices being lower at the moment in several areas affected by drought," adds Bornman. He says it is largely a "buyer's market" and not a good time to sell farm land.

"In the current market, you will find that the bigger commercial farmers are buying up smaller farms. They may pick up bargains at huge discounts at the moment. However, land prices vary for different provinces and even in areas within a province," he notes.

Despite the slow pace of land reform from government's side, Bornman says statistics show that more black farmers are entering commercial agriculture and are buying land privately at commercial rates.

"My research, based on farm sales registered with the Deeds Office, reveals an upward trend," he says. "The number of black purchasers of farms increased from 464 farms in 2016 to 603 bought in 2017. Looking at stats for the first 11 months of last year, 590 farms were sold to black buyers. The total for 2018 will show a continued upward trend."

FNB senior agricultural economist Paul Makube, says data on farm values is not readily available and he has not observed any significant increase in offerings or a drop in farm prices. However, he agrees with Bornman that most farms sales currently are due to economic challenges and drought, rather than the land expropriation debate.

"At the higher end of the commercial farming sector we are seeing expansion happening," he says. "However, smaller farmers are coming under pressure. We are seeing more consolidation in the space, with smaller farms being swallowed up by bigger commercial players."

Despite concerns around land expropriation and policy implementation, Makube says farmers continue to invest in agriculture. This can be seen in the growth in production of produce like

blueberries and avocados. He notes that total exposure of commercial banks and other institutions such as the Land Bank to the agriculture sector has been moving upward for several years now. Latest figures on agriculture sector debt is due out in March, but unofficial estimates put it at more than R160 billion. Makube says the continued increase in farm debt can be attributed to a combination of increased investment in agriculture and finance costs related to the droughts of recent years.

“A further indication that SA farmers are investing in agriculture is our increased food exports. For instance, there has been a considerable increase in meat exports, which tells you that farmers have been investing in the infrastructure needed to export and comply with international benchmarks,” he adds.

Absa senior agricultural economist Wessel Lemmer tells *Moneyweb* that consolidation in the farming sector is common during dry years.

“The price of farm land does fall during periods of drought and it becomes the best time to buy,” he says. “But farm values vary across the country. In areas experiencing dry cycles, farms may go up for sale and you will see consolidation.

“However, in areas where there is new higher-value agricultural development like blueberry and macadamia cultivation, land values increase due to higher returns. Farmers will invest and are risk takers, but policy uncertainty does not help. There may be some caution, but you won’t see farmers not investing. If you stop investing, you are going to fall behind your competitors [locally] and in the export market.”

Lemmer says government has been clear that it is not going to expropriate productive agricultural land – in the interest of food security and due to the agriculture sector being a growth driver in the country.

“SA is a net exporter of food, barring years of severe droughts,” he says. “We need to keep this capacity because it is one of our strengths. We need a free market and the protection of property rights for the agriculture sector to thrive.”

Suren Naidoo, *Moneyweb*, 7 February 2019

'Cape's commodity approach to land reform creating successful businesses'

After the provincial Department of Economic Opportunities announced the results of an independent evaluation on agricultural land reform on Thursday, a land expert also called for farmers to have more access to irrigation.

Economic Opportunities MEC Beverley Schäfer released the results of an independent evaluation done to determine the success of agricultural land reform projects in the province which receive support from the Department of Agriculture, Forestry and Fisheries.

Professor Ben Cousins from the Institute for Poverty, Land and Agrarian Studies, said support from the department of agriculture for farmers was important. “But there is still the problem which farmers experience with irrigation and water rights, which are essential. This is very important because then farmers cannot water their crops or give water to their live stock,” Cousins said.

Schäfer said the study – which rated the projects on 39 indicators in environmental, socio-economic and economic categories – found that 72% of projects were successful in the period between 2014 and 2019.

She said the department set itself the goal of a 70% success rate for land reform. “These results show that the Western Cape’s commodity approach to land reform is creating successful businesses and farmers,” Schäfer said.

“The study evaluated 105 of the projects which received support from the department and found that 16% of farms were classified as ‘highly successful’ while 56% were classified as ‘succeeding’.”

Schäfer said that with the additional project implementation support provided by the agency Casidra, they were able to provide mentorship, training, market access contracts, access to grant funding as well as equipment and infrastructure.

“It is clear from this survey that the farms that are run as a business are the most successful. Farmers that are tax compliant, and keep sound financial and production records are the most likely to succeed.

Unfortunately, the environmental indicators, like the use of renewable energy and waste recycling seem to be among the lowest scoring indicators, which gives us an indication of where our support and extension services should be focusing going forward.”

Schäfer said most of the challenged projects were situated in the Central Karoo and Eden districts and many farms with livestock.

She said the areas were still dealing with the impact of the drought. They have also seen that these farms have a smaller degree of financial and tax compliance, and have lower ratings of relations between beneficiaries.

Rusana Philander, *Cape Argus*, 18 February 2019

A record year for SA's agricultural exports

Recently released data on SA's agricultural trade for December 2018 paint a clear picture that is worth highlighting of the full year's agricultural trade performance.

In 2018, South Africa's agricultural exports grew by 7% y/y to US\$10.6bn, a record level in a dataset starting from 2001.

This was underpinned by increased exports of oranges, grapes, wine, maize, apples, wool, lemons, mandarins and pears, amongst other products.

Over the same period, imports increased marginally to US\$6.7bn.

The key imported products were rice, wheat, offal, palm oil, whiskey, live cattle and oilcakes for animal feed. But overall, this subsequently led to a 21% y/y increase in South Africa's agricultural trade balance to a record US\$3.9bn.

From a destination point of view, the African continent and Europe continued to be the largest markets for South Africa's agricultural exports, collectively absorbing 66% of total exports in 2018, measured in value terms.

In more detail, Africa remained South Africa's largest market, accounting for 39% of agricultural exports.

The leading products to these markets were beverages, fruit, vegetables, wool, sugar and grains.

Asia is also an important market for South Africa's agricultural exports, demanding a 25% export share in 2018. Wool, fruit, grains, beverages, vegetables and meat were the leading products exported to this particular region.

The Americas and the rest of the world accounted for 5% and 4% shares. Exports to these regions were also dominated by fruits, beverages, vegetables, tea, sugar and grains.

One key thing to note is that South Africa has an import substitution objective through its Industrial Policy Action Plan, but the substitution of some of the key imported agricultural products is unlikely in the foreseeable future, as South Africa does not have favourable agroecological conditions, specifically for the production of palm oil and rice.

About 23% of the overall 2018 agricultural imports were rice, wheat, offal, and palm oil. In the case of wheat and offal imports, there could be a decline in the coming years if the domestic revitalisation process of these subsectors succeeds.

The most recent data from International Grains Council (IGC) suggest that South Africa's 2019 rice imports could amount to 1.1m tonnes, up by 10% from 2018.

This is according to data from the IGC. But the import value might not be higher than in 2018 due to comparatively lower rice prices on the back of a large global harvest of 491m tonnes in the 2018/19 production season.

In terms of palm oil, South Africa's imports increased by 5% per annum over the past 17 years to a record 472 874 tonnes in 2018. Throughout this period, the leading suppliers were Indonesia and Malaysia. The trend is unlikely to change this year due to growing domestic demand. My back-of-the-envelope calculations suggest that South Africa's palm oil imports for 2019 could reach 477 603 tonnes.

Looking ahead, however, South Africa's agricultural trade prospects for 2019 are not as positive as for 2018, as unfavourable weather conditions in parts of the country could lead to lower production, particularly in grains.

The current ban on the exports of beef is another factor that could lead to reduced exports in 2019. The subsectors that could still show solid export performance this year are horticulture and wine. Be that as it may, I still believe that there will be positive trade balance for South Africa's agriculture in 2019.

Let me end off with a positive note on this subject that came out of the 2019 State of the Nation Address by President Cyril Ramaphosa, when he signalled that potential expansion in agricultural production in South Africa would mainly be on export-oriented products.

There is already a clear pathway for this initiative as South Africa is currently well-positioned in terms of export markets as illustrated by the trade trends above, and there is clarity about products that show a growing demand in the world market.

Wandile Sihlobo, *Fin24*, 12 February 2019

From Russia to Malaysia, these fascinating maps show where SA's fruit and veg end up

Agri SA, a federation of agricultural organisations, has just released its annual Snapshot of South African Agriculture, which contains an overview of South Africa's farm exports.

Agricultural exports represented some 10.8% of total South African exports in 2017, and came to R127.69 billion.

The report counts South Africa among the top exporters of a number of products, including

- Citrus fruit – world's second-biggest exporter (R18.6 billion)
- Wool – world's third-biggest exporter (R4.7 billion)
- Pome fruit (apples and pears) – world's fourth biggest exporter (R7.6 billion)
- Stone fruit (apricots, plums, peaches etc.) – world's sixth biggest exporter (R1.7 billion)

Here are some of the highlights:

- Sweet potatoes – the bulk goes to Netherlands
- Wattle bark – SA exports massive amounts to India
- Wine – The UK and Germany are the main importers
- Watermelons – Botswana, Lesotho, and the UK each import more than 400 tons a year
- Table grapes – The biggest importers are the Netherlands, UK and Hong Kong
- Plums – The Netherlands, UK and the UAE are big buyers
- Pears – More than 70,000 tons go the Dutch, followed by the Russians
- Citrus – The Dutch are the biggest buyers, followed by the UK and the UAE
- Avocados – Spain are among the top-three importers, along with the Netherlands and UK
- Apricots – Most SA exported apricots go to the UAE
- Apples – The top importers are the UK, Malaysia, Nigeria and Bangladesh

Business Insider SA, 1 February 2019

Spain: The citrus crisis is not only due to South African imports

In recent months, there has been a big crisis in the citrus production sector, especially in the case of oranges and mandarins, with prices falling below the production costs and plantations left unharvested. It was not the first time that the price paid for citrus fruits has oscillated between 5 and 10 cents per kilo, or when the production costs have been over 15 cents, or when growers have left part of their production in the trees.

In previous crises, the causes were a combination of increases in the production, a lower demand in the rest of the European Union due to weather issues, pressure from large retailers and also imports from third countries. In this year's crisis, the main argument, and almost the only target of the complaints, has been the importation of oranges and small citrus fruits from South Africa. The reality is that, regardless of the entry of citrus fruits from third countries into the European Union, the crisis is also due to other reasons.

According to data handled by Eurostat, the European Union annually imports an average of about 7 million tons. Some 4 million of these correspond to Spain and 2 million to third countries, with South Africa at the head. This country exported 658,000 tons, including lemons and grapefruits, between the years 2013 and 2017. Next in the ranking are Turkey, Egypt and Argentina, with about 220,000 tons each.

In the case of South Africa, the added problem against the interests of EU producers was the signing of the agreement with the European Union, which came into force in October 2016, and which involves a progressive reduction of tariffs for sweet oranges. These stood at 11.68% in 2018 and at 10.24% in 2019, and will eventually disappear in the year 2026, when a minimum entry price will be in place between 1 December and 31 May, to which a specific tariff will be added if it falls under. According to official EU data on the import of oranges and small citrus fruits, the total volume entering the EU between January and November before the signing of the agreement was 523,000 tons in 2013, 519,000 tons in 2016, 566,000 in 2017 and 593,464 in the same period of 2018; some 27,000 tons more than in the previous year.

Objectively, in a market that absorbs 7 million tons of citrus fruits per year (with about 4 million being Spanish), focusing on South Africa as the main cause of the sector's ills, despite it only recording an increase of 27,000 tons, is like closing our eyes, refusing to admit that there is a problem which has already affected other products in the same fruit sector.

Also, the agreements with less developed third countries have been and continue to be perceived as an open door for the entry of their raw materials, without them having to meet every health requirement. This would be done in exchange for them opening their borders to EU industry exports, from which agricultural producers don't benefit directly.

But in this year's citrus crisis, other factors should also be taken into account. For instance, in spite of the reduction of the acreage due to its lack of profitability, especially in the Region of Valencia, the production has registered an important increase, reaching up to about 7.4 million tons, compared to an average of about 6.7 million. This situation has also been aggravated by delays and overlaps in the harvest, with the product harvested not being properly ripe in many cases. Moreover, there has been a lower demand due to the good weather in the rest of the European Union.

The sector's protests and the complaints from political parties in the opposition pushed the Administration to withdraw 50,000 tons, with a cost of about 12 million Euro, although to date, only one quarter of that volume has been covered.

Drought in South Africa makes fruit industry more resilient

Last season's drought taught South Africans more than the importance of good water management, irrigation, mulching and other water-efficient techniques. It demonstrated the resilience of the deciduous fruit industry.

Dutoit Agri's Research and Development Manager, Willie Kotze: "The drought forced us to sharpen our knowledge. We learnt to get along with less water and waste less."

According to Wiehann Steyn, Assistant General Manager at Hortgro Science, the most important lessons learnt were in the area of irrigation. "There were many ways that producers stretched irrigation during the drought. Some growers simply allowed longer intervals between irrigations or used less water during each irrigation. Many already used mulch to reduce surface evaporation, while some relied on drip irrigation."

Kromco's Technical Manager, Anton Müller, says it was crucial to increasingly shift the focus to drip irrigation during the dry season. "No one will ever think about water in the same way again. In the past, there were certain speculations that people now know to be the truth. For years there was this perception that you can't really use drip irrigation to produce apples and pears, and I think this idea has been broken now."

The general feeling, says Steyn, is that given the challenging circumstances, the industry did not do too poorly, and this is largely thanks to good management, thorough planning, and various interventions.

FreshPlaza, 21 February 2019

Wine is looking (surprisingly) fine

I had feared that South Africa's agricultural exports for 2018 would take a big knock because of the decline in the Western Cape's agricultural production. But the statement released by Wines of South Africa (WOSA), a representative body of the country's wine producers, late in January 2019 was encouraging.

WOSA noted that "despite 2018 being a challenging year for the wine industry with a low-yielding harvest due to the regional drought, we are excited to report a positive growth in the overall value of our exports". This essentially referred to the 4% year-on-year increase in the value of South Africa's wine exports in 2018.

The rise in global wine prices and the 13.5% depreciation in the rand against the US dollar in 2018 have somewhat offset the impact of the decline in production volumes on the value of exports. Wine is one of South Africa's largest agricultural exports, therefore the growth in its exports contributes positively to the country's agricultural trade balance.

After this statement, I then checked the available trade data on Trade Map and realised that for the first 11 months of 2018, South Africa's agricultural exports for 2018 amounted to US\$9.9 billion, which is 0.5% lower than 2017's full year exports.

We are yet to see what the overall 2018 agricultural exports value will be when December 2018 trade statistics are released, but it is clear that there will not be a notable decline, as I previously feared. South Africa's top export products were edible fruits, beverages (largely wine), spirits, vegetables and wool.

Over the same period, South Africa's agricultural imports fell by 6.2% to US\$6.3 billion. The top imported products by value were rice, wheat, palm oil, sunflower oil and offal, amongst others. But, a closer look at the trade statistics shows that South Africa's agricultural sector recorded a positive trade balance of US\$3.6 billion in the first 11 months of 2018, which is a record level in a dataset dating back to 2001.

The African continent and Europe continued to be the largest destination for South Africa's agricultural exports, collectively absorbing 65% of total exports over this period, measured in value terms. In more detail, Africa remained South Africa's largest market, accounting for 38% of agricultural exports. The leading products to these markets were beverages, fruit, wool, sugar and grains.

Asia is also an important market for South Africa's agricultural exports, demanding a 25% export share in the first 11 months of 2018. Wool, fruit, grains, beverages, vegetables and meat were the leading products exported to this region. The Americas and the rest of the world accounted for 5% and 4% shares. Exports to these regions were also dominated by fruits, beverages, vegetables, tea, sugar and grains.

Overall, while the volume of the Western Cape agricultural harvest declined for most commodities, the increase in global US dollar prices and a weaker domestic currency helped to boost the rand value, which in turn, supported the South African agricultural exports. There is still one-month data point to be released, but from the available evidence, it is fair to say that the sector performed well. Given that 2018 brought some good showers over the Western Cape and other fruit-producing areas of South Africa, one would hope that the 2019 harvest will be relatively bigger, therefore boosting volumes of exports, which in turn, could increase the value.

Given that South Africa's beef exports have been suspended in a number of markets due to the recent outbreak of the foot-and-mouth disease, and the fact that grain production, and subsequently exports will be low, fruit and wine will be amongst the key products that will support South Africa's agricultural trade in 2019.

Wandile Sihlobo, *Fin24*, 5 February 2019

World finance institutions invest in a United Exports blueberry farm expansion

Three leading World developing financial institutions recently announced an investment United Exports to support a 180-hectare blueberry farm expansion and infrastructure upgrade.

The International Finance Corporation [IFC], a member of the World Bank Group, the Nederlandse Financierings-Maatschappij Voor Ontwikkelingslanden N.V. [FMO], and the Danish Sustainable Development Goals Investment Fund, managed by the Investment Fund for Developing Countries [IFU], will provide a long-term financing package to support United Exports [currently trading under the name Mbiza Trading Ltd.] expansion programme. The instrument was specifically designed to assume the early-stage risk that commercial banks do not offer.

Co-founder and Global CEO of United Exports Roger Horak says the financing from these leading development financial institutions will enable the company to increase our planning and packing capacities to capture market share in the fast-growing international blueberry market.

"The support from these institutions will help us increase the availability of our new varieties to meet the demand of markets as well as improve the technology used by our farms, thus increasing their efficiency and incomes," Mr Horak said.

Kevin Njiraini, IFC Regional Director for Southern Africa, said South Africa needs to expand efficient companies that can create jobs and grow the economy.

"The country has the potential, and IFC is committed to working with the best companies and partners to make that happen," he said.

FMO's Manager Agribusiness Food and Water for Africa, Hans Bogaard added: "With this facility to United Exports/Mbiza, FMO is helping South Africa to establish itself as an emerging blueberry production hub, resulting in large-scale job-creation in communities that have a very high unemployment rate and further development of the industry."

United Exports/Mbiza expects to create 200 to 250 new permanent jobs and another 4,200 seasonal jobs, many of which will be women. The proposed investment will be complemented by advisory

service that will help strengthen supply, raise rural employment, and create jobs along the food supply chain, and expands new domestic and export markets.

“The financing for United Exports/Mbiza is a good example on how we can assist private companies in growing their business, increasing local jobs, food production as well as rural development, which is in line with our aim to support the 17 UN Sustainable Development Goals,” IFU Regional Director for Southern Africa, Johnny Ohgrøn Hansen said.

Blueberries, a ranked superfood, are an increasingly popular berry among consumers, who have been increasing consumption of them over the past few decades as new varieties have made them more accessible to buy and store and consume on multiple occasions. In 2017, South Africa exported \$50 million worth of fresh berries with blueberries being a significant portion, of which United Exports/Mbiza accounted for some 30 per cent.

FreshPlaza, 5 February 2019

Almonds: High value, huge potential

After more than three decades of refining production on its farm near Montagu in the Western Cape, the largest almond producer in the country is taking production to the next level.

Amanteco Almonds has partnered with various growers, such as Olyfberg Vrugte, which includes the Van Loveren Group and Prof Mohammad Karaan, as well as an international exporter, to establish an almond-processing facility near Robertson in the Breede River Valley, which opened in November 2018.

The facility will trade under the name Amandel Afrika. The goal is to increase almond production along the R62, all the way from Robertson to Oudtshoorn, and in the Olifants River region.

“In addition to our own 130ha, we’ve signed offtake agreements with nine farmers, who have so far planted 210ha and intend expanding their production by another 250ha over the coming year,” says Stephan le Roux, farm manager of Amanteco.

“We’ve also partnered with a long-time family friend, William James Bussell of Bussell Boerdery, to establish a new almond farm in Robertson where we’ve planted 70ha to almonds. These trees will be producing their first harvest this year. The processing facility is situated on this land.”

The timing for the initiative is ideal, according to Stephan. Global almond consumption has increased from 927 000t in 2007 to 1,3 million tons in 2018, and is expected to increase by about 2,8% annually to 1,7 million tons a year within the next few years.

Growing demand has resulted in carry-over stock from California, which accounts for more than 80% of global supply, decreasing for the past three years despite production increases.

In South Africa, 3 000t of almonds have to be imported annually to supply local demand, which has been growing by about 5% over the past five years.

While it will take seven to eight years for South African growers to produce enough almonds to meet local demand, the Le Roux’s ultimate vision is for the country to rule the high-end export market.

“South Africa now produces about 250t of almonds annually. We might not be able to outcompete California on volume but our production costs are lower, allowing us to better manage the processing side. The result is that 90% to 93% of our almonds fall in the Extra Number 1 grade category, in comparison with 80% to 85% of the US crop,” says Stephan.

Almonds represent a means of diversification for farmers in the Breede River Valley, Klein Karoo and Olifants River Valley, who are looking for ways to break out of the cost-price squeeze and market volatility associated with wine grape and canned fruit production.

“Almond prices are relatively stable because of the maturity of the market. Price differences between markets are also small and transparent as prices are derived from Californian prices. The farm-gate price is now around R85/ kg, making it a far more lucrative crop than wine grapes,” explains Stephan.

At about R120 000/ha, the establishment cost of almonds is relatively cheap in comparison with other crops, but Stephan's father, Hans, warns that farmers should look at the entire production cost and plan carefully to ensure a viable operation.

"To be commercially viable, you need at least 40ha under production; the breakeven point depends on your production conditions, yield, and the cost of your harvesting equipment.

"It doesn't make financial sense to plant only 10ha of almonds, unless you're surrounded by other almond farmers who are willing to share equipment."

To lower costs, Amandel Afrika intends establishing a contract harvesting company in the Breede River area to accommodate farmers during their first few years of production.

The Le Rouxs initially harvested almonds onto nets with mechanical shakers, after which the crop was dried. They have since switched to the Californian method, where trees are shaken with a machine that can harvest up to five trees a minute.

A second machine then sweeps the almonds into a row, where they dry for up to a fortnight.

"By doing this, we cut out unnecessary risks and costs involved in the drying of almonds mechanically," says Stephan.

The processing facility that they have used until now has the capacity to process almond kernels at a rate of 500kg/h. Hans imported it 20 years ago for R5 million. The Robertson facility will have a kernel-processing capacity of 2 500kg/h and costs about R60 million.

Stephan's grandfather, Rino Brochetto, planted almonds on the family farm, Addersfontein, near Montagu in the 1980s. This was part of a Safari Dried Fruits drive to boost almond production in South Africa.

"Most farmers got rid of the trees after only a few years, but we endured," recalls Stephan, adding that the poor state of the 50km dirt road connecting their farm to the outside world hampers the production of fruit, which gets bruised in transit.

Rino and Hans performed various trials to turn almond production into a viable income generator.

"My grandfather only had access to an almond production manual from California when he started, which didn't help much because of the huge difference between Californian production conditions and ours," says Stephan.

A major reason that almond production did not live up to expectations was that farmers used the wrong combination of varieties, rootstocks and growing practices.

"Until about 2010, most almond varieties were grafted onto Kakamas rootstocks due to limited rootstock availability," explains Stephan.

"Kakamas, however, has low vigour and a higher cold requirement than the majority of almond varieties, resulting in the tree being out of synch with the rootstock. Farmers initially also experienced a lot of trouble with fruit set due to wrong cultivar selection."

Improved varieties and rootstocks have helped address these challenges.

"We help farmers access the right genetic material by making block bookings. Ordering higher volumes enables the farmers to be more demanding in terms of the plant material they're looking for," says Stephan.

Another early problem was that many farmers mistakenly treated almonds as if they were an extensive crop, merely planting the trees and leaving them on their own with hardly any inputs. Almonds, however have very high nutrition and water requirements.

In fact, the crop's water requirement is about a quarter higher than that of wine grapes.

"We farm in harmony with nature as far as possible and make use of humates and effective micro-organisms applied via irrigation to boost soil health, but synthetic fertilisers are required to ensure the trees have access to enough macro- and microelements for optimal production," says Stephan.

Farmers initially fertilised the crop as they would have done peach or apricot trees, but later learned they were under-fertilising young trees by almost a third. Since then, they have started pushing trees during the first three years after planting to get them into production earlier.

With the help of agricultural consultants Rian Briedenhann and Blasie Franken, they have refined a soil feeding programme based on the developmental phases of the trees to ensure they supply the right volumes of nutrients at the right time.

Leaf analysis protocols have also been developed to identify nutritional deficiencies so that corrections can be made proactively.

A big leap that Hans made was to stop pruning the trees in the same fashion as peach or apricot trees. "I noticed that some Californian farmers stop pruning them once they start producing almonds," he recalls. "We did the same, with great results. We prune the young trees into an open chalice shape with three to four leader branches per tree during the first two years after being planted. Thereafter the trees basically maintain their own shape."

Hans also started using much higher plant densities than the Californians in an attempt to increase production per hectare.

"Because of their good soils and favourable climatic conditions, the Californians can get high yields with a row spacing of 7m x 7m or 7m x 6m. We've had to reduce our spacing to 6m x 3m or 6m x 4m, depending on soil quality, to increase our production per hectare, which over the years has increased from 2t/ha to 3,5t/ha, thanks to good production practices," he says.

Experiments are being carried out together with JC Erasmus, who farms near Robertson, on ultra-high-density planting, with trees being trellised and planted at a row spacing of just 3,5m x 1,2m.

"This establishes 2 380 trees/ha, in comparison with our 417 trees/ha. It's still too early to evaluate the success of these plantings. The Californians were shocked even by my father's medium-density planting!" says Stephan.

Glenneis Kriel, *Farmer's Weekly*, 25 February 2019

Government has taken steps to increase local wheat production, minister says

High production costs, fluctuating commodity prices, climate change and outbreaks of pests and diseases have caused a significant drop in wheat production in SA.

Wheat is the second-most important grain crop produced in SA after maize. However, local production averages 2.3-million tons, far below the levels of consumption. To meet demand, SA imports about 1.7-million tons of wheat annually.

The department of agriculture, forestry & fisheries is concerned about the low levels of local wheat production.

The department "supports wheat producers with technical advice, which includes [that about] cultivar choice, production site selection, soil preparation, cultivation practices, pest and disease control measures, harvesting, as well as post-harvest practices", agriculture minister Senzeni Zokwana said in a written reply to a question from African Christian Democratic Party (ACDP) MP Cheryllyn Dudley.

Dudley had asked the minister whether the government is concerned about the increasing wheat consumption linked to population growth and increasing urbanisation, as local production is continuing to decrease while imports increase annually.

She also asked Zokwana whether the government intends to implement any measures to assist technically with the production of wheat to improve the profit margins and outputs to make it a viable crop to farm.

Zokwana said the Agricultural Research Council is conducting breeding programmes for wheat. The programmes are aimed at developing appropriate and high-yielding cultivars. Focus is also on developing cultivars that are drought tolerant as well as those that are pest and disease resistant.

"Private and public sector stakeholders are also working with the government to increase productivity and competitiveness of the wheat industry. One such initiative is the Wheat Breeding

Platform, which aims to serve as a pre-breeding facility which develops suitable varieties at a rapid pace which are then available to industry for further targeted breeding,” said Zokwana.

“In addition, a statutory levy was introduced to provide research and technology development funding for open-pollinated cultivars. This will also encourage seed growers to make the latest breeding material available to South African farmers,” he said.

Bekezela Phakathi, *Business Day*, 25 February 2019

SA peanut plantings at lowest level ever

Only 19 200ha had been planted to peanuts in the 2018/2019 production season, which is the smallest area on record, according to Grain SA head economist, Luan van der Walt.

He said that the reduction in plantings had mainly been the result of drier weather conditions at the start of planting season, which ran from October to December 2018.

“Due to late rain, farmers planted [far] less than the 50 000ha that was intended; this year’s production is a 66% decrease from the average production for South Africa of 56 300ha,” he said.

It was therefore expected that increased imports would be necessary to supplement supply levels.

Other challenges farmers were facing included the labour-intensive nature of production and the high cost of mechanisation, he said.

Wandile Sihlobo, head of economic and agribusiness intelligence at Agbiz, said that based on the average yield over the past 10 years, it was expected that the current area planted to peanuts would yield about 22 300t.

Added to the carry-over stock of 17 200t, according to data from Grain SA, overall supplies would be about 39 500t.

South Africans consumed approximately 81 500t of peanuts a year, mainly as edible nuts and processed peanut butter.

If consumption was maintained at these levels, the country would have to import over 40 000t of peanuts to satisfy demand.

In the 2016/2017 marketing year when peanut production also declined significantly due to drought, South Africa imported 52 100t.

Leading global suppliers of peanuts include Argentina, India, Brazil, Malawi, Mozambique, Turkey, the US, and Zambia.

Siyanda Sishuba, *Farmer’s Weekly*, 21 February 2019

Tesco named as South African fruit industry’s Stone Fruit Retailer of the Year

For its performance during the 2016/2017 stone fruit season, Tesco has been named as the South African fruit industry’s Stone Fruit Retailer of the Year.

Both in peaches and nectarines the supermarket achieved a record season, and it had some strong figures in plums. It worked with Hortgro to implement promotional activities for consumers and its own staff.

Hortgro is the association that represents South African stone fruit and top fruit growers and gives the award to one UK retailer every year based on support and performance during the season. Presenting the award at the retailer’s head office last month, Jacques du Preez, General Manager Trade & Markets at Hortgro, said: “South African growers are awarding the title of Stone Fruit Retailer of the Year to Tesco for its ongoing support to the stone fruit category and another superb

performance during the SA season. This is the third time Tesco has won this award, which is not surprising given its continual focus on achieving excellence in stone fruit.”

FreshPlaza, 28 February 2019

HortGro chair new WAPA President

Hortgro’s Chairman, Nicholas Dicey, was recently elected as the president of the World Apple and Pear Association (WAPA).

Dicey, a fourth generation deciduous fruit producer from Wolseley in the Western Cape and graduate from Stellenbosch University, joined the family business in 1992. Dicey runs La Plaisante Estate with his two brothers, Anthony and Peter, and together they produce pears, plums, and peaches for the local and export market.

Dicey joined Hortgro Pome (previously known as the South African Apple and Pear Producers’ Association) as a director in 2000 and became the Chairman in 2006. In 2016 Dicey was nominated to represent South Africa at an annual WAPA meeting, and at that time was elected Vice-President.

Dicey will work closely with the Brussels-based secretariat to raise awareness about apple and pear production, consumption, and marketing - thereby growing the global industry.

WAPA was founded in August 2001 with the objectives of providing a world forum for discussion on matters of interest to the apple and pear business and initiating recommendations to strengthen the sector.

Dicey says he is honoured to represent South Africa on the world stage and is proud of our local, well-structured deciduous fruit industry body, Hortgro. “Not all the countries are as well-organised as the South African pome fruit industry. If we want information or statistics it takes a button click to get the information, other countries have diverse groupings representing their industry, which makes data gathering difficult.”

One of his objectives is to get meaningful and accurate statistics from all the apple and pear players in the world in order to help everyone make intelligent marketing decisions. “With the increase in world apple and pear production accurate information is required for effective marketing decisions and strategies to be implemented in keeping the market in equilibrium – data has never been more important and precludes responsible marketing.”

Dicey also wants to increase WAPA membership – which is voluntary – and currently include: Argentina, Australia, Austria, Belgium, Brazil, Chile, China, France, Germany, Italy, Moldova, the Netherlands, New Zealand, Poland, Scandinavia, Slovenia, South Africa, the UK, Ukraine and the USA.

“There are a number of pome producing countries that are not yet members, but over the past number of years countries such as Moldova, Slovenia and China have joined the association and that is good for the global industry.

“Through the sharing of information and challenges countries become more competitive and make better business decisions. We cannot market apples and pears efficiently and compete against other fruit groups if we do not have up-to-date information and statistics of the apple and pear world. We have seen consumption stagnation in some areas and we need to stay abreast of trends and supply a good quality product.”

WAPA is interested in sharing production figures, hectares planted, research and promotional activities. “By sharing research and technology the whole apple and pear industry will benefit.”

According to Dicey sustainable farming, ethical production practices, preservation of biodiversity, and the health benefits of apples and pears, are also serious talking points at WAPA.

“I am looking forward to my two-year tenure. It is going to be a major learning curve for me. I hope to increase my knowledge and exposure and plough that back into the South African industry,” says Dicey.

Historically South Africa is a major player on the apple and pear world stage with ±640 000 tons being exported annually. It is expected that SA apple production will be 928 122 tons and pear production 422 728 tons for 2019. European production also bounced back during 2018 to an above average volume after the reduced apple crop of 2017. This, combined with other Southern Hemisphere production, will result in a challenging marketing season in Europe this year.

The consolidated crop forecasts for the forthcoming southern hemisphere apple and pear seasons were recently released by WAPA. Collected from industry associations in Argentina, Australia, Brazil, Chile, New Zealand and South Africa, the forecast showed that the 2019 apple and pear Southern Hemisphere crops are expected to reach 5,261,000 tons and 1,327,000 tons, respectively. For apples, this represents an increase of 2% compared to the 2018 crop. Export is expected to remain stable at 1.738 million tons. The pear crop is expected to increase by 2% compared to 2018. Export is expected to remain stable at 712,154 tons.

FreshPlaza, 18 February 2019

Capespan launches The Logistics Group

Capespan, the multinational fresh fruit producer and marketer, today announced the formation of The Logistics Group (TLG) as a focused, integrated logistics service provider.

Over the last four years, Capespan has invested significantly into the capacity and capability expansion of its logistics operations. These expansions included several acquisitions such as commodity logistic operator, Tradekor, and port stevedoring service provider, Port Stevedoring, to broaden and diversify the value proposition of its logistics business.

Capespan will now group together its entire logistics infrastructure, including its port terminal operator FPT, Tradekor, Port Stevedoring, its Mozambique operations MCT, freight forwarding service provider Contour Logistics and the technology enabled The Logistics Company into TLG as a focused and separately managed business.

Tonie Fuchs, Managing Director of Capespan Group, explained that Capespan's global fruit production and marketing businesses remain the core focus within the Capespan Group, while its logistics businesses will be consolidated into TLG to ensure a focus-based approach to increased logistical service levels across a broader spectrum of product capabilities and capacity.

"The logistics business in TLG will continue to be managed by Capespan's current logistics management team, led by retiring CEO Dawie Ferreira, who will be handing over to incumbent CEO Anton Potgieter over the next six months. Dawie Ferreira has been at the helm for many years and instrumental in the Division's diversification drive. Anton Potgieter brings a fresh, hands-on perspective to this highly experienced management team. With the renewed management focus, customers of TLG can expect greater service delivery, across a much broader spectrum of services," said Fuchs.

"Significant steps have been taken over the past few years to structure the Capespan Group into two focused business units, the global fruit business on the one hand and the Logistics business on the other hand, that each could pursue relevant growth opportunities," said Fuchs.

"We have now reached the stage internally where focusing on each business unit can be accelerated, and I am extremely excited about what lies ahead for both Capespan's global fruit business as well as the logistics opportunities in TLG. Fruit will remain a core logistical commodity for TLG, and we will always remain closely associated, but more focused, business units within a larger group."

Fuchs believes the newly focused TLG venture will enable and empower Capespan to focus all its energy and resources on its fruit production and marketing businesses to ensure it achieves its own strategic objectives as a reliable supplier of fresh produce globally.

Ferreira and Potgieter are similarly excited about the renewed focus within TLG. "The management team has been mandated to focus on the further expansion of TLG's operational capabilities and

capacity as an integrated and purpose driven logistical operation. Over the last few years, with the support of Capespan, we have radically transformed this logistics business unit into an integrated, multi-modal, multi-functional logistics service provider. We are eager to pursue the growth and further integration opportunities within the broader logistics industry for the ultimate benefit of our customers,” said Ferreira and Potgieter in a joint statement.

Norman Celliers, Chief Executive Officer of Zeder, the parent company of Capespan, said that this step is in line with Zeder’s strategy of creating clear divisional focus within its portfolio companies. “TLG will aim to position itself as a customer-focused, technology-led and capability-enabled group that provides a broad range of logistical services and solutions to customers across multiple cargo-types and cargo-routes.” He added that the broader logistics industry offers exciting opportunities for expansion in South Africa and the rest of the African continent and TLG will be well positioned to participate.

TLG will include large-scale port and warehouse operations in the ports of Cape Town, Durban and Port Elizabeth; cross-country warehousing and loading terminals for bulk minerals and agricultural cargo; cross-border and warehouse operations in Mozambique as well as an early stage technology platform for the consolidation of road freight. The underlying operations will therefore combine large, established operations and infrastructure with a newly created and innovative platform, aligned for an integrated, end-to-end logistical service offering.

FreshPlaza, 12 February 2019

Great Karoo project thriving despite drought

With 325 Angora goats, 60 Dorper sheep and a hay field, Jan Loff and seven co-owners of the Swartrivier farm in the Great Karoo are operating a viable agricultural concern as part of the national land reform initiative.

When Swartrivier, registered as Wolwekraal 211, was bought by the government, the new owners were determined to prove they could succeed in creating a livelihood and employment for eight families.

In 2009 the 3643ha were bought with no permanent farm workers - only a young farmhand.

Fast-forward 10 years and the farm has a carrying capacity of 45ha/LSU (large-stock unit), six camps that can accommodate 325 breeding Angora ewes and 10 rams (this year shearing 125 small goats, 169 ewes and 36 kapaters).

It employs four shearers, four assistant shearers, one classer, three casuals and two agricultural students, one from the Potchefstroom College of Agriculture and the other from Lovedale Technical and Vocational Education and Training (TVET) College in King William’s Town.

“The farm was acquired as a PLAS (proactive land acquisition strategy) project to provide black farmers with productive land in Prince Albert.

“The acquisition of this property assisted in the transformation of land ownership and economic development,” said Vuyani Nkasayi, deputy director of communications in the national Department of Rural Development and Land Reform, who visited the farm last week with Tabisa Mashiya, assistant director, and Gaynore de Jager, project co-ordinator, from Beaufort West.

According to Nkasayi, the land was awarded to the beneficiaries before the implementation of the State Land Lease and Disposal Policy of 2013, and before a beneficiary selection committee was in place.

“No beneficiary selection process was conducted. It was presented to the district land reform committee on March 14, 2018 and supported for land allocation. The department awarded recapitalisation and development funds to the project to assist with livestock, implements and infrastructure upgrade. The farmers formed a new entity called Wolwekraal Boerdery. The eight families have occupied the land since the acquisition in 2009.”

Nkasayi said the government had invested R5million in the project and it was working well.

“The farm is doing its part in job creation and skills development. We are offering assistance, in the form of formal courses, but these farmers have to manage the land themselves.”

In the past few years the owners gradually changed from mainly sheep to Angora farming because mohair earns more in Port Elizabeth, where it is taken to be sold overseas.

“The bakkies don’t place a heavy burden on the veld like sheep, especially now in a time of extreme drought”, Loff said.

The drought, which has become more severe in the past four years, was their biggest challenge, he added.

“In January we didn’t have a drop of rain - usually a month with fair rainfall. However, we have learnt to do thorough drought planning. We are surviving and determined to get through this disaster.

“We brainstorm with other farmers in the area, exchanging ideas and advice. The government helps with drought relief, but for the rest we are on our own.”

According to one of the shearers, Hendrik Afrika, 68, twice a year he and the rest of the team work on farms in the district, known for its excellent mohair quality.

“I have been in the trade for more than 40 years. It gets easier over time, because you learn how to hold the animals to keep them calm, to prevent cuts. To them, shedding hair is a great relief in this heat.”

Afrika said each of these professionals shears, on average, 30 sheep daily in season. This had helped turn Swartrivier into a viable concern.

Farming in the Great Karoo, especially in a time of a natural disaster, is no joke, Loff conceded. “But, with the right attitude, success is possible,” he said.

Marlene Malan, *Weekend Argus*, 17 February 2019

Banking & Capital Markets

Deutsche Bank plans to rebuild South Africa staff after cuts

Deutsche Bank AG plans to start rebuilding its South African workforce just months after scaling back staff and cutting costs as part of a global restructuring.

“The hiring we’re currently pursuing is geared toward enhancing the areas where we have global and local strengths, such as fixed income,” South Africa Chief Executive Officer Muneer Ismail said in an interview on Tuesday. “In the next two-to-three months we should be back to fighting strength.”

The bank recently appointed Gregory Scott as the new head of corporate finance coverage in South Africa and plans to hire 26 people for that unit and in others such as fixed income and corporate treasury solutions, Ismail said.

Deutsche Bank’s South Africa turnaround comes after the lender said in June that it would terminate its advisory, corporate-broking and sponsor-services in the country, leading to as many as 50 job cuts. The bank is also rebuilding in the Middle East by hiring executives to help win debt and advisory deals.

Chief Executive Officer Christian Sewing is trying to grow Deutsche Bank’s struggling fixed-income trading unit, which posted seven straight quarters of declining revenue. One way he wants to do that is through selective hiring after cutting 1,135 front-office jobs across the investment banking division last year.

“We are not the traditional Deutsche Bank of old,” said Ismail. “We have reshaped the business, and are redirecting resources to areas where we believe we can add most value to clients.”

Deutsche Bank was the fourth-biggest arranger of bond sales in sub-Saharan Africa last year, up three places from a year earlier, according to Bloomberg League Tables.

Despite the bank's renewed push into South Africa, Ismail said clients are likely to hold off from making any major strategic decisions until the country's political outlook is clear. President Cyril Ramaphosa needs more than 60 percent backing to have a clear mandate to implement reforms to kick start the country's economy.

"The South African election result in May will be a key factor to look out for in terms of the banks deal pipeline," he said. "Clients are telling us they are in a 'wait and see' mode."

Deutsche Bank has had a presence in South Africa since 1979 and opened a branch there in 1998, offering corporate-finance advisory services, equities research and trading, foreign-exchange and fixed-income trading as well as global transactional banking.

Roxanne Henderson & Loni Prinsloo, *Business Day*, 20 February 2019



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