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Harvest SA

Securing South Africa's Food Resources

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Base of the pyramid

Celebrating success

It has been a great year for Grain SA

Decoding of Eucalyptus tree genome unlocks new possibilities

Hope for renewable fibre, fuel and biomaterials



Prof. Zander Myburg

Decoding of Eucalyptus tree genome unlocks new possibilities for renewable fibre, fuel and biomaterials better and more wood, fibre and cellulose – and possibly even future jet fuel!

A University of Pretoria (UP) researcher, Prof. Zander Myburg, took the lead as chief investigator in a global project to discover the genetic blueprint of *Eucalyptus grandis*, a species from a genus of fast-growing trees commonly known as “gumtrees” (“bloekoms” in Afrikaans) in South Africa.

The successful sequencing of this genome has been published in the prestigious, high impact scientific journal *Nature* (advanced online publishing at 19:00 London time on 11 June 2014; print edition 19 June 2014).

“Now that we understand which genes determine specific characteristics in these trees, we can breed trees that grow faster, have higher quality wood, use water more efficiently and will cope better with climate change,” Prof. Myburg explains the significance of this major scientific milestone. “Even more, we can turn well managed Eucalyptus plantations into bio-factories to produce specific kinds of sought-after materials and chemicals.” He added:

“With this new knowledge about the molecular basis for superior growth and specific adaptations in plants, we can apply the same techniques to other woody plants that can be used as feedstock in the bio-economy of the future.”

Gum trees are highly adaptable and grow exceptionally fast. While native to Australia, these trees are planted worldwide, mainly for timber, pulp and paper production, but increasingly also for “chemical cellulose” – a form of pure cellulose that is used in a wide variety of industrial products from textiles to pharmaceuticals.

The project to sequence the *Eucalyptus grandis* genome involved 80 researchers from 30 institutions across 18 countries. It took them five years to sequence and analyse the 640 million base-pair genome. Combing through the more than 36 000 genes found in *Eucalyptus*, the researchers homed in on those that may be able to boost the economic value of the trees by influencing the production of cellulosic raw materials that can be processed for pulp, paper, biomaterial and bio-energy applications.

“As one of the lead organisations, the University of Pretoria is delighted with the positive outcomes of the project and the exciting new opportunities for our genomic research programmes,” says Prof. Anton Ströh, Dean of the Faculty of Natural and Agricultural Sciences at UP.



Prominent co-leaders on the project include Prof. Dario Grattapaglia of the Brazilian Agricultural Research Corporation (EMBRAPA) and Catholic University of Brasilia; Dr Gerald Tuskan of the Oak Ridge National Laboratory (ORNL) and the BioEnergy Science Center (BESC) and US Department of Energy Joint Genome Institute (DOE JGI); Prof. Dan Rokhsar of the DOE JGI; and Dr Jeremy Schmutz of the DOE JGI and the Hudson Alpha Institute for Biotechnology.

The US Department of Energy was a major funder via its Joint Genome Institute in Walnut Creek, California, where most of the DNA sequencing was done.

South Africa's Department of Science and Technology (DST), together with forestry companies Sappi and Mondi, supported Prof. Myburg and his team by funding the construction of the genome map used as a scaffold for genome assembly, as well as the sequencing of expressed genes used for annotation of the genome.

“The development of new knowledge and skills in tree genomics, and the application of that knowledge to enhance industry competitiveness, is directly aligned with the DST's vision of a bio-economy,” says Dr Phil Mjwara, Director-General of the Department of Science and Technology.

“This is a superb example of full value chain thinking, and thus an important investment for the Department.” Prof. Myburg's research team identified genes encoding 18 final enzymatic steps for the production of cellulose and the hemicellulosexytan, both carbohydrates that are enriched in wood fibre cells and can be used for biofuel production. “By tracing their evolutionary lineages and expression in woody tissues, we defined a core set of genes for biopolymer production that are highly expressed in the development of xylem – the woody tissue that helps channel water throughout the plant and strengthens the tree,” he explains. Team members Dr Carsten Kußlheim and Prof. Bill Foley at the Australian National University (ANU) also found that, among sequenced plants to date, Eucalyptus showed the highest diversity of genes for specialised metabolites such as terpenes. These hydrocarbons serve as chemical self-defenses against pests, and also provide the familiar aromatic essential oils used in medicinal cough drops and in industrial processes.

Among the family of terpene compounds naturally produced in plants – and in particularly high abundance in Eucalyptus trees – derivatives of sesquiterpenes that contain 15 carbon atoms (diesel fuel typically contains 10 to 24 carbon atoms) may be promising alternatives for petroleum-based fuels. Researchers have already made important breakthroughs in engineering aspects of terpene biosynthesis into microbes such as bacteria and yeasts.



“This means that in future we could use specially selected Eucalyptus genes in bacteria and yeasts, turning them into biofactories to manufacture advanced biofuels on a large scale,” Prof. Myburg says. “In future, jumbo jets may take off powered by renewable, Eucalyptus-based fuel!”



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On the cover

Agro-processing has been identified as a key economic driver for the NDP: a 'good luck charm' that could solve a number of problems at once, provided that primary agriculture, which underpins the whole effort, is taken care of.

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FOREWORD



JANNIE DE VILLIERS
CEO, GRAIN SA

The National Development Plan (NDP) is leading the way towards land reform and transformation in agriculture. The congress season for most of the agricultural unions has just passed, and land reform was at the top of all their agendas. The Land Summit called by the Minister of Rural Development and Land Reform in September 2014 gave momentum to the decisions taken at the congresses, and the Agricultural Sector Unity Forum (ASUF) is

Details and action are required

in the process of consolidating all the decisions into one land reform proposal. It is clear that the framework provided in the NDP has found its way into these decisions. Now it is necessary to have the details and action plans for implementation. The NDP is not all about land reform, and one can only hope that the agricultural sector recognises this. There are other issues, such as job creation, support services for new entries, research still to be done and education systems to be improved—and we need to continue to produce food for the nation, too.

Looking at the current maize prices, it seems as if the market is doubtful about the rain. The first rains of the season came very late and many of the forecasts are indicating a bigger chance for a below-average rainfall. The rule of thumb used in the maize industry is that the maize needs to be planted between mid-October and mid-November in the area east of the N1, and between mid-November and mid-December west of the N1. The only farmers who are already planting are those with access to irrigation water. They produce roughly 20% of the maize crop annually. Following the huge crop of the previous season, our stock looks good currently, but the prices indicate a belief that we will not be having a normal season.

The fact that some of the key political leaders in the country are also farming on the side is benefiting agriculture tremendously. Not just

in understanding the issues at grassroots level to influence policies, but also in terms of the image of agriculture. We have learnt that even the smallest incident could harm the image of agriculture substantially. The mere fact that a minister can say, "On my farm, it works like this..." from a podium, adds credibility to the realities of farming. These experiences of ministers are assisting the cultural changes agriculture needs to make.

One such experience, mentioned by the Minister of Agriculture, Forestry and Fisheries, is that of roaming cattle in communal areas. No-one is prepared to use their savings to work the land and plant some maize only for it to be eaten by the cattle of the village. This cultural practice is preventing crop production in those areas and reduces household food security.

This is a complex problem and the solution will go far beyond just fencing—it will also include issues of land ownership in these areas. Lack of ownership also prevents these farmers from access to production loans as they cannot present any form of security to the financial institutions. It is almost as if there is a trade-off between having food security with private ownership of the land, or food insecurity and poverty connected to a cultural lifestyle. This is a very tough political choice. Maybe, with the politicians' practical involvement in agriculture, there will be some middle ground that could be found to cater for both needs. Let's pray that the good Lord will provide the rain needed to produce a full crop and ample food for the nation.

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EDS NOTE



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Working hard behind the scenes

The past year is similar to one of those high-definition television series, like *Breaking Bad* or *Orange County*, that have displaced the movies as the dominant cultural form in the modern world. There has been no shortage of drama in 2014, no shortage of action and no shortage of those breath-taking plot twists that leave you on the edge of your seat and then, cruelly, force you to wait until next season to find out what will happen next.

Recent developments in the political arena have been every bit as gripping and disquieting as anything in *House of Cards*. The spectacle of riot police in parliament, the expulsion of trade-union colossus NUMSA from COSATU—this is the stuff that history is made of.

Yet, just as with the modern television series, the majority of the work takes place behind the scenes. While the viewer is transfixed by the action taking place on-screen, there is an army at work ensuring that the illusion offered for consumption is perfect.

This is also the case with agriculture. Grain SA has worked incredibly hard throughout the year to close the gap between established agriculture, developing agriculture and Government. There is a real sense that ears are now open to different voices, that a genuine sense of cooperation is informing initiatives to grow the base of agriculture and foster food-security and prosperity.

Of course, unlike a television series, what Grain SA and Government have achieved together is no illusion: all the work behind the scenes has contributed to permanent change for the good on the agricultural scene.

Thank you South Africa. Your support is what keeps us going.



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A full-page background image of a vast, golden wheat field stretching to the horizon under a cloudy sky. The wheat stalks are in sharp focus in the foreground, creating a sense of depth. The sky is a mix of blue and white clouds, and the horizon line is visible in the distance.

Base of the pyramid

Primary agriculture is crucial to a prospering agro-processing sector, writes Keith du Plessis



The agro-processing industry has been identified, by a range of industrialists and Government, as one of the sectors that can spur growth and turn around a declining agricultural market, which has seen a decline both in job creation and its contribution to the country's gross domestic product (GDP).

Agro-processing plays a vital role in food security, employment and rural livelihoods, and serves as a viable source of foreign investment. It is widely seen as a vehicle to develop rural economies and to create much needed jobs in the underdeveloped rural areas of South Africa.

The New Growth Path (NGP, 2010) forecasts the creation of 145 000 jobs in agro-processing by 2020, while the Industrial Policy Action Plan (IPAP 2) has conservatively estimated the creation of 66 180 jobs in agro-processing over the next 10 years. The IPAP—in its various iterations—the NGP and the National Development Plan (NDP) have identified the agro-processing industry as a sector primed to spur growth and create jobs. This is mainly because of the sector's strong backward linkage with the primary agricultural sector.

Agro-processing is the processing, preservation and preparation of agricultural production for intermediate as well as final consumption.

It is simply not possible without primary agriculture, unless one imports raw products. Essentially, no raw materials mean no processed product or, simply put, "no apples, no apple juice".

This is where we as South Africans seem to have lost our way; we've lost respect for the power of raw materials. Even though agriculture and food production in South Africa are highly developed, and the country has become food sufficient, we are a net exporter of agricultural products—and even though we benefit from diverse climatic conditions which allow for a large variety of commercial and food crops to be cultivated, there has been a stagnation and even decline in the agricultural industry.

The statistics on this are cause for a rude awakening. According to Quantec data,

agriculture's contribution to the GDP shrunk from 10.3% to 2.5% between 1967 and 2010. The number of jobs in the sector has dropped from 1.9 million to 624 000 in just over 10 years between 2000 and 2011, while the people employed in the agricultural sector dropped from 19.1% of all jobs to only 4.7% over the same period. This was mainly driven by a decline in the state spending in agriculture over the past few decades.

Furthermore, the sector never fully recovered from policy changes in the 1980s that removed existing controls over the movement of labour and microeconomic deregulation, which led to a significant increase in various activities in the informal economy.

More recently, the shift in the structure of the agricultural sector and agricultural production, which saw a larger focus on horticultural crops (fruits and vegetables) rather than field crops, led to a further slowdown of agricultural production.

Despite this, a study by South African Institute of Race Relations (2012) indicates that capital expenditure by commercial farmers has more than quadrupled from R2.1-billion in 1993 to R11.2-billion in 2010, while their net income has more than doubled from R3.2-billion to R7.2-billion over the same period. The value of agricultural exports has almost tripled over the last decade. Reasons for this include the introduction of new technologies in the 21st century that reduce the need for large labour forces and the increase in growth of yields of almost all grains due to increased mechanisation, use of improved seeds, fertilizer, herbicides and pesticides.

The outcome is that commercial farm sizes increased from 1 006 hectares in 1910 to 1 400 in 2007. During the same period the farm numbers declined from 76 622 to 44 575 as smaller players were gobbled up by their larger counterparts.

Many of the commercial farms do only minor processing in-country and then export the fresh/raw product to either be consumed in its raw form or processed further in the importing countries. This is the case in the wool and mohair industries, for example. South African consumers then buy expensive imported products, for



example a fine mohair suit, at huge costs. In many instances, such as in the citrus industry, it is more lucrative to export the fresh product rather than a processed fruit. Processing in South Africa is mainly limited to juice production.

Support for emerging farmers must be taken more seriously. Land in the hands of people who do not know what to do with it will lead to one of the biggest tragedies this country has ever faced. Commercial farmers must be encouraged to take emerging farmers by the hand and to show them the ropes. Cooperative and mentorship-orientated business models that encourage this relationship between commercial and small farmers must be developed, so that all parties can benefit from the fruits of their labour.

Farmers must be dissuaded from merely entering into subsistence farming if



the opportunities do exist for them to farm commercially by forming ties with other small farmers, or even better, with commercial farmers.

The concept of forming agricultural clusters that focus on certain commodities will go a long way in creating economies of scale in rural areas. Commercial farmers have long realised this and they now benefit from reduced unit costs to get their product to market as compared to small farmers.

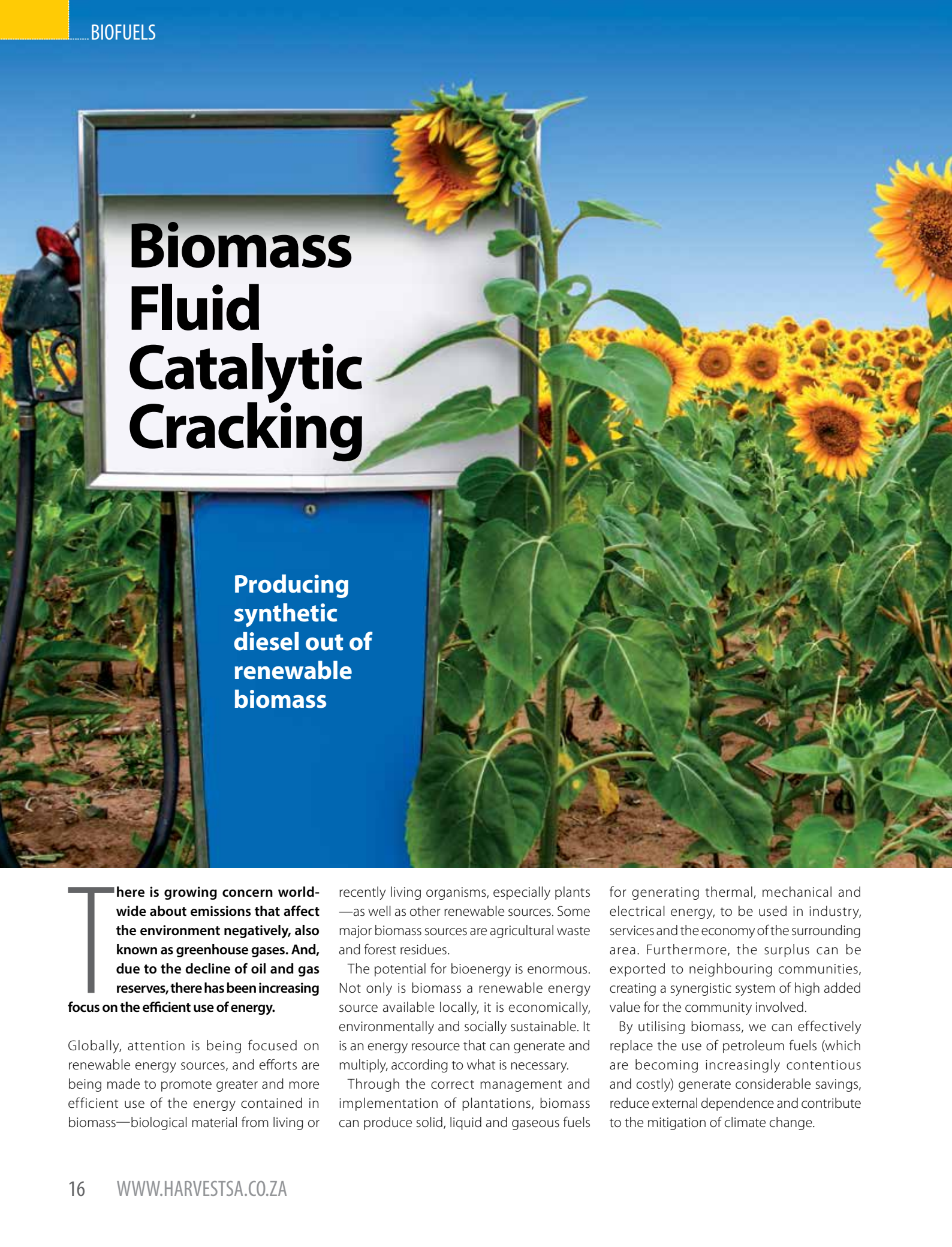
Even though extensive studies have been done by the Department of Agriculture, Forestry and Fisheries (DAFF) as well as the Agricultural Research Council (ARC) regarding suitable crops for the South African climate, it is as equally important to identify and determine if markets exists for these products; preferably in processed form.

Once it has been established that markets do exist, it would be important to form local businesses that will act as intermediary markets for the produce to be processed, after which it can be delivered to the determined markets.

This is obviously easier said than done, and government will have to play a key role in facilitating the relationships between commercial and small farmers. Prospective farmers should realise that farming is not easy and successful farming requires hard work.

Opportunities for import substitution exist, as do local markets; the question is therefore how do we maximise our internal capacity and desire to substitute imported processed products such as honey, olive oil, pectin and apple juice, for which there is already a local appetite, with locally produced products?

Dr Keith du Plessis was appointed in April 2012 at the Coega Development Corporation (CDC) as Agro-processing Project Development Manager. He holds a PhD in Microbiology with extensive experience in the fields of agriculture and environmental management, having worked in various capacities such as Senior Researcher: Environmental Management (Soil and Water Management Programme) and Programme Manager (Post-Harvest & Wine Technology Programme) at the Agriculture Research Council. His primary objective at the CDC is to take responsibility for the identification, development and promotion of investment opportunities in the agro-processing industry and its subsectors. He also develops and implements strategies for strengthening investment promotion, particularly in the agro-processing sector.

A gas pump nozzle is visible on the left side of the frame. The background is a vast field of sunflowers under a clear blue sky. The sunflowers are in various stages of bloom, with bright yellow petals and dark brown centers. The overall scene suggests a connection between renewable biomass and traditional fossil fuel infrastructure.

Biomass Fluid Catalytic Cracking

**Producing
synthetic
diesel out of
renewable
biomass**

There is growing concern world-wide about emissions that affect the environment negatively, also known as greenhouse gases. And, due to the decline of oil and gas reserves, there has been increasing focus on the efficient use of energy.

Globally, attention is being focused on renewable energy sources, and efforts are being made to promote greater and more efficient use of the energy contained in biomass—biological material from living or

recently living organisms, especially plants—as well as other renewable sources. Some major biomass sources are agricultural waste and forest residues.

The potential for bioenergy is enormous. Not only is biomass a renewable energy source available locally, it is economically, environmentally and socially sustainable. It is an energy resource that can generate and multiply, according to what is necessary.

Through the correct management and implementation of plantations, biomass can produce solid, liquid and gaseous fuels

for generating thermal, mechanical and electrical energy, to be used in industry, services and the economy of the surrounding area. Furthermore, the surplus can be exported to neighbouring communities, creating a synergistic system of high added value for the community involved.

By utilising biomass, we can effectively replace the use of petroleum fuels (which are becoming increasingly contentious and costly) generate considerable savings, reduce external dependence and contribute to the mitigation of climate change.



The value of BFCC

Biomass Fluid Catalytic Cracking (BFCC) is a technology that converts sustainable biomass into renewable energy. The BFCC process uses a catalyst (for example aluminium silicate) in conjunction with a patented system that energises biomass, for example plant matter, and reacts in a short timeframe, under intense mixing conditions. It creates the conditions necessary for the catalyst to join with the hydrocarbons resulting from the slow and partial combustion of the biomass molecules (such



as olefins, alkanes, plastics, and so on). One kilogram of dry biomass typically yields between 15 and 35% synthetic diesel fuel oil. The process is conducted in such a way as to ensure all toxins are destroyed during processing, with a clean final product.

As well as the environmental benefits, this technology has significant cost advantages, including lower capital and operating costs as compared to traditional bio-fuels producers.

Bioenergy key to development

Given the above information, it is clear that bioenergy is ideal for the promotion of rural development, mobilising investment and creating jobs, as it is a well-balanced revenue mechanism.

However, it should also be noted that bioenergy is not always sustainable: if not properly planned, there is a risk of deforestation, loss of biodiversity, soil erosion, excessive water use, conflicts in land use and land tenure, food shortages or sudden price hikes. Special attention needs to be paid to the type of fuel biomass aspects being promoted, as well as where and how it is produced.

It is edifying to look at global employment trends in the energy sector. Over the past

few years, more and more jobs have been generated by the increase in renewable energy production, particularly bioenergy.

In India, between three and four million jobs have been created in the wood fuel trade. In Pakistan, the number of jobs in the same industry is 600 000. In the Philippines, 700 000 jobs have been generated through the production and trade of biomass energy.

In the European Union, it has been estimated that over 90% of the jobs generated through the use of renewable energy sources are in the field of bioenergy.

A recent wood energy study, conducted in Nicaragua by the Food and Agriculture Organization of the United Nations, showed that the price of electricity generated from wood (biomass), was extremely competitive to that generated from bunker oil.

To continue creating jobs and producing cost-efficient, sustainable energy, there needs to be more investment into bioenergy.

The BFCC biomass-to-energy solution is a technology that is renewable, economically viable and environmentally friendly. Biomass conversion to energy or fuel is a reality today, and it is imperative that we implement these strategies to create a better future for all.

Neil Fichardt, Biotech SA

Cause for celebration

Grain SA fetes the successes of grain producers in South Africa





From left to right: Brienne van der Walt, Head AgriBusiness: Barclays Africa and ABSA; Louw Steytler, Chairperson, Grain SA; Paula and Richard Hobson, 2014 Grain Producer of the Year; Honourable Senzeni Zokwana, Minister of Agriculture, Forestry and Fisheries; Antonie Delport, Managing Director, Syngenta South Africa; Victor Mongoato, Vice Chairperson, Grain SA and Andries Theron, Vice Chairperson, Grain SA.

Grain SA celebrated the successes of its grain producers during two prestigious celebratory events, held in Bloemfontein and Midrand on 2 October and 17 October 2014 respectively.

With excitement in the air and a magical setting at the venues, guests arrived in anticipation of these award ceremonies as Grain SA honoured the development, growth and achievements of its emerging and commercial grain producers.

Applauding emerging grain producers

The Day of Celebration function, hosted by Grain SA's Farmer Development Programme, was held at Leopards & Lace in Bloemfontein in the Free State, and was attended by more than 220 guests, with emerging grain producers present from all corners of our beautiful country. The development and accomplishments of upcoming grain producers are of utmost importance to the organisation and the Day of Celebration is an opportunity to celebrate farmer development, recognise excellence

in the field and above all, acknowledge transformation in grain production.

The purpose of the Grain SA Farmer Development Programme is to assist all its members to make optimal use of the arable land available to them for crop production. Due to the various systems of land tenure, the Grain SA study groups are comprised of grain producers of various categories—but all were very keen to participate in the producer of year contest.

The three different categories developed to give credit to emerging grain producers, and which create a platform for all categories of grain farmers to compete fairly, include one for Subsistence farmers, who have access to and farm on less than 10ha, Smallholder farmers, who are planting more than 10ha but producing less than 250 tons of any grain in a year, and New Era Commercial farmers, who produce more than 250 tons of grain.

Farmers of all sizes are supported and empowered to use modern and sustainable production methods. All farmers are required to prepare the soils appropriately, use commercial (hybrid) seed, control the

weeds and apply correct quantities of fertilizer. These are the basics and as the farmers migrate from the smaller to the larger categories, the information given to them is adjusted accordingly.

And the award goes to...

The finalists for the Grain SA/ABSA Subsistence Farmer of the Year category were Gladys Zondo and Thoko Matha Mofokeng, both from Winterton, with the accolade being awarded to our winner, Enoch Khumalo from Piet Retief.

Enoch grew up in a rural area and worked on a farm for about 30 years, mainly with sheep and cattle. In 2009, Enoch joined the Donkerhoek Study Group when it was formed and also attended various training courses. This year, Enoch planted 3ha and although he has access to 6ha, a lack of funds hindered his plans to plant the entire area. Even so, the planted crop responded well to his management with expectations to harvest in excess of 6 ton/ha.

The finalists for the Grain SA/Syngenta Smallholder Farmer of the Year category



Jannie de Villiers, CEO, Grain SA; Louw Steytler, Chairperson, Grain SA; Lungelwa Kama, 2014 Grain SA/Syngenta Smallholder Farmer of the Year; Antonie Delpont, Managing Director, Syngenta South Africa

were the Dwaalkraal Cooperative from Sannieshof, Langa Simon Mbele from Bergville and Willem Modukanele from Welkom, with Lungelwa Kama from Maclear who was announced the overall winner.

Lungelwa started farming by buying a small herd of cattle and due to a lack of grazing, the Department of Rural Development and Land Reform made a farm and a few implements available to her—just what Lungelwa needed to get going on the road to commercial farming. Lungelwa has since been able to rent an additional 70ha of good arable land in addition to the 35ha she received from the Department, and this year planted 100ha of maize, with expected yields in some areas exceeding 8 tons/ha.

In the Grain SA/ABSA New Era Commercial Farmer of the Year category, four finalists vied for the honour including Pieter Chaballala from Puthaditjhaba, Michael Ramoholi from Theunissen, Job Metswanere from Delareyville and our overall winner, Ralph Swart of Swart Boerdery situated in Elim, Western Cape.

Ralph, the first ever finalist and subsequent winner from the Western Cape, produces wheat, barley, oats, triticale and rooibos tea. He has been farming on his own for the past 33 years and is the third generation farming on the same land. Ralph has a passion for agriculture and is a true entrepreneur, always willing to assist smaller farmers in his area with equipment and advice.

During the Day of Celebration, a number of farmers were awarded membership of



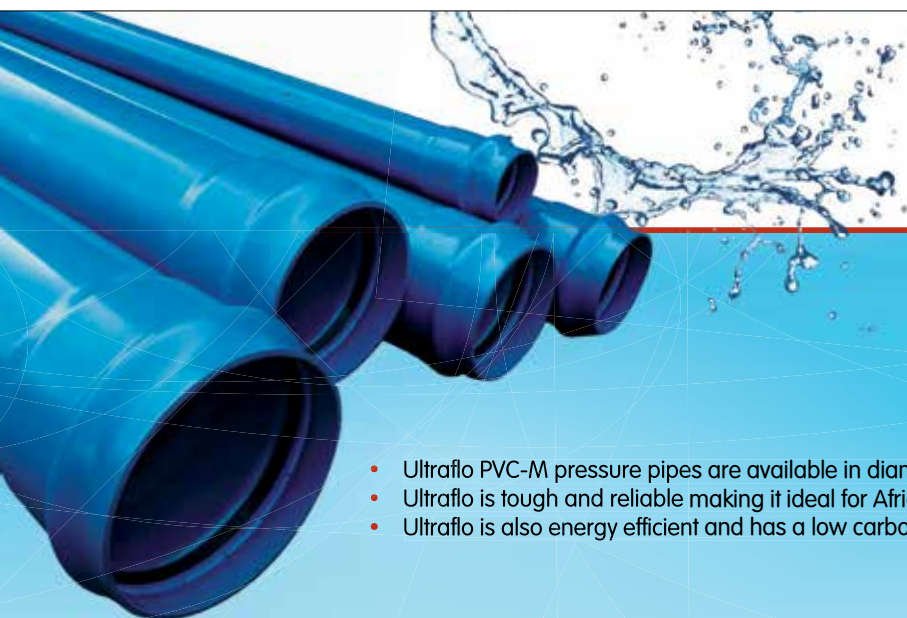
Brienne van der Walt, Head AgriBusiness: Barclays Africa and ABSA; Louw Steytler, Chairperson, Grain SA; Pholakele Khumalo; Victor Mongoato, Vice Chairperson, Grain SA; Enoch Khumalo 2014 Grain SA/ABSA Subsistence Farmer of the Year; Honourable Senzeni Zokwana, Minister of Agriculture, Forestry and Fisheries and Andries Theron, Vice Chairperson, Grain SA.

the 250 Ton club while others graduated from the Grain SA Farmer Development Programme. This programme ensures that farmers are equipped with the necessary information and skills to contribute to food security in the country.

In his closing remarks, Mr Jannie de Villiers, CEO of Grain SA, acknowledged the massive difference the Grain SA Farmer Development team makes to the grain producers of South Africa and was delighted about the fact that the ceremony was a celebration of people. "Today we are harvesting farmers—we develop people," he said and concluded with a sincere call to government to invest in our people to ensure that there are no food shortages in this country.

The cream of the crop

Grain SA further celebrated the successes of its commercial grain producers in addition to commending emerging producers for their outstanding achievements during a prestigious gala event, held at The Theatre on the Track. This year's awards ceremony commemorated the 15th year of the gala awards, since replacing the previous Maize Man of the Year in 2000, and was attended by the Honourable Senzeni Zokwana, Minister of Agriculture, Forestry and Fisheries, Members of Parliament, representatives of the various agricultural Trusts, organised agriculture and government as well as academia and our guests of honour—grain producers from around the country.



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- Ultraflo PVC-M pressure pipes are available in diameters of 50 to 630mm and pressure ratings of 6 to 25 Bar.
- Ultraflo is tough and reliable making it ideal for African conditions.
- Ultraflo is also energy efficient and has a low carbon footprint.

The gala awards programme, overseen by the superb Katlego Maboe as Master of Ceremonies, was both entertaining and rewarding, giving guests food for thought throughout the evening. Added to that was outstanding entertainment from Jannie Moolman, and guests were soon engaged in a joyous sing-along accompanied by much fun and laughter.

After much fanfare, the 2014 Grain SA/ Syngenta Grain Producer of the Year award went to Richard Carey Hobson of Nonen Ranch, situated in Setlagole in the North West Province. Verified by PriceWaterhouseCoopers, Richard was announced the overall winner in this category, over the other finalists Trevor Egon Zunkel from Bergville and the Blanckenberg Family from Durvanville in what must have surely been a tightly contested affair. The judges were faced with a difficult task since all finalists proved to be exceptional producers with diverse management styles.

Richard started farming with his father Carey on the farm Papiesvlakte after completion of his studies. After the family business, Botselo Holdings, acquired Nonen Ranch in Setlagole in 2002, Richard took full responsibility for the farming operations and its subsequent significant expansion. Under his expert management, the farming operation forms an integral part of the Botselo Holdings group, comprising 10 450ha, spread over three farms, namely Nonen Ranch, Papiesvlakte



Katlego Maboe, Master of Ceremonies leading the guests in singing the National Anthem

and Lawn. Botselo Farming forms part of Botselo Holdings which includes Botselo Mills, Botselo Grain and Botselo Carriers. In 2006 Richard started with conservation agriculture that led to significant increases in profitability and sustainability of each of his diversifications.

Awarding excellence

In addition to these awards, Grain SA also honoured the Bureau for Food and Agricultural Policy (BFAP) with an Inspiration Award, received by Prof Ferdi Meyer, Director of BFAP, in appreciation of their continuous contributions to the grain industry, excelling to achieve extraordinary

results and inspiring the industry to be more competitive in its commitment to excellence.

Grain SA further honoured three of its past Executives in recognition of their outstanding leadership. Recognition to the previous Chairperson of Grain SA, Neels Ferreira, as the highest honour bestowed by Grain SA, was awarded for his vision and outstanding leadership, locally and internationally, in the interest of all grain and oilseed producers of South Africa. Gert Pretorius (posthumous), was honoured for his leadership in the unification and establishment of Grain SA. His outstanding contribution to the oilseed industry in particular, locally and internationally, was recognised. Willie Pretorius received the honour on behalf of his late father. Fanie van Zyl was honoured for his leadership to Grain SA and as Chairman of the Audit Committee, for his ground-breaking work for the establishment of best management practices and the development of policies and procedures for Grain SA.

On completion of a very successful event showcasing many inspirational journeys, and for the first time travelling on the journey through the different categories of grain producers—from the smallest to the largest—Grain SA Chairperson, Mr Louw Steytler ended a joyous celebration requesting all present to participate in the agriculture debate, for our children to inherit a better future than we did.



Richard Hobson, 2014 Grain Producer of the Year and his wife Paula receiving their prize from Louw Steytler, Chairperson, Grain SA; with Grain SA CEO, Jannie de Villiers and Grains SA PRO, Alzena Gomes looking on



HOW ARE WE GOING TO FEED A GROWING POPULATION?

Given the current population growth, all indications are that the world population will reach approximately 8 billion in 2025. Putting food on the plates of a growing population remains a challenge.

Advanced research and new tools such as biotechnology have revolutionised agriculture by helping farmers produce more and conserve more, as they work to meet the world's rising demand for food. These tools help them overcome challenges such as limited resources (water and land), extreme weather conditions due to climate change, and pests that compete for food.

Biotechnology crops are amongst the most extensively tested, characterised and regulated food and fiber products ever developed.

After more than 15 years of production and more than 1 billion hectares worldwide, there have been no adverse effects documented from the food produced from biotechnology crops.

In fact, biotech crops (GM-crops) provided a better environment by saving on pesticides and CO₂ emissions whilst increasing crop yields substantially.*

Thanks to companies such as Monsanto we can be sure of safe and healthy food** produced sustainably.

Read more about the safety of GM-crops at www.monsanto.com.

Monsanto is committed to improving lives by improving agriculture.

* According to Brookes and Barfoot, 2013, from 1996 to 2011 biotech crops contributed to food security and sustainability by increasing crop production valued at US\$ 98.2 billion. It also provided a better environment by reducing pesticide use by 473 million kg of active ingredient. In 2011 alone CO₂ emissions were reduced by 23,1 billion kg, equivalent to taking 10,2 million cars off the road.

** Regulatory agencies worldwide, such as the Food and Agriculture Organization, World Health Organization, the European Commission, the French Academy of Medicine, the American Medical Association, and the American Society of Toxicology have agreed that GM foods are safe for human health.
<http://www.sho.int/foodsafety/publications/biotech/20questions/en/>
http://ec.europa.eu/research/biosociety/pdf/a_decade_of_eu-funded_gmo_research.pdf



About Monsanto Company

Monsanto Company is a leading global provider of technology-based solutions and agricultural products that improve farm productivity and food quality. Monsanto remains focused on enabling farmers to produce more from their land while conserving more of our world's natural resources such as water and energy.

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Mining and agriculture team up for development

Collaboration between government and the private sector is crucial for agricultural growth in Africa

The importance of agricultural growth in Africa was highlighted on World Food Day on 16 October, a day set aside by the international community to focus on raising awareness of world hunger and food security.

The African agricultural sector is set to experience exponential growth over the next decade, but only if the sector diversifies enough and continues to invest in the factors inhibiting growth, such as structural, financial and infrastructural challenges. This is according to Omri van Zyl, Head of Deloitte Africa Agricultural Unit (DAAU) & Deloitte Africa Agriculture Leader. "Diversity is important for the growth of the agricultural sector as it allows for tapping into diverse global markets," says van Zyl.

Africa is regarded as a key centre of agricultural production because of availability of arable land. But van Zyl points out that to tap into potential, the sector has to invest in infrastructure, most notably storage infrastructure through grain silos and related infrastructure.

In Ethiopia, agriculture and the agri-industry will benefit from the movement of subsistence farmers into the commercial economy, helped by the expansion of road, power and market networks. In Central Africa, agriculture, fishery and forestry present increasing economic potential.

Untapped potential

Agriculture remains the dominant sector in Africa, even though its contribution has fallen from 56% to 46% since the 1980s, but the composition of its output has changed as dramatically as its value has increased. The improvement in agricultural output is due to

better use of arable land and improvements in productivity, for which there is still room for more. This suggests that agriculture still has huge potential.

A challenge, though, is the lack of capital to produce inputs, which not only affects quality of seed but also the quantity and quality of fertilizer applied per hectare. Studies indicate that the amount of fertilizer application in Africa can be as little as 25kg per hectare, which has no beneficial effect whatsoever. The normal application amount is anything between 250 and 350 kg per hectare.

Changes in the composition of agricultural output are also reflected in the pattern of exports, which has seen the emergence of totally new categories in the top-10 goods. For example, exports of cut flowers and fresh vegetables were practically non-existent in 2003, but figured in the top five exports by 2012.

"Climatic conditions and the availability of quality arable land favour agricultural development in products such as cotton, coffee, tobacco, yams, maize, bananas and cassava. The southern African hub is well-endowed in a variety of natural resources on the other hand," says van Zyl.

The case for collaboration

Increasing world populations and emerging markets will create greater demand for food production. Changing consumer demand is more focussed on meat and other proteins. This in turn will affect the demand for commodities used in the feed industry.

In addition, due to lack of chemical nutrients, farmers are forced to de-bush new areas to obtain nutritious soils. This leads to deforestation and erosion, which makes

farming unsustainable in the long term. Due to the fact that the private sector is the initiator of commercial enterprises and as such the main stimulus of agriculture, it only makes business sense for government and private sector to partner and collaborate in ensuring that the industry is well supported.

Focus should be on value chain activities whereby infrastructure, including road, rail and storage infrastructure, in established



financial institutions will gain the necessary comfort to enter into financing agreements with primary producers who are assisted by industry leaders.

Relationship between agriculture and mining

Mining in Africa has been growing at an exponential rate and this creates the opportunity for agri-businesses to grow accordingly. A new approach should be considered, in which agri hubs are included in mining development planning. "One way this can be done is through the creation of facilities for storage handling and processing," says van Zyl. "At the same time, a demo plot needs to be created, to show community members how to farm." Van Zyl says it's important to secure inputs to distribute to farmers. "Inputs include seeds, fertiliser, herbicides and pesticides."

One such project is currently being run by First Quantum Minerals in Solwezi, the north-west province of Zambia. And Deloitte is

currently developing an agri hub project with The Royal Bafokeng Nation. The creation of agri hubs on mining sites and in mining communities not only creates a stable source of nutrition, but helps to establish commercial agriculture that can be replicated through contract growing schemes.

"Also called out-grower schemes, the contract growing scheme functions as a development tool in a variety of ways, one being that it creates employment for the people in the communities in which the agri hub is based.

"With proper planning, such a scheme can improve nutrition in households by at least 50%. It also creates a small economy for the community and contributes to education and training of community members."

The success of existing agri hubs shows that mining and agriculture are more closely related than previously thought. Both depend on long-term tenure, are capital intensive and reliant on each other's outputs

—agriculture receives fertiliser from mining and mining receives food from the agriculture sector.

"Using technology and innovation for food security and sustainable development is one way of making sure that the food produced is secure for consumers. The use of modern technology, like seed varieties, herbicides and pesticides can increase agricultural production without using any genetically modified crops," says van Zyl.

With emerging African economies continuing to grow at a fast rate, meeting the demand for key infrastructure across the continent has been identified as a priority. It is encouraging to see private entities working alongside large multi-national companies as subsidiaries, and this has resulted in a large portion of innovations being imported and adapted to suit the African agriculture market and conditions.

Sarah Johnston



Whack the weeds

**Alternative herbicides to
combat weed resistance**





The main cause of weed resistance against glyphosate herbicides, to which Roundup Ready® crops are resistant, is the continued annual use of the product without alternating it with other weed killers, including non-chemical weed control practices.

“Alternate herbicides prevent weeds from developing resistance,” says Professor Chris Preston of Australia.

Preston is professor in weed management at the Adelaide University, Australia, and visited South Africa by invitation where he was a guest speaker during a workshop on weed resistance at the Villa Academy in Kempton Park.

“There is a serious need to combine herbicides and non-herbicide practices in an integrated weed control programme to control resistance. Farmers use glyphosate repeatedly without thinking of other weed control methods to prevent seed forming by weeds. This is a vital aspect in managing weeds,” he emphasised.

The rapid worldwide expansion of herbicide resistance and the lack of new chemicals require that control methods not employing herbicides should be a meaningful component in the strategic weed control programme of any agricultural enterprise, he said.

“One example is to prevent seed forming by deep ploughing of lands before planting, so that weed seeds are buried deep in the soil where they cannot germinate. This practice can be repeated every 10 to 15 years.

“The alternating of herbicides is another practice which controls resistance effectively. In Australia the double knock procedure is extremely successful. This entails the application of different herbicides following glyphosate. After the first glyphosate application a second and third knockout follows by using a different chemical to eradicate those weeds that escaped the first application.

“In Australia we have a success factor of up to 95% with this method. It’s cost-effective and very successful,” Preston said. “Glyphosate is one of the most valuable herbicides in Australian agriculture. However,

weed resistance was first observed in 1996. Of the 30 weed species worldwide that developed resistance against glyphosate, six are in Australia and three in South Africa."

Prof. Charlie Reinhardt is the Dean of Villa Academy and extraordinary professor at the University of Pretoria. One of South Africa's most acclaimed weed scientists, Prof. Reinhardt said that weed resistance should not be regarded as a death sentence for the continued use of herbicides.

He agreed wholeheartedly with Prof. Preston that the excessive, repetitive use of only glyphosate gives reason for concern regarding resistance.

"The chemical impact of herbicides on plants does not cause genetic deviations responsible for resistance. Weed populations include individual plants which have one or other natural mechanism that does not make them sensitive to a specific herbicide. Use different weed killing methods—not only the type of product, but also its chemical killing method. This requires the application of products that belong to different chemical groups with diverse active mechanisms," he said.

Reinhardt pointed out that a single weed plant which escaped the effect of a herbicide in a specific growing season could, for example, result in up to a thousand resistant plants in the following season when the product application is repeated for a follow-up spray. This even happens when

a different product, but one with similar chemical action, is used for the follow-up and also in the absence of alternative methods such as mechanical hoeing. In the third growing season the result could be up to 10 000 resistant weed plants/ha.

Globally seen, he added, there were at present 400 weed species presenting resistance to a large variety of herbicides belonging to the nine most important chemical groupings.

Weed resistance against the world's, and also South Africa's, leading weed killer, glyphosate, has been proved in 30 weed species. Three are found in South Africa and only in the Western Cape, namely tall fleabane (*Conyza bonariensis*), rye grass (*Lolium-complex*), and buckhorn plantain (*Plantago lanceolata*). No resistance has yet been proved in the summer grain area but more reports are received continuously of weed species that have become more difficult to control than before.

Reinhardt emphasised five golden rules for efficient management to prevent weeds developing resistance:

- **Reduce the number of weeds on the land**

This lessens the chance that "one in a million" plants may have natural resistance and may increase in time. Follow instructions on labels meticulously.

- **Prevent weeds from forming seed**

There is a saying: "One year's seeding is seven years' weeding." The seed of many weed species can survive many decades in the so-called soil "seed bank". That is why the weed seedling that germinates today may perhaps be older than the farmer if the seed's age is considered.

- **Increase the competitive ability of the crop against that of the weed**

- + Establish the crop during the seasonal "window" when conditions are unfavourable for the germination of weeds.
- + Use narrower crop rows that will allow less light to reach ground level.
- + Increase plant stand/hectare. Select a cultivar that develops fast, and quickly forms a copious leaf canopy.
- + Cover crops can be utilised to inhibit weeds.

- **Alternate the herbicide's killing mechanism**

Apart from alternating the herbicide's mechanism through consecutive application of alternative products, tank mixtures of products with different killing mechanisms may also be utilised.

- **Weed resistance**

When weed resistance is suspected, ensure that "true" resistance is the problem and that "apparent" resistance, to which various other products apart from herbicides contribute, could not be the issue. The difference between "true" and "apparent" resistance can only be verified under controlled scientific hothouse conditions.

Prof. Reinhardt is project leader of the South African Herbicide Resistance Initiative (SAHRI) at the University of Pretoria. At present the SAHRI is focusing on resistance against glyphosate herbicides. The research team would appreciate being informed of instances where weeds that were easy to control previously have now become difficult to control.

More information may be obtained from Prof. Reinhardt at 083 442 3427. E-mail address: dr.charlie.reinhardt@gmail.com



At the workshop on weed resistance were, from left: Kobus Steenekamp, business manager, Monsanto; Prof. Charlie Reinhardt, Dean of the Villa Academy; T. Nephumbada, DAFF; Dr Chris Preston, professor in weed management, University of Adelaide, Australia; Corné Louw, senior economist, operational services, Grain SA and Elbe Hugo, ARC Grain Crops Institute, Potchefstroom. Photo: Hans Lombard

KUILVOERMIELIES

SC 602 Geel

SC602

Laat konvensionele geelmielie baster
Stadige graanafdroging
Besproeiing: 55 000 plante per ha
Droëland: 45 000 plante per ha
Goeie blaarsiekte toleransie – spesifiek teen grysblaarvlek
Lang snyperiode vir kuilvoer
Kenmerkend hoë kuilvoeropbrengs

SC 608 Geel (nuut)

SC 608

- Medium groeiseisoen geelmielie baster
- Uitstekende opbrengspotensiaal as kuilvoer
- Verbeterde wortel- en stamontwikkeling
- Uitstekende staanvermoë
- Goeie toleransie teen siektes
- Waar siektedruk baie hoog is moet voorkomend gespuit word
- Goeie toleransie teen hitte- en droogte stres

SC 709 Wit

SC 709

- Laat konvensionele witmielie baster
- Verkieslik hoë potensiaal gebiede
- Stadige graanafdroging – ideaal waar kontrakteurs gebruik word
- Besproeiing: 65 000 plante per ha
- Droëland: 45 000 plante per ha
- Goeie siekte toleransie – spesifiek teen grysblaarvlek
- Lang snyperiode vir kuilvoer
- Hoë graanopbrengs sowel as kuilvoer
- Ideaal geskik vir KwaZulu-Natal streek

SC 719 Wit (nuut)

SC 719

- SC 719 is 'n witmielie baster
- Het 'n lang en groot plantstruktuur wat uitstekende vroeë groeikrag toon
- Uitstekende staanvermoë
- Goeie toleransie teen droogtetoestande
- 'n Ideale keuse vir kuilvoer onder droëland- en besproeiing toestande
- Waar kwantiteit die bepalende faktor is sal SC 719 as kuilvoer uitstaan
- Baie geskik vir die Oos- en Suid-Kaap streke

SOJA AS KUILVOER DM 6.8iRR

- Goeie stamkanker toleransie
- Goeie Phytophthora toleransie
- Baie goeie sytak ontwikkeling
- Goeie staanvermoë
- Goeie 'frogeye' toleransie


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aan die groei



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More crop per drop

New drought-tolerant maize soon to be available in SA

New maize seed that can give farmers a significant yield increase under drought stress is soon to be available in South Africa. Marketed under the brand of DroughtTEGO™, this conventional, drought-tolerant hybrid was developed by the WEMA (Water Efficient Maize for Africa) project and was launched by South African seed companies in September 2014, says Dr Kingstone Mashigaide, Department Manager: Plant Breeding & Biotechnology at the Agricultural Research Council (ARC).

Dr Mashigaide said the DroughtTEGO is a new, improved conventional non-GM white maize. WEMA will release its first two new conventional hybrids and will target two to five new releases each year. The first DroughtTEGO hybrid was introduced in Kenya in late 2013 and now, after two planting seasons, is becoming a hit with smallholder farmers in Kenya.

WEMA is a public-private partnership dedicated to delivering drought-tolerant and insect-pest-protected seed to smallholder farmers in sub-Saharan Africa. The project uses conventional, marker-assisted and genetic modification to develop high-quality seeds that will improve yield and, consequently, the livelihoods of smallholder farmers in South Africa.

WEMA is coordinated by the Kenyan-based African Agriculture Technology Foundation (AATF), involving five national agricultural research institutions from South Africa, Uganda, Kenya, Tanzania and Mozambique; CIMMYT and Monsanto.

The objective of the project, financed by the Bill and Melinda Gates Foundation, the Howard G. Buffett Foundation and USAID, is to improve food security and rural livelihood among smallholder farmers in sub-Saharan Africa.



All the partners in the project have contributed their maize germplasm and expertise to help develop new drought-tolerant hybrids. Monsanto has contributed elite global germplasm, breeding and product deployment know-how. According to the AATF, initial plantings in 2013 of DroughtTEGO in Kenya resulted in average yields of 4.5t/ha, a 2.7t/ha increase over the national average of 1.8t/ha.

It is estimated that if the WEMA project achieves its target scale and yield increases, an additional two million tonnes of maize will be produced to feed 14 to 21 million

people in the five sub-Saharan countries involved with trials.

WEMA is working with private seed companies to deliver at least 10 000 metric tonnes of certified seeds produced from at least 25 conventional drought-tolerant hybrids within the next four years. To date, 25 DroughtTEGO hybrids have been approved for commercialisation in Kenya, Tanzania and Uganda.

For further details, contact Dr Kingstone Mashigaide on 018 299 6356 or Mr Kiru Pilay on 011 790 8200.

Balancing water and food security in South Africa

'Water is the key ingredient to food security'

According to a report by WWF-SA, the largest water consuming sector in South Africa is growing crops to provide food for human consumption. Approximately 62% of all water used in the country goes to irrigation.

Issues such as drought, declining rainfall and the over-demand for water causes water scarcity, and along with a decline in farming profitability, has left South Africa with less than two-thirds of the number of farms it had in the early 1990s (WWF-SA).

Water directly as well as indirectly, affects the availability of food, access to food, stability of food supplies and the use of food, and is thus directly linked to food security.

Calculating the water footprint of a product can indicate the relationship between water and food. For example, it takes up to 1 000 litres of water to produce 1 kg of maize in South Africa.

A report by the CSIR (2010) indicates that it also takes about 65 times the quantity of surface water to produce feed-lot beef in South Africa if the feed crops are irrigated – 860 litres for every 500 g grain-fed steak, compared with naturally fed beef.

How can you effectively manage water in the agricultural industry?

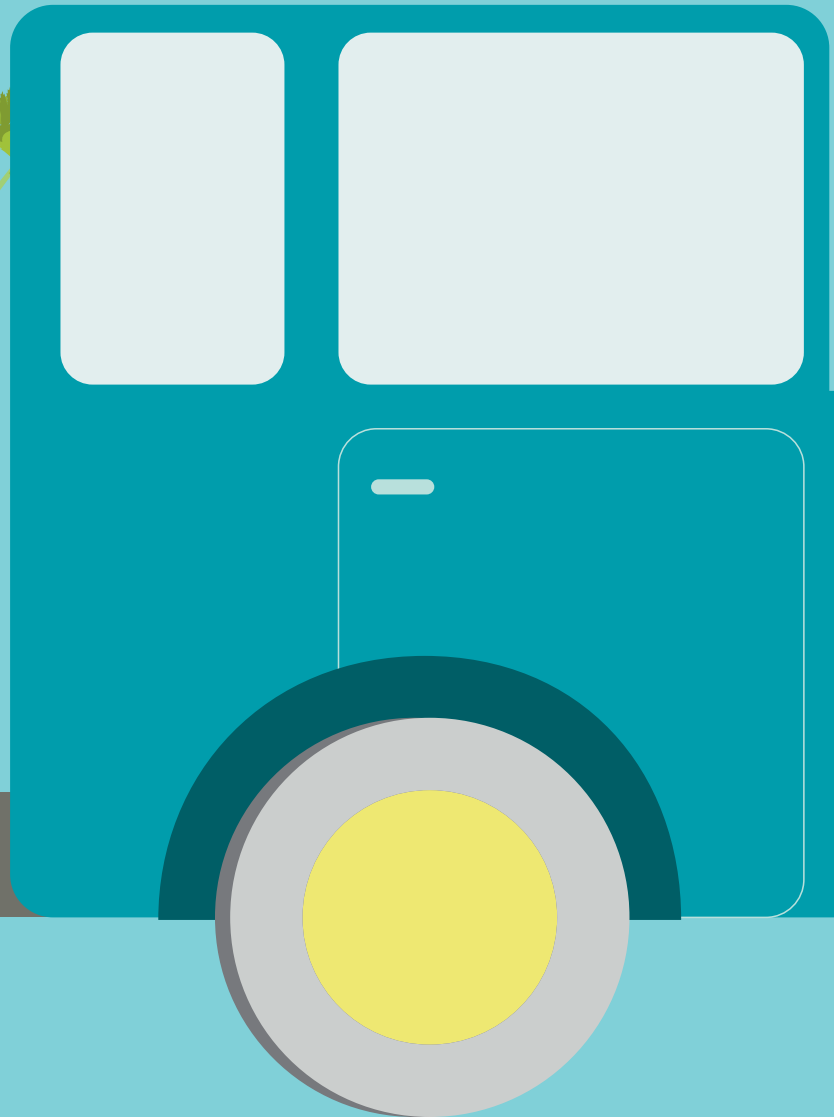
- **Proper irrigation management.** In other words, know your soil type, evapotranspiration rate and rainfall in your area.
- **Reducing water pollution.** Fertilizer and pesticide run-off increases the nitrate and phosphate content in rivers, causing eutrophication. Reduce the amount of chemicals you use.
- **Safe use of wastewater.** Grey water, which is basin, bath, shower and dish water can be used to irrigate, as long as it conforms to the South African Water Quality Guidelines for Irrigation.
- **Water saving production methods.** Investigate ways to reduce your water consumption, such as mulching crops, checking soil moisture and using a rain sensor.



For more information on being Water Wise please visit www.randwater.co.za and click on the Water Wise logo or contact us on 0860 10 10 60.

HOW TO FAST-TRA

Heavy investments are needed in on-farm and off-farm infrastructure along the agriculture value chain



BACK AGRICULTURE

The African Development Bank Group's commemoration of the Africa Year of Agriculture and Food Security, on 29 September 2014 in Abidjan, kept its promises. The meeting comes at a time when the continent is fast becoming an investor destination of choice and agriculture is at the centre of conversations about ensuring that prosperity experienced in an increasing number of African countries becomes more inclusive.

The discussions focused on how the continent could sustainably fast-track its transformation through increased investments in the agricultural sector, through intra-regional trade and price stability, to ensure improvements in food security and shared prosperity in Africa.

The panellists agreed that infrastructure that is supportive of agriculture is weak in Africa, stressing that heavy investments are needed in both on-farm and off-farm infrastructure along the agriculture value chain.

The meeting noted that women farmers in Africa play an extremely important role and should be given priority. It also noted the huge agriculture financing gap and the impact climate change poses on regional

agriculture. Panellists contended that the financing gap can only be met through strategic public-private partnerships.

The key recommendations included the need to practise agriculture differently and innovatively and to engage in agriculture as a business and not only as a means to reduce poverty. This implies taking strong commitments to improve environmental impacts and protecting natural resources.

Other proposals included engaging in agriculture through an integrated value chain approach as well as the need to take measures to fight the effects of climate change.

Concerning youth unemployment in the area of agriculture, the meeting expressed the need for the sector to be made more attractive for youth to participate. This is in line with the Bank's continued efforts to address these challenges, and in solidarity with the African Union's declaration of 2014 as the Africa Year of Agriculture and Food Security.

The event aims to deepen awareness of the need to promote agriculture as the long-term vehicle for driving inclusive growth and sustainable development; and to enhance the visibility of, and bolster the commitment to, agriculture and food and nutrition security.

The meeting was opened by Operations Vice-President Aly Abou-Sabaa, who also launched the flagship publication entitled "GM Agricultural Technologies for Africa".

Professor Wiseman L. Nkuhlu, Chancellor at the University of Pretoria, South Africa, delivered the keynote address on the theme "Agriculture: The Green Gold of Africa".

While recognising efforts made to improve lives in the continent, Professor Nkuhlu affirmed that poverty and chronic hunger had reached crisis proportions and had to be alleviated, with 300 million Africans living on less than US \$1 a day and 200 million chronically hungry.

"Malaria and HIV/AIDS pandemics that were killing millions of Africans a year has to be tackled with an increased sense of urgency," Nkuhlu added.

For her part, the Bank's Special Envoy on Gender, Geraldine Fraser-Moleketi, stressed the urgent need to secure food in quantity and quality to African families, especially to women. "The African woman plays a prominent role. She procures water and prepares food, but is still hungry," Fraser-Moleketi said. The meeting was attended by experts, civil society representatives and the media.

AfDB

Water is life, sanitation is dignity

**An assessment of the status of water affairs
by the Minister of Water and Sanitation**

have been deeply honoured to be asked to serve my country in this very serious business of delivering some of the most basic services to the millions of our people. I take this honour and mandate seriously. It is a mandate that speaks to people across all strata, thus knowing no boundaries.

All of us are impacted upon on a daily basis by these services. All of us cannot do without these services. They really level the playing fields wherever you may be.

As a Ministry and a department we must dispense our responsibilities as aptly described and directed by the Constitution, chapter 2, part 27, that speaks to the rights of all to health care, food, water and social security. This therefore defines who we are and how we need to see our role.

I write this even as we are at the tail end of the recent water supply challenges experienced by the province of Gauteng. This was indeed a perfect storm exacerbated by cable theft and technical glitches, but in the same vein, I believe they helped to open our eyes to new opportunities.

It could be helpful to paint a picture, however small, of what we as a department are all about. We are responsible for the security of supply of water and sanitation in and for the country. Inherent in this is the responsibility for the building of the major water infrastructure to support all of our interests, from domestic, to agricultural, industrial, and all other uses. We are also responsible to maintain this infrastructure, ensuring it performs optimally. All of this entails a lot of planning and understanding where the resources are and how they can best be harnessed for the socio-economic development of our country and society at large.

This therefore dictates that our work needs to be central to all kinds of planning as it cuts across all sectors. The government's plan for provision of services to the people is guided by the National Development Plan (NDP) as a blueprint until 2030. This is a sign of the seriousness with which broad and thorough thinking is being brought to bear in order to coordinate the implementation of all our work.

The department and sector has seen the need to collectively plan in 10-year cycles that would dovetail with the ideals

of the NDP and will include refurbishment of old and ageing infrastructure, as well as maintenance. This came out strongly as one of the outcomes of the recent Water and Sanitation Summit. Ultimately, water and sanitation infrastructure planning and development, guided by the NDP, and placed highly on the agenda of government through Strategic Infrastructure Programme (SIP) 18, will ensure seamless provision of these critical services.

In this regard we have built infrastructure in the form of canals, major and small dams. Of all the dams in the country, our five major dams are: the Gariep, Van Der Kloof, Sterkfontein, Vaal and the Pongolapoort. Together they have a combined capacity of 16 128 389 cubic metres.

As a department we have also indicated during our Budget Vote the work we will do to support local government. We are mindful of the issues that are weighing down municipalities.

We have criss-crossed the country in the last three months, engaging with provinces and municipalities to ensure better coordination and a seamless operation around the provision of water and sanitation.

The waste-water systems in most of the provinces, other than Gauteng, Western Cape and KwaZulu-Natal, are very poorly managed, lack routine maintenance and consequently discharge poor quality effluent back into our rivers and streams. As such, most of the municipalities performed poorly in the 2013 Green Drop certification programme. We need to turn this around as it is a critical factor that can lead to pollution of our streams, rivers and other water courses.

The Department of Water and Sanitation is the sector leader and cognisant of the fact that we cannot be a lone ranger; co-operation with the sector cannot be downplayed, including strengthening inter-governmental relations.

The country, as one of the 30 driest in the world, must take seriously the issues of water conservation and demand management. It cannot be left to just one sector to do so. We need all our big and small users, domestic and commercial to partner with us in this regard. Together we can do more to save this precious resource.

Our vision to bring more skills into the sector must continue to find traction. Our learning academy was established with the objective of filling the skills gaps in specific technical areas, including overall water supply value chain and planning and building capacity for the immediate, medium and long-term needs of the department.

It is focused on supporting academic programmes through bursaries and experiential training. In addition young graduate trainees are undergoing a mentoring programme that includes on-the-job training, active involvement and participation in real-time projects, and attendance of specialised training interventions.

We are also in partnership with Cuba through the Cuban skills development programme. In this regard, we continue to benefit from the RSA-Cuba Agreement that was signed in 2013 to exchange and develop expertise, while appreciating the long-standing cordial and harmonious relations between the two countries.

The areas of co-operation include fields of geo-hydrology and engineering services, exploitation of available resources, development of infrastructure for water supply, capacity building, as well as water management.

We are confident that this process, married to the work of our Learning Academy, will avail the requisite skills for our country as it develops further.

In addition, we enjoy a healthy relationship with institutions of higher learning. They run programmes for students that have been granted bursaries for the full time pre- and post-graduate studies on water-related courses.

As the new Department of Water and Sanitation, we are cognisant of the challenges ahead in terms of sanitation backlogs and high expectations. We are well aware of the enormity of the task ahead; however we cannot claim freedom for as long as some of our people are still without dignity. The most affected provinces are Gauteng, Free State,

Western Cape, North West, Eastern Cape and Northern Cape.

We have also invited people to bring alternative technical solutions which are "implementation ready"; they are encouraged to put demonstration units on the ground for us to gauge the viability and acceptability of such solutions. There must be community involvement directed towards community development, education and awareness, resulting in the community being an active partner appreciating, owning and protecting the infrastructure.

I must declare, on behalf of the Deputy Minister and myself, that we will lead this new Department of Water and Sanitation prudently. Ours is to ensure that our people deservedly receive the kind of service expected from those who have been entrusted with this responsibility.

It is true that "Water is Life, Sanitation is Dignity".

NP Mokonyane, Minister of Water and Sanitation



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Better together

The story of an innovative farming approach in the Ficksburg area

Despite the daunting challenges facing many in the agricultural sector today, a small group of Ficksburg farmers are proving that the opportunities can far outweigh the obstacles.

FARM Limited (www.farmlimited.co) visited a farm in the Ficksburg area to explore this unique collaboration. Here, they came across a fresh approach to farming—showcasing how farming units can work together to be more sustainable while simultaneously becoming an integral part of the fabric of a community and its social upliftment.

It's an innovative approach that very nearly didn't happen. Back in 2010, five Ficksburg farmers were almost ready to give up entirely until they turned to their faith. Faced with their own separate challenges (from a deadly farm attack to the struggle for ongoing financial sustainability), all five found themselves at a crossroad—trying to decide whether to carry on farming or pack up and pursue other ventures.

But as each weighed up their options, one question kept popping up: "What about the people?" Almost 200 people stood to lose their jobs and income if the farming operations ceased to exist. The spillover effect into the local community would be devastating.

"What about the people?"

This nagging question led to a turning point for the group... a strong conviction in their joint belief in God catalyzed a shift of perspective that would ultimately lead to them pursuing a progressive and brave new approach to farming.

Better together

Instead of letting the challenges bring them down, the group, having received a strong message of faith, chose to rather come together to find a new way of dealing with the harsh realities that face those involved in agriculture and the communities around them. Choosing to practise the biblical principles where they put community and relationships first, the result has been a great success.

The five farming families decided to pool their farms, resources and assets—endeavouring to make a profit, while also attempting to tackle the problems of crime, unemployment and education in their local community.

Formed in 2010, the MD Foundation was the result. Land and assets were amalgamated to form a stronger farming operation and are farmed as one company.

Farming for good

Just four years later, the MD Foundation has proven to not only be sustainable for all the families invested, it has become a vital part of the community's social upliftment landscape.

"Not only were the jobs of 180 permanent employees saved, but we now have closer to 220 people employed and we're still striving to create more work for more people," says Lindie van Malitz of the MD Foundation.

"There are so many unemployed people just sitting around each day. So we try to use people where we can instead of trying to see how to cut back on labour. We believe





having a job creates a sense of self-worth amongst people and enables them to care for their families.”

This is just one aspect of upliftment that the MD Foundation pursues.

Lindie continues, “We’ve started a school that grows each year as the children grow. There’s also a new healthcare centre that provides care for people who need proper medicine or nutrition, but are too weak to care for themselves. Due to the care and commitment of the staff at the centre, many critically ill patients are nursed back to health here and are able to return to their homes.”

But is it sustainable?

With so much philanthropic work being undertaken, one might assume that the actual business of farming may be taking a backseat, but the opposite is in fact true. The MD Foundation has grown in success and sustainability each year and today, the farming units consist of a dairy unit, beef cattle unit, sheep unit and grain-producing unit. In 2013 and 2014 the Foundation was awarded the Free State Elite Dairy Herd award.

In Lindie’s words: “Our approach just makes sense. The cost benefit of sharing implements and other resources makes sense.”

A mutual commitment to unity in their belief and the same values also underpins the success of this collective:

“Our operation would simply not work without our commitment to each other and God. Our focus is always on relationships and unity. Business, farming and everything else



comes after this. In MD, you cannot be selfish and demand that things are done according to your own way. You have to submit to the unity of the group.”

Their commitment to a strong team ethos extends further than the five families involved too. When congratulated for their award, they are quick to emphasise the bigger team behind the title.

“The Dairy division is made up by a team of people... We have teams of people that believe in what they do and are proud to do it... They are not merely workers; they are our family.”

Yet despite the MD Foundation’s success, all stakeholders remain aware of the daily challenges that all of us in the agricultural sector face.

“Farming is not for the faint-hearted. We live in a country that is constantly in political turmoil and farming is often used as a tool to cause upset among both farmers and their workers. Meanwhile most of us have to still get up each morning to face a new day and create hope among the hopeless.”

How is this possible on a daily basis? Lindie’s final advice:

“We pray—a lot! Also, love your neighbour just as you love yourself. Really believing and acting on this will build a unified country.”

Working as a collective is certainly not for every farmer, but the success of this initiative is worthy of respect and perhaps even replication. It’s a picture of what is achievable when a few courageous people get together to do what they would have struggled to do on their own: create a sustainable agricultural business while also strengthening the local community through various social upliftment programmes. Of course, a deep mutual respect for one another, as well as a common set of values and vision, are critical to success. But with these non-negotiables firmly in place, it would seem the glass really is half full and rising.

For more information, visit www.mdfoundation.co.za.

Julie Williams for Twenty Two Media

Tractor and combine harvester sales

Sales figures reflect cautious optimism

September tractor sales of 588 units were approximately 12% up on the 523 units reported in September last year. Sales for the nine months year-to-date are now approximately 3% down on the same period last year. September combine harvester sales of 16 units were five units down on the 21 units sold in September last year. On a year-to-date basis combine harvester sales are now approximately 5% down on the same period last year.

Market sentiment has moved from optimism to cautious optimism this month. Most farmers, particularly those in the eastern summer cropping areas, are anxiously waiting for rain. Although maize prices have fallen in recent months, good crop yields were experienced in most areas. This has enabled farmers to buy ahead of possible equipment price increases necessitated by the recent fall in the value of the rand. Short term prospects for equipment sales are likely to be dependent on weather conditions during the next three to four weeks, the period leading up to summer crop plantings. Industry expectations are still that the market in 2014 will be between 5 and 10% down on last year.

Industry sales reported by SAAMA are for the following companies: Argo Industrial (Landini, Kioti and McCormick), Bell Equipment (Bell), Dicla (Farmtrac and Chery), Eqstra Agri Equipment (Deutz Fahr and Same), John Deere South Africa (John Deere), Kempston Agri (Claas), Michigan Equipment (Tafe), New Holland South Africa (New Holland), Northmec (Case IH) and Valtrac (Valtra).

Contact: Mr Wynn Dedwith (082) 554-9202 or Dr Jim Rankin (011) 453-7249

Wynn Dedwith, Chairman: South African Agricultural Machinery Association

Retail sales of agricultural equipment during September 2014 were as follows:

	Month		Percentage	Year-to-date		Percentage
	September		change	September		change
	2014	2013	%	2014	2013	%
Tractors	588	523	12.4	4 833	4 986	-3.1
Combine Harvesters	16	21	-23.8	279	295	-5.4





Change the system

Our planet is changing, and so must our food system

With the global population predicted to reach 9 billion by 2050, we collectively face a dual challenge: ensuring that everyone will have access to affordable, nutritious food without decimating the Earth's natural resources in the process.

This is easier said than done. Our current food system is dysfunctional, both in its impact on people and the planet. Unless we change course, we will fail to meet this challenge.

Today, millions do not have enough to eat and billions lack the right nutrients to be healthy. Three UN organisations—the Food and Agriculture Organization (FAO), the World Food Programme (WFP) and the World Health Organization (WHO)—have just published their annual 2014 report on global food insecurity. Their report highlights that despite some evidence of progress, 805 million people—or 1 in 9 people—still suffer from hunger.

Poor diets stunt the growth of 162 million children every year, 97% of them in the developing world, trapping communities in a cycle of poverty and ill health. The

consequences for those affected can be devastating. Malnourished children tend to start school later, have poorer levels of concentration and lower scores in cognitive ability tests. Many carry these burdens through into later life.

According to the WHO, a staggering 2 billion people are affected by iron deficiency, which contributes to anaemia. More than 250 million children suffer from Vitamin A deficiency which is a major public health challenge in more than half the countries on the planet, with half a million children going blind each year. Half of these children die within 12 months.



Meanwhile, 1.3 billion of us are classified as overweight or obese, fuelled by a food system that is damaging not just our bodies but the environment too. If trends towards Western diets continue, the impact of food production alone will reach, if not exceed, the global targets for total greenhouse gases.

Food waste

Our current agricultural production system is inefficient. We continue to destroy tropical forests for agricultural expansion and this contributes 12% to the total warming of the planet today. And much of the food we produce, we waste. Figures from the Institute

of Mechanical Engineers show as much as 2 billion tonnes of food—50% of all we produce—never make it onto a plate.

What is a crisis for many now could become a catastrophe for more in the future because of the effects of climate change. Climate change is already making people hungry—disrupting crop yields, pushing prices up and increasing food insecurity for large numbers of the world's population.

And it is not just food but nutrients that are becoming scarcer as the climate changes. A study led by the Harvard School of Public Health found that rising levels of CO₂ are stripping staple foods of vital nutrients,

rendering crops such as wheat, rice and soya less nutritious for millions of people in developing countries. If these climate and socio-economic trends continue, the number of under-nourished children in Africa alone is expected to rise 10-fold by 2050.

It is against this backdrop that world leaders have come together at the Climate Summit in New York to secure buy-in for a global climate deal next year. In the same week, in the same city, governments meeting at the UN General Assembly are reviewing proposals for the post-2015 development goals that aim to eliminate poverty and hunger for good.



Avoiding a downward spiral

If we fail to act, we risk a downward spiral in which poverty and climate impacts reinforce each other. It is the poorest communities that will suffer the worst effects of climate change, including increased hunger and malnutrition as crop production and livelihoods are threatened. And poverty is a driver of climate change, as desperate communities resort to unsustainable use of resources to meet current needs.

But there is an alternative path. In the face of climate change, our basic food systems have to be reimagined so that the world is producing nutritious food in a more sustainable way that increases livelihoods.

This means supporting the world's smallholder farmers so that they are able to grow, sell and eat more nutritious foods; it means converting degraded lands into

productive farms; fortifying staple foods with essential nutrients like iron and zinc; and developing alternative sources of food.

It also means scaling up existing sustainable interventions that we know already work well like breastfeeding for infants. All can play a role in reducing malnutrition and reducing the carbon footprint of the food we eat. All will rely on ambition, innovation and leadership.

It's only by bringing together business, civil society and governments that we will find solutions that can be scaled up for maximum impact. Countries, companies and NGOs can create a better future, leading by example and catalysing action in their peer groups or industries. But we need ambitious targets and a common vision. We cannot afford to talk about hunger without addressing climate change, food production

without sustainability or growth without good nutrition.

As climate and development goals are debated this week and in the months ahead, it should be with these links in mind. A healthier, more sustainable future is possible. But, the sustainability, food and health nexus must be dealt with together if we are going to fix the global food system.

Paul Polman is CEO of Unilever, a member of the Scaling Up Nutrition (SUN) Movement lead group and chairman of the World Business Council for Sustainable Development. Marc Van Ameringen is executive director of the Global Alliance for Improved Nutrition. He is the recipient of the 2014 World Food Program Hunger Hero Award.

Paul Polman and Marc Van Ameringen

Hauling South Africa's crops safely



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Climate-smart agriculture

Family farming: Feeding the world, caring for the Earth

The ARC's Climate-smart agriculture (CSA) research is underpinned by ecosystems-based soil-water-nutrient-biodiversity conservation to help build resilient ecosystems, resilient livelihoods, and effective food systems. These CSA projects to promote food and nutrition security embrace both the theme and the six pillars of World Food Day 2014. They also significantly contribute to South Africa's Fetsa Tlala programme to end hunger.

ARC's CSA projects started 20 years ago with a peri-urban vegetable production project in the Stanza Bopape informal settlement at Mamelodi, Pretoria. This community was poor, vulnerable, suffered hunger, and had little, if any prospect of improving their livelihood to a socially acceptable standard of living. The ARC, in partnership with the Human Sciences Research Council (HSRC), experientially trained residents selected by the community in low input cost conservation agriculture practices and the use of a low-cost irrigation system which was designed by the ARC. The residents were further empowered by formal lectures on aspects such as the principles

of conservation agriculture, soil fertility, risk-smart approaches including alternative food systems to ensure sustainable long-term food security despite climate shocks and the effects of climate variability and change, leadership and organizational skills.

Since 1994, the ARC's action-oriented CSA practices research, technology development and applications have mushroomed all over the country and have spilled over into neighbouring countries.

As South Africa is a water scarce country, a mantra of the ARC's CSA is more crop per drop to conserve water and to improve the productive use of water within its soil-water-nutrient-biodiversity conservation approach. The ARC's rainwater harvesting and conservation (RWH&C) technologies involve the harvesting of runoff for crop and livestock production. Communal and homestead farmers who adopted ARC's RWH&C technologies in the Eastern Cape, Free State and Limpopo Province, experienced maize yield increases varying between 11 to 28% and rainwater productivity increases of up to 7%. Due to a substantial increase in harvest, the farmers concerned became food secure and generated income by selling excess produce. This income enables them to enjoy

nutrition security and health which are dependent on a balanced diet. RWH&C also underpins sustainable rural development and economies. Another advantage of the RWH&C practice is reliable production even during periods of drought and water stress. This is of critical importance for household food and nutrition security as well as to ensure the resilience of ecosystems and livelihoods.

RWH&C technology development and application projects are funded by the Water Research Commission and the Department of Agriculture, Forestry and Fisheries and more than 1 500 households in 69 communities have already been successfully trained in technology application.

The RWH&C (IRWH and mechanised basins) have been implemented on 11ha in KrwaKrwa (Eastern Cape) and adopted by 75 farmers in Lambani (Limpopo) on an area of 75ha. These community members have harvested more grain for household consumption on RWH&C than on conventional tillage. By applying RWH&C practices for food production, community members are now able to produce more than is needed for household consumption and the surpluses can be sold to improve household income



A CSA project in the Eastern Cape and KwaZulu-Natal Province funded by the Department of Rural Development and Land Reform, focuses on the demonstration and assessment of conservation agriculture technologies to ensure the sustainable use and management of the natural resources while enhancing food production, entrepreneurial development and job creation. The impact of this project is that 231 farmers received Jojo tanks to harvest rainwater; 214ha of land were converted from low yielding traditional production practices to improved conservation agriculture practices and benefited 636 project participants, 262 farmers received training in vegetable production, and 2 221 long- and short-term jobs were created.

The benefits of the application of CSA practices and technologies are multiple and often exceed typical CSA benefits. An ARC CSA project in the Free State Province aimed at reducing the impact of climate risk on food production, prepares community farmers, also in future readiness, to minimise their vulnerability to the effects of climate variability and change. The project also focuses on renewable energy. The biogas digester part of the project trained and

hired 25 youths from the surrounding area to install and maintain biodigesters at nine project sites. Gender and youth as well as job creation and economic development opportunities are significantly boosted by this project.

The question arises, involuntary, if the CSA benefits claimed by the ARC are scientifically founded. The answer is yes. Until fairly recently, conservation agriculture (CA) practices were promoted as a cost effective, resource-saving agricultural crop production system, but these benefits were never quantified. The ARC's quantification of the benefits of CA was a first in South Africa.

Qunu in the Eastern Cape was selected as a challenging research area to quantify the benefits of CA practices. Qunu is marred by land degradation, low crop yields, crop failure and food insecurity. The Qunu farmers used traditional production practices.

Research over six growing seasons under rainfed conditions was conducted on a commercial scale, to compare the results of maize cultivated by means of traditional production practices with those of production by CA practices, intercropped and rotated with legumes such as soybeans. Using CA practices with maize and legume

either in rotation or intercropped, increased maize yield by 297% and 208% respectively and hiked gross margin from R633 to R2 566 per hectare. This was simply amazing as maize production with traditional practices, over the same six growing seasons, experienced complete crop failure during three of the six seasons.

Other benefits of CA now quantified, include the improvement of the soil fertility status, the reduction of soil compaction, higher soil water regimes during the vegetative growth phase of crops, more nutritious grain and biomass benefiting both humans and livestock as consumers and, equally important, less greenhouse gas emissions into the atmosphere. Greenhouse gases are at the root of climate change.

The ARC can state with confidence that CSA is an environmentally beneficial and economically viable crop production system suitable for both smallholder and commercial farmers in the area of the research.

CSA as effective food production system is, indeed, the key food production system to help build resilient ecosystems and resilient livelihoods and to achieving the theme of World Food Day 2014 namely Family farming: Feeding the world, caring for the Earth.

Brewing up a storm

African home-brewed beer is high on Heineken's list

It tastes sweeter than most pilsners with a slight metal aftertaste. Its golden colour and intense flavour reminds you of a good German beer. But what makes Harar Beer special is its provenance. It is made in Harar, the fourth most holy city to Muslims.

It is a 563km bus journey east from Addis Ababa in Ethiopia, to Harar. The journey is a long, tiring one through scrubland, and the biggest danger is wandering camels. You enter the walled city, inhabited since the 7th century, through its Moorish gate, to find yourself in the bustling home of the 76 000 Adaris, the only people allowed to live within the walls.

Harar, or Gey as the locals call it, has 82 mosques including the Sheikh Abul Bakir mosque built in the 11th century. For centuries the city remained a fortified city not open to infidels. Any non-Muslim found within its walls was summarily executed.

The French poet Rimbaud lived in the city and his home is being renovated by UNESCO. He worked as a teacher, but also supplied guns to the local tribes. It was his guns that were used to defend the city and defeat an Italian army in 1896.

The main gate, the mythical one that adventurer Sir Richard Burton (the first white person to visit Harar) used to enter the city, adorns the Harar Beer label, which will be available to beer connoisseurs across the

globe if brewing giant Heineken has its way. The Dutch brewer has been growing its investment in Africa and now spends \$690-million a year on expansion and marketing on the continent.

Africa is a market with huge potential

At the World Economic Forum in Nigeria earlier this year Siep Hiemstra, Heineken president for Africa and the Middle East, explained that Africa was a market with huge potential. "We are strong believers in the growth of Africa, the economies of Africa, the consumer base, the middle class. We continue to invest heavily."

Along with its latest acquisition, a brewery in Kilikinto just outside Addis Ababa, the beer maker has three breweries in Ethiopia alone, excluding those the company is a partner in or owns—some 46 breweries across the continent.

According to Tom de Man, the previous president of the Africa office and the man who grew Heineken's business from €846-million in 2003 to €2.8-billion by 2010, Africa has a negative reputation but its economies are growing at a faster rate than the US and the Eurozone. In an interview with Bloomberg he said, "We only know the bad messages about it—civil war, genocide—but in the olden times, it was a developed area, and you see slowly and surely things are coming back."





Heineken's expansion is being driven by Africa's rosy economic future and the continent's growing middle class. But the company has deep roots on the continent: it built its first brewery in 1923 in what was then the Belgian Congo.

De Man is familiar with the challenges of building breweries and doing business in Africa. He was a brewery manager in the Nigerian town of Aba in 1973. The only means of communication with the outside world was shortwave radio, but his experiences there provided the blueprint for Heineken's expansion across Africa.

Bad roads, where they exist, infrastructure that has been allowed to decay and the difficulty in finding equipment make Africa a challenge. But the rewards are worth the struggle. "Thinking 'invest before the market' has proved very successful. There's so much growth that it's a challenge for everybody to make sure you install sufficient capacity all the time in those countries to maintain and grow your positions."

Heineken has tailored its logistics, employing staff with specialised skills to operate in Africa. However by 2020 the company wants 60% of its needs to be sourced from local farmers and manufacturers. According to Hiemstra the purchase of the Harar Brewery is an investment in the company's future in Africa. "It shows that we're not only here to make profits."

The numbers for beer consumption make interesting reading. On average Africans drink a miserly 70 litres of commercially brewed beer per year. But there is a large thirsty market for home-brewed beer—four times the size of the commercial market—that companies like Heineken are hoping to tap into by buying local breweries.

It is this niche market that has driven growth for brewers. Harar Brewery produces Harar Sofi, a non-alcoholic drink for the city's Muslim population. De Man explained, "Operating in Africa is not straightforward. By helping to set up a local supply chain, brewers could also improve the quality and image of local beer, creating a win/win situation."

*Sulaiman Philip
medioclubsouthafrica.com*

Boosting agriculture

Intertek – leading quality solutions provider to industries worldwide

From auditing and inspection to testing, training, advisory, quality assurance and certification, Intertek adds value to customers' products, processes and assets. With a network of more than 1,000 laboratories and offices and over 36,000 people in more than 100 countries, Intertek supports companies' success in a global marketplace.

"Intertek's Agricultural Services provide an extensive array of inspection services designed to reduce the risks associated with commodity trading, by monitoring the quality and quantity of cargo from source to destination," says Charles Botha, Sub Sahara Africa Agri Regional Manager.

"As a global operator with strong regional networks, Agricultural Services takes an integrated approach to apply global solutions to local challenges, protecting customers interests all over the world. Our experts offer seamless support interlinking inspection services and offering traceability throughout the entire supply chain."

Intertek ensures clients receive a professional and consistent service by reducing risk on a global basis, around the clock by offering inspection services, testing and assessment, traceability services, risk management and fumigation.

"We assess the quality and quantity of agricultural products from source to consumer," Botha explains. "We provide certification services to businesses across the whole supply chain of worldwide agricultural commodities. We also provide 'upstream' agriculture services, such as precision farming and farm sustainability assessments, to ensure that agricultural commodities are produced efficiently and sustainably."

"Each agricultural product has its own particular characteristics and therefore

unique testing and inspection requirements", says Botha regarding then types of testing undertaken for agricultural products. He explains that each product is tested to ensure it is fit for purpose or for direct human consumption (as per IFIA standards), and that stock inspections are conducted, and cargo loading, discharging, weighing and screening supervised.

In terms of the regulations that farmed products have to comply with before they can be sold on the market, Botha explains that it depends on the destination of the cargo. "Certain countries may have specific import regulations regarding agricultural products. For example, phytosanitary (plant health) and sanitary requirements often need to be met before farmed products can be sold into a country. Non-GMO and Non-Radioactivity certification of the agricultural goods is also a requirement."

The overall objective of Agri services, like precision farming, is to enhance agricultural productivity. "Precision farming is about making optimal use of farm inputs in order to maximise agricultural output, i.e. crops," says Botha. "With advanced data technologies like GPS-based soil mapping, a detailed analysis of the land on a farm is made. On that basis, the right amount of water and fertilizers can be applied at exactly the right place and the right time."

Food provenance (knowing where and how our food is produced) is becoming increasingly important to consumers. Intertek Agri and Food's presence all along the supply chain – from Farm to Fork – is key in food traceability programs. "The monitoring performed by Intertek of agricultural produce from the field, during transformation, and up to their final sale for household use, assists in reliable certification of food provenance to consumers", describes Botha. This includes the genetic testing of crops. "We can determine if goods have been genetically modified or

not and we can certify them accordingly," he says. Intertek views biodiversity an important aspect in the sustainability evaluation of farms, as well as the fair treatment and payment of workers.

Intertek is able to offer clients access to a global network of modern laboratories and state of the art inspection services. Our facilities are web-enabled and staffed with highly professional specialists.

Recently, Intertek established an Environmental Division that assists clients with environmental monitoring and testing. "Our Environmental division has a dedicated team which is able to assist clients with legislation compliance by recording the impact their activities have on the environment", says Botha.

The Environmental laboratory is based in Johannesburg and specialises in Environmental testing of Land, Water and Air. Intertek is also working closely with industry as South Africa awaits the introductions of Biofuels. Intertek will be ready to support and enable their clients in this dynamic new industry.

"Our goals for the next 12 – 24 months are to not only to continue with our existing services but through improved quality systems, ensure that our customers enjoy improved services. Our global and regional footprint is to be further expanded with particular emphasis on laboratory services specifically customised to meet individual requirements", says Botha. The Intertek group has embarked on a 'One Intertek' strategy, which is already providing our existing customers a much broader range of services.

IFIA is the trade association for inspection agencies and other organisations that provide inspection, testing and certification services internationally.

Intertek

Precision Farming

The Intertek Solution

The Global population is increasing, placing an increased strain on the natural resources and creating a dependency on crop yield. With 60% of the world land found in Africa, and yet only 3.7% of arable land utilised the opportunity to develop sustainable agricultural practices and techniques becomes essential.

Precision agriculture practices can significantly reduce the investment in nutrient and crop inputs, whilst boosting yields, and providing you with substantial savings on your investment.

Working in Partnership with Intertek can provide you with bespoke solutions to your needs, accurately targeting the crops requirements and providing recommendations to increase revenue.

By observing and responding to your land you are able to capitalizing on the lands natural resources, accurately apply the right amount of input in the precise location, at the right time. This not only benefits your crops yield this year but creates a sustainable environment for future crop cycles.

With you all the way

Intertek through our Global Footprint and Local Expertise is able to offer all services in terms of Precision Farming including:

- GPS Soil Mapping and Sampling
- Analysis of Samples drawn
- Interpretation of results
- Recommendations
- Modification of equipment to allow variable rate applications of input*
- Supply of electronic data for variable spreaders*
- Management of all data pertaining to Soil Services
- Direct access by client to his/her data in real time to allow for informed decisions.

Our service

The solution is simple, increase the Output (Yield per Hectare) whilst reducing the Input.

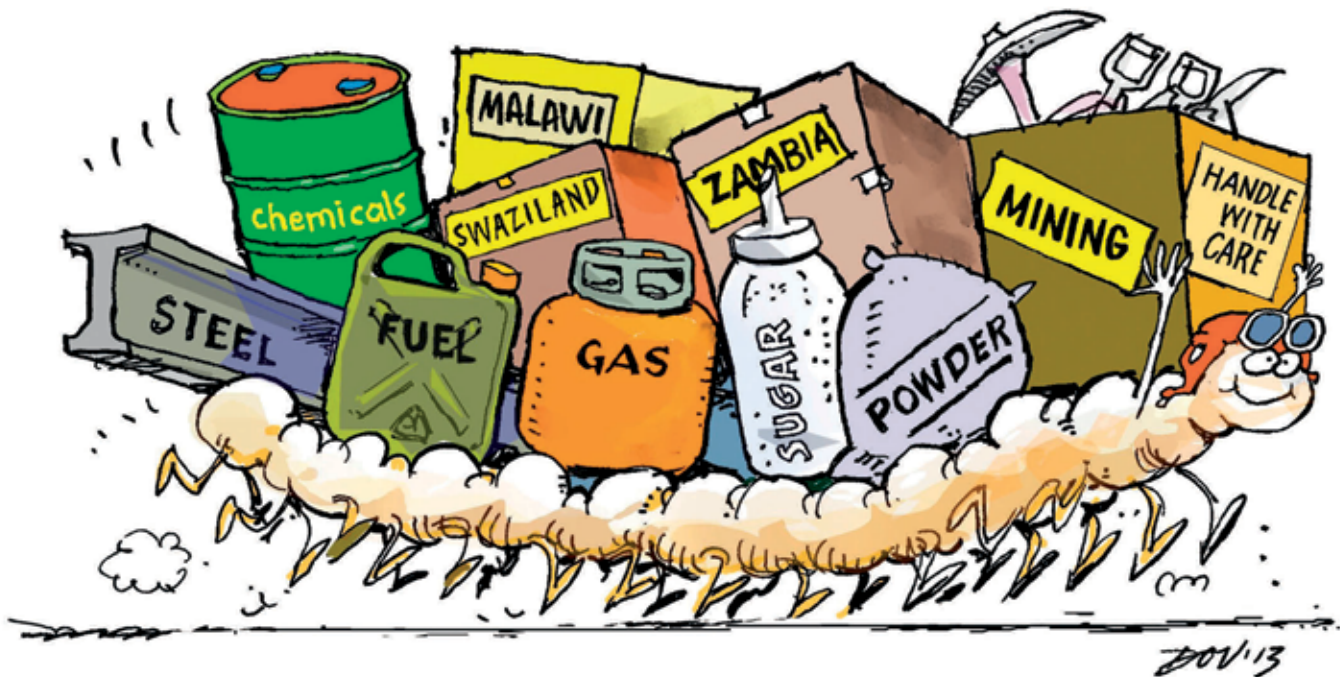
- **Soil analysis** will help managing soil fertility
- **Soil physical** properties will determine crop potential, tillage practises as well as farm layouts
- **Plant analysis** will help to evaluate and manage the nutrient status of a crop during the growing season
- **Water analysis** will determine the risk involved in irrigation
- The above information will supply information to build an ideal environment for soil micro organisms to work effectively thus **increasing yields.**

Intertek

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We don't talk logistics solutions, we walk it

Being able to deliver high-quality logistic and supply chain solutions requires having more than just a one-size-fits-all approach. At Cargo Carriers we pride ourselves on being customer centric and while vertical specific we are always looking for challenges and opportunities in new industries and regions. We strive for the highest levels of reliability in all that we move. With each customer comes an individual set of safety, health, environmental and quality requirements, and our innovative and service orientated offering means that we are consistently able to provide for your specific needs.

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