Towards DROUGHT RESILIENCE

LandCare insights

RISKY BUSINESS: Agricultural Insurance

Research and news magazine of the Western Cape Department of Agriculture
Creating opportunities

“When women are empowered and can claim their rights and access to land, leadership, opportunities and choices, economies grow, food security is enhanced and prospects are improved for current and future generations.” — Michelle Bachelet, Under-Secretary-General and Executive Director of UN Women.

During the month of August, Women’s Month, we celebrated women in agriculture at various events. These are women who exceed expectations when they are given the opportunity to show their worth. The World Farmer’s Organisation brilliantly encapsulates the sentiment in the following paragraph: “Women are the backbone of the development of rural and national economies. They comprise 43% of the world’s agricultural labour force, which rises to 70% in some countries. In Africa, 80% of the agricultural production comes from small farmers, who are mostly rural women.”

When considering agricultural opportunities, the focus should not only be on production, but also on preservation, processing and marketing of agricultural products. Sustainable opportunities and focusing on modern agricultural techniques should be pursued.

The article “Western Cape shines in Female Entrepreneurs Awards” (page 6) in this edition of Agriprobe also acknowledges the outstanding achievements of outstanding women in our own province.

Let us continue to contribute towards a common goal, regardless of our role in the agricultural sector, the goal of creating opportunities not only for ourselves, but also for others. With the increasing disparity between rich and poor, let us not be short-sighted, but let the future look favourably upon us for living Provincial Strategic Goal number 1: “Create opportunities for growth and jobs”. AP

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ON OUR COVER

A two-day workshop hosted by the Western Cape Department of Agriculture was held recently with the sector to discuss the current drought. All stakeholders gave input to an action plan in order to mitigate the impact.

Image © Arie van Ravenswaay

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Further strategies to mitigate the impact of the drought on the Western Cape’s agricultural sector were recently announced. The Western Cape Department of Agriculture hosted a two-day dialogue to discuss the current drought. The event formed part of the SmartAgri plan, which is a co-ordinated climate change response plan for the government, academia and the private sector.

Key items on the agenda included:

- Overview of economic impact of the drought on the province’s agriculture sector.
- Climate change and the future of Western Cape agriculture.
- Challenges facing commercial and smallholder farmers as a result of the drought.
Drought and disaster intelligence.

Anton Bredell, the minister of Local Government, Environmental Affairs and Development Planning in the Western Cape, said the event took place at a critical juncture given the ongoing drought conditions across the province.

Stakeholders in the sector, such as Agri-West Cape, AFASA and academics, lead discussions. Over 100 delegates, including farmers, analysts and national and provincial government officials, attended the drought dialogue. The sector also shared the plans they have used to cope during the drought.

Ministers Winde and Bredell briefed the media on the final day of the event. “As part of our SmartAgri roll-out, it is our goal to have dedicated teams in place by the end of this event to drive action plans,” said Minister Winde. “This will ensure our agriculture sector is more resilient to the impact of extreme weather events, which are likely to increase.”

Minister Bredell said: “The dialogue will provide an ideal platform for a thorough discussion around the Western Cape Climate Change Response Framework and Implementation Plan for the Agricultural Sector, also known as the SmartAgri plan. SmartAgri is the first ever sectoral climate change response strategy for the province and presents a ‘road map’ for the agricultural sector towards a more productive and sustainable future.”

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For more information, contact Bronwynne Jooste: Bronwynne.Jooste@westerncape.gov.za
This year marks 60 years since the historic event on 9 August 1956 when women of all races marched to the Union Buildings in Pretoria in protest against the country’s oppressive pass-laws. The month of August is therefore annually celebrated as Women’s Month.

The Female Entrepreneur Awards competition is a platform to showcase our women entrepreneurs in agriculture’s contribution to the agricultural sector and the food value-chain in general, irrespective of the size of their agriculture enterprise and whether it is a subsistence enterprise (household or community based), smallholder and/or commercial farm. The competition furthermore re-enforces and builds capacity amongst women with different expertise, knowledge and experience ... a strong show of solidarity with the common objective of meaningful participation in the agricultural sector.

The Female Entrepreneur Awards programme started in 1999 and is an initiative of the national Department of Agriculture, Forestry and Fisheries (DAFF), which partners with the various provincial agriculture departments. It culminates in a national event where the provincial winners of the various categories compete with each other for the coveted national prize in each category.

The programme seeks to acknowledge,
encourage and increase the participation of women, young women and women with disabilities in the sector and in doing so emphasise the significant role women play in food security, job creation, economic growth and poverty alleviation.

Each year the competition becomes stricter in terms of its rules and criteria, thereby creating a buzz of real entrepreneurial spirit and competitiveness amongst the competitors. Ongoing liaison with DAFF through the organising coordinators to market this competition and to attract a greater pool of female entrepreneurial agriculturists remains a priority, as well as how best the criteria for each category can be defined and the practical challenges can be addressed.

As part of the Women’s Month festivities, the Western Cape’s top female entrepreneurs in agriculture were celebrated at an event hosted on 11 August. Alan Winde, Minister of Economic Opportunities, said it is important to celebrate the Western Cape’s entrepreneurial heroes and urged the winners and finalists of this year’s competition to become change agents and bring more women and young people into agriculture so that the sector can grow inclusive of and within the context of government’s land reform agenda.

One of the highlights of the event was the speech by Tenjiwe Kaba, last year’s provincial and national winner in the category Best Subsistence Producer. She eloquently and in layman’s terms gave an overview of how she started in the sector, her passion and commitment to agriculture and her drive to uplift her community ensuring participation in the agricultural sector. She is a true stalwart, representing agriculture in her community.

The provincial winners competed at the national event in Polokwane on 25 August and once again did the Western Cape proud. Lindelwa Mabuya won Best Female Worker, while Caroline de Villiers was named Top Entrepreneur: Commercial. This is a remarkable achievement because it is the first time the province has won two awards at this prestigious event.

Once again, congratulations to all the provincial winners and finalists of 2016. As your partner in agriculture, the Department will continue to support initiatives such as this and to create platforms and networks for sustainable economic growth for our women agricultural entrepreneurs in the province. AP

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Lindelwa Mabuya, national winner in the Best Female Worker category.
On 25 May business leaders, key government officials, African consulate representatives and other major industry role-players in the Western Cape gathered at the Artscape Theatre in Cape Town to network and celebrate Africa Day, the day when in 1963 the now African Union (AU) was founded as the Organisation of African Unity. The message from the day was clear: Whilst a weak global economy has led to a slowdown in regional trade and integration across the globe, Africa remains one of the most exciting prospects for the growth of the Western Cape economy.

Wesgro hosted the event and CEO Tim Harris opened proceedings, highlighting that in the past year, Africa has overtaken Europe as the biggest destination for Western Cape exports.

The growth in exports to Africa has been driven mainly by strong growth to a few key markets such as Kenya, Angola, Nigeria and Ghana. Growth has been particularly strong in exports of processed food and beverages and particularly weak in the export of services.

Wesgro has, like many others, changed their strategy for Africa from a previously strong export focus to a broader view focusing on increasing the Western Cape’s footprint on the continent.

The bulk of the session was made up of two expert panel discussions. The first panel discussion focused on agribusiness opportunities and issues in Africa. The second looked...
more generally at business expansion on the continent.

Rwanda and Angola received particular attention in the discussions. Rwanda was identified as having become a particularly promising partnership opportunity for South Africa and the Western Cape. On the other hand, business has been difficult in Angola in recent times as oil revenues have dried up having been inefficiently utilised when the oil price was strong. Despite this, there are South African businesses doing well in Angola, where they have taken advantage of the gaps left by foreign businesses leaving the country and where the Angolan government has focused initiatives on strengthening agribusiness in order to diversify the economy and reduce the country’s high dependency on oil.

Whilst there was much talk about the benefits of regional integration, it was acknowledged that there are still serious issues that need to be overcome to succeed when doing business in Africa.

One of the biggest issues discussed was the inconsistent policies, particularly regarding sanitary policies, veterinary services and infrastructure developments. Logistics is another key issue, particularly for perishables, where poor infrastructure and delays due to inefficiencies and corruption mean a high risk of produce spoiling.

Despite the significant challenges faced when doing business in Africa, it was emphasised that it is possible to overcome these issues and whilst this can often be hard work, the potential payoffs can be substantial.

African agribusiness in particular has huge potential as is evident by the increasing number of South African agribusinesses looking to expand operations into the continent. Whilst progress has been taking place, it would be greatly aided by a few key paradigm shifts:

- Reduce the current emphasis placed on producing commodities in Africa and focus instead on value-adding.
- Take a longer-term view of investments as agricultural payoffs tend to only be realised over longer time periods.
- Look to build relationships with individuals involved in African agriculture rather than the current practice of building relationships with political people.
- A concerted effort is also needed to try and change the prevalent view in Africa of agriculture being a poor man’s activity primarily for subsistence means.

Western Cape Premier, Helen Zille, ended the day’s programme with an address highlighting the benefits of African integration. She also emphasised the critical importance of good governance and made an appeal to South Africans to develop a culture of responsibility. The closing message was a celebration of Africa as a continent of beauty and opportunity, a unique and exciting place to live in. As the old Latin saying goes, *ex Africa semper aliquid novi* (out of Africa always something new).
The annual Restoration & Greening Nursery information day takes place at the Kluitjieskraal Nursery in Wolseley. This initiative of Breede Kloof Wine and Tourism (BWT), an NPO from Rawsonville, in partnership with LandCare gives farmers access to various indigenous trees to support their own rehabilitation or revegetation projects.

The event encourages farmers to give donations to BWT to support the project so that it can take place every year. All the funds raised during this day are used to support local rehabilitation and restoration projects within the BWT area and even some food garden projects at schools that actively participate in the Junior LandCare project.

Unemployed people from the local community are trained to harvest the seed and cuttings from the catchment and grow 11 different species of indigenous trees over a two-year period.

The species are sweet thorn, Cape holly, wild peach, Breede River yellowwood, wild almond, white stinkwood, assegai, beech, tree fuchsia, Cape ash and wild olive.

This year’s event took place on 1 June.
This initiative of Breede Kloof Wine and Tourism (BWT), an NPO from Rawsonville, in partnership with LandCare gives farmers access to various indigenous trees to support their own rehabilitation or revegetation projects.

and the over 100 landowners who attended received 10,021 trees.

The event encourages farmers not only to plant indigenous trees but to network with various partners. Whilst the farmers make their way through the different stalls and displays their trees are loaded onto their vehicles.

This year the exhibitors were Wildlands, WWF, CapeNature, CREW, SANBI, Working on Fire, Intaba and LandCare. All the exhibitors are linked to the theme of the event, which is all about indigenous plants and the important role they play in our environment.

For more information, contact Jody Wentzel: jodyf@elsenburg.com
Die Predasiebestuursforum (PMF) het onlangs ’n omvattende handleiding oor geïntegreerde predasiebestuur bekend gestel. Hierdie handleiding is ’n eenstopgids om produsente te help om die roofdierprobleem op hul plase, asook die beste metode om dit te bestuur, binne die raamwerk van provinsiale en nasionale wetgewing te identifiseer.

Guillau du Toit, voorsitter van die PMF, sê hierdie handleiding is die kulminasie van die werk wat die PMF, die kenner-adviseurs dr. Gerhard Verdoorn en Niel Viljoen, en die PMF-sekretariaat gedoen het.

“Die PMF is daarop gemik om produsente by te staan met ekologies versoenbare predasiebestuur. Dit is waarom die PMF sedert sy ontstaan die beginsel van geïntegreerde predasiebestuur verkondig waarin alle aspekte van ekologiese bestuur, kuddebestuur, voorkoming en remediërende ak- sies inmekaargewef word ten einde roofdierskade op ’n aanvaarbare vlak te bring.”

Guillau sê om enigsins te kan slaag in die stryd teen roofdiere is dit noodsaaklik dat boere, plaasbestuurders, plaaswerkers en bure gesamentlik poog om die natuur se prosesse te verstaan en om op die hoogte
te wees van roofdierbeweging op die plaas.

“Geïntegreerde predasiebestuur, wat ’n omvattende gereedskapskis insluit bestaande uit voorkomende en remediërende beheermaatreëls, is belangrik en daar moet kennis geneem word van alle wettige metodes om sukses te behaal.”

Geïntegreerde predasiebestuur fokus nie alleen daarop om die roofdiere te bestuur nie, maar ook op gesonde vee- en wildbestuur, voorkoming van predasie deur voldoende omheining, afweer- en skrikmaaktegnieke. Nie ene tegniek alleen kan die predasieprobleem oplos nie, maar deur alles saam te integreer, kan dit die boer baat.

Hy sê die resultate op die monitorplase van Niel Viljoen, waar beste-praktyk-predasiebestuur gedemonstreer word, getuig van die sukses van hierdie benadering.

Sedert 2008 is altesaam 30 plase, wat ’n totale oppervlak van 156 188 ha dek, ge-monitor. Statistiek en data wat van monitorplase verkry is, toon behoorlik geïntegreerde predasiebestuur het gelei tot ’n be- duidende afname in predasieverliese.

Volgens Guillau is dit sinneloos om predasie te probeer beveg as die situasie nie 100% korrek geïdentifiseer is nie, want dan word die beheermaatreëls op verkeerde teikens toegespits. Dikwels is dit moeilik vir ’n produsent om vas te stel watter roofdiere skade veroorsaak. Daar is egter ’n aantal aan- duingke waar na een moet soek, soos bytmerke, beenskade, vreetpatrone, spore, stukkies hare, asook lokaliteit, om net enkeles te noem.

“Ek vertrou hierdie handleiding sal elke lewendehawe-eienaar bemagtig met die nodige kennis om verantwoordelik op te tree deur die beste beskikbare praktyke toe te pas ten einde verliese te bekamp en winsgewendheid te verhoog.”

Die elektroniese formaat van die handleiding is op die NWKV-webtuiste beskikbaar.

Vir meer inligting kontak Bonita Francis by die NWKV Hoofkantoor in Port Elizabeth by 041 365 5030 of nwga@nwga.co.za

Die PMF is daarop gemik om produsente by te staan met ekologies versoenbare predasiebestuur.

Die elektroniese formaat van die handleiding is op die NWKV-webtuiste beskikbaar.
During the recent SA Annual Cheese Festival, our Departments’ Cape Made Pavilion, exhibiting alternative crops and products of the Western Cape, welcomed a new addition in the Cape Made Kitchen. Here two Stellenbosch culinary schools, the Institute for Culinary Arts and The Private Hotel School, joined forces with Agri Expo and the Western Cape Department of Agriculture to bring a small food theatre to the festival.

Three packed cooking sessions were held per day as the festivalgoers seized the opportunity to learn more about cooking with these alternative crops and cheese.

Herewith one of the recipes from the recipe CD booklet presented to the attendees to test at home.

MORE DELICIOUS RECIPES will follow in the next editions of AgriProbe.

Three packed cooking sessions were held per day as the festivalgoers seized the opportunity to learn more about cooking with these alternative crops and cheese.
Herewith one of the recipes from the recipe CD booklet presented to the attendees to test at home.

Scan the QR code or visit www.elsenburg.com/resource-library/cape-made-taste-alternatives to download the recipe.

Blue Camembert and honey crunch cupcakes

Cake Mixture
- 320 ml (300 g) butter
- 360 ml (300 g) caster sugar
- 6 eggs
- 400 ml (300 g) self-raising flour

Preheat oven to 160°C. Sieve flour and set aside. Line muffin tins with cupcake cases and set aside. Cream together the butter and sugar until light and fluffy. Add eggs one by one and mix well after each addition. Gently fold the flour into the mixture.

Filling
- 100 g blue Camembert, cut in thin wedges

Spoon batter into a piping bag fitted with 1 cm nozzle. Pipe batter halfway into cupcake cases. Spoon ± 10 ml of the honey crunch and a few wedges of blue Camembert onto the centre of the batter. Pipe the remaining batter on top.

Topping
- 100 ml Busy Bee Honey
- Extra honey and almond crunch for sprinkling

Bake for ± 15 minutes until springy to the touch. Remove from the oven and allow to cool on a wire rack.

To Serve
Warm the honey until runny and lightly glaze each cupcake. Finish by sprinkling with honey and almond crunch.
Two PhDs were recently awarded to students involved in the animal breeding and reproduction programmes of the Directorate Animal Sciences.

Dr Puleng Matebesi-Ranthimo was awarded a PhD at the 2015 winter graduation ceremony of the University of the Free State (UFS) with a thesis entitled “Genetic studies on reproduction and fitness in South African Merino sheep”. She used data from the Merino flocks at the Tygerhoek and Elsenburg Research Farms to conduct a...
Her research on gastro-intestinal nematode faecal worm egg count under natural challenge conditions as an indicator of resistance to helminth infestation has uncovered sufficient genetic variation for inclusion in ovine selection programmes. There was little evidence of unfavourable genetic correlations with other trait complexes, including growth, wool traits and conformation.

Further studies confirmed a heritable component to reproduction at two years of age as well as lifetime reproduction. Genetic correlations within the reproduction trait complex and with other trait complexes were mostly favourable, enabling the construction of a relatively uncomplicated selection index for fitness traits in local Merino sheep.

The study yielded two scientific papers in accredited journals, two papers in refereed, accredited conference proceedings and six abstracts at local and international scientific conferences.

Dr Matebesi-Ranthimo was supervised by Prof Japie van Wyk at UFS, and Prof Schalk Cloete and Dr Buks Olivier of the Directorate Animal Sciences. After graduation, Dr Matebesi-Ranthimo was promoted to Head of the Department at the Roma campus of the University of Lesotho.
A protocol for liquid storage and cryopreservation of ostrich (*Struthio camelus*) semen.
Dr Marna Smith received a PhD at the autumn 2016 graduation ceremony of the Stellenbosch University (SU) with her thesis entitled “A protocol for liquid storage and cryopreservation of ostrich (Struthio camelus) semen”. Her research was conducted at the Oudtshoorn Research Farm in collaboration with Dr Maud Bonato as resident scientist.

Her study was based on the assumption that the storage of ostrich semen followed by artificial insemination could ease industry limitations like a very narrow male:female ratio, a poor egg fertility and poor survival of embryos and chicks.

During this study, Dr Smith developed a species-specific protocol for short- and long-term storage of ostrich semen. An ostrich-specific diluent balanced for macro- and micro-mineral concentrations maintained sperm function during short-term liquid storage for up to 48 hours at 5°C while maintaining sperm quality.

Ostrich semen stored indefinitely in liquid nitrogen with an added cryo-protectant maintained sufficient sperm function in vitro to fertilise eggs after thawing. Semen subjected to liquid storage and cryopreservation resulted in the production of fertile eggs in inseminated females.

So far the study yielded two scientific papers in accredited journals, a paper in refereed, accredited conference proceedings, as well as four abstracts at local and international scientific conferences.

Dr Smith was supervised by Associate Prof Irek Malecki of the University of Western Australia, Prof Schalk Cloete of the Directorate Animal Sciences and Prof Kennedy Dzama of SU. Her work provided essential stepping-stones for the establishment of a viable ostrich artificial insemination protocol.

For more information, contact Prof Schalk Cloete: schalkc@elsenburg.com
The Certificate in International Wine Trade (CIWT) is an academic and training partnership developed between the Western Cape Department of Agriculture and the Regional Council of Burgundy-Franche-Comté. The Centre for the Formation of Professionalism and the Promotion of Agriculture, situated in Beaune, France, and the Elsenburg Agricultural Training Institute (EATI) are the two main collaborators in this programme.

The relationship with the Regional Council of Burgundy dates back to 2001, when the Thuthukile Skweyiya Western Cape – Burgundy Wine Exchange Programme was first established and still is an ongoing and successful venture between these two regions.
The majority of the CIWT course took place in France, where the students visited various wine regions and estates, such as Champagne, Bordeaux, and of course Burgundy. Once they completed their practical and theoretical parts of the course, the students embarked on a seven-day training programme in South Africa.

The focus of the programme while in South Africa was the local and international marketing of wine in the Western Cape. Effective business strategies, varying approaches and social responsibility were also key discussion points.

Marketing can be defined as the science and art of finding, keeping and growing profitable customers. All wineries or wine companies need to have a clear understanding of what exactly the discipline of marketing encompasses if they want to effectively compete in today’s saturated wine market. Only then can a company work seamlessly towards offering products to customers who are both willing and able to purchase them.

With the local and international wine industry becoming increasingly congested with newly developed product offerings, the pressure is mounting on estates to develop sound marketing disciplines and practices. These disciplines cannot only focus on sales, but also need to look at building a lifestyle brand and an added-value experience within the wine drinking culture.
The success of the programme can be attributed to the Western Cape wine industry and their willingness to donate their time and knowledge to the international students hosted by EATI.

Twelve international students, along with a lecturer, arrived on 8 May to discover and understand these principles and ideals within a South African concept. Kelly-Marie Jacobs, lecturer in Oenology at EATI, arranged the seven-day programme in collaboration with iconic estates in different regions of the Western Cape. This exposed the students to the diversity of the South African wine industry and illustrated how marketing can be successfully adapted, regardless of location.

The estates visited were Warwick, Jordan, Rupert & Rothschild, Vrede en Lust, Haute Cabrière, Groot Constantia, Beau Constantia, Natte Valleij, Fairview, Simonsig, Beyerskloof, Ataraxia, Creation and Bouchard Finlayson.

These estates visited were chosen based
on their ability to continuously and successfully grow their brand in an ever-increasing and saturated wine market. The students had the opportunity to meet directly with the brand managers and winemakers of the various estates.

Interesting discussion topics included brand experience and how brand associations tie in with the bigger plan, associating with history and heritage, arts and culture, sustainability, social responsibility, regional cooking, and of course premium wine making.

The manner of approach with regards to marketing locally versus internationally was also elaborated upon. All the estates visited emphasised that regardless of the country the wine was to be sold in, the values and ideals of the estate had to be upheld and communicated unambiguously.

The participating wine estates proved that as South African producers, we are not only good at making wine, but are excellent at discerning target markets.

The success of the programme can be attributed to the Western Cape wine industry and their willingness to donate their time and knowledge to the international students hosted by EATI.

For more information, contact Kelly-Marie Jacobs: Kelly-mariej@elsenburg.com
towards FOOD SECURITY in 2050 by Edwin Boshoff

“The overarching challenge facing humanity today is how to prepare ourselves to feed the nine billion people that will inhabit the Earth in 2050.”
The Western Cape Department of Agriculture (WCDoA) is embarking on several innovative ways of supporting the agricultural sector, both at primary and secondary level. It is for this reason that the WCDoA sent an official, Edwin Boshoff, to attend the International Food and Agribusiness Management (IFAMA) World Conference in Minneapolis, USA.

The conference offered an opportunity for delegates from different countries to meet their peers in research and share information on new development research areas and/or models for potential use within the countries. The attendance of such a global event enhanced Edwin’s skills base of global initiatives with regard to food production and value-adding practices on a global scale.
Under the umbrella of food security, the conference examined three major sub-themes:

- **People:** Flow of talent in the food and agribusiness sector
- **Climate:** Climate-smart food and agribusiness systems
- **Big data:** Better analytics and deeper insight management

These three overarching issues are expected to significantly affect the performance of the food and agribusiness industry in the future, because they are complex and will impact on public policies, human resources, technology, international trade, health, domestic and international conflicts, sustainability, investment and overall global prosperity.

The issues are not independent of each other. Therefore, addressing them requires a more sustained and structured approach in conjunction with the necessary resources and time to apply implementable solutions for more realistic and constructive outcomes.

South African themes and topics were well presented at the conference. Some of the topics discussed included:

- Intergenerational farm transfers in South Africa.
- Ensuring resilience to climate change in a changing business environment: A rate of return for South Africa’s peach and nectarine research.
- Smallholder development and participation in output markets: The case of the Eastern Cape province.
- Home gardening as a strategy for food security and poverty alleviation in rural South Africa.
- Towards a new capital formation series for machinery in agriculture: A way to improve agricultural productivity measurements.

What stood out from discussions at the conference was that businesses should move from transactional ways of operating to working together. It is not enough to just make money. Businesses should link the players within the respective value chains and adapt to change.

The inclusion of smallholder farmers in the value chains is a necessary change that should be addressed in earnest to mitigate poverty. Agribusinesses should think beyond the farm gate and find innovative ways to promote linkages of smallholder farmers into local, regional and global agri-food chains.

An enabling environment should be created with the necessary enforcements to ensure market access and storage for smallholder farmers. This enabling environment should include environmental sustainability, quality standards, policy enforcements, contract farming and post-harvest solutions.
A summary of
THE TAKE HOME POINTS
from the conference:

TALENT (PEOPLE) MANAGEMENT

Talent management is extremely important to the bottom line of companies and those companies struggling to link quality to talent. More integration between academia and industry is needed. The talent factor should also be beefed up with soft skills, such as strategic thinking, awareness, sharing of career paths and job shadowing. Social media should be drawn into discussions more, because it is taking over the one-on-one conversations. More advocates on food security are needed.

CLIMATE CHANGE

Climate change constraints for small and larger farmers are the same, therefore creating a need for standards to be linked to different farming systems. Standards must come from the market and should drive differentiation to ensure that it is to the benefit of the environment and towards sustainability. These standards must be harmonised to minimise duplications and cut costs. It will help agriculture respond to markets. Appropriate technology is needed to address different farming systems for different farmer categories or countries. Technologies that work need to be identified and adapted for circumstances in different countries.

DATA MANAGEMENT

Data needs to be relevant. Agribusinesses need to know how to conduct data capturing in supply chains and not only in on-farm production. The analysis of such data is also important. Broader sharing of privately owned data should take place and information needs to be more transparent. Opportunities for those who are able to use the data should be created. Social adoption is a hurdle and often moves too slowly. The data should be introduced to the farmer in the correct way. It is also important to make data user-friendly so that it can be used in a more beneficial manner and ultimately influence research. Engagement with the grower is key in order to complete the picture.

Collaboration for creating critical mass in the market should take place amongst farmers in an attempt to enhance sustainability.

As producers of food it is crucial that farmers ask themselves whether they are asking the right questions. How do they (producers) deal with the ignorance of institutions, politicians and policymakers regarding the agricultural sector? Is our education system ready to absorb these changes in climate, data and doing business? As a collective sector, are role-players ready to address environmental fluctuations brought about by climate change? How meaningful is the debate with regards to agribusiness management versus agri-production management? Is the prioritisation of research on par with addressing food security in 2050?

For more information, contact Edwin Boshoff, Senior Agricultural Economist, AgriBEE Advisory Services, WCDoA: 028 840 1243, 021 808 7733 or edwinb@elsenburg.com
Outeniqua is bekend vir die ontwikkeling en pasmaak van voorpunt-navorsing ten opsigte van suiwelproduksie vanaf aangeplante weiding.

Die Outeniqua-navorsingsplaas, een van die sewe navorsingsplase van die Wes-Kaapse Departement van Landbou (WKDL), is gelei aan die suidweste kant van George en is in 1953 aan die Departement oorhandig. Die doel was om die stuk grond te ontwikkels as proefplaas te dien. Vandag bedien Outeniqua ’n gebied vanaf die Tsitsikamma tot by Caledon. Die plaas het in 2013 sy 60ste bestaansjaar gevier.

Outeniqua is bekend vir die ontwikkeling en pasmaak van voorpunt-navorsing ten opsigte van suiwelproduksie vanaf aangeplante weiding. Melk- en vleisbees-stelsel-navorsing vanaf aangeplante weiding word ook gedoen en ekonomies ontleed om
Die Outeniqua-navorsingsplaas, een van die sewe navorsingsplase van die Wes-Kaapse Departement van Landbou, is geleë aan die suidweste kant van George.

TAKING OUR SERVICES OUT THERE

Die suiwelkudde bestaan uit ongeveer 750 diere, waarvan ongeveer 400 koeie in melk is, en vorm die basis van die suiwel-navorsingspoging. Die Jersey-stoetkudde het oor die jare reeds verskeie prestasie- en bestuurstoekennings ontvang. Die voervoervloei bestaan hoofsaaklik uit kikoejoe wat oorgesaai word met verskeie raagrasspesies.

Die plaas se personeelkorps kan opgedeel word in drie programme. (Aantal persone in hakies)

1. Navorsing en Tegnologie-ontwikkelingsdienste (46)
   - Direktoraat Plantwetenskappe.
   - Direktoraat Diere-wetenskappe.
   - Infrastruktuur-ondersteuningsdienste.

2. Volhoubare Hulpbronbestuur (LandCare) (3)

3. Opleiding (4)
Die Direktoraat Plantwetenskappe se navorsing is daarop gegrond om die winsgewendheid en volhoubaarheid van aangeplante weidings in die Suid-Kaap te optimaliseer. Die navorsingsprogram volg dus ‘n geïntegreerde benadering waar die bestuur van grond, plant en dier as ‘n kontinuum, eerder as aparte komponente, beskou word. Die navorsing word gedoen in vier fases wat toeneem in kompleksiteit:

1. **Fase een** is kultivarevaluerings. Kommercieël beskikbare spesies en kultivars word in kleinperseelproewe geëvalueer in terme van seisoenale droëmateriaalproduksie, volhoubaarheid oor jare en weerstand teen plaaslike peste en plae. Onlangs is “elite” kultivarevaluerings, waar die jongste kultivars met moderne genetika geëvalueer word, ook tot die fase toegevoeg. Dié navorsing verskil van standaard kultivarevaluerings deurdat nie alleenlik opbrengs bepaal word nie, maar ook ander eienskappe van belang in weidingspesies, soos blomtyd en...
blomduur, groeivorm, vatbaarheid vir siektes en weidingsgehalte. Die inligting sal daartoe lei dat die seleksie van kultivars, veral in weidingsmengsels waar mededinging tussen spesies ’n invloed op produksie kan hê, meer oordeelkundig kan plaasvind.

Die volgende proewe is tans onderweg as deel van die navorsingsportefeulje:

a. Subtropiese grasse (16 kultivars van 9 spesies gevestig op twee plantdatums).
b. Kropaargras/swenkgras (24 kultivars).
e. Elite Italiaanse raag-gras (13 kultivars).
f. Elite meerjarige raag-gras (23 kultivars).
g. Meerjarige gematigde grasse (42 kultivars van 4 spesies).
h. Kort-duur wintervoergrane (9 kultivars van 4 spesies).
i. Lang-duur wintervoergrane (15 kultivars van 5 spesies).

j. Verbetering van die somerproduksie en voedingsgehalte van melkbeesweidings deur die gebruik van voergewasse sigorei en smalblaarplantago (Buckhorn plantain).

2. Die doelwit van die proewe in fase twee en drie is om bestuursriglyne te ontwikkel en mengsels en/of spesies onder beweiding te evaluer. Die volgende proewe word tans gedoen:

a. Die evaluering van die impak van ontblaringsintervalle- en praktike op die droëmassa-opbrengs en voedingsgehalte van gematigde meerjarige gras.
b. Die effek van verskillende stikstoftoedieningspeile op die droëmassa-opbrengs van kikoejoe oorgesaai met vier verskillende gras-peulgewasse-mengsels.
c. Strategiese stikstofbemesting van kikoejoe-gegronde weidings oorgesaai met peulgewasse.
d. Optimalisering van stikstofbemesting van kikoejoe en kikoejoe-eenjarige raaggrasweidings.
3. Fase vier bestaan uit stelselnavorsing in samewerking met die Direktoraat Diere-wetenskappe. Tydens dié fase word alle parameters van belang vir kommersiële producente, insluitend weidingsproduksie en -gehalte, drakrag, melkproduksie per dier en melkproduksie per hektaar, binne ’n volledige produksiestelsel geëvalueer.

Vorige navorsing in dié fase, spesifiek gefokus op kikoejoe-oorsaaistelsels, word algemeen beskou as ’n maatstaf vir producente in die streek.

Die bestaande aangeplante weidingstelsels is gegrond op geenbewerkingstelsels waar verskeie gras- en peulgewassies binne ’n bestaande weidingsbasis ingeplant word met minimum of geen grondversteuring.

Uit ’n omgewingsoogpunt is dit belangrik dat navorsingsprojekte op die beskerming van ons natuurlike hulpbronne soos grond en water fokus. Daarom sal toekomstige
plantwetenskappenaarsing ook ‘n sterk “omgewingsbestuur”-inslag neem, spesifiek gefokus op bemestingspraktyke, besproeiingskeduleringpraktyke, grondgesondheid en die seleksie van meer droogtetolerante spesies.

Die Direktoraat Veekundige Wetenskappe fokus op die volgende projekte:

a. Sitruspulp as alternatief vir mielies as energie-aanvulling vir lakterende koeie op raagirasweiding.


c. Palmpitbyproduk (PKE) -supplementering aan koeie op kikoejoeweiding in die somer.

d. Intensiewe stelsel om Angus/Jersey-kalwers groot te maak met Jersey- en Angus/Jersey-koeie as moeders op weiding.

e. Die onderhoud en bestuur van die Out-eniqua Jersey-kudde.

f. Die effek van vervanging van stysel met suiker en pektien in die koeie se kragvoer op hul melkproduksie, melksamestelling en veselvertering.

g. Essensiële olies as voerbyvoegsel aan lakterende koeie op raagirasweiding.

h. Meting van metaan-emisies van lakterende Jersey-koeie op weiding.

‘n Deklaagstrooier (mulcher) word gebruik om kikoejoe met verskeie ander gras- en peulgewassies oor te saal.

Dit is belangrik dat navorsingsprojekte op die beskerming van ons natuurlike hulpbronne soos grond en water fokus.
Verskillende landbou-ondersteuningsprogramme wat ’n departementele landboukundige diens in die Suid-Kaap lever, is ook op die Outeniqua-navorsingsplaa gesetel. Die Program Volhoubare Hulpbronbenutting (LandCare) sien om na die volhoubare benutting van natuurlike hulpbronne in die produksie van voedsel, terwyl die Program Gestruktureerde Landbou-opleiding hoofsaaklik fokus op die opleiding van nuwe boere by sy opleidingsentrum op die plaas.

Navorsing op Outeniqua is produsent-en behoefte-gedrewe met die doel om die winsgewinheid van melk- en vleisproduksie in die Suid-Kaap volhoubaar te bevorder. Stelselnavorsingsresultate is gegrond op langtermyn-navorsing en is goed gedokumenteer. Navorsing speel ook ’n sleutelrol in tegnologie-ontwikkeling, demonstrasies en opleiding van opkomende boere. Bestaande

Navorsing wat fokus op grondgesondheid en grond eienskappe is belangrik om omgewingsvolhoubaarheid te onderhou.
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Outeniqua opgelei. Dié studente-opleidings-program word verder versterk deur ‘n samewerkingsooreenkoms met die Nelson Mandela Metropolitaanse Universiteit, waar studente as deel van hul studies praktiese ervaringsopleiding op Outeniqua doen.

Volgens dr. Ilse Trautmann, Hoofdirekteur Navorsing en Tegnologie Ontwikkelingsdienste, is die Outeniqua-navorsingsplaas ‘n trotse navorsingsinstansie met ’n ewe trotse rekord van prestasies en gaan die plaas ondersteuning aan boere in die Suid-Kaap in die toekoms nog verder uitbrei met voorpunttegnologie deur ‘n toegewyde en kundige navorsingspan.

Vir meer inligting, kontak
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of Hennie Gerber: hennieg@elsenburg.com

Nagradse landboustudente word ook op Outeniqua vir ’n loopbaan in landbou opgelei. In dié program, onder mentorskap en studieëidelings van spesialiswetenskaplikes en navorsers op Outeniqua asook dosente aan verskeie universiteite, het verskeie M.Sc.- en Ph.D.-studente reeds hul studies voltooi. Die studente-opleidingsprogram gee studente blootstelling aan landboukundige navorsing, bied hulle die geleentheid om verder te studeer, lei navorsers en navorsings-tegnici op, en vergroot die navorsingskapasiteit van die WKDL. Studente binne die WKDL se opleidingsprogram vir studente wat besig is met praktiese indiensopleiding, word ook binne die navorsingsprogram op Outeniqua opgelei. Dié studente-opleidings-program word verder versterk deur ’n samewerkingsooreenkoms met die Nelson Mandela Metropolitaanse Universiteit, waar studente as deel van hul studies praktiese ervaringsopleiding op Outeniqua doen.

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Adoption of conservation agricultural (CA) practices in the grain producing areas of the Western Cape resulted in changes in various aspects of crop management strategies. It is well known that by reducing the degree of soil disturbance due to less tillage, soil fertility and the potential of the soil to mineralise nitrogen will increase. Microbial activity and diversity may change as a result of the increase in crop diversity, less soil disturbance and the effect of more crop residues remaining on the soil surface. This creates better conditions for soil fauna and flora to function due to lower topsoil temperatures during summer and protecting soil water from evaporation.
The development of planters/seeders that ensure optimal placement of fertiliser, along with improved cultivars, has also contributed to increased yields recorded for wheat and canola in recent years.

Practising CA usually results in higher soil carbon levels due to increased stubble retention and less soil disturbance as a result of reduced tillage. The higher soil organic carbon content will increase soil microbial activity resulting in the ability of the soil to supply more nitrogen in plant-available forms, namely ammonium and nitrate. It is therefore anticipated that nitrogen fertilisation requirements may decrease under CA. This could result in a lowering of input cost without reducing yield potential.

With this in mind, a research programme was initiated to develop nitrogen fertiliser programmes to determine nitrogen fertiliser requirements of wheat and canola. The focus will be:
1. Relating the soil mineral N content at the time of the last topdressing to the fertiliser nitrogen required by the crop for optimum yield.
2. Determining the effect of increasing fertiliser N application rates on the soil mineral nitrogen content.
3. Relating plant nitrogen with the final crop yield recorded.
4. Relating foliar nitrogen application to “protect” the yield potential and the effect it has on grain protein content.
5. Evaluating the efficacy of different top-dressed nitrogen sources.
6. Comparing once-off application of all nitrogen at seeding, followed by splitting the total nitrogen to be applied in two applications.

At planting, 25 kg N ha$^{-1}$ will be applied to all treatments except the control, where no nitrogen will be applied throughout the season. In one plot per replication, all nitrogen recommended for the site will be applied at seeding. At top-dress, a range of nitrogen levels (0, 25, 50, 75, 105, 135 and 165 kg N ha$^{-1}$) will be applied. In order to relate and understand mineral nitrogen relations and crop performance, soil mineral N will be determined in samples taken to a depth of 300 mm the day before planting, the day before top-dress, 10 days after top-dress, as well as any mineral nitrogen that remained in the soil at harvesting. Nitrogen content of the total plant will be determined at top-dress and in the case of wheat, at the flag leaf stage.

In a separate trial, limestone ammonium nitrate (LAN), ammonium sulphate, limestone ammonium nitrate sulphate, urea and urea + urease inhibitor will be tested to evaluate efficacy of the listed sources.

This study will also be conducted on dif-
The study includes on-farm wheat and canola trials.

Different sites, namely Riversdale, Tygerhoek, Caledon, Langgewens, Darling and Porterville, to represent a diversity of climatic regions and soils found in the Western Cape. Different site-specific cropping systems will be included at these sites.

At Riversdale and Tygerhoek wheat following canola and canola following wheat in a wheat/canola/wheat/lupin system will be included in the study, while wheat after lucerne will be studied at Caledon (farm of Mr MG Lötter).

The Swartland sites at Porterville (farm of Mr WG Treurnicht), Darling (farm of Mr N Loubser) and Langgewens will include wheat after canola, wheat after medics and canola after wheat.

The wheat study is co-managed by PJ Neethling, an MSc Agric student in Agronomy at Stellenbosch University (supervised by Dr Pieter Swanepoel), who will use the data to complete his MSc thesis. Negotiations with the Stellenbosch University and University of the Free State are in process to allocate the canola study to a suitable MSc (Agric) student for the 2017-18 seasons.

For more information, contact Dr Johan Labuschagne: johanl@elsenburg.com
Although some coat colour patterns, such as the recessive black of this lamb, are clearly visible shortly after birth, not all coat colours and patterns are visible throughout an animal's life and visual pigmentation may change with age.

Merino sheep are known and highly valued for their soft white fleece. It may therefore be surprising to learn that the Merino, and in fact most other sheep breeds, are descended from dark coloured ancestors. The white coat of the modern Merino is the result of a duplication mutation of the ASIP gene that results in a white coat with pink skin. Due to the historical preference for white wool, white Merinos were favoured as breeding stock and passed this mutation to their offspring.

Dark (pigmented) wool interferes with the dyeing process during garment manufactur-
ing and therefore the industry has a strong resistance to any pigmented wool reaching the manufacturing stage. A small quantity of pigmented wool can "contaminate" other white (unpigmented) wool and reduce the value or even result in wool buyers rejecting a whole batch.

Pigmented wool is therefore kept separate from white wool and sold at a much-reduced rate.

Animals with darker wool are usually culled as soon as possible to reduce economic losses to the producer. Avoiding the birth of a pigmented animal is, however, not a simple task.

Eliminating breeding stock using visual inspection for pigmentation is not always effective as dams and sires of pigmented lambs seldom exhibit noticeable pigmentation themselves. Black, pied (spotted) or flecked Merino lambs are therefore occasionally born to purebred white Merino dams and sires. The reason for this lies in the interaction between the sheep coat colour genes.

The mutation of the ASIP gene responsible for the white coat colour of the Merino is dominant to the wild-type dark coat colour gene variant. Animals representing the wild-type coat colour typically have a black or dark brown coat over most of their body with a white blaze on the forehead and a white tail.

This Merino ram exhibits a combination of coat colour patterns that makes the identification of the individual patterns difficult.

The white coat of the modern Merino is the result of a duplication mutation of the ASIP gene that results in a white coat with pink skin.
Black, pied (spotted) or flecked Merino lambs are therefore occasionally born to purebred white Merino dams and sires.

Animals can inherit both the white and dark coat colour gene variants from their dam and sire respectively, and still display a white coat colour. Only animals that inherit two copies of the wild-type colour gene variant, one from each parent, will display the dark coat colour.

The carrier animals that possess both the dominant white and recessive dark versions will be visually indistinguishable from animals with two copies of the dominant white gene. When two carrier animals are mated, the offspring have a 25% chance to inherit both wild-type dark gene variants and exhibit a pigmented coat, and a 50% chance to be a carrier with a white coat. The elimination of mating between carriers is needed to avoid the birth of wild-type pigmented lambs.

Unfortunately, the inheritance of sheep coat colour is more complex than the effect of a single gene, such as the ASIP gene. The inheritance of several other colour variants, including dominant black, pied and flecked, all seem to be the result of additional gene variants that can act independently on the coat colour of the Merino.

In theory, a Merino could have the wild-type dark gene variant together with variants of other genes responsible for piebald and flecking. Colour variants may also be masked by the simultaneous expression of another colour pattern. The dominant white coat colour of the Merino may, for example, mask the occurrence of a flecking pattern of the animal’s coat. The simultaneous occurrence of several distinct colours and pat-
Researchers at the Directorate Animal Sciences at the Western Cape Department of Agriculture have embarked on a project to investigate the inheritance and occurrence of specific gene variants involved with pigmentation in a fine-wool resource flock. The objective of the study is to investigate the feasibility of using genetic markers to identify animals carrying pigmentation genes and thereby enable the exclusion of breeding stock that will potentially produce pigmented lambs.

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Patterns makes visual identification and elimination of individual colours and patterns even more challenging.

The genetics underlying the pied (or spotted) coat pattern is especially intricate. Recent studies have indicated that several novel genes are involved in the regulation of this trait in sheep. Characterising the inheritance and genetic basis of the pied pattern is further complicated by the fact that the pattern may not be visible in all pied animals.

A method that does not depend on visual identification of pigmentation will be beneficial to identify carriers of pigmentation genes in the Merino sheep and thereby reduce the economic losses associated with pigmented wool.
Bewaringslandbounavorsing binne die Wes-Kaapse Departement van Landbou is vanjaar mondig. Die eerste werk op hierdie volhoubare produkstelsels het amptelik op 1 April 1996 op die Departement se Langgewensnavorsingsplaas in die Swartland begin.

Die navorsing het destyds ontstaan nadat 'n groep leierboere, met wyle Oom Jack Human (Heidelberg-omgewing) aan die voorpunt, in die vroeë 1980's Australië besoek het om na hierdie alternatiewe manier van grondbestuur te gaan kyk. Hulle het besef dat die Wes-Kaap kon nie bekostig dat meer van ons grond deur wind- en watererosie verlore raak nie en dat vernuwing nodig is in hoe ons grond op plaasvlak bestuur. Na die verbetering in hul produksiemetodes gesien is, het dit duidelik geword dat navorsing nodig is om hierdie verbetering verder uit te bou en te rugsteun.

Die langtermynproef is opgestel om die voordele van wisselbou, minimum grondversteuring en tot 'n mindere mate die behoud van grondbedekking te ondersoek en sodoende 'n alternatief vir die konvensionele boerderypraktyke daar te stel. Kwynende koringopbrengste en skerp stygende insetkostes het die soeke na volhoubaarheid van plaaslike produkstelsels genoodsaak.

Die navorsing het tot dusver verskeie kontantgewas en kontantgewas/weidingstelsels met mekaar vergelyk. Hierdie navorsing is ook in 2002 uitgebrei na drie gebiede in die Suidkaap, naamlik die...
Van links: Dr. Johann Strauss (Wetenskaplike, Direktoraat Plantwetenskappe), Annelene Swanepoel (Wetenskaplike Bestuurder, Plantwetenskappe), Carel van Niekerk Jnr. en Carel van Niekerk Snr. (albei van Piket Planters).

Departement se Tygerhoek-navorsingsplaas net buite Riviersonderend, asook kommersiële plase in die Napky-omgewing tussen Swellendam en Malgas, en op die Riversdal-vlaktes.

Die navorsing het duidelike voordele in die toepassing van die bewaringslandbouproduksiemetodes uitgewys. Die grond is nie meer soos in die verlede geploeg nie en die enigste versteuring van die grond was die plasing van die saad en kunsmis deur gespesialiseerde planters. Alternatiewe gewasse soos canola, lupiene en gars, en weidingsgewasse soos lusern, medics en klawers, het koring afgewissel. Die oesreste is ná oes op die grondoppervlak gelos om die grond teen die somerson te beskerm.

“Dié kopskuif het gelei tot verhoogde koringproduksie, beter beheer van onkruid en siektes, verlaagde erosie, laer insetkostes en beter waterinfiltrasie en -houvermoë van die Wes-Kaapse skaliegronde.”
Dié kopskuif het gelei tot verhoogde koringsproduksie, beter beheer van onkruid en siektes, verlaagde erosie, laer insetkostes en beter waterinfiltrasie en -houvermoë van die Wes-Kaapse skaligrond. Hierdie tipe produksiemetodes deur produsente binne droëland-graanverbouing in die Wes-Kaap is reeds deur meer as 80% van graanproduksente in die Wes-Kaapse saaigebiede en 20% landwyd aanvaar.

Soos met enige praktyk is daar altyd plek vir vernuwing en verfyning van die produksiemetodes. In die buiteland is daar tans ‘n sterk fokus op die integreering van landbouproduksie met ‘n meer ekologies ge-fokusde ondertoon. Navorers en produsente besef nou die waarde van die grond se mikrobiologie en die belangrikheid om biologiese diversiteit te beskerm en te verbeter om sodoende voedselsekuriteit te verseker. Die insluiting van dekgewasse (gewasse wat nie geoes gaan word nie, maar ten doel het om die grond se gesondheid en gehalte te verbeter), raak ook al meer deel van bewaringslandboupraktek. Verdere verbetering wat ook nog aandag kan kry, is nóg minder versteuring van die grond deur planters.

Vanjaar is ’n nuwe langtermynproef op Langgewens geloods wat die insluiting van verskeie van hierdie nuwe denkrihtings insluit. Dit is belangrik wanneer sulke navorsing aangepak word dat die bedryf inkoop in dit wat gedoen word. Die langtermynwerk wat op die navorsingsplase gedoen word, word bestuur deur insette van produsente en bedryfsorganisasies te kry tydens jaarlike tegniese vergaderings. Dit is ook nie altyd moontlik om die jongste tegnologie in terme van implemente aan te koop nie. In sulke gevalle word op vennootskappe met die bedryf gesteun om
Die nuwe rigting wat die bewarings-landbou-navorsing van vanjaar af inslaan, is ’n sprekende voorbeeld van hoe die bedryf skouer aan die wiel sit en deel word van die (navorsings-)aksie.

Om die grondversteuring nóg minder te maak, het Piket Planters (Piketberg) ’n skyfplanter aan die Department se navorsings-program geskenk om die plantwerk binne hierdie proewe te kan behartig. Die nuwe masjien is 5 m breed en kan 20 rye plant. Dit is ’n nuwe produk wat vir die eerste keer deur Piket Planters gebou is. Die nuwe planter word gebruik om alles van koring tot fababone en dekgewasmengsels te plant. Dit stel die Departement se navorsers in staat om baie materiaal wat op die grondoppervlak lê, sonder verstopping te hanteer, die verskillende saad op die regte dieptes te plaas en dit alles te doen met ’n minimale versteuring van die grond. In die proses word ook minder koolstofdioksied in die lug vrygestel en minder diesel verbrand, wat dit ’n veel meer eko-vriendelike praktyk maak.

Hierdie planter se werking sal binne die proewe gemonitor word en enige ontwikkelingswerk wat geïdentifiseer word, sal dan saam met Piket Planters gedoen word om die planter selfs meer toepaslik te maak vir plaaslike omstandighede.

Voorlopige samesprekings met ander landboubesighede het reeds die moontlikheid uitgewys van verdere soortgelyke vennootskappe in die Suid-Kaap in die toekoms.

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Koring wat opkom deur ’n dik materiaallaag.
RISKY BUSINESS: Agricultural Insurance in the Face of Climate Change
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Risky Business:
Agricultural Insurance in the Face of Climate Change

A.G. Partridge & N.J. Wagner

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1. Introduction
One of the key reasons for the struggle of South Africa’s smallholder farmers is the inability to effectively insure themselves against extreme weather events that threaten agricultural production. This has become increasingly relevant as climate change has led to the increased frequency and severity of extreme weather conditions (Smart Agri Project Consortium, 2015). Agricultural insurance in South Africa is currently not tailored to the needs of smallholder farmers (FinMark Trust, 2013). An effective insurance option for smallholder farmers would help to make agriculture an attractive option and assist in promoting Agrarian reform in rural areas.

This paper aims to highlight the need for appropriate agricultural insurance schemes and identify the lack of such schemes in South Africa, especially for smallholder farmers. The hope is then that this will be taken further by researchers and other stakeholders to come up with specific solutions and insurance designs that address the issues specific to smallholders and the environmental and economic factors they face.

2. Climate change and extreme weather conditions
There is widespread consensus on both the fact that global warming is happening and also that this is causing extreme weather events to become more frequent and more severe (Smart Agri Project Consortium, 2015). Agriculture is particularly sensitive to climate change due to the reliance on climatic variables such as temperature and rainfall. Crops (extending to cultivar choices and cropping calendars) and selection of livestock are influenced by these variables in different geographic areas.

According to South Africa’s Disaster Management Act 57 of 2002, a “disaster” is defined as “a progressive or sudden, widespread or localised, natural or human-caused occurrence which (a) Causes or threatens to cause (i) death, injury or disease; (ii) damage to property, infrastructure or the environment; or (iii) disruption of the life of a community; and (b) Is of a magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources” (Government Gazette, 2003. p.6)

The Centre for Research on Epidemiology of Disasters (CRED), based in Belgium, keeps a database of all global natural disaster occurrences. For an event to be classified as a disaster requires at least one of the following to be true:
• The reporting of at least 10 people killed
• At least 100 people affected
• A state of emergency declared
• International assistance called (CRED, 2015)

Figure 1 (next page) shows the number of occurrences of storms, floods, droughts, wildfire and earthquakes that were classified as disasters in the CRED disaster database for each decade from 1960 to 2010. There is a clear rise in the frequency of these natural disasters. Up until the end of the twentieth century storms were the most common
natural disaster, but they were overtaken by floods for the most recent decade where there were approximately 63% more floods than storms classified as disasters.

Natural disasters have recently become a particularly relevant reality in South Africa as a severe drought has resulted in 2015 representing the lowest annual rainfall in the country since 1904. Projections done by the Bureau for Food and Agricultural Policy (BFAP) show that the drought will put serious strain on the country’s agricultural sector. Production levels are expected to decline significantly and whilst rising food prices will offset some of the negative impact on farmers, it will not be enough to prevent Net Farm Income falling, plummeting to negative values in some areas (BFAP, 2016).

3. Agricultural insurance
Agricultural producers face significant risk as a result of being reliant on environmental conditions for production. Where risk cannot be adequately managed, producers struggle to survive in the face of a negative event and they are more likely to take on less risky investments that are typically also low-yield investments thus restricting growth of the agricultural sector. In addition to incentivising taking on higher-yield investments, being insured also makes producers more creditworthy, making lenders more likely to grant a loan that could be used for a promising investment opportunity (Nnadi, et al., 2013).

Agricultural insurance can come in many different forms. Table 1 summarises the key agricultural insurance types. The list is not exhaustive or mutually exclusive, there are other insurance types and a country will generally have options for a number of these different insurance types.

4. Agricultural insurance take up in South Africa
For South Africa’s agricultural sector as a whole there does appear to be some take

---

**Figure 1:** Global occurrences of natural disasters by decade, 1960-2010.

Data Source: (CRED, 2015)
up of formal insurance schemes, however, this has been declining relative to farm incomes in recent years. In the commercial farming sector, approximately 1.4% of total farming income is spent on insurance. This is according to the national 2013 Agricultural Survey (Stats SA, 2013) that is down from previous years as illustrated in Figure 2, which shows the proportion of farm income spent on insurance for all available years since 2002 where the percentage was more than 2.3%.

In 2010, FinMark Trust commissioned the Centre for Inclusive Banking in Africa to undertake a study on the state of agricultural and rural finance in Southern Africa, in order to better understand the nature and extent of challenges faced in accessing and making use of financial services. This study provides a benchmark for agricultural and rural finance in South Africa and seeks to contribute to making financial markets work for the poor. Although there has been an improvement in accessing a range of financial services among the poor, there is still a need for more specialised financial services for emergent and small commercial farmers, especially with regards to insurance (FinMark Trust, 2013).

FinMark Trust (2013) reports that smallholder agriculture is a significant component of (urban) livelihood strategies and approximately 30% of smallholder farmers utilise formal insurance services. However, further

<table>
<thead>
<tr>
<th>Insurance Type</th>
<th>Risks Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Risk</td>
<td>One (even two) risks or perils of a non-systemic nature (hail, or hail and fire).</td>
</tr>
<tr>
<td>Yield</td>
<td>Main risks that affect production (e.g. multi-peril crop insurance)</td>
</tr>
<tr>
<td>Price</td>
<td>Insured amount of production against decreases in price in relation to a determined threshold.</td>
</tr>
<tr>
<td>Whole-farm</td>
<td>Combination of guarantees for various products on a farm that can be whole-farm yield or revenue insurance.</td>
</tr>
<tr>
<td>Revenue</td>
<td>Combination of yield and price insurance that can cover the whole-farm or a specific product.</td>
</tr>
<tr>
<td>Income</td>
<td>Price and yield process together with production costs for the whole-farm and is usually not product specific.</td>
</tr>
<tr>
<td>Index-based</td>
<td>Based on indices that are measured by government or third parties, for example, weather based indices and satellite imagery, average yields.</td>
</tr>
</tbody>
</table>

Source: (Bielza, et al., 2008)
investigation reveals that this was primarily personal life insurance cover and only a negligible proportion is noted for agricultural insurance. The report identifies significant financial service needs of smallholder farmers in terms of savings, transmission, credit and insurance services, and highlights the stark contrast between insurance access for smallholder farmers when compared to the commercial farming sector.

A later assessment by the South African Insurance Industry Association revealed a penetration rate for Multi-peril Crop Insurance (MPCI) for commercial farmers of 17% of the planted surface area. For smallholder farmers the penetration rate was deemed negligible (SAIA, 2013).

Mahlase (2013) argues that the reason for the low take-up is largely expensive insurance premiums. In South Africa’s case, the main reasons are:

• Unlike many developing countries, the South African Government does not subsidise crop insurance (Nieuwoudt, 2000; Mahul & Stutley, 2010)

• As illustrated, there have been substantial increases in the frequencies of particular natural disasters, specifically floods, storms and wildfires. This increases the risk to insurers, which will lead to higher premiums.

• Potential clients are widely distributed across the country including some remote and difficult to reach places. This raises the transaction cost of insurance, which will push up premium prices (Mahlase, 2013).

There is evidence of schemes tailored for smallholder farmers. FinMark Trust (2013) reports on programmes that offer production loans, crop insurance, production inputs, marketing, logistics and mentorship towards becoming self-sustaining commercial farmers. However take up of such schemes was still very low, at the time of the FinMark Trust study, one of the programmes reached only 272 farmers, involving R155 million in crop loans (FinMark Trust, 2013).

5. Conclusions and recommendations
South African farming has experienced a very low take-up of agricultural insurance. Additionally, where it has been taken up, it has been by the commercial sector with no suitable insurance packages for smallholders. This is a huge concern as smallholder farmers are much less able to cope with extreme weather conditions due to under developed infrastructure and the lack of resources to start up again should they suffer large losses. As climate change increases the frequency and severity of extreme weather events smallholders are becoming more and more at risk, hence the incentive for households to take up farming diminishes even further.

Agricultural insurance offers smallholder farmers the opportunity to reduce vulnerability to volatile weather conditions and climate change by allowing the market to carry a portion of the costs (World Bank, 2011), whilst establishing themselves in the sector and adapting to climate change events. It is of importance that agricultural insurance becomes sustainable and remains affordable for smallholder and commercial farmers.

In South Africa there is a clear need for innovation in the industry so as to have access to appropriate and well implemented agricultural insurance in the South African context. Insurance can (and should) be used to complement other risk management approaches. Risk management can help reduce farmers’ vulnerability to adverse weather conditions and in this way complement risk transfer schemes such as insurance. For this reason it is important that agricultural insurance initiatives are coupled with other schemes that encourage sustainable farming practices in the face of climate change, such as the Western Cape 110% Green Initiative, The GreenAgri Portal and the SmartAgri Project. The key priority areas under the Comprehensive Agricultural Support Programme (CASP) should also be revisited to ensure that information, technology and advisory services incorporate
resource efficiency. If grant funding can be linked to efficiencies and savings, smallholder farmers may be in a position to reduce vulnerability in the face of increased extreme weather events and afford insurance where risk transfer is applicable.

The main outcome of this study, however, should be to stimulate further research; as a need has been identified in order to ensure the growth and development of the country’s smallholder sector. These farmers need an insurance package that is suited to their specific needs and characteristics and there should be a focused research into designing such a package. If this can be achieved, the risk which threatens the sector can be minimised, thus making smallholder farming an attractive and fruitful activity, leading to improved sector growth and the alleviation of poverty.

References


Changes in the air cell volume of artificially incubated ostrich eggs

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$^{2}$Directorate: Animal Sciences, Western Cape Department of Agriculture, Private Bag X1, Elsenburg, 7607, South Africa.
$^{3}$Department of Animal Sciences, University of Stellenbosch, Private Bag X1, Matieland, 7602, South Africa.

Take home message

It is important to be able to determine at an early stage of incubation if there are any problems with the incubators or alternatively, with the breeder flock. This makes the identification of time of death of embryos during the incubation period important. Results from our study showed that the relationship between the development of ostrich embryos and air cell volume at various stages of the artificial incubation process can be used as an additional tool by hatcheries to determine age of early embryonic mortalities.

Introduction

Ostrich farming is a major agricultural enterprise in South Africa. To maximise production, eggs are collected daily, and incubated artificially. A poor understanding of the pattern of embryonic development in ostriches may contribute to the poor hatching results.

An important tool for identifying incubation problems that cause low hatchability is knowledge of the age and degree of development of the embryo at the time of death (Ar & Gefen, 1998). On commercial ostrich farms, egg candling is commonly used during artificial incubation to determine fertility and monitor the progress of the developing embryo. Candling, however, is not considered an effective tool to assess embryonic development or potentially to identify developmental problems at an early stage of incubation.

One feature, however, that is usually easily distinguishable is the air cell at the blunt end of the egg. The air cell is initially formed between the two shell membranes as the egg cools after being laid. Air cell volume consequently increases in size during incubation as water is lost from the egg. The rate of water loss, and thus change in air cell volume, can potentially be influenced by any deviation from normal embryonic development. This study aimed to determine the potential relationship between the development of ostrich embryos and air cell volume at various stages of the artificial incubation process, as well as report on factors influencing air cell volume during the incubation period.

Material and Methods

Data obtained for this study were recorded during the 2007 breeding season for eggs that originated from the commercial ostrich breeding flock at the Oudtshoorn Research Farm of the Western Cape Department of Agriculture, South Africa. The origin of birds, their husbandry and artificial incubation practices for the eggs have been described by Van Schalkwyk et al. (1996), Van Schalkwyk (1998) and Bunter & Cloete (2004). All eggs collected during the 2007 breeding season were weighed and identified by date and paddock of origin. Methods for collection, disinfection and storage at the experimental site are well documented (Van Schalkwyk et al., 1998; 1999; Brand et al., 2007).
One hundred and twenty fresh eggs (chosen at random to represent eggs at that stage) were weighed and candled. These eggs were set and incubated in an electronic Buckeye® incubator at a temperature of 36°C and relative humidity of 24% to investigate the changes in air cell volume and the development of the embryo. Eggs were candled and photographed every 2-3 days throughout the 42-day incubation period to monitor air cell size. A total of 2,160 images were digitised from the photographs and evaluated by using the software package AnalySIS® (Soft Imaging System, 1999). The percentage of egg volume occupied by the air cell was determined, and the area occupied by the air cell was expressed as a percentage of the area occupied by the entire egg. Examples of images acquired in this way for embryos of 3 to 42 days of age are depicted in Figures 1a to f. Eggs were weighed on day 21 and on day 35 of incubation to determine weight loss of the eggs at that stage. Weight loss was calculated as the difference between the fresh egg weight and the egg weight recorded on days 21 and 35, respectively. The data was subjected to analysis using ASREML software (Gilmour et al., 1999). Traits that were considered were percentage water loss up to 21 days of incubation (WL21), percentage water loss up to 35 days of incubation (WL35) and the percentage of egg occupied by the air cell.

Table 1 Descriptive statistics for traits recorded from eggs of breeding ostrich females for the 2007 production year.

<table>
<thead>
<tr>
<th>Traits</th>
<th>Mean ± SD</th>
<th>CV (%)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>EWT (g)</td>
<td>1389 ± 112</td>
<td>8.1</td>
<td>1121-1765</td>
</tr>
<tr>
<td>WL21 (% of fresh egg weight)</td>
<td>7.5 ± 1.8</td>
<td>23.9</td>
<td>4.6-12.6</td>
</tr>
<tr>
<td>AC 21(%)</td>
<td>10.9 ± 3.4</td>
<td>31.5</td>
<td>4.5-20.0</td>
</tr>
<tr>
<td>WL35 (% of fresh egg weight)</td>
<td>12.4 ± 3.0</td>
<td>24.1</td>
<td>7.4-20.2</td>
</tr>
<tr>
<td>AC 35(%)</td>
<td>18.5 ± 5.9</td>
<td>31.9</td>
<td>9.2-39.7</td>
</tr>
</tbody>
</table>

SD: standard deviation; CV%: coefficient of variation; EWT: egg weight at time of lay; WL21: water loss at day 21 of incubation; AC 21%: air cell as % of egg volume at 21 days of incubation; WL35: water loss at day 35 of incubation; AC 35%: air cell as % of egg volume at 35 days of incubation.
The random effect of egg was included in the analysis to account for the variation attributed to the repeated sampling of specific eggs.

**Results and Discussion**

The average weight of the 120 eggs used in this study was 1,389 ± 112 g, with a coefficient of variation (CV) of 8.11% (Table 1). Water loss ranged from 4.6% to 13.0% of fresh egg weight at day 21 of incubation, and 7.4% to 20.0% at day 35 of incubation, with higher CVs of 23.9% and 24.1%, respectively. The percentage of the egg occupied by the air cell varied considerably between eggs candled throughout incubation. Air cell volume averaged 10.9% for eggs incubated for 21 days, and 18.5% for eggs incubated for 35 days with high corresponding CVs of 31.5% and 31.9%, respectively.

The proportion of the egg occupied by the air cell increased throughout the incubation period of 42 days (Figure 2). The average percentage of the egg occupied

---

**Figure 2** Percentage of egg volume (± S.E.) occupied by the air cell in hatched, infertile and dead-in-shell ostrich eggs during the 42-day incubation period.
by the air cell for fertile eggs that hatched successfully was 2.5% for fresh eggs. This increased steadily to 24.4% at day 42 of incubation. By day 28 of incubation, the dark shadowed area of the developing embryo covered almost the entire eggshell, with the exception of the air cell region in fertile eggs. From day 29 of incubation and longer, air cell volume for infertile eggs was significantly higher (19.3%, \( P < 0.05 \)) when compared with that observed for dead-in-shell (DIS) eggs (14.3%) and eggs that hatched successfully (13.8%). There appeared to be a plateau in the expansion of the air cell area from day 17 to day 27 of incubation.

A rapid increase in air cell volume occurred towards the end of incubation. This increase in air cell volume from day 38 of incubation could be attributed to an increase in embryonic heat production, which in turn leads to an increase in egg temperature, contributing to increased water loss. The most pronounced increase in \( \text{O}_2 \) consumption of ostrich eggs occurred between 26 and 31 days of incubation. This, together with a similar increase in embryonic metabolism at day 25 of incubation, could contribute to the increase in air cell volume towards the end of incubation. The first indication of the commencement of hatching took place on about 42 days of incubation with the appearance of a shadow on one side of the air cell as the chick pipped internally (Figure 1f). Movement of the chick could be observed throughout internal pipping until external pipping occurred when the chick broke through the egg shell.

**Conclusions**

Egg candling is a useful tool to assess embryo development, and to identify infertile eggs, as well as early embryonic mortalities in ostrich embryos. In this study, the aim was to determine the potential of the technique to assist with determining embryonic mortality at later stages. Changes in the air cell volume conformed to expectations, but the differences between hatched eggs and those with dead-in-shell chicks were generally not significant.

Fairly large levels of variation observed within categories involving hatched and dead-in-shell chicks, as well as infertile eggs, complicating the formulation of robust guidelines that could be used in commercial hatcheries to identify embryonic mortalities where it is unlikely that such detailed parameters will be recorded. Although only subtle differences between hatched and DIS chicks were detected in this study using air cell volume to predict embryo development throughout the hatching period, it can still be an additional tool for hatchery managers to use.
References


AGRICULTURAL RESEARCH EXPENDITURE:
South Africa’s place in the developing world

Dr Dirk Troskie
Director: Business Planning and Strategy Western Cape Department of Agriculture

1. Introduction
South Africans have just started to get used to have lost its status as the largest economy in Africa when a second shock awaited them at the World Economic Forum on Africa: South Africa has lost its second place to Egypt and is now third in line. But, where do we stand in the game of agricultural research? The purpose of this article will be to explore this topic and the first section will focus on South Africa’s standing in the developing world. The second section will explore trends in domestic agricultural research expenditure and the final section will try to put a perspective on the table to argue why agricultural research matters.

2. Agricultural research expenditure in the developing world
South African agriculture is, without doubt, a beacon of light in the developing world. Indeed, to prevent the distortion of data, South Africa is often left out of Sub-Saharan data. The information in Figure 1 provides important information.

Figure 1 Agricultural research expenditure (Million US$) in 2011 by various countries in the developing world

Source: ASTI (2016)
According to this information Morocco is currently the developing country (middle and low income countries) spending most money on agricultural research. Indeed, Morocco's $403 million is more than twice the $194 million invested by South Africa in agricultural research. Even more important, Turkey ($348 million) and Nigeria ($266 million) are investing significantly more in agricultural research than South Africa. It is also interesting to see that other African countries such as Egypt, Kenya and Tunisia are also making significant investments into agricultural research.

However, the total value of investment in agricultural research only provides part of the picture. In Table 1 two other indicators are provided. In the first of these it is clear that Trinidad and Tobago spends 8.7% of the value of its Agricultural Gross Domestic Product (AgGDP) on agricultural research. Mauritius, Namibia and Botswana are all African countries spending a bigger share than South Africa of their AgGDP on agricultural research.

Even worse than its agricultural research expenditure as a percentage of AgGDP, is South Africa’s agricultural research expenditure expressed per person of the population. According to this criterion

**Table 1** The agricultural research expenditure (US$) in 2011 of the top 20 developing countries as share of Agricultural GDP and per person of the population.

<table>
<thead>
<tr>
<th>Nr</th>
<th>Percentage of Agricultural GDP</th>
<th>Per Person of the total population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Country</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Trinidad and Tobago</td>
<td>8.7</td>
</tr>
<tr>
<td>2</td>
<td>Oman</td>
<td>5.5</td>
</tr>
<tr>
<td>3</td>
<td>St Kitts and Nevis</td>
<td>5.2</td>
</tr>
<tr>
<td>4</td>
<td>Mauritius</td>
<td>4.9</td>
</tr>
<tr>
<td>5</td>
<td>Mauritius</td>
<td>3.8</td>
</tr>
<tr>
<td>6</td>
<td>Antigua and Barbuda</td>
<td>3.7</td>
</tr>
<tr>
<td>7</td>
<td>Botswana</td>
<td>2.6</td>
</tr>
<tr>
<td>8</td>
<td>Barbados</td>
<td>2.3</td>
</tr>
<tr>
<td>9</td>
<td>South Africa</td>
<td>2.0</td>
</tr>
<tr>
<td>10</td>
<td>Jordan</td>
<td>1.6</td>
</tr>
<tr>
<td>11</td>
<td>Cabo Verde</td>
<td>1.5</td>
</tr>
<tr>
<td>12</td>
<td>Swaziland</td>
<td>1.4</td>
</tr>
<tr>
<td>13</td>
<td>St Vincent and the Gren.</td>
<td>1.2</td>
</tr>
<tr>
<td>14</td>
<td>Costa Rica</td>
<td>1.1</td>
</tr>
<tr>
<td>15</td>
<td>Lebanon</td>
<td>1.1</td>
</tr>
<tr>
<td>16</td>
<td>Malawi</td>
<td>1.0</td>
</tr>
<tr>
<td>17</td>
<td>Lesotho</td>
<td>1.0</td>
</tr>
<tr>
<td>18</td>
<td>Congo, Rep.</td>
<td>0.9</td>
</tr>
<tr>
<td>19</td>
<td>Grenada</td>
<td>0.9</td>
</tr>
<tr>
<td>20</td>
<td>Panama</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Source: ASTI (2016)
South Africa spends just $5.7 per person on research, which is roughly one fifth of the $27.2 that Namibia spends on the same criterion. Ahead of South Africa’s 12th place are other African countries such as Mauritius ($25.3), Botswana ($9.3), Cabo Verde ($7.3) and Kenya ($6.2). South Africa is just ahead of Ghana ($5.6) and Swaziland ($5.1). How did South Africa end up in this situation? This question will be addressed in the next section.

3. South Africa’s agricultural research expenditure over time

An interesting picture starts to emerge when South Africa’s agricultural research expenditure is tracked over time (see Figure 2). In real terms (i.e. with the effect of inflation removed) South Africa’s research expenditure fluctuated around $210 million per year for most of the 1980s. For most of the 1990s agricultural research expenditure reached a new high and remained in the order of $250 per year for this decade. However, with the turn of the millennium agricultural research expenditure has lost its impetus and has steadily declined to $193 million in 2011; which is significantly lower than the expenditure in the 1980s.

Agricultural research expenditure as a percentage of AgGDP has followed a similar trend with expenditure ranging around 2% in the 1980s, climbing to 3.1% in 1992 and declining since to its former levels. Of more concern is agricultural expenditure per person. In 1982 South Africa invested $10.50 per person in agricultural research. Although the downward trend was slightly arrested during the higher total investment of the 1990s, population growth has forced total agricultural research expenditure to steadily decline ever since. One can rightly ask how this will impact on the long-term food security of the country.
4. The power of agricultural research expenditure: The case of Ghana

Although there are undernourished people in South Africa (a debate for another day), we became used to sufficient food being available (whilst resources to purchase food may be lacking). However, Ghana was not always in such a position. In 1991 more than 47% of Ghana’s population suffered from malnutrition, but by 2013 less than 5% of its people suffered this fate (see Figure 3). Incidentally, the FAO consider a figure of less than 5% as if total food security is in existence.

At the other side of the coin Ghana’s expenditure per person on agricultural research increased from $1.5 per person in 1982 to $6.4 in 2009 (ASTI, 2016). This increase in expenditure has translated into an increase in the food production index per capita from 54 index points in 1990 to 118 today (2004-2006=100). This is a clear indication of how investment in agricultural research and food production can translate into improved food security and a better life for all.

5. Conclusion

The purpose of this paper was to explore South Africa’s agricultural research expenditure in the context of the development world. It was found that South Africa is the 4th biggest investor in agricultural research in the developing world, the 9th as a percentage of AgGDP and the 12th if agricultural research expenditure per person is calculated. Of particular concern is the fact that the agricultural research expenditure per person has steadily declined over the past three decades. On the other side of the spectrum it was shown how Ghana’s investment in agricultural research has relegated undernourishment to its history books.

References


Agri-Expo promotes livestock

Agri-Expo Livestock, 13 to 15 October 2016 at Sandringham, Stellenbosch, is regarded as the gold standard of the livestock industry in the country. This expo reflects the unique image of the South African livestock industry, with about two hundred cattle of outstanding quality that will be competing against each other. Agri-Expo ploughs 185 years of valuable experience into every activity, so visitors can expect an extensive programme with something for old and young, farmer and consumer.

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The first Western Cape Landbouweekblad conference takes place with outstanding speakers. For enquiries, contact Theuns Venter on 021 406 3855.

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Buy a beautiful leather bag or wool jersey and see if you can distinguish between the eggs of different poultry. Food demonstrations by famous chefs, dog shows and a variety of exhibitions will provide hours of pleasure and fun.

Tickets available at the gates: Adults - R50, children between 13-18 - R30 and kids under 13 - free. Gates open daily from 09:00 to 18:00. Sandringham is located next to the N1, Stellenbosch turnoff 39.

For more information, contact Porchia Adams: Porchia@agriexpo.co.za
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