New minister’s approach to agriculture

Live animal online export system

Jong broeivolstruis haal goeie pryse
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With the scourge of rhino poaching at the forefront of the news, the public are being reminded of the important work veterinarians do. But veterinarians are more than just animal doctors and in this issue we look at some of the ways in which veterinarians influence our society.

As the world gets “smaller” and new trade opens up, the role veterinarians play in the movement of animals (pets or commercially valuable species such as cattle and horses) becomes more important. New ways of handling export certification as well as the impact of animal disease on trade are considered in this issue.

But where would we be if we were unable to monitor for the presence of disease or assure our trading partners the tests we are using are acceptable unless our laboratories were of an international standard? To this end the Provincial Veterinary Laboratory is working towards ISO accreditation that will see our lab counted amongst those offering the very best in scientific testing.

Trade is important to our country’s
This issue we are focusing on veterinary services. On the cover page is the new Minister of Agriculture, Alan Winde with one of the state veterinarians, Dr Annelie Cloete.

An increasing amount of farm produce is used as inputs in processing consumer products, from cheese, chocolate and sausages to shoes, jackets and leather furniture. Veterinarians play a crucial role in ensuring the public have access to healthy, wholesome food and safe products.

Finally, we welcome Minister Alan Winde.

Happy reading!
Dr Gininda Msiza
Chief Director: Veterinary Services
New minister to approach agriculture as a serious business

Giselle Terblanche, gisellet@elsenburg.com

The new Minister of Agriculture, Alan Winde, who also heads Tourism and Economic Development, is not one bit phased by the fact that the responsibility for the whole economy now rests squarely on his shoulders. In fact, he sees it as an exciting opportunity that will give him the chance to “bring all the threads together” in order to grow the economy and create much needed jobs.

Previously a successful entrepreneur involved in the start-up of several small businesses, he will be approaching agriculture as a business. He views agro-processing as an especially huge opportunity. “We mustn’t just export our products; we must process what we produce and by doing so add value,” he says.

He wants to get rid of blockages such as red tape in order to make agriculture an “easy place to do business”. He is aware of the various challenges but believes these can be turned into opportunities.

His plan is to change the outdated image of agriculture to that of a cutting-edge sector with highly skilled people and technology that’s globally competitive. He wants it to be viewed as a sector that is a leading force in the food security challenge. The role our region plays in Africa must also not be underestimated. “We have a leadership role to play on our continent and should build relationships with other countries to our mutual benefit.”

He is especially keen that young people would start viewing it as an exciting sector offering rewarding careers.

But what about the social side of agriculture, bearing in mind the farm strikes that nearly crippled the province in 2012? It is his belief that more than most, the agriculture sector has to take responsi-
bility for the social welfare of the people in its space because of where it is based. He views farmers and farm workers as an equal priority.

However, he has no intention of coming in and turning things “upside down”. Firstly he wants to talk to all the role-players in the sector to familiarise himself with the challenges and hardships faced. Then he will apply his entrepreneurial mind to initiate exciting new projects similar to the ones he has become known for in his other portfolios.

Few people know that Minister Winde is also a dedicated “greenie”, who rides his bicycle to work when his schedule and the weather permit it. Definitely something to be admired! He has also implemented several “green” measures in his home, such as a full recycling system and vegetable gardens. “We only have one planet and at the moment our resource use is in excess of the planet. Therefore we need to take responsibility of how we use those resources in every aspect of our lives.”

With such an innovative and energetic man at the helm, agriculture can only go from strength to strength in the years to come. Welcome, Minister Winde!

One-on-one with Minister Winde

What makes you angry?
I don’t often get angry, as I don’t allow things to get under my skin.

What makes you happy?
Life! We live in a stunning part of the world. My wonderful family also makes me happy.

If you were stranded on an island and could choose two things to have with you, what would it be?
My wife and a yacht.

Which books are you currently reading?
I have a pile of books next to my bed, including one by Steven Covey, but unfortunately I don’t have much time to read.

If you could have dinner with anyone in the world, dead or alive, who would it be and why?
Leonardo da Vinci. If he had lived today he would have brought amazing insight. He would have given us endless solutions to the various problems we face.

We have a leadership role to play on our continent and should build relationships with other countries to our mutual benefit.

MINISTERIAL

“...We have a leadership role to play on our continent and should build relationships with other countries to our mutual benefit.”
Diary and events

A flock of Merino folk

Pavarni Jorgensen, pavarnij@elsenburg.com
This year South Africa hosted the Cape Wool 9th World Merino Conference for the first time since 1990. It took place in Stellenbosch at the end of April. This year’s conference hosted over 350 local and international delegates comprised of farmers, scientists and industry partners. The Western Cape Department of Agriculture sponsored, supported and participated in Merino 2014 events.

International delegates explored South Africa and the local Merino industry during post- and pre-conference tours. The Merino Expo showcased SA breed societies as well as local produce (e.g. Cape wines, Karoo lamb and woollen garments). The Directorate: Animal Sciences (Chief Directorate: Research and Technology Development Services) participated in the Merino Expo with a quirky Merino display, launched the Research Project Summaries – Small Stock 2012/13 publication and interacted with delegates.

Leading international and local speakers covered a range of subjects of interest to Merino breeders and scientists and the Merino trade and commerce in general. Dr Buks Olivier and Prof Schalk Cloete delivered well-received talks titled “Are we getting there? What breeding values tell us” and “‘The high line’ – continuous selection for the best” respectively.
Puleng Matebesi Ranthimo, a student of Prof Cloete’s and affiliated to Elsenburg, represented Lesotho in her talk “On top of the world – Merino breeding in Lesotho”. International speakers included President of the World Federation of Merino Breeders and dedicated Merino farmer, Robert Ashby, His Royal Highness King Letsie III of Lesotho, also a passionate Merino farmer, Charles Massy, Australian Merino breeder and author, and James Rowe, CEO of the Australian Sheep Industry Cooperative Research Centre (CRC) based in Armidale NSW, Australia.

The Western Cape Department of Agriculture hosted 90 delegates at Elsenburg during the post-conference tour. Joyene Isaacs (HOD) and Dr Ilse Trautmann (Chief Director: RTDS) welcomed the guests and Francis Steyn (Sustainable Resource Management) and Dr Aileen Pypers (Veterinary Services) described some of the services and projects of their respective programmes. Lorraine Geldenhuys (Faculty: Viticulture & Oenology, Elsenburg Agricultural Training Institute) and her 12 final-year students treated the guests with a wine and food pairing event. All the wines were produced by students of Elsenburg Agricultural Training Institute.

The conference successfully brought industry leaders from around the world together and provided great networking opportunities. The Western Cape Department of Agriculture’s support of and participation in the Cape Wools 9th World Merino Conference is indicative of our commitment to our respective agricultural industries and commodities and their research and development endeavours.
Die navorsingsspan van die Direktoraat Dierewetenskappe van die Departement van Landbou Wes-Kaap en medewerkers in die bedryf het op 8 Mei ‘n baie suksesvolle inligtingsdag op die Oudtshoorn Navorsingsplaa aangebied. Die opkoms was uitstekend en produsente van so ver as Swellendam in die Suid-Kaap, Vryburg in die Karoo, asook vanuit die Oos-Kaap het dit bygewoon.

Die hoofdoel van die inligtingsdag was om die jongste navorsingsinligting na die Klein-Karoo te bring. Die bekende landbou-ekonom prof. Nick Vink het ‘n positiewe oorsig van wêreld-, Afrika- en plaaslike markte en verbruikersvoorkeure deurgegee.

Met die uitbraak van voël griep by volstruise in 2012 het produsente groot verliese aan inkomste gely weens die uitslag van diere en die verbod op die uitvoer van vleis. Die groot vraag is of ‘n moontlike volgende uitbraak voorkom kan word deur die inenting van huidige volstruiskuddes. Dr. Louis Maartens van Delta-Mune het deurgegee dat dit nie verbode om volstruis teen voël griep in te ent nie, maar daar is verskeie uitdagings voor ‘n entstof beskikbaar sal wees. Dr. Adriaan Olivier van Klein Karoo Internasionaal het beklemt met die bestuur en beheerde beweging van voëls is noodsaaklik om die risiko van sakteverspreiding te beperk.

Weens die hoë koste van grondstowwe het die voerkoste van volstruise die hoogte ingeskiet. Dit is dus noodsaklik dat dié optimaal geformuleer word om kostes te beperk. Prof. Tersius Brand, 'n spesialis-navorser by die Departement van Landbou Wes-Kaap, het die produente ingelig oor die voedingsmodel vir volstruise wat hy ontwikkel het. Hy het ook alternatiewe grondstof-opsies deurgegee wat die koste van rantsoene sal verlaag.

Tans is volstruisvelle die hoofbron van inkomste vir produente. Om 'n goeie inkomste te verseker is dit dus belangrik dat die gehalte van velle hoog is. Dr. Anel Engelbrecht, senior navorser van die Departement, het die produente ingelig dat goeie bestuur reeds vanaf dagoudkuikentijd nodig is om te verseker dat die vel van die slagvolstruise is in 'n goeie toestand.

Navorsing het getoon skade aan die velle vanaf 'n reeds baie jong ouderdom kan duidelik op die vel gesien word nadat die volstruis geslag is. Sy het 'n aantal oorsake van velskade bespreek, soos swak heijnings, doringboomtakke, groeplading, ens. Met goeie bestuur kan hierdie probleme uitgeskakel word en dit sal lei tot 'n verhoging in velgradering en beter pryse.

Prof. Schalk Cloete, spesialis-navorser van die Departement, het 'n oorsig oor die vordering in eier- en kuikenproduksie oor die afgelope 25 jaar gegee. Daar is groot variasie in reproduksie van volstruise. Gevolglik is genetiese vordering moontlik deur seleksie vir die onderskeie reproduksie-eienskappe, eier- en kuikenproduksie. Hy het ook verslag gedoen oor die positiewe vordering wat met kunsmatige inseminasie by volstruise gemaak is.

Met die toename in kleinveeboerdery in die gebied het dr. Buks Olivier, bestuurder van die Direktoriaat Dierewetenskappe van die Departement, 'n lezing oor basiese bestuursbeginsels by kleinvee gegee. Faktore soos ooiouderdom, paringskondisie en aantal meerlinge is belangrik vir 'n ekonomiese produksie-eenheid.

Die hoofdoel van die inligtingsdag was om die jongste navorsingsinligting na die Klein-Karoo te bring.
Goeie pryse
vir jong broeivolstruise
op jaarlikse veiling

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Die jaarlikse produksieveiling van jong broeivolstruise met teelwaardes vir reproduksie en liggaamsgewig is in April op die Oudtshoorn Navorsingsplaas van die Departement van Landbou Wes-Kaap aangebied. Die hoogste prys wat betaal is, was R6 800 (vir ’n jong wyfie met teelwaardes van 5.0 vir liggaamsgewig, 21.2 vir eierproduksie en 9.3 vir kuikenproduksie), terwyl die gemiddeld vir al die jong broeivolstruise wat aangebied is R4 888 was.

Die pryse was van so ’n aard dat kopers kan voel hulle het goeie waarde vir hul geld gekry, gesien teen huidige slagpryse en die potensiële langtermynwaarde wat ’n jong broeivoël bied. So ’n jong broeivolstruis kan vir minstens tien jaar lank kuikens produseer. Die broeivolstruise wat aangebied is, is spesifiek uitgesoek op grond van hul teelwaardes vir massa en reproduksie (eier- en kuikenproduksie) met die oog op die genetiese verbetering van bestaande teeltkuddes.

Altesaam 13 kopers het geregistreer vir die veiling en 94% van die aanbod is van die hand gesit. Gegewe die huidige ekonomiese klimaat word die veiling as ’n groot sukses beskou. Soos een van die boere dit gestel het: “Daar is nie geld wat rondlê nie.” Die beskikbare volstruise is dus abso-
luut op behoefte aangekoop. Die aanvraag na jong wyfies was soos gewoonlik hoër as vir jong mannetjies, met die gevolg dat agt van die jong mannetjies nie verkoop is nie. Die 26 ouer broeivolstruise wat ook aangebied is, is vir ’n gemiddelde prys van R5 077 verkoop.

Dit was die tiende veiling wat die Wes-Kaapse Departement van Landbou op sy Oudtshoorn Navorsingsplaas aangebied het sedert die aanvang daarvan in 2004. Oor dié tydperk is altesaam 1 171 broeivolstruise aan meer as 60 produente verkooop. Op dié manier word die genetiese vordering wat op die Navorsingsplaas gemaak word, ook beskikbaar gestel aan die bedryf, wat geleidelik die gehalte en produktiwiteit van die kommersiële kuddes kan verhoog.

Met die veilings word gepoog om ’n bewustheid te skep van die noodsaaklikheid van deeglike rekordhouding om seleksie moontlik te maak en produktiwiteit te verhoog. Daar is wel produente wat intussen self met klein kampies begin het waar individuele produksie gemonitor kan word en seleksie van voortreflike diere dus moontlik is. Só kan meer kostedoeltreffend geboer word omdat hoogproduserende teeldiere behou kan word, terwyl onproduktiewe diere geïdentifiseer en geprul kan word. Hierdie verwikkeling is belangrik, aangegee daar tans geen formele diereverbeteringskema by volstruise beskikbaar is soos wat die geval by ander plaasdiere is nie.

Dit is interessant dat daar vroeër jare, tydens ’n bloeitydperk kort ná dereguleriging van die bedryf, soortgelyke veilings onder die vaandel van die Klein Karoo Koöperasie op die Navorsingsplaas aangebied is. Op die eerste van hierdie veilings in 1995 is rekordpryse van R20 750 vir ’n wyfie en R17 500 vir ’n mannetjie behaal. In 1996 is daar vir die eerste keer in die geskiedenis van die volstruisbedryf volgeregistreerde diere te koop aangebied, wat aansienlik hoër prysie as die ongeregistreerde diere behaal het. Met die inkrimping van die bedryf in die later 1990’s is die veilingegester staak. Nou, amper 20 jaar later, is die prysie vir teeldiere steeds baie laer as wat in daardie tydperk behaal is.

Agter van links na regs is P.A. Geldenhuys (afslaer, Klein Karoo Beperk), Jurie Klue (meeste volstruise gekoop) en Jan Fouche (hoogste prys vir ’n wyfie). Voor is Owen Clayton (hoogste prys vir ’n mannetjie), Nico de Boa (Klein Karoo Beperk), prof. Schalk Cloete en dr. Zanell Brand (Departement Landbou)
In 1964 het die Departement van Landbou ‘n plaas net buite Oudtshoorn aangekoop met die doel om volstruisnavorsing te doen - volgens alle aanduiding die oudste volstruisnurvorsingsplaas ter wêreld!. Nou, 50 jaar later, kyk ons terug op ‘n ryk geskiedenis van navorsing wat saam met die volstruisbedryf gegroeí het tot waar ons vandag is!

Groot vordering is gemaak ten opsigte van onder meer die daarstel van voedingstandaarde vir volstruiise, riglyne vir die kunsmatige broei van volstruiseiers en verskeie aspekte van teling. Daar is oor die jare ook verskeie droogte-bestande en alternatiewe gewasse op die plaas ondersoek vir gebruik in die omgewing.

Die Oudtshoorn Navorsingsplaas huisves deesdae ook 'n opleidingsentrum en is die tuiste van verskeie departementele programme, soos Veeartsenydiente, Landcare en FSD, wat almal van die Navorsingsplaas af hul dienste aan die gemeenskap lewer.

Vieringe van die 50ste verjaardag word beplan vir 12 Augustus, wanneer 'n koffie-tafelboek oor die geskiedenis van die plaas, asook 'n Engelse weergawe van die bekende “Volstruishandleiding” bekend gestel gaan word. 📚

Behind the scenes at the Young Ewe Show Competition

The Young Ewe Show Competition, which took place during Agri-Week 2014, was held for the fifth time in Beaufort West. The show competition gives small holder farmers the chance to showcase their animals and compete against each other. During Agri-Week close co-operation between Farmer Support and Development (FSD) (Eden and Central Karoo), Veterinary Services (Eden and Central Karoo), LandCare, BKB, Landbank, Beaufort West Show Committee and various other private organisations and Departmental officials ensure the event’s success.
More than 300 officials, farmers and NMMU students attended Agri-Week 2014 and more than 450 sheep and goats were entered. Various breeds of sheep, goats, cattle and working dogs were showcased. These included Dorper, Merino, Afrino, Dohne Merino, SA Mutton Merino, Dormer, Meatmaster, Boer goat, Angora goat, Tuli, Drakensberger, Boran and Nguni. Maluti and Anatolian worker dog breeds were also showcased.

The Agri-Week activities involve the showing of Dorpers, Wool breeds, Cross breeds, Boer and Angora goats. Slaughter lambs are also judged on the hoof and afterwards the carcasses are judged in the abattoir. Other activities farmers and students can engage in include info sessions on all the breeds that are showcased, animal handling sessions, shearing demonstrations (mohair and wool), a veld evaluation course, a cattle EBV evaluation competition, an abattoir tour, vasectomy procedure, artificial insemination (AI) of ewes, ram testing and pregnancy scanning.

Veterinary Services’ involvement is an integral part of Agri-Week. In preparation for the event animals are vaccinated against pulpy kidney and pneumonia. It also gives Veterinary Services the chance to inspect all animals on the farms and commongrass. The projects that form part of the Red Meat Evaluation Project in the Eden district are more closely monitored in conjunction with FSD in terms of production and reproduction.

During Agri-Week Veterinary Services are responsible for administering booster vaccines and endo- and ectoparasiticides to all animals (except the slaughter lambs), checking tattoo markings of all animals and general health inspections. Veterinary officials are largely responsible for the organisation of the terrain and offloading of animals.

The State Veterinarians are responsible for ram testing, AI of ewes, reproduction training and performing vasectomies. Veterinary Public Health is responsible for the abattoir tour.

Agri-Week’s success depends on the Department of Agriculture as a whole as well as the private sector and is a perfect example of the Western Cape Government’s ethos – better together.
The 2014 Western Cape Farm Worker of the Year Competition was launched in May on the farm La Provence outside Stellenbosch. The competition, with an annual budget of R1,5 million, is unique in South Africa and one of the flagship events of the Western Cape Department of Agriculture.

The competition recognises the important role farm workers play in South Africa and highlights the various career opportunities available in the agricultural sector. This year will see more than 1 000 entrants from 16 regions compete in categories such as General Worker; Tractor Driver; Social Development; Administrative Staff and two Farm Management categories. The overall winner will receive a prize worth R100 000 during a gala event in November 2014.

Former Western Cape Minister of Agriculture and Rural Development, Gerrit van Rensburg, said farm workers are some of the most important contributors to the economy and food security in the Western Cape. South African leaders who frequently attack the agricultural sector should take a moment to reflect on what life in South Africa would be like if there was no food available. He thanked the agricultural community for supporting the competition.

Johan van Deventer, the General Manager of Freshmark, Shoprite Checkers’ fresh produce procurement arm, attended the launch as representative of the main private sector sponsor. He said the importance of farm workers are evident when you walk through any Shoprite store in South Africa, as it is fresh and processed food products that are dominating the shelf space.

The first regional winner will be announced on 24 July in the Witzenberg region, which includes the towns of Ceres, Tulbagh, Wolseley, Prince Alfred Hamlet and Op-die-Berg.
Four Animal Sciences delegates attended the 20th biennial conference of the Association for the Advancement of Animal Breeding and Genetics (AAABG), which took place in Napier, New Zealand from 20 to 23 October 2013 – Prof Schalk Cloete (Directorate Animal Sciences: Elsenburg and Department of Animal Sciences, US), Dr Carel Muller (Directorate Animal Sciences: Elsenburg), Dr Jasper Cloete (Directorate Animal Sciences: Elsenburg and Department of Animal Sciences, US) and Lise Sandenbergh (Department of Genetics, US).

The AAABG is a professional organisation based in Australia and New Zealand for livestock scientists, breeders, educators, students and industry service providers. It has grown from a largely regional organisation to a truly international forum. Conferences organised by the AAABG therefore attract scientists from all over the world.
The 2013 conference comprised six keynote addresses during plenary sessions, 110 oral presentations during concurrent sessions and 26 posters presented during a poster session. The delegates from Elsenburg and the Stellenbosch University contributed four oral presentations and six poster presentations. Although several important livestock research areas were discussed during the conference, several papers discussed topics relating to genomic selection. This subject was of special interest to the South African delegation owing to the possible future implementation of this technology in the South African livestock industry.

Prior to the AAABG conference Prof Cloete visited the Massey University in Palmerston North, New Zealand on invitation of Associate Prof Nicholas Lopez-Villalobos. Prof Cloete took part in a seminar involving the postgraduate students under the supervision of Prof Lopez-Villalobos, and also presented a paper on selection for fitness in South African sheep flocks.

After the AAABG conference Dr Pierre Beukes of Dairy NZ invited Drs Muller and Cloete to visit a few dairy farms in the Hamilton region. Discussions centred on the InCalf project, seeking to improve the reproduction management of New Zealand cows. A commercial dairy farm was also visited.

Prof Cloete and Ms Sandenbergh stayed on in Napier to attend a Sheep Breeders’ Day at the Hawke’s Bay show grounds at Hastings. This event formed part of the annual Hawke’s Bay Agricultural Show. Dr Peter Amer of Abacus Biotechnology invited Prof Cloete along with other international scientists attending the AAABG to present a paper on the South African Sheep and Wool Industry at the event. Apart from learning about the international perspective, the New Zealand sheep farmers attending the Sheep Breeders’ Day were also informed about recent advances in sheep breeding affected by Sheep Genetics in Australia and by Sheep Industry Limited in New Zealand. The event was well attended and farmers and other audience members engaged with researchers during the question sessions. The show drew numerous visitors thanks to its festive atmosphere and various agricultural exhibitions and there were many participants in the livestock competitions.

Papers and posters presented by the South African delegation during the AAABG conference were met with a lot of interest from international colleagues. Informal discussion during the conference paved the way for possible future international collaboration on some projects involving sheep and dairy cattle.
Your champion in Agriculture

The Department prides itself in a number of achievements over the past 4 years. Due to limited space we can only highlight a fraction thereof.

140 721 person days of employment for unemployed rural people through LandCare and EPWP

36 833 youth reached through LandCare camps

3 138 farm workers participating in the Farm Worker of the Year competition

6 833 farmers supported

89% in the Public Service Commission’s assessment of the successful application of Batho Pele (Peoples First) principles (one of the highest scores in the country)

3 730 people trained through the Rural Development Co-ordination Programme

1 908 dogs sterilised in Kayamandi and Klapmuts

R278.2 million worth of investment in green and brownfield projects through the Agribusiness Investment Unit

More than 3 000 people in rural communities benefitted from World Food Day

834 students graduated from Elsenburg Agricultural Training Institute

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Dairy industry benefits from MOU with Milk SA

Dr Ilse Trautmann, ilset@elsenburg.com

A memorandum of understanding (MOU) was signed in March 2014 between Joyene Isaacs, Head of Department, and Nico Fouche, CEO of Milk SA. This is a significant milestone in the Western Cape Department of Agriculture’s support to the dairy industry.

The purpose of the agreement is to ensure a coordinated and functional approach is taken with regards to research & development (R&D) in the Western Cape in order to support the strategic direction of the dairy industry of South Africa, namely:

- broadening of the market for milk and other dairy products;
- improvement of the international competitiveness and sustainability of the South African industry;
- the empowerment of previously disadvantaged individuals, and
- supporting the NDP 2030, National Outcomes and Provincial Strategic Objectives.

The Department will offer its intellectual and other resources to address R&D needs as jointly identified by both parties, offer study leaders for postgraduate students where appropriate, and make its extensive facilities and pasture and dairy expertise at Outeniqua and Elsenburg Research Farms available for the execution of mutually agreed and approved research projects and technology transfer events.

Milk SA will ensure the R&D agenda is identified and maintained through its structures.

Both parties will ensure the R&D projects are aligned with the priorities of the dairy industry, as identified by Milk SA and the Department.

This agreement is yet another example of the Better Together drive of the Western Cape Government in our search for food security and higher agricultural production.
Several of the Department’s employees excelled at the April graduation ceremony of the Nelson Mandela Metropolitan University’s George campus.

Megan Bruintjies, community worker of the programme Farmer Support and Development (FSD) in Mossel Bay, not only received her BTech degree in Agricultural Management, but was also the first recipient of the Rainman Landcare Foundation Trophy for her contribution to sustainable food security.

Ben Booysen, a community worker at FSD Knysna, also received his BTech in Agricultural Management.

Prof Tertius Brand, specialist scientist
in the Directorate Animal Sciences (Programme Research and Technology Development Services), received a special research award for his mentorship of students over many years at NMMU.

Stefan Terblanche, one of Prof Brand’s students, received his MTech cum laude and was also awarded the “Best Masters Degree Dissertation”.

Vuyo Nteyi, our beloved colleague from the Directorate Plant Sciences who sadly passed away earlier this year, was awarded his MTech posthumously. Stefan and Vuyo were the only MTech students in Agriculture (Research) at this graduation ceremony.

1. Megan Bruinjies receives her Rainman Landcare Foundation Trophy from Prof. Raymond Auerbach, sponsor of this award.

2. Megan Bruinjies and Ben Booysen.

3. Prof. Almero de Lange (right) awards Stefan Terblanche with the “Best Masters Degree Dissertation”.

4. Prof. Jos Louw of NMMU (right) presents Prof. Tertius Brand with his award.

5. Vuyo Nteyi, who sadly passed away earlier this year, was awarded his MTech posthumously.
Finalists for the acclaimed 2013/14 NSTF-BHP Billiton Awards were recently selected, Prof Schalk Cloete, Specialist Scientist, Directorate of Animal Sciences, Elsenburg, and Professor Extraordinaire, Stellenbosch University, was chosen in the category outstanding contribution to SETI through research capacity development over the last five to ten years.

It is an exceptional honour to be a finalist, given the quality of the nominations received and the fact that all of them have made an outstanding contribution to Science, Engineering, Technology and Innovation (SETI) in South Africa.

All finalists received a certificate to acknowledge this achievement and were invited to participate in the discussion forum at the 45th NSTF Plenary meeting on 6 June, focussing on the UNESCO Science Sector in South Africa. During the morning session before the Finalists’ Ceremony the meeting was addressed by the Director-General of the Department of Science and Technology, Dr Phil Mjwara.

“Prof Cloete has excelled as a mentor and human capacity builder of many postgraduate students over many years and this nomination is rewarding his relentless efforts to build young scientists in agriculture,” said Dr Ilse Trautmann, Chief Director of the Programme Research and Technology Development Services.

Well done to Prof Cloete!
Top-toekennings beklemtoon “beter tesame”

Vennootskappe en volgehoue samewerking is boustene van die “Beter tesame”-slagspreuk van die Wes-Kaapse Departement van Landbou. Twee onlangse top-toekennings aan navorsers en ’n na-graadse student verbonde aan die Stellenbosch Universiteit, het juist hierdie slagspreuk beklemtoon.

Die Afrikaanse Taal- en Kultuurvereniging (ATKV) stel jaarliks prysgeld van R60 000 beskikbaar vir die bekroning van ses gepubliseerde Afrikaanse artikels wat in ’n betrokke jaar in ’n geakkrediteerde tydskrif verskyn is. Vier pryse is bestem vir artikels in die geesteswetenskap en twee vir artikels in die natuurwetenskap, wat ingenieurswese en mediese wetenskap insluit. Die Suid-Afrikaanse Akademie vir Wetenskap en Kuns hanteer die keuringsproses en die prys staan bekend as die SA Akademie/ATKV-prys. Vanjaar is die beste artikels wat in 2011 verskyn het en deur redakteurs van geakkrediteerde tydskrifte aan die Akademie voorgelê is, beoordeel. Daar is 17 artikels uit 11 tydskrifte voorgelê.

Anélia Marais (navorser, Direktoraat Plantwetenskap, Wes-Kaapse Departement van Landbou), Mardé Booyse (LNR), dr. Mike Ferreira (spesialis-navorser, Direktoraat Plantwetenskap) en prof. Alf Botha (Stellenbosch Universiteit) het vanjaar een van die Natuurwetenskappryse ontvang vir hul artikel “Die uitwerking van die onkruiddoder Roundup® op sommige populasies van grondmikrobes”, wat in Die SA Tydskrif vir Natuurwetenskap en Tegnologie, 30(1), 2011 verskyn het.

Tydens die onlangse bekroningsplegtigheid van die SA Akademie vir Wetenskap en Kuns het Lobke Steyn, na-graadse student verbonde aan die Stellenbosch Universiteit die Junior Kaptein Scott-medaille van die beste M.Sc-verhandeling in Veekundige Wetenskap aan die Suid-Afrikaanse universiteit verower. In haar tesis, wat sy cum laude verwerf het, getiteld “Supplementation of a high fibre concentrate to Jersey cows on pasture”, het sy navorsing gedoen oor alternatiewe veselryke voere wat veral in die winter as byvoeding vir Jerseykoeie gegee kan word. Die meeste van haar navorsing het sy op die Outeniqua Nauworsingsplaas van die Wes-Kaapse Departement Landbou op George gedoen, waar Jerseykoeie permanent op aangeplante weilings aangehou word. Prof. Christiaan Cruywagen van die SU se Departement Veekundige Wetenskap en prof. Robin Meeske, spesialis-wetenskaplike van die Direktoraat Veekundige Wetenskap van die Wes-Kaapse Departement van Landbou en Buitengewone Professor verbonde aan SU, was haar studieleiers.

Hierdie toekennings getuig nie alleen van die uitsette van hoogstaande wetenskaplike gehalte nie, maar ook die krag wat in samewerking en vennootskappe opgekom het. 

Prof Wannie Carstens en Lobke Steyn, wenner van die Junior Kaptein Scott-medalje.

Vlnr: Prof Wannie Carstens, dr Mike Ferreira, dr Mardé Booyse, dr Japie Gouws, prof Alf Botha en Anélia Marais.
In 1997 the European Commission published its guidelines regarding the importation of horses into the then European Community. These guidelines defined the specific African horse sickness (AHS) control zones in South Africa. This included the AHS free zone around Cape Town, which allowed direct exports of horses to the European community.

One of the restrictions to export is when AHS breaks out in one of the AHS control zones. The graphic on the right shows the AHS outbreaks which have occurred over the past 17 years have had a major impact on the direct export of horses between South Africa and Europe. Between January 1997 and March 2014 there have been a potential 206 months of direct export to the EU. Because of the AHS outbreaks which occurred in 1999 (Stellenbosch), 2004 (Stellenbosch) and 2011 (Mamre) only 55% of that time was available to export because of the two year period bans that are implemented based on the import permit requirements.

The loss of income as a result of the loss of direct export during the Mamre 2011 AHS outbreak was estimated in the region...
of R150 million. It is therefore clear that in economic terms the impact of disease is significant.

The South African government in collaboration with the formal equine industries will be evaluating aspects of AHS and its control in the country during 2014.

It is clear from the analysis presented in the graph that AHS exports under the current EU import criteria is not sustainable and fraught with risk because of AHS outbreaks in the AHS control zones. Hopefully a solution can be found where sustainable exports become a reality.
The continent with a plan

Dr Dirk Troskie, dirkt@elsenburg.com
Although most of us grew up with the perception that Africa is the dark continent and lacks the ability to even feed its population, this perception has been changing over the last few years. As a result of this changing awareness a new “scramble for Africa” has ensued; with mixed results as some burnt fingers indicate. Nevertheless, the value of agricultural production in Africa increased by 85% from US$114 billion in 1993 to US$212 billion in 2012 (deflated to constant 2006 values). As the population of Africa has also increased rapidly over this period, the index of food production per capita has increased somewhat slower at 16% over the same period (Figure 1).

This positive change did not just happen, but can be traced back to an African commitment to spend at least 10% of their budgets on agriculture towards achieving a 6% annual agricultural growth rate. Indeed, thirteen African countries have already achieved this expenditure target for at least one financial year. This money was spent on agricultural research, market access, increasing the supply of food whilst containing hunger and promoting sustainable natural resource use.

The people driving this initiative, the Comprehensive African Agricultural Development Plan (CAADP), met recently in Durban. It was quite interesting to note their positive attitude regarding ownership as determinant for future success and commitment towards a better future. Effective policies, participatory planning, the monitoring of results and the evaluation of its impact are key elements of this plan. Watch this space: Africa has a plan.

Figure 1: The value of African agricultural production (constant 2006 values) and the per capita index of African agricultural production.

Elsenburg Library – a gem for agriculturists
The library is situated at the Elsenburg Agricultural Training Institute on the first floor of the Hostel Building just above the dining room. It is categorised as a special library, meaning it has a collection in a specific field of interest – in our case agriculture and its related fields. It is open during normal working hours and Tuesdays to Thursdays until 20h30. The library has a facility for photocopying and printing, computers students may use and study cubicles.

It has three main client groups: the students of the Elsenburg Agricultural Training Institute, officials of the Department and the general public. The students use the library to search literature to complete assignments, photocopy and print documents, use the Internet and e-mail facilities.

Wilna Brink, wilnab@elsenburg.com
and to study. Officials (researchers, veterinarians, extension officers, lecturers, etc.) of the Department use the library to find information for their research and various clients. The library is also open to the general public for research and information purposes. In addition, farmers, organisations and school children may request information by phone, fax or e-mail.

To render an effective library and information service, the library relies on the following resources:

1. **Library database**
   Currently it has 7,843 books, 3,337 articles (many in full-text), 100 CD-ROMs, 46 DVDs, 519 journal titles, 153 law and legislation documents, 60 plans, 5,175 pamphlets, 378 Elsenburg documents, 742 study tours (reports on overseas travel) and 36 videos. The library catalogue is computerised and forms the library database.

2. **Sabinet Online**
   This is a paid online subscription consisting of various databases. Users can access the two most used, SACat and ISAP databases, through the intranet pages. The SACat (South African Catalogue) database is a cooperative national catalogue of library collections in Southern Africa. It reflects the stock of libraries in Southern Africa since 1800 and contains bibliographic information for books, periodicals, audio-visual and other information material. It is invaluable in determining the location of information sources in Southern Africa. It also supports resource sharing in libraries, making it possible to borrow books and forward copies.
It is categorised as a special library, meaning it has a collection in a specific field of interest – in our case agriculture and its related fields.

of periodical articles between libraries. This is known as the interlending system, of which the ReQuest System forms an integral part. ISAP (Index to South African Periodicals) database indexed articles from more than 900 South African periodicals.

3. ScienceDirect
This leading full-text scientific database offers journal articles from more than 2,200 journals from the Elsevier Science Direct Collection. The library currently subscribes to ScienceDirect Government Edition. This is an access-based licence option, especially developed for government organisations. It is limited to full-text articles and access goes back until 1995. Access to our subscription is available to officials and students. Officials can set up their own account by obtaining a username and password from the library staff. In the past most international journals were obtained in hard copy format but as the need for full-text articles increased, it was decided to cancel most of our hard copy subscriptions and move to a full-text online database. The library still maintains a small number of hard copy international journal subscriptions in subjects that have limited exposure on our ScienceDirect subscription. The library also subscribes to a number of South African published journals and magazines.

Although supplying information to our clients is our main service the library also provides the following services:

1. Lending
Only students of Elsenburg Agricultural Training Institute and officials of the Department may borrow books from the library. Students may borrow books for two weeks and renewals are allowed. Officials borrow books for an unlimited period but need to renew their books annually. Members of the public are not allowed to borrow books, but may make photocopies if needed.

2. Interlending
This service is only available to officials of the Department and is extensively used by researchers. The library staff obtains journal articles and books not available in the library or via ScienceDirect from other libraries in South Africa through the ReQuest System mentioned above. The time frame for supplying items varies from the same day to two weeks depending on the supplying library and the Post Office. Articles are mostly supplied in PDF format via e-mail.

3. Table of contents
This service entails the sending out of contents pages of journals via e-mail as they become available and its main purpose is to keep researchers up to date in their fields of research. Contents pages are sourced from the library’s own journal subscriptions, journal subscriptions of other libraries and ScienceDirect. Users indicate which articles they are interested in and the library staff obtains the articles and supply them via e-mail.
Introducing the live animal online export system

Dr Vincent Henwood, vincenth@elsenburg.com

Export certification of pets travelling out of the country with their owners on holiday or for the purpose of relocation is just one of the many services offered by the Veterinary Services programme of the Department of Agriculture.

In an effort to be the best run regional government in the world, there was a need to take this service to the next level and this has been achieved by bringing online application and processing of export certificates for live animals to the Western Cape. This is a first for the province and a first for South Africa.

The web-based application was designed to:
1. Create and maintain a database of all pet animal exports that are certified by Veterinary Services.
2. Serve as a record keeping repository of tests, treatment and vaccinations and area disease status requirements for live animals as per individual certificate requirements.
3. Reduce the chance of fraud and inaccuracies resulting from poor handwriting in a paper-based system.
4. Reduce time spent on each application and therefore optimise efficiency for both private and state veterinarians.

The system consists of three components:

• Private export request, where the client or their agent enters all the relevant details.
• Private veterinarian declaration, where the private veterinarian can access the information the client has entered and complete the necessary tests and health declarations required.
• State veterinarian certification, where the state veterinarian completes the chain by certifying all the information provided as required by the importing country.

Currently the system is only meant to handle the export of dogs and cats to the European Union, but the goal is to expand this to include other animals and other countries once the system has proven to be effective.

Recently Dr Gary Buhrmann, State Veterinarian at the Boland office, presented the system to a group of about 20 animal travel agents. The response was overwhelming enthusiasm and an appeal for this type of system to be available countrywide.

An electronic certification management system would allow South Africa and the Western Cape to be a leader in the trade of animal and animal products.
It has always been a focus of the Stellenbosch PVL to ensure clients receive only the best service and results of a high standard. In 2008 the National Department of Agriculture, Forestry and Fisheries (DAFF) began the process whereby all veterinary laboratories performing tests on controlled animal diseases were required to be audited by DAFF. This was necessary to ensure the standard of testing was in line with the World Organisation for Animal Health’s (OIE) international standards for diagnostic laboratories and Stellenbosch PVL was one of the first laboratories to obtain DAFF approval for 21 tests across seven disciplines.

Henry Ford once said “Quality means doing it right when no one is looking” and accreditation against an international quality standard is therefore the ultimate way to offer clients the peace of mind that the results they receive are of a high standard and internationally accepted, which in today’s global economy is very important.

Towards the end of 2013 it was decided that Stellenbosch PVL would commit itself to obtaining accreditation under ISO 17025:2005 (or SANS 17025 as it is known in South Africa) by the end of 2015. This international standard includes all of the requirements laboratories have to meet if they wish to demonstrate they operate a quality management system, are technically competent and are able to generate technically valid results. The standard prescribes proficiency-testing schemes as one of the ways laboratories can prove the validity of their results. These schemes test the ability of participating laboratories to obtain expected results and are run by independent testing agencies. In preparation for accreditation the Stellenbosch PVL will in 2014 already take part in international proficiency testing set up by the prestigious Animal Health and Veterinary Laboratories Agency (United Kingdom) and GDN Deventer (Netherlands).

The initial scope of accreditation will be the 21 tests currently approved by DAFF. However, since the principles of the standard have to be implemented across the board, clients will have the peace of mind that the same quality principles will be applied to all non-accredited tests offered by the laboratory.

It is said that quality is a journey, not a destination and the Stellenbosch Provincial Veterinary Laboratory is looking forward to the next 40 years on the quality journey with all its clients.
1. Introduction
A substantial number of small-scale beef producers in the Eden district buy young dairy calves to rear on lactating dairy-type cows. Multiple calves are thus reared per lactating cow per lactating cycle. The purpose is an attempt to increase production and income from limited resources. The weaned calves are sold to agents buying up stockers for beef feedlot operations or at local auctions. Due to the lower growth potential and lack of carcass conformation of finished dairy animals, farmers have to accept reduced marketing prices for these calves.

An opportunity for these farmers opened up when the Research, Technology & Development Services – Program (RTDS); Institute for Animal Sciences; Outeniqua Research Farm of the Department of Agriculture, Western Cape (WCDoA) started to inseminate lower estimated breeding value cows with beef breed semen. Beef cross calves fetch higher prices. Making Outeniqua bred cross calves available to small-scale calf rearers could improve their economic position substantially.

The purpose of this paper is to communicate the success achieved from seizing this opportunity to improve the sustainability of small-scale farmers in the Eden district, by opening up access to the cross-calf resource and presenting the results from biological, economical and extension monitoring and evaluation actions.

2. Methodology
A pilot study by the Farmer Support and Development Programme (FSD), Eden district, in co-operation with RTDS (Outeniqua Research Farm), WCDoA, was initiated in 2011 to make beef cross-calves available to small-scale calf rearers in the Eden district.

FSD ward officers are responsible for identifying calf rearing producers in the district. Producers are visited, evaluated and selected into the pilot project by a screening committee through a scoring process. Outeniqua bred cross calves are made available to pilot project members by formal request at a subsidised price. A quarterly monitoring program is followed where the following information is gathered and recorded:

- Cow & calf identification,
- Pasture base and feed base utilised,
- Cow and calf weights, number of calves suckling, pregnancy determination,
- Health management and treatments,
- Faeces sampling and parasite load determined,
- Marketing price and weight per calf achieved.

Individual projects and systems are analysed in collaboration with NMMU, BTech students (George Campus) and annual feedback given to the participants. Participants are included into a calf rear interest group convening at least twice per year.
3. Results
Since project commencement a total of 248 calves (up to 1 April 2014) have been distributed to 18 smallholder calf rearers in the Eden district (91, 123 and 34 for 2012, 2013 and 2014 respectively). Biological monitoring has been conducted at nine selected projects. Economic analysis of five projects has been done for the 2011/12 and 2012/13 production seasons.

Calf rear production systems range from semi-extensive (two calves per cow lactation of 6 to 8 months) to intensive (8 to 12 calves reared per cow lactation), depending on the intensity of pasture production base used. Some hand rearers are also included in the project. In more intensive systems calves are weaned at three to four months and replaced by a new batch of calves.

Monitoring shows calf growth declines after weaning, indicating farmer and Advisory attention needed to feed resources used during this period.

Analysis of actual auction prices received for calves of a specific project (Table 1) indicate substantial advantage of using beef crossbred calves compared to dairy breeds. The lower prices received during 2013 was a result of the impact of drought conditions over large parts of Southern Africa, flooding the market. Prices may normalise when sufficient rain has fallen in the region.

Economic analyses per project, reveal gross margins ranging realised from R1 839 to R2 300 per calf raised (Jordaan 2012; Jordaan 2013). Economic results expressed in margin per calf sold for four projects are presented in Figure 2. Margins realised show that good economic benefits may be obtained with calf rearing, regardless of the system used, depending on good management practices.

Table 1. Actual live weight prices received for different calf breeds at auction (Oudtshoorn) in 2012, with extrapolation for 2013 using December 2013 prices (same owner).

<table>
<thead>
<tr>
<th>Steer Breed</th>
<th>Weight at sale kg</th>
<th>Price received</th>
<th>R/kg 2012</th>
<th>Difference in R/kg received</th>
<th>Price for 220 kg steer @ real prices</th>
<th>Prices in R/kg Dec 13</th>
<th>Prices in Des 13 for a 220 kg steer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hereford X Dairy</td>
<td>110</td>
<td>R1 820.00</td>
<td>R16.55</td>
<td>R0.00</td>
<td>R3 640.00</td>
<td>R12.50</td>
<td>R2 750.00</td>
</tr>
<tr>
<td>Angus X Jersey</td>
<td>274</td>
<td>R4 400.00</td>
<td>R16.06</td>
<td>-R0.49</td>
<td>R3 532.85</td>
<td>R11.00</td>
<td>R2 420.00</td>
</tr>
<tr>
<td>Friesian</td>
<td>255</td>
<td>R3 100.00</td>
<td>R12.16</td>
<td>-R4.39</td>
<td>R2 674.51</td>
<td>R12.00</td>
<td>R2 640.00</td>
</tr>
<tr>
<td>Jersey</td>
<td>177</td>
<td>R1 530.00</td>
<td>R8.64</td>
<td>-R7.90</td>
<td>R1 901.69</td>
<td>R8.00</td>
<td>R1 760.00</td>
</tr>
<tr>
<td>Jersey</td>
<td>160</td>
<td>R1 580.00</td>
<td>R9.88</td>
<td>-R6.67</td>
<td>R2 172.50</td>
<td>R8.00</td>
<td>R1 760.00</td>
</tr>
</tbody>
</table>
4. Conclusions and extension implications
The results achieved during execution of the calf rearing pilot project indicate a real advantage to small holder beef farmers in sourcing beef-dairy cross-calves for improving the economy of their rearing systems. Expansion of the model is encouraged where access to beef-type calves is within reach. Scientific verification of production potential and refinement of systems in the Southern Cape needs to be researched. A research RTDS project has been registered at Outeniqua research farm. Linkages for small holder farmers with commercial dairy operations, inseminating cows with beef bull semen needs to be established.

Using the project data (actual farmer progress) and the research project as demonstration establishes a strong extension tool involving all stakeholders, ensuring group participation and positive production and/or economic results.

The extension approach followed, based on working with identified farmers (pilot project) on practical recording, monitoring and evaluation builds hands-on skills for project sustainability. These actions are implemented within the context of the total commodity where training, group work, development and equips him as an extension agent to fellow producers.

References


Acknowledgement
Calf Rear Pilot Project Team

RTDS: Prof R Meeske, P Cronjé, D Kotzé.

Animal Health: Dr BJ grobler, Dr C Fox, S Lessing, F Bredenkamp, E Lottering, R Kwinda, H Slechter.

Outeniqua Farm: D Veldsman, M Zeelie.
Trade into Africa: Perspective on South African Horticultural Trade with Africa (Part 2).

L Pienaar & A Partridge

The live weight of replacement heifers in commercial dairy herds in the South Western Cape.

C.J.C. Muller, W.J. Burger & M.M.C. Lamont
Trade into Africa: Perspective on South African Horticultural Trade with Africa (Part 2).

L Pienaar1 & A Partridge1
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Introduction
Part one of this paper series outlined the importance of the African continent for trade and investment for the South African agricultural sector (Pienaar & Partridge, 2014). Continuing with the same theme, this paper will seek to give detailed results from a study by the Western Cape Department of Agriculture on the “Africa Agenda” (Pienaar & Partridge, 2013). The main objective of the research was to identify possible export market opportunities for various important agricultural goods produced in the Western Cape. This paper will be limited to only include the following horticultural products: apples, oranges, table grapes and pears. These products are the main horticultural products that are currently being exported by South Africa. The paper will start off with an introduction to the research question, followed by a brief description of the methodology used to create a Market Attractiveness Index (MAI) for the horticultural products. Finally, the results will then be discussed, followed by a conclusion and some recommendations.

Methodology
In the quest to identify possible high potential export destinations for South African horticultural products into Africa, the International Trade Centre’s (ITC) Market Attractiveness Index (MAI) is used. The MAI is an instrument aimed at supporting the selection process of identifying attractive markets from an export perspective (ITC, 2014). According to the OECD (2004), a composite index such as the MAI is formed when individual indicators are compiled into a single index, on the basis of an underlying model of a multi-dimensional concept that is being measured. Thus, in order to identify possible export markets in Africa an MAI is developed for each product. Figure 1 shows all the indicators used to construct the MAI in order to generate the final rankings of debate and the high costs involved in exporting products to European markets, it would be wise to consider some alternative export opportunities. Thus, if Africa is becoming more attractive for exports, one needs to have a method to identify which African countries should be targeted for increased export potential. Even more specifically, which markets in Africa should be focused on for specific Western Cape agricultural products? In order to answer this question this study develops a framework in which attractive markets can be identified. The analysis comes in the form of the development of a Market Attractiveness Index (MAI) using trade related data, which is then used to rank African countries from the most to the least attractive according to the selected criteria.
attractive markets. These indicators are all weighted and standardised for comparability and will contain a value of between 0 and 100 (ITC, 2014). Currently the ITC employs a standard weight for each indicator, which is a simple average.\(^1\)

The detailed steps used to create the MAI in Microsoft Excel are given in the ITC’s (2012) step-by-step guide to building a Market Attractiveness Index. This is done for each product at the six-digit level. The following products were selected as indicated in Table 1: Apples (HS: 080810); Oranges (HS: 080510); Grapes (HS: 080610); Pears (HS: 080820).

Table 1 gives the value of African imports for the specific products used in the analysis, as well as South African exports to Africa. The five-year annual growth rates for both these indicators are also given. Apples represent the biggest share of imports to Africa with US $566 million in value, followed by oranges with US $69 million. These two products were also the main exported South African horticultural products into Africa with export values amounting to US $161 million and US $26 million for apples and oranges respectively. The value of grapes and pears imported into African countries amounted to US $61 and

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Table 1: List of selected products used to create MAI’s

<table>
<thead>
<tr>
<th>Products</th>
<th>Africa Import Value in USD 2013 (’000)</th>
<th>5-year annual growth rate (%)</th>
<th>RSA Export to Africa Value 2011 (’000)</th>
<th>5-year annual growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Apples: 080810</td>
<td>565847</td>
<td>17.09</td>
<td>160988</td>
</tr>
<tr>
<td>2</td>
<td>Oranges: 080510</td>
<td>68708</td>
<td>18.84</td>
<td>26133</td>
</tr>
<tr>
<td>3</td>
<td>Grapes: 080610</td>
<td>60502</td>
<td>19.84</td>
<td>15889</td>
</tr>
<tr>
<td>4</td>
<td>Pears: 080820</td>
<td>34730</td>
<td>17.20</td>
<td>10478</td>
</tr>
</tbody>
</table>

(Source: Compiled using ITC, 2013)

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\(^1\)According to the ITC, there is currently no advanced weighting scheme used within the MAI methodology. It should be noted that the same weights for each indicator are used, but improvements to the weights are currently being worked on in order to make them more statistically sound.
US $35 million respectively. Important to note in Table 1 is the high annual growth rates (> 18%) for the past five years for both African imports and South African exports to Africa. These numbers suggest positive market growth for South African exporters wanting to export these products into new markets.

**Results and discussions**

The MAI results for each product will be given in this section, will be presented in graphs according to the MAI rankings and followed by discussions on each finding. Important to note when interpreting these results is that these are not absolute measures of market attractiveness, but rather a macro-economic framework to identify the main attractive markets. Thus, all of the top-ranked markets could possibly give attractive potential for increased exports and need further country-specific research to establish whether or not a market is suitable for market entry. This step will typically be taken by export companies and agribusinesses, while the results below only give a framework to select possible markets. Typically, countries with high import growth, expected GDP, high level of imports, negative trade balance, closer to South Africa and with lower tariffs will get higher MAI scores and are therefore classified as attractive markets.

**Apples (HS: 080810)**

Nigeria, Mozambique and Angola are the top three attractive markets that were identified for apple exports, followed by Kenya, Zambia and Ghana. Nigeria is ranked top because of its massive increase in apple imports since the lifting of the import ban on apples in 2012. Furthermore, with high expected GDP and population growth, this market seems very attractive for South African apple exports. All the countries in the top ten have import growth of more than 34%, while factors such as distance and tariff advantages also give Mozambique, Angola and Kenya high MAI ratings. The results are given in Figure 2. Indicated in the line is the annual growth rate of South African exports of apples to the specific country. It is evident that all of the countries listed in the top ten have positive growth rates of greater than 20% from 2009 to 2013, indicative of the fact that all of these markets are already importers of South African apples.

![Figure 2: Top ten attractive export markets for apples (HS: 080810)](source)

**Oranges (HS: 080510)**

The top attractive markets for orange exports are Mozambique, Angola and Zambia. These markets have high expected economic growth rates, strong import growth and favourable market access conditions. Algeria, even though at a distance disadvantage, has a high MAI ranking because it is the second biggest importer of oranges on the continent. It should however be noted that South Africa does not currently export to this nation (therefore a 0% growth rate). Senegal, Congo, Kenya and Gabon have greater than 25% import growth from

![Figure 3: Top ten attractive export markets for oranges (HS: 080510)](source)
2009 to 2013. All of the markets listed in the top ten, apart from Algeria, are markets that South Africa is already engaged in. The top ten countries present good potential export opportunities going forward with annual growth rates of South African exports very high, particularly Angola and Zambia with rates greater than 25%.

**Table grapes (HS: 080610)**
The most attractive markets for table grape exports are Mozambique, Angola and Zambia, followed by Zimbabwe, Nigeria and Mauritius. These markets are characterised by their high expected GDP growth rates, favourable tariff and distance advantages. Angola’s imports of grapes have grown in value from US $806 000 in 2009 to US $2.95 million in 2013. Zimbabwe and Nigeria have import growth rates of 71% and 83% respectively, placing them fourth and fifth in the top ten attractive export markets. All of the markets listed in the top ten have favourable growth in imports from South Africa and are expected to continue with the current trend. Nigeria’s imports of table grapes have also been impacted with the lifting of the import ban in 2012 growing by 66% in one year. This is clearly seen in Figure 4 with the annual growth rate of Nigerian imports more than 100% since 2009.

**Figure 4: Top ten attractive export markets for grapes (HS: 080610)**
(Source: own calculations)

**Pears (HS: 080810)**
Even though pear imports into Africa are much lower compared to apples, the main attractive markets that are identified by the MAI results are given in Figure 5. They are Angola, Mozambique and Nigeria in the top three, with Zimbabwe and Zambia in fourth and fifth place. All of these markets have high market access rankings and import growth rates of greater than 50% over the period from 2009 to 2013. After Zambia, the MAI value drops considerably, evident of the fact that these markets have much lower market demand. South Africa already exports pears to all of the top five markets and these have all seen exceptional growth, especially Nigeria since 2012 because of the lowered restrictions.

**Figure 5: Top ten attractive export markets for pears (HS: 080810)**
(Source: own calculations)

**Conclusion**
To conclude, this series of papers has so far given a perspective on the state of and potential for South African agricultural trade into Africa. The work is in accordance with research undertaken by the Western Cape Department of Agriculture (Pienaar & Partridge, 2013). In Part 1 it was shown why Africa is important using various trade and related statistics. In Part 2 the authors went on to the next step in identifying possible attractive markets for South African horticultural produce. Using the MAI methodology by the ITC, it is possible to use various trade related indicators to compile a ranking of countries according to their attractiveness for selected products. For each product, at the six-digit level, a MAI was created and the result given.
In summary, the main markets for apples are Nigeria, Mozambique and Angola, while Mozambique, Angola and Zambia are the top three attractive markets for oranges. In the MAI results for table grapes, Mozambique, Angola and Zambia are again highly ranked. Finally, the most attractive markets for pear exports to Africa are Angola, Mozambique and Nigeria. From these findings there seems to be a consistent trend of countries listed in the positions of market attractiveness. Angola, Mozambique, Zambia and Nigeria present economies that are growing, present good market access prospects and are relatively close to South Africa for market penetration. Also evident in the results is the impact of policy, such as the lifting of the import ban on fresh fruit and vegetables into Nigeria in 2012. Since that time period the import growth into this market has been enormous. Lastly, the MAI rankings are also in line with South African export growth to these countries, with the main attractive markets already showing good market growth for South African exports to these markets.

In part 3 of this series of papers, country-specific analysis will follow on some of these identified attractive markets in order for exporters and agribusinesses to create robust export strategies going forward.

Bibliography


The live weight of replacement heifers in commercial dairy herds in the South Western Cape.

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Taking Home Message
Age at first calving for heifers on commercial farms is often later than the recommended 24 months of age. Further, because of a lower live weight at first calving, primiparous cows tend to produce less milk during first lactation than well-reared heifers. Both these factors result in a higher milk production cost. Dairy heifers should be fed to reach a live weight of at least 55% of mature live weight at first breeding (or conception) at 13-15 months of age to calve down below 24 months of age weighing 82% of mature live weight after calving. In this study the live weight of replacement heifers on commercial farms were recorded over a three year period. Heifers weighed varied in age from birth to 36 months of age. The live weight of heifers was regressed on age in days using different growth functions. Observed live weights of heifers according to best fit regression equations were compared to recommendations available from the literature for three dairy breeds. The average daily gain of Holstein, Ayrshire and Jersey heifers from birth to 24 months of age was 0.448, 0.420 and 0.375 kg per day respectively. In comparison to literature information these growth rates are very low. North American literature indicates that the minimum live weight gain of Holstein, Ayrshire and Jersey heifers should be 0.70, 0.55 and 0.40 kg/day respectively. Further studies are needed to determine optimum growth rates for dairy heifers and the effect of poor growth rates on the milk yield of dairy cows under South African conditions.

Introduction
Achieving a proper growth rate for replacement heifers on commercial dairy farms is a major challenge (Heinrichs, 1996). Feeding and caring for replacement heifers are not regarded as the most critical day-to-day activities on dairy farms. This often results in a chronic neglect of heifers causing them to calve down at below recommended target live weights for the breed (Clark & Touchberry, 1962). Alternatively, they calve down at a later age than the recommended 24 months of age. Because of lower live weight at first calving, primiparous cows tend to produce less milk during first lactation than well-reared heifers (Heinrichs, 1993). Ideally, dairy heifers should be fed to reach a live weight of at least 55% of mature live weight at first breeding (or conception) at 13-15 months of age to calve down at an age below 24 months of age weighing 82% of mature live weight after calving (NRC, 2001). Data from the United States of America (USA) indicate that the ideal mature live weights for Holstein and Jersey cows are 650 and 450 kg respectively.

While evaluating management systems on dairy farms in the Southern Cape, it was observed that replacement heifers of most herds were below the target live weights as suggested in North American literature
(Baard & Muller, 1996). Age at first calving was also later than 24 months of age. The difference between the milk yield of dairy cows in first and second lactation was in excess of 20% indicating that cows, while in first lactation, were still growing. The reason for this could probably be attributed to a low management input especially for heifers that are reared on cultivated pastures.

Although some dairy farmers regularly weigh their heifers, no information has recently been published with regards to the live weight of heifers of different dairy breeds in South Africa. Naude (1963) reported on the live weight of registered Jersey and Friesian cattle in the Western Cape from birth to 10 years of age. According to this study, Friesian and Jersey heifers weighed 315 and 195 kg at 15 months of age while live weights at 24 months of age were 412 and 268 kg respectively. In 1965 Naude & de Swardt noted that the live weight of British and American Friesian and Jersey heifers were higher than weights recorded in South Africa. They reported that the birth weights of Friesian and Jersey heifers in the USA were 42 and 24 kg respectively while heifers of the same breeds weighed 35 and 22 kg respectively in South Africa. No possible reason for the difference in live weight between heifers born in South Africa and those in the USA and Britain has since been presented. At this stage there are no baseline figures on the live weight or growth rates of replacement heifers for the different dairy breeds in South Africa. Guidelines regarding the live weight and growth rate of replacement heifers are based mostly on North American data.

The objectives of this study were to model the live weight of Jersey, Ayrshire and Holsteins replacement heifers on commercial farms from birth to 36 months of age and to compare the observed live weights of heifers to recommendations available from the literature for these three dairy breeds.

Materials and methods
Five commercial dairy herds (three Jersey, one Ayrshire and one Holstein herd) in the Riversdale area of the Southern Cape, were included in the study. The annual rainfall in the area varies between 350 and 700mm of which 60% occurs during summer. Most farms use cultivated pastures as a feed source for the dairy. The natural rainfall is supplemented by irrigation using permanent or supplementary irrigation systems. Cows are on cultivated pastures while also receiving supplementary concentrates and hay or silage depending on the season and pasture production. Heifers are normally reared indoors in individual stalls for the first two months of their lives using whole milk or a commercial milk replacer with a calf starter meal usually in a pellet form. After weaning, heifers are kept in groups close to the dairy on cultivated pasture. During this time they are also fed one to two kilograms per day of a home-mixed or commercial calf meal. After six months of age, most heifers in good health are kept on pastures further away from the dairy often with little supplementary feeding. During dry spells when pasture growth is limited, additional oat hay or wheat and oat straw may be provided. Some heifers are kept on the natural mountain vegetation which consists of fynbos and some annual indigenous grass species. From about 15 months of age heifers observed in heat are inseminated while a bull is kept with the heifers older than 18 months of age to service those heifers not becoming pregnant through artificial insemination.

Extension personnel of the Southern Cape Region of the Department of Agriculture in the Western Cape arranged with the relevant dairy farmer for the date and time of weighing. On the day of weighing, heifers were kept in a pen near the dairy without feed and water for about an hour before weighing started. A transportable electronic scale (Rudd) was used to weigh heifers. The scale was installed in a crush and then tared to zero. All clearly identified heifers with known birth dates were weighed. The age of heifers at each weighing date was determined. Live weight data of all heifers were recorded approximately once a month over a three year period. A total of 3328 Jersey, 1472 Ayrshire and 1115 Holstein live weight records were collected between November 1996 and December 1999 from 291 Jersey, 116 Ayrshire and 128 Holstein heifers ranging from one day old up to 36 months of age.

The live weight records of heifers of the three Jersey herds were pooled. Growth curve models were fitted for the Ayrshire, Holstein and pooled Jersey heifers sepa-
rately using unadjusted live weight records on age in days. Linear and non-linear models were fitted using the REG procedure or the NLIN procedure of the Statistical Analysis Systems Institute (SAS, 1989). Equations for the exponential and sigmoid models were taken from Fitzhugh (1976). The F-test for goodness-of-fit was performed on each model. Initially, linear models were calculated, i.e. the linear regression and models from the polynomial group, with different values of n in the general form $y = f(x)$:

$$y = b_0 + b_1x + b_2x^2 + \ldots + b_nx^n$$

$y$ being the live weight expressed in kilograms and $x$ the age expressed in days.

Based on graphical and biological considerations, several exponential and sigmoid models were also fitted. For each breed the model describing the data best (highest $R^2$ values) was used to compare actual live weights of heifers to the recommended or target live weights for each breed.

### Results and discussion

Equations depicting the live weight on age in days of Jersey, Ayrshire and Holstein heifers from five commercial dairy herds are presented in Table 1. Equations are sorted within breed by coefficients of determination ($R^2$) from high to low. All models were highly significant ($P < 0.001$). The highest coefficient of determination for all the breeds was obtained with the cubic and quadratic models. The selection of the best model for a data set is dependent on criteria such as goodness-of-fit and coefficient of determination. An appropriate intercept is also necessary as that gives an indication of live weight at a specific age, i.e. birth weight at day 0. De Behr et al. (2001) noted that some exponential and sigmoid functions such as the Brody, Logistic and Gompertz functions are commonly applied in animal growth models.

<table>
<thead>
<tr>
<th>Growth model</th>
<th>Regression equation</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jersey:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cubic</td>
<td>$y = 20.1 + 0.459x - 0.00005x^2 - 0.00000009x^3$</td>
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<td>$y = 15.2 + 0.514x - 0.00019x^2$</td>
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<tr>
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<td>$y = 512.0 (1 + 0.97 \exp (0.0011x))$</td>
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<tr>
<td>Gompertz</td>
<td>$y = 362.5 (\exp (-0.35 \exp (-0.92x)))$</td>
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</tr>
<tr>
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</tr>
<tr>
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<td>$y = 41.9 + 0.343x$</td>
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<td></td>
<td></td>
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<tr>
<td><strong>Ayrshire:</strong></td>
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<td></td>
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<tr>
<td>Quadratic</td>
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science as their parameters have biological significance and express the physiological mechanisms of growth to reach a mature live weight.

Linear regressions describe a starting weight at a specific time, i.e. at birth and mean growth rate (De Behr et al., 2001). However, often due to higher than expected live weights at a later age, the predicted birth weights of heifers can often be unrealistic. This is observed in the present data set in which the linear trends showed birth weights of 41.9 and 46.1 kg for Jersey and Ayrshire heifers respectively. For Holsteins, the quadratic growth curve model (Table 1) showed a birth weight of 35kg. This in agreement with the observed live weights at birth of Holstein-Friesian heifers in the Elsenburg herd (Muller & Botha, 2000). In contrast, James (2001) reported a birth weight of 42 kg for Holstein heifers in the USA.

The coefficient of determination for the linear trend for Holstein heifers was higher than for the other breeds possibly indicating that these heifers were still growing at 30 months of age and that the growth rate of heifers in this herd had not slowed down as expected causing a flattening-out of the trend line, as is the case in the Ayrshire and Jersey herds. However, the linear growth curve model for Holsteins showed a birth weight of approximately 48 kg which is unrealistic as heifers actually weighed 42.4 kg at one month of age. The quadratic trend describing the actual observed live weights of heifers was compared to the recommended live weight for Holstein heifers (Figure 1). The reason for this could be that heifers in this herd probably suffered from poor feeding from an early age. Heifers only reached a live weight of 500 kg at 36 months of age while this is the targeted live weight for Holstein heifers at 22 months of age.

In Figure 2 the ratio between the predicted and observed live weights for Ayrshire and Jersey heifers is presented. This shows that only Jersey heifers were growing close to the recommended growth rate for the breed. By using a minimum recommended growth rate of 0.55 kg per day for Ayrshire heifers, observed live weights reached less than 0.90 from recommended live weight targets indicating a poor feeding programme. From 15 months of age, the ratio declined further to below 0.80.

Under practical farming conditions, heifer diets would change from birth to first calving, i.e. a calf starter meal is fed supplementary to liquid feeds while after weaning, various growth meals may be fed depend-

**Figure 1:** The observed \((y = 35.36 + 0.499x - 0.00007x^2)\) and recommended \((y = 35 + 0.700x)\) live weight trends for Holstein heifers on a commercial farm \((y = \text{live weight} \text{ and } x = \text{age in days})\).
ing on the stage of development of the animals and the type and quality of available forage. From 12 to 14 months of age, often, very little supplementary concentrates are fed to heifers in an effort to save costs. This is observed in the smaller ratio between predicted and observed live weights for Jersey and Ayrshire heifers from about 15 months of age. Changes in the total diet of heifers according to age would probably be best described by a number of linear regressions using the broken stick method of analyses. This would however, be difficult to apply over a number of herds as management could vary extensively.

The live weights of Holstein, Ayrshire and Jersey heifers on all the surveyed commercial dairy farms and at all ages were lower than live weights for Ayrshire (Heinrichs & Hargrove, 1994), Jersey (Heinrichs & Hargrove, 1991) and Holstein heifers (Heinrichs & Hargrove, 1987). Similarly, observed live weights of heifers in this survey are also lower than the heifer growth objectives as presented by Holtz et al. (1992). According to their recommendations, Ayrshire, Jersey and Holstein heifers should weigh at least 523, 436 and 610 kg respectively at 24 months of age. This means that the growth rate of heifers should be at least 0.673, 0.559 and 0.778 kg per day from birth weights of 32, 28 and 42 kg respectively. The corresponding average daily live weight gain of heifers from birth to 36 months of age on these commercial farms was only 0.420, 0.375 and 0.448 kg for Ayrshire, Jersey and Holstein heifers respectively.

Comparing the observed live weights of heifers with recommended live weights is difficult as recommendations vary between countries. In the USA a live weight of 596 to 646 kg (average 621 kg) at 24 months of age is recommended for Holsteins (Hoffman, 1997). In New Zealand a live weight of 490 kg at 24 months of age is recommended. Birth weights of Holstein heifers in the USA and New Zealand are assumed to be 42 and 35 kg respectively. A linear growth rate of approximately 0.80 and 0.55 kg/day is therefore assumed for USA and New Zealand Holstein heifers respectively. In Australia a live weight of 560 kg at 750 days (24.7 months) of age has been identified as the optimum live weight and age at first calving for Friesian heifers for the coastal areas of New South Wales (McLean & Freeman, 1996).

For other dairy breeds, similar differences were observed. According to Wattiaux (1997) the birth weight of Ayrshire and
Jersey heifers should be 35 to 40 and 25 to 30 kg respectively. Live weight at first calving at 22 to 24 months of age should be 450 to 500 kg and 360 to 425 kg respectively. The average daily gain of Ayrshire and Jersey heifers should be 0.60 and 0.50 kg/day respectively.

In South Africa consultants from feed companies and breed societies generally use North American guidelines as an indication of the adequacy of the feeding programme for dairy heifers. The reason for this is because no sufficient data have been compiled as yet to give guidelines for heifers for South African dairy breeds. It is generally expected that the live weight of heifers should be similar to North American heifers because of similar genetic backgrounds. There is however a lack of understanding in the implications regarding target live weights as it is not unusual to find two recommendations within one publication for a specific breed. For the Jersey breed for instance, it is recommended that heifers should weigh 240 kg at 15 months of age. To reach this weight at 15 months of age, heifers should maintain a growth rate of 0.470 kg per day from a birth weight of 25 kg. In the same publication it is also recommended that heifers should grow at 0.40 to 0.45 kg/day. This means that heifers growing at this rate would only reach a live weight of 208 to 230 kg at 15 months of age.

The growth rate of heifers is determined by the mature live weight of cattle (NRC, 2001). This can vary from 400 kg for small breeds to more than 680 kg for large breeds. Each animal has an inherent growth potential and its production as a mature animal is reduced when growth is limited. Joubert (1963) proposed that heifers would not reach puberty until they have reached a minimum degree of physiological maturity. This has been confirmed by Cady & Smith (1996) who found that growth rates of replacement heifers affect economic returns on dairy farms. Inadequate size (live weight and stature) at first calving limits milk yield and conception rate during first lactation (Hoffman et al., 1996).

If, by using North American guidelines, it is accepted that heifers in these commercial herds are under-weight at specific ages and that this is the trend in most dairy herds in this area, then there is cause for concern as the benefits of well-grown replacement heifers on their subsequent milk yield in the first lactation period and farm productivity are being disregarded by dairy farmers in an effort to reduce the cost of raising heifers. It seems that for farmers the present liability of the cost of heifer rearing outweighs the future advantage of well grown-out heifers. Spence & Woodhead (2000) found that suboptimal nutrition is the most likely cause of low live weight for age of dairy heifers. Increasing concentrate feeding to at least 1 kg/day until weaning has resulted in significantly higher growth rates while a higher fertilizer level also increased the growth rate because of a larger amount of pasture available. Benefits of a better heifer rearing program include a higher first lactation and life-time milk yield, fewer calving problems and a lower rate of culling due to health and reproductive failure during first lactation (McLean & Freeman, 1996).

Farmers’ awareness of effective heifer management techniques should be increased to improve dairy heifer growth rates and lifetime performance of dairy cows. Heifer rearing cost can only be reduced by shortening the non-productive stage of the animal, i.e. the period from birth to first calving. The correct diet is, however, necessary as a high growth rate does not always result in an increased productivity for cows as excessive feeding during the pre-pubertal stage could reduce their milk production potential.

**Conclusion**

The live weight and growth curves of dairy heifers in a Holstein, an Ayrshire and three Jersey commercial herds in the southern part of the Western Cape were established. The average daily gain of these heifers from birth to 24 months of age was 0.448, 0.420 and 0.375 kg per day respectively. In comparison to literature information these growth rates are very low. Some North American data indicate that the minimum daily gain of Holstein, Ayrshire and Jersey heifers should be 0.70, 0.55 and 0.40 kg/day respectively. Further studies are required to determine optimum growth rates for dairy heifers and the effect of poor growth rates on the milk yield of dairy cows under South African conditions.
References


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