

AGRI-

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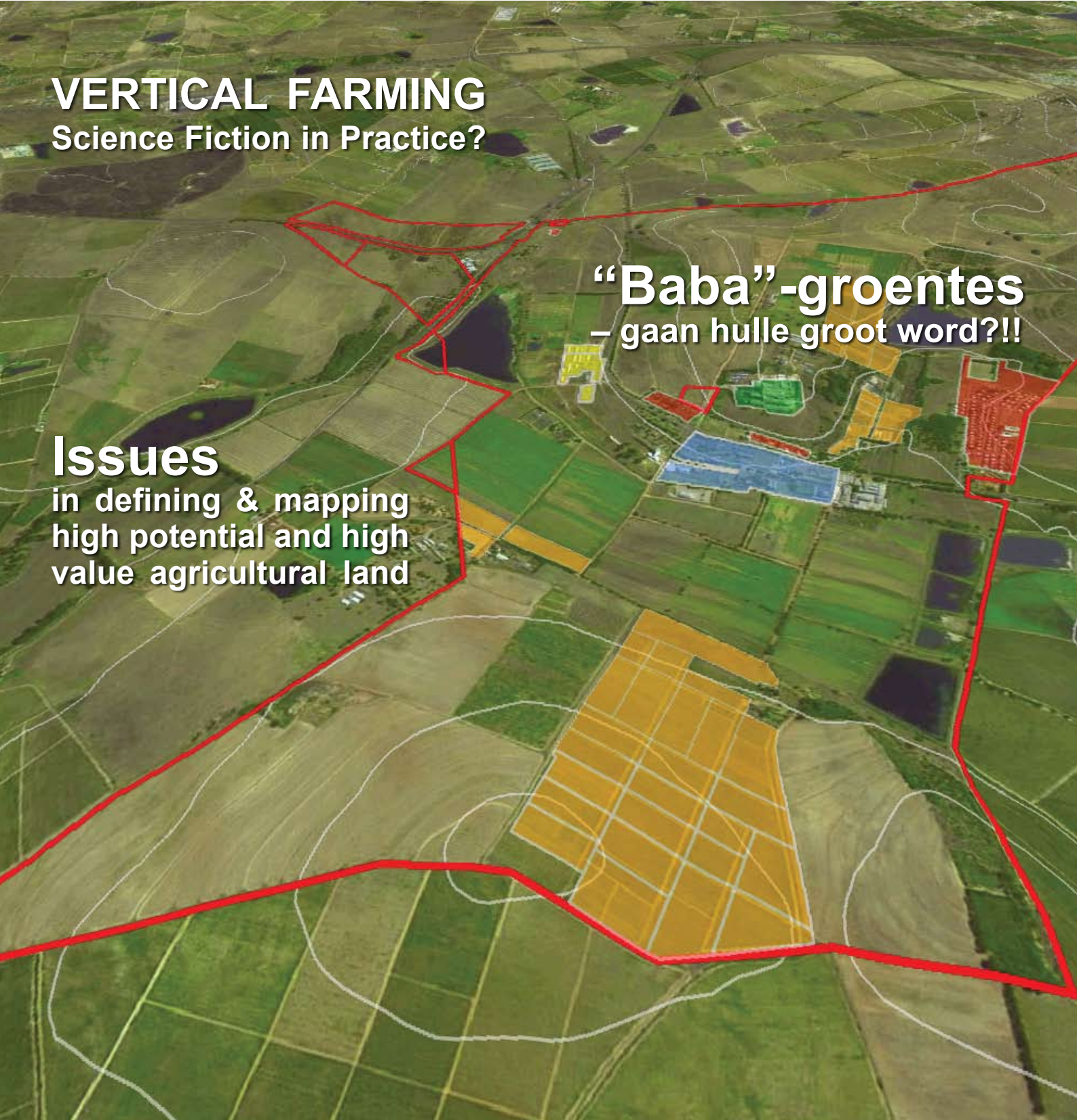
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Research and news magazine of the Western Cape Department of Agriculture
Nuus en navorsingstydskrif van die Wes-Kaap Departement van Landbou
UPhando neemagazine zeendaba zeSebe lezoboLimo leNtshona Koloni

VERTICAL FARMING
Science Fiction in Practice?

Issues
in defining & mapping
high potential and high
value agricultural land

“Baba”-groentes
– gaan hulle groot word?!!





If you need any of the articles in this magazine in any other of the official languages of the Western Cape, we would be happy to arrange a translation for you. Please contact the editor on Tel: 021 808 5022.

Indien u enige van die artikels in hierdie tydskrif in een van die ander amptelike tale van die Wes-Kaap benodig, kan u ons gerus kontak om die vertaling daarvan te reël. Kontak die redakteur by Tel: 021 808 5022.

Ukuba ufana naliphina inqaku elikule magazini ngolunye ulwimi olusesikweni kwiilwimi zeNtshona Koloni, siya kukulyngiselela uguqulelo-lwimi lenqaku elo. Nceda ke uqhagamshelane noMhleli kule nombolo yomnxeba 021 808 5022.

EDITORIAL REDAKSIONEEL

As a newcomer in Agriculture, I was astounded to see how one of the oldest industries in the world embraces modern technology to empower producers with knowledge that is critical for their advancement and economic growth. Just how effectively the offerings of the information age have been taken up, were showcased by a number of project managers at a recent Media WOW! Day, presented by the Department. The use of the Smart Pen (virtually bringing the farm to the office in real time), satellite images, artificial insemination and GIS have definitely put the Department of Agriculture, Western Cape squarely amongst the forerunners of world best practices in Agriculture.

It is in light of above that the editorial team of AgriProbe decided to continue the theme of technology through this edition. Hence, we have dished up such exciting articles such as "Vertical Farming: Science fiction in practice?", "Issues in defining and mapping high potential and high value agricultural land" and "Resourceful waste: incorporating Biogas into South African farming practices".

Although the Media WOW! Day focused on technology, it ended with good old paper and ink and although some of us would give our right kidney for an iPad, there's nothing that can compare to the feeling of a real book...or three! Our Minister of Agriculture and Rural Development, Mr Gerrit van Rensburg launched 3 new books by the Department of which our brand new "Abundant Harvest: Successful stories in Agriculture in the Western Cape" by Charlene Nieuwoudt will probably be one of the Department's most coveted publications that ever sees the light. It is a beautiful coffee table book that tells 10 stories of success made possible by the amazing people that work for the Department and friends in Agriculture. Furthermore, two books which are widely used by the industry: "Melkbeeshandleiding" by Dr Carel Muller and "Volstruishandleiding" by various authors, both second editions, just came hot of the press and is a must-read for anyone in either of these industries.

Reading the articles in this edition, one thing is clear as daylight: this Department delivers WOW! work in every aspect of the Agricultural industry that they touch. Till next time, when we will WOW! you with an edition specifically focused on livestock.

Enjoy the read!

Petro Van Rhyn
Head of Communications
Department of Agriculture, Western Cape

AgriProbe



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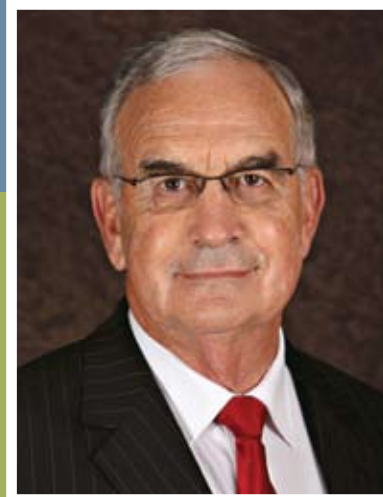
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CONTENTS

INHOUD



Message from Gerrit van Rensburg Minister of Agriculture and Rural Development

"How the times have changed", I thought as we recently bid yet another group of Western Cape farm workers farewell on their Western Cape-Burgundy Exchange Programme visit to France. Opportunities such as these did not exist when I was a young man from a privileged background, and yet, today we are able to provide farm workers this once in a life time opportunity to go and learn and work in arguably the finest wine district in the world; Burgundy in France.

I was also fortunate to join the group of workers in France on this visit, as the Western Cape Government negotiated the extension of this very successful exchange programme with its counterparts in France. Seeing our farm workers in the foreign environment made me very proud, and also realise how important missions such as this one is.

We live in a time where agricultural technology is replacing the human hand with machines in order to be more productive and competitive. This trend cannot be reversed, and in South Africa it is also impossible to ignore. We would simply fall behind the international norms and standards of efficiency. If we were to try and shield ourselves from new technology, we would ultimately become so uncompetitive that our own agricultural sector would be at risk.

But this creates severe problems for a country such as South Africa with high unemployment, as we cannot simply allow for people to be replaced by machines. The answer to this dilemma lies in a work force with quality skills. We need to train our work force in aspects still out of reach of machines. This is exactly what the Burgundy Exchange Programme is doing for our Western Cape farm workers.

The knowledge and experience our workers are exposed to during their stay in France cannot be measured in monetary terms. It is also difficult to measure the ripple effect these workers have amongst their peers once they return back to South Africa. The past has shown that many of their careers are kick started due to this experience, and general vineyard workers have progressed to become wine makers as a result.

And there is no arguing the value a highly skilled and motivated worker can bring to his workplace. Our wine industry depends on these workers to bring home new ideas and improved vineyard and cellar practices in order for us to remain competitive in the world wine markets.

I trust that this group of Western Cape farm workers will also infuse the local industry with positive energy, and share their new outlook on life with their families and friends. The positive results of this exchange programme will keep on revealing itself long into the future.

SPECIAL FEATURES

SPESIALE ARTIKELS

- 4 Vertical farming: Science fiction in practice? - *Dr Dirk Troskie*
- 6 Volhoubare landbou - Waarom die fokus hierop? - *Cor van der walt*
- 7 Agricultural Learnerships kick-off to a great start on 25 January 2011
- 8 Resourceful Waste: incorporating biogas into South African farming practices - *Helanya Vlok*
- 10 "Baba"-groentes – gaan hulle groot word?!!
- 23 Die onderbou van 'n suksesvolle melkery - *Dr. Carel Muller*
- 24 Issues in defining & mapping high potential and high value agricultural land - *M Wallace, Institute for Resource Utilisation, DAWC*
- *Dr L Reed, Natural Resources and Environment, CSIR, Pretoria*
- 26 Western Cape Burgundy Wine Exchange Programme Celebrates 10 years!!!
- 27 Cape Premier Yearling Sale
- 28 An analysis of the inclusion of SA to Bric Countries – the fit for South Africa's Agricultural Sector. - *Mildred Pheeha and Dr. Dirk Troskie*
- 30 New game translocation policy for the Western Cape
- 31 Goedgedacht Path out of Poverty Project

ELSENBURG JOURNAL

ELSENBURG JOERNAAL

- 12 Die effek van verskillende vlakke van byvoeding op die produksie van afrondingsvolstruise wat besproeide lusern bewei - *Marline Strydom, Tertius Brand, Bennie Aucamp & Johann van Heerden*
- 18 Ontwikkeling van stikstofbestuurs strategieë op weimengsels in die Wynland sub-streek van die Wes-Kaap - *C Bester, J Labuschagne, P Karsen & PJ Pieterse*
- 20 Die invloed van populasiedigtheid en vloerspasie van dagoud volstruiskuike (Struthio Camelus) op hul gedrag, inname en groei - *M Janse van Vuuren, T S Brand & B B Aucamp*

VERTICAL FARMING: SCIENCE FICTION IN PRACTICE?



Dr Dirk Troskie
Specialist Advisor: Agricultural Economics

The popular press (and e-mails doing the rounds) often present images of skyscrapers (farmscrapers / skyfarms?) full of plants with dairy cows enjoying the view from the 27th floor. The underlying argument is that conventional (rural) farming's day has passed and it is time for those silly agriculturalists to start thinking out of the box.

While there are good arguments in favour of vertical farming...

All roads lead to Rome. Any enquiry into vertical farming will very soon lead to Professor Dickson Despommier from Columbia University in New York; the undisputed doyen in this field. Despommier (2010) argues that urbanisation, population pressure and limited (and depleted) natural resources force us to consider vertical farming as an option in order to feed (in addition to the current 1 billion malnourished) the more than 3 billion people that will be added to the global population by 2050. He lists the following advantages:

- a) As production takes place in an enclosed and regulated environment, year-round production of crops from various climatic regions can be produced.
- b) Agricultural runoff is eliminated and the use of pest-control chemicals can be contained.
- c) Production takes place in cities with the result that fossil-fuel emissions (through crop transportation) are reduced.
- d) Abandoned or unused properties can be used (brown-fields projects).
- e) Weather related risk is eliminated.
- f) The sustainability of urban centres is enhanced.
- g) Employment opportunities in urban areas are created.
- h) Black and gray water can be converted to drinking quality.
- i) Methane generation adds energy back into the grid.
- j) Transfer of diseases between production regions is reduced.
- k) Farmland is returned to nature.

...and the remaining challenges can be solved...

The necessary technology for vertical farming already exists. The Economist (2010) argues that hydroponics provides the technological foundation for vertical farming and it is claimed that almost any plant, from root crops to cereals and fruit, can be grown in this environment. Hydroponics has reached such levels of sophistication that a semi-automated hydroponic facility at the Amundsen-Scott base at the South Pole provides fresh fruit and vegetables year-round for the 65 permanent staff members at the base. This type of closed-system will also prove to be essential for any long-range space mission such as the planned human exploration of Mars.

Nevertheless, there are a number of limitations that needs to be kept in mind. Hydroponic farming usually takes place in single-story glasshouses specifically designed to allow maximum volumes of natural light to filter through. Although artificial lighting can replace (whilst much more effectively controlled) direct



sunlight in a multi-story building, its use will increase energy requirements. Given the rapid progress in renewable energy generation, this additional energy requirement will soon not necessarily lead to an increase in carbon emissions. However, as the current rule of thumb is that the area of solar panels required will be 20 times the area illuminated, renewable energy requirements will lead to additional design specifications and visual pollution (Economist, 2010).

Added to the illumination requirement, is the energy required to pump water to the top of a multi-story building. A further limitation is the carbon dioxide requirements of plants. Although this feature may create a “green lung” in cities, provision must be made for appropriate ventilation systems. Of course, there are those who proclaim that hydroponically grown tomatoes, although visually perfect, is totally tasteless. The good news is that these people are getting used to drinking recycled water and will probably not be too concerned about “black water” being used in the hydroponic process.

...it is economics that will determine feasibility.

It is calculated that a 30 story building with a base of approximately 2 hectares (about a block in an average city) should provide sufficient space to produce food for 50 000 people. The floor space of this building would be just over 607 000 square metres. The construction cost of office buildings in New York (where the calculations were made) is currently equal to approximately \$200 per square feet (Gudeman, 2010). At the current exchange rate of just over R6,81 for one dollar, this is equal to R14 676 per square metre and, according to Turner & Townsend (a global consultancy and operations firm in the fixed assets business), the construction cost in the Cape Town area is on average about 56,4% of that in New York (Turner & Townsend, 2010). This means that the construction of our 30 story office building in Cape Town would cost approximately R5,02 billion.

However, this is the construction cost of a normal office building and additional features (inter alia lightning, ventilation and structural reinforcement) needs to be included to sustain animal and plant life. Gudeman (2010) calculates that these features would add 50% to the cost with the result that our building would cost R7,54 billion to erect. To put this amount into perspective; there is currently 140 000 hectares of irrigated land in the Cape Winelands District. If we accept that the cost of irrigated land ranges between R120 000 to R500 000 per hectare, this mean that the capital outlay to purchase all irrigated land in this District would be R2,63 billion. In other words, just over a third of the construction costs of the vertical farm.

If the financier of such a megaproject would accept a return (only) equal to the current prime rate (9%), this will require an annual payment of R826 million over 20 years just to settle the construction cost of the vertical farm. As the average price for all vegetables sold at the Epping Market in Cape Town during 2010 was R3 040 per ton (DAFF, 2010), the implication is that 272 000 ton of vegetables needs to be produced in the vertical farm just to cover repayment of the capital outlay (no maintenance or

operational costs are included). As, on average, 192 000 tons of vegetables (supplying roughly half the requirements of the 3,6 million people in the Cape Metropole) are annually being sold at the Epping Market (DAFF, 2010), the implication is that the vertical farm needs to produce 1,4 times Epping's vegetable turnover just to cover capital costs.

Fact or fiction?

Hence, farming in vertical structures is technically possible but not yet economically feasible. In the immediate future the most appropriate approach will be to make use of hydroponics structures on rooftops and the area immediately adjacent to windows (supplying natural light) in multi-story office blocks. That is, if we can convince health-conscious office workers to refrain from snacking during lunch breaks on the carrots, lettuce leaves and celery sticks next to their desks. Talk about vertically integrated supply chains!

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VOLHOUBARE LANDBOU - waarom die fokus hierop



Wêreldwyd het 'n bewuswording ontstaan dat die wêreld se natuurlike hulpbronne (soos bv. olie as die wêreld se gewildste energiebron) beperk is. Die gebruik van natuurlike hulpbronne, wat ten alle koste beskerm moet word, word meer dikwels beskadig as wat beseft word. Voorbeelde soos kernbomme, die Chernobyl ontploffing, osoonlaagbeskadiging, oorbeweiding, erosie, ens. is maar enkele maniere waarop natuurlike hulpbronne beskadig word. Die bevolkingsaanwassing plaas al hoe meer druk op die kwessie van verstedeliking (goeie landbougrond, noodsaaklike ekosisteme ens. wat verlore gaan), verarming, bevolkingsaanwassing wat voedsel verlang, natuurverskynsels wat nie beheer kan word nie (hael, droogtes, vloede ens.), wat 'n wye reeks gevolge het soos hongersnood, agteruitgang van grond en water, verlies aan unieke habitatte, wat weer impakkeer op swak bestuur van die hulpbronne omdat dan uit nood opgetree moet word. Moet dan ook nie vergeet van klimaatsverandering/aardverwarming wat op almal se lippe is nie.

Redes vir die vyf pilare van volhoubare landbou

Hierdie feite beïnvloed elke bewoner van die wêreld, want ons moet eet, werk en iewers bly. Die mensdom is ook ingestel op oorlewing en daarom het hy (die mens) die opdrag gekry om die aarde te bewoon, te bewerk en te bewaar. In hierdie drie opdragte is daar iets te sien van die vyf pilare van volhoubare landbou.

Die vyf pilare van volhoubare landbou is:

- biologiese produktiwiteit handhaaf of verhoog,
- groter sekuriteit verseker deur die vlakke van risiko te verlaag,
- die kwaliteit van natuurlike hulpbronne handhaaf,
- sosiaal aanvaarbaar en verantwoordbaar wees, en dit moet ekonomies lewensvatbaar wees.

Verdere redes wat ook die totstandkoming van die vyf pilare of beginsels van volhoubare landbou teweeg gebring het op 'n grondvlak, anders as die globale redes hierbo genoem, is oa.:

- **agteruitgang van grond** – water en wind erosie; versuring van gronde;
- **indringers en onkruid** – inbring van onwettige spesies/plantegroei; swak beheer en wetgewing van hierdie plantegroei;
- **water en ekosisteme** – oorbesproeiing en loging van bemestingstowwe; besoedeling van riviere en ondergrondse waterbronne; ooronttrekking van boorgate; ontwikkeling wat vleie en moerasse drooglê;
- **verwoestyning en algemene agteruitgang van flora** – droogtes; oorbeweiding; onoordeelkundige bewerking van natuurlike veld; onoordeelkundige brand;
- **verstedeliking en bevolkingsaanwas** – die steeds groeiende vraag na voedsel en kleding (hierby ingesluit is nismarkte wat ten koste van goeie beginsels verbou word);
- **infrastruktuur ontwikkeling** - die mens se natuur om meer te neem as te gee; ingenieurswonders en die mense se behoeftes wat voorrang kry bo die natuur;
- **onoordeelkundige bestuur** – wanneer die aanvraag die aanbod oorskry word nuwe gronde skoongemaak vir die vestiging van kommersiële gewasse wat in baie gevalle nie totaal versoenbaar is met die fisiese, chemiese en biologiese eienskappe van die grond en klimaatsfaktore nie, maar alles om korttermyn wins gaan;
- **verantwoordbaarheid** – in 'n kommuniale stelsel bestaan eienaarskap nie, dus gebruik elkeen die beskikbare hulpbronne tot sy maksimum sonder om in

die meeste gevalle iets terug te plaas;

- **finansiële wanbalans en tydsberekening** – plase wat gekoop word teen onrealistiese hoë pryse en rentekoerse wat meer styg as wat die produkprys styg;
- **meerderheid vs minderheid in Suidelike Afrika en Afrika** – voor 1994 (in SA) het die 80/20 beginsel gegeld (by wyse van spraak), 20% blankes het 80% van die landbougrond besit, maar na die 1994 verkiesing het die situasie begin verander dat die meerderheid nou ook aanspraak maak op grondbesit. Vanweë verskeie redes aan almal bekend, is die gevolg dat groepe mense grond inbesit neem. Dit beteken dat een of meer van die beginsels van volhoubare landbou in die slag kan bly deurdat van die volgende moontlikhede dit kan veroorsaak; skaal van ekonomie; druk op natuurlike hulpbronne; onverantwoordbaarheid vanweë gebrek aan eienaarskap; gebrek aan kundigheid (markte, tegnologie, finansiële bestuur); gebrek aan bestuursvaardighede op die terrein van besluitneming wat vereis word deur faktore soos klimaatsverandering, mark-tendense, grondchemie, ens. om maar 'n paar te noem;
- gebrek aan finansiële/politiese ondersteuning – gebrek aan politiese ondersteuning aan die pilare van volhoubare landbou en hoë kostes van produksiepraktyke;
- **GMO's** – die toetreding van geneties gemanipuleerde gewasse om opbrengste en kwaliteit te verhoog, vereis nuwe bestuurspraktyke;
- **grondstowwe as energiebron** – die wêreld se energiebronne is besig om minder te word en die wêreld fokus nou sy aandag of hernubare bronne vir vesel, energie en industriële rou materiale wat uit landbou moet kom;
- **besoedeling** – die agteruitgang van kwaliteit en kwantiteit water.

Voorbeelde van veranderings in die landbou omgewing

Volgens Tait en Morris (2000) word die volgende drie belangrike kwessies geïdentifiseer wat volhoubaarheid in die landbou bedreig:

- a) algemene verarming en ontvolking van die plattelandgebiede omdat plaaseenhede groter word en klein eenhede net nie meer genoeg inkomste verseker nie,
- b) verlies aan sekere habitatte, ekosisteme, verswakking van waterbronne, algemene agteruitgang van grondkwaliteit, loging van bemestingstowwe en onoordeelkundige toediening van plaag- en onkruidodders,
- c) die toenemende gebruik van antibiotiese- en plaag-beheermiddels wat in voedsel opgespoor word.

Hieruit is dit duidelik dat volhoubaarheid bedreig word op sosiale-, biologiese- en ekonomiese vlakke.

Druk word deur eerste wêreldlande geplaas op produserende lande om aan produksievereistes te voldoen, soos bv. GLOBALGAP. Dit is grootliks vereistes wat deur o.a. sosiale behoeftes (gewete) ontstaan het wat nou ekonomies impakteer op landboupraktyke.



In landbou is daar baie veranderlikes, onsekerhede, onbekende faktore wat direk en indirek 'n mens se gedrag beïnvloed soos in die onderstaande waarneming deur Clark (2001).

Verandering in persepsie en waardes by grondgebruikers word verander deur hul blootstelling aan risiko- en omgewingsfaktore, oftewel onsekerheid en die afwagting van risiko. Sodra omstandighede drasties verander soos bv. 'n langdurige droogte, skop 'n soort van "oorlewingshouding" in waarin die voortbestaan van 'n besigheid/boerdery hoogste prioriteit geniet en ander besluite oor dier- of plantaktiwiteite, beskerming van grond, water en plantegroei, ens. 'n laer prioriteite inneem. Hierdie gedrag veroorsaak direk dat die natuurlike hulpbronne, plante, diere en mense afhanklik van die grond laer prioriteite inneem wat die fondasie van so 'n onderneming is.

Internasionale rolspelers in die saad en chemiese bedrywe ontwikkel GMO produkte wat impakteer op ekonomiese-, natuurlike hupbron- en sosiale bestuursvlakke. Groepe raak opgewonde oor die vooruitsigte wat dit bring, maar gelyktydig ontstel dit ander groepe wat dit as beperkend en selfs gevaarlik beskou. Sosiale gedrag word bepaal deur persepsies, onsekerhede, risiko, beskikbaarheid van inligting ens. So 'n groot onderneming /agri-besigheid kan dus baie druk en negatiewe publisiteit ontvang van drukgroepe wat meen dat dit tot nadeel van die mens en natuurlike hulpbronne in die toekoms sal wees.

Uit die voorbeelde is dit duidelik dat die balans van die vyf pilare van volhoubare landbou versteur word, en daarom noodsaaklik is om uit hierdie veranderinge in landbou en die eise wat dit stel, bestuursriglyne op te stel om praktyke te rig, te evalueer en te verander dat dit volhoubaar tot voordeel van mens en hulpbronne aangewend kan word.

Die Departement van Landbou: Wes-Kaap met sy verskillende programme, maak waardevolle bydraes in die bereiking van die doelwitte van volhoubare landbou. So, bv. word gekyk na onder andere:

- die biologiese produktiwiteit van gronde deur potensiaalbeplanning;
- die beskerming en benutting van natuurlike veld, vleie, bewerkte grond;
- natuurlike hupbronbestuur en bewaring
- effektiewe waterbestuur deur besproeiing;
- ekonomiese modelle vir lewensvatbaarheid;
- evaluasie van besigheidsplanne vir opkomende boere;
- daarstel van bestuurshulpmiddels deur GIS;

- ontwikkeling van wei en voerstelsels;
- evaluasieproewe vir bv. koring, weidings en onkruid;
- produksiepraktyke wat die nadelige effekte van klimaatsverandering kan teenwerk;
- bekendmaking van inligting aan produsente;
- opleiding;
- veeartsenydiens.

*Bronne beskikbaar op aanvraag.

Cor van der Walt Grondgebruiksbestuur

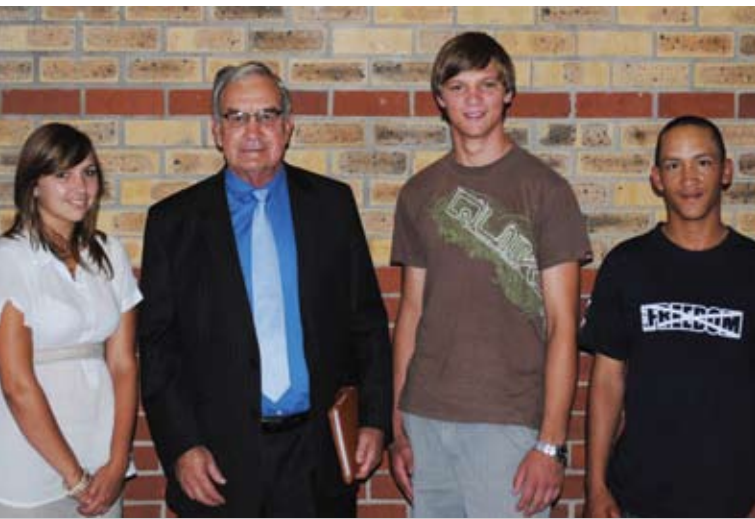
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Departement Landbou: Wes-Kaap
Elsenburg

AGRICULTURAL LEARNERSHIPS kick-off to a great start on 25 January 2011

The Further Education & Training Learnership Orientation DAY for the academic year 2011, took place on the 25th of January 2011 at Elsenburg. A total of 100 learners registered for different study disciplines on NQF level 1 - 4. Learners from the four (4) decentralised FET training centres (Clanwilliam, Bredasdorp, George, Oudtshoorn) gathered at the main campus at Elsenburg, where they were addressed by the Programme Manager, Mr. Marius Paulse who emphasised the importance of this Learnership Programme as a stepping stone towards potential career opportunities within the field of Agriculture, whereas Mr. Chitepo, extended a warm welcome to the students and guests, after which he introduced all FET personnel to the students and explaining their roles within the sub-programme.

The Orientation day was also attended by parents of the learners, FET lecturing- and admin support staff, who assisted the learners with questions, queries and the completion of their learner contracts. The newly elected House Committee, also addressed the learners, which was well received by the 'Team Leaders' of the regional FET campuses, where accommodation is provided to students. The new intake of students had an opportunity to meet fellow students from other centres and in doing so could make some friends.

The students were given an overview of the academic- and examination rules, hostel regulations and the institutional regulations, as well as the expectations and outcomes to be achieved through the learnership training.



Natalie Roberts (B.Agric from Salsanha), Minister Gerrit van Rensburg, Harry Pohl (Hoër Sertifikaat from Tzaneen, Limpopo) en Valtino Jafta (B.Agric from Fraserburg)

► This was the first time that students from the various FET centres congregated as a group and the response to this initiative had been very positive and hence, it will now take place every year, as part of the broader orientation- and registration week of the College.

Learnerships are currently offered in the following commodity areas within the various regions:

- Viticulture NQF Level 4 – Elsenburg
- Vegetable Production NQF Level 1 – Elsenburg
- Vegetable Production NQF Level 4 – Bredarsdorp
- Pomology NQF Level 4 – Clanwilliam
- Vegetable Production NQF Level 1 – George
- Pomology NQF Level 1 – Oudtshoorn

A presentation from ICAS was presented to the learners by Ms Zeldi Hall focusing on their service offering namely: counselling, financial advice, HIV & AIDS information, etc. Learners were also afforded the opportunity to finalise any administration matters before having their class photographs taken with their relevant centre managers.

Further Education & Training wishes all our students 'THE BEST OF LUCK' with their studies for the 2011 academic year!!!!

RESOURCEFUL WASTE:

Global concerns about climate change and the increasing price of conventional electricity has evoked interest in the contribution that renewable energies can make towards South Africa's energy portfolio. While the current level of technological development of renewable energies still renders them costly relative to conventional electricity, the non-monetary benefits they hold justify exploring their overall value.

Biomass as a source of energy can contribute towards a country's renewable energy portfolio. Technologies for converting biomass into energy include biodiesel or bio-ethanol, gasification (whereby biomass is combusted), and anaerobic digestion (whereby biomass is broken down through a bacterial process to produce biogas). The Western Cape Department of Agriculture is investigating the incorporation of energy production through anaerobic digestion into agriculture.

Biogas is produced through "the breakdown of organic matter by micro-organisms in the absence of oxygen" (Van Haren & Flemming, 2005). The process can be facilitated in a biogas digester. Most biogas digesters function according to the same working principles as illustrated in figure 1. The feedstock enters a fermentation tank directly or after being mixed with water. The tank retains the slurry while a gas collects above the biomass. Thereafter, the gas exits through an outlet pipe where it is collected in a displacement tank or outlet pit for future use (Plöchl & Heiermann, 2006). The sludge (digested feedstock) exits the tank through an alternative outlet.

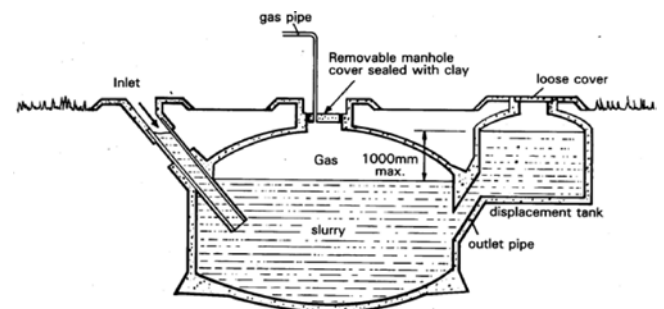


Figure1: Illustration of a fixed dome biogas digester (Image: www.fao.org)

The Western Cape Department of Agriculture has an agreement of collaboration with the German state of Bavaria. This agreement allowed Ms Vlok to visit Bavaria to find out more about how biogas technology works and whether it provides a suitable option for agriculture in South Africa. The Bavarian landscape is a patchwork of maize, sunflowers and forests, intercepted by villages and connected by well maintained roads. The high frequency of houses with roofs covered by sun panels bear legacy to the success of the environmental policies designed and implemented by the German government (Van Haren & Fleming, 2005). Biogas plants in Germany provide an estimated 8.5 % of their renewable energy supply.

Biogas production in Germany is an expensive enterprise and biogas investments are highly dependent on the Renewable Energy Feed-In Tariffs (REFIT) at which the government purchases electricity from individuals. This allows farmers a guaranteed sale of every kWh of electricity produced within the first 20 years of plant operation.

INCORPORATING BIOGAS INTO SOUTH AFRICAN FARMING PRACTICES

Helanya Vlok

Senior agricultural economist: Macro and resource economics

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Farm scale biogas plants typically consist of two or three digesters, each retaining the feedstock for a specified period. Retention time varies between 3 and 50 days depending on the type of feedstock used. Some digesters are stirred with mechanised stirrers to ensure that the feedstock is optimally exposed to the bacteria. Digesters are often heated to maintain the appropriate temperatures (approximately 38°C) at which the process takes place. In 2008, the average capacity of farm-scale German biogas plants was 350 kW, but larger plants of around 5 MW are also found (Siemens Limited, 2010).

The quantity and composition of gas produced depends on the type of feedstock fed into the digester. A broad variety of organic waste can be used, including silage, household waste and animal manure. The feedstock is often mixed with water to create slurry with the appropriate volatile solid content for digestion. Average farm sizes in Bavaria are smaller and agricultural practices are more technology intensive and less labour dependent than in South Africa. It is not uncommon for Bavarian farmers to obtain feedstock from neighbouring farms in exchange for digested feedstock which they use as fertiliser. While maize silage is the most common source of feedstock for Bavarian biogas production, some farmers augment it with animal manure or other types of agricultural wastes.

The decomposition of the organic waste produces a gas that consists of a high percentage of methane (Steffen, Szolar & Braun, 1998). The gas can be used to generate electricity or applied directly for heating or cooking. To use the gas in conventional gas appliances it needs to be scrubbed – a process whereby impurities and carbon dioxide in the gas are removed; but appliances in which biogas can be used directly are also available. The other by-product of the process is sludge, which has been proven to be an effective organic fertiliser. Some farmers in Bavaria use surplus heat from their digesters to heat their households or to dry materials such as straw and woodchips.

Other than the energy and fertilisation opportunities that anaerobic digestion holds, it also provides a number of external benefits pertaining to the environment and can contribute to achieving objectives of sustainable agriculture. These include reduced carbon dioxide emissions from conventional coal based electricity generation, reduced nitrous oxide emissions from inorganic fertilisers, and reduced methane emissions from shorter exposure of fermenting manure (Schenkel, 2009). This not only offers farmers an opportunity to reduce their carbon footprint, but may also hold health benefits and improved water quality as a result of improved waste management.

Biogas generation in South Africa is hampered by a number of factors. One of the key constraints is the low financial return in absence of a REFIT policy, augmented by lack of information about the technology. Additionally, in a water-scarce country such as South Africa, and the Western Cape Province in particular, the opportunity cost of water must be considered when feedstock needs to be mixed with water to create slurry suitable for digestion.

In spite of limitations, the popularity of biogas in industrialised as well as developing countries suggests that South African farmers should also be able to benefit from the technology. The implementation of South Africa's REFIT policy and the signing of the first purchasing power agreements (PPAs) are being awaited and are expected to encourage investment in renewable energies. At this stage of its development, the policy proposes a tariff of R0.96 per kWh of electricity produced through biogas systems with a capacity of one mega watt.

In an attempt to gain firsthand experience with biogas technology, the Western Cape Department of Agriculture has invested in a pilot plant on Outeniqua Research farm close to George. The manure collected during the time in which the 400 cows are stationary while being milked is expected to provide enough energy to power a 35 kW generator, supplying sufficient electricity to power the dairy. If biogas technology can be integrated into agricultural practices in a way that is financially viable, it can become a value adding investment through enabling cost-savings and contributing towards sustainable agriculture and climate change mitigation.

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“Baba”-groentes – gaan hulle groot word?!!

Die meeste baba-groentes is heeltemal volwasse miniatuur groentes en ander is onvolwasse groentes wat geoes word voordat volwassenheid bereik word. Hierdie groente is net so voedsaam soos groente van normale grootte en is gewoonlik sagter en het 'n meer delikate smaak. Die produksie van baba-groente is relatief nuut. Navorsing is in die 1960's tot vroeg in die 1970's gedoen waarna dit basies tot 'n einde gekom het aangesien die supermark-verspreidingsisteme van daardie tydperk nie so gesofistikeerd was soos vandag nie en die bevriësing, waarvoor die baba-groentes oorspronklik ontwikkel is, te duur was as gevolg van ontoereikende masjinerie. Die verbruiker van die sestigs en vroeë sewentigs was ook nie ingestel op baba-groentes nie.

Baba-groentes het egter die afgelope tien jaar baie meer populêr geraak en supermarkte het die konsep van baba-groentes bevorder en vandag is dit 'n baie gewilde produk by die verbruiker. Tans word daar spesifieke teling gedoen om kultivars van baba-groentes te ontwikkel in lyn met die verbruiker se behoefte. Sekere kultivars sal baba-groentes produseer as hulle by 'n nou spasiëring geplant word, maar sal tot “normale” groottes ontwikkel as by tradisionele spasiërings geplant word. Die produksie van baba-groente is geskik vir 'n persoon met 'n klein groentetuin of selfs op 'n balkon of stoep.

Die hoofredes om self jou baba-groentes te produseer is onder andere die volgende:

- Vars is die beste, reguit van die tuin na die tafel, sonder chemiese residue.
- Die kleinste tuin kan groente produseer, baba-groentes kan in sakke, potte en ander toepaslike houers geproduseer word.
- Tuis-produksie is ekonomies.
- Tuis-produksie gee 'n keuse van tipes en kultivars.

Die volgende punte moet in ag geneem word wanneer daar beplan word om te produseer:

- Saai of plant baie naby mekaar sadat die plante die oppervlak kan bedek en sodoende onkruidgroeï kan beperk. Gebruik die spasie tussen gewasse soos murgpampoentjies vir 'n tussenplanting van 'n vinnig-groeiende gewas soos slaai of radyse.
- Beperk kompetisie vir lig deur groentes van dieselfde hoogtes langs mekaar te plant.
- Gesonde plante sal tot 'n goeie oes lei. Die plante moet nie aan onnodige stres soos bv. 'n watertekort en winderige toestande blootgestel word nie. Saai slegs in optimale toestande en moet nie buite seisoen probeer plant nie.
- Ondersoek plante gereeld vir peste en plaë. Baba-groentes ontwikkel gewoonlik vinnig en sal dus nie al die normale probleme ondervind nie.
- Indien geelwortels, beet, raap, witwortels en prei in warm toestande gesaai word, moet die beddings eers goed nat gemaak word.
- In die geval van 'n goeie murgpampoentjie oes sal dit nodig wees dat voldoende water altyd beskikbaar sal wees vir die plant en dat die plante weekliks gevoed sal moet word met 'n oplosbare bemesting.
- 'n Deklaag sal waterverlies beperk, veral by murgpampoentjies, kopkool en blomkool, maar daar moet onthou word dat die deklaag daar geplaas moet word



- voordat die grond uitdroog.
- Indien in houers of sakke geplant word, moet in ag geneem word dat dit meer gereeld nat gemaak moet word.
- 'n Goed voorbereide komposryke grond sal 'n beter waterhouvermoë besit as grond met 'n lae kompossamestelling.
- Wanneer die gewas benat word is dit nodig om die grond goed te benat en nie net die oppervlak nie.

Die beste resultate word behaal met baba-groentes as die grond deeglik voorberei word voor saai of plant, net soos by konvensionele groente aanplantings. Baba-groente ontwikkel baie goed op beddings van 120 cm wyd aangesien daar nooit op die bedding getrap hoef te word nie en die werk vanaf die kant gedoen kan word. Elke jaar moet daar 'n goeie mengsel van verskillende soorte kompos in die grond ingewerk word sodat die grond sy voedingswaarde en waterhouvermoë kan behou.

Navrae:

Dr. Jacques van Zyl
021 8085302

Die onderbou van 'n suksesvolle melkery.

Dr. Carel Muller
Instituut vir Diereproduksie, Elsenburg



'n Fyn balans is nodig vir finansiële oorlewing van 'n melkery. Melkboere is aan die uitsetkant prysnemers terwyl insetverskaffers na hul eie brutomarges kyk. Veranderinge in melkpryse en insetkoste is groot besprekingspunte en dit vorm die emosionele toestand van die bedryf. 'n Daling in die melkprys het dikwels tot gevolg dat 'n aantal produsente die bedryf verlaat. Ander produsente vergroot weer hul melkkuddes om 'n groter jaarlikse omset te verkry. Wêreldwyd kom dieselfde tendens voor en produsente vra dieselfde vrae oor hoe om te oorleef. Produsente moet konsentreer op daardie faktore wat direk onder hul beheer is. 'n Melkery is 'n intensiewe onderneming met hoë insetkoste en 'n hoë vlak van wetenskaplike en praktiese kennis is nodig om dit suksesvol te bedryf.

Heelplaaswingsgewendheid

'n Eenvoudige beskouing van 'n melkery is gesetel in twee aspekte, naamlik die hoeveelheid melk wat per jaar aan die melkoper gelewer word en die koste om daardie hoeveelheid melk te produseer. Dit bepaal die wingsgewendheidsvlak van die plaas. Dit is dus nie net 'n hoë gemiddelde melkproduksies of 'n lae voedingskoste wat 'n winsgewende onderneming verseker nie. Binne 'n spesifieke produksiestelsel word die daaglikse hoeveelheid melk bepaal deur die genetiese meriete van koeie vir die produksie van melk, die vrugbaarheid en produktiewe leeftyd van koeie.

Genetiese meriete van koeie

Koeie met hoë teelwaardes vir melk kan meer melk produseer per eenheid voer ingeneem. Die gemiddelde melkproduksie van die Elsenburg Holsteinkudde het oor 'n 11-jaar periode met 53% toegeneem vanaf 5112 kg per laktasie. Dit is verkry deur bulle met hoër teelwaardes vir melk vir inseminasie in die kudde te gebruik en om laag produserende koeie tydens eerstelaktasie te identifiseer en uit te skot. Die gemiddelde teelwaarde van die koeie in die kudde het dus oor tyd toegeneem. Met 48 koeie in melk was die daaglikse melkproduksie 607 kg en aan die einde van die periode het 32 koeie 'n soortgelyke hoeveelheid (612 kg) melk per dag geproduseer. Dit beteken dat die doeltreffendheid van die kudde toegeneem het aangesien die kleiner aantal koeie dieselfde daaglikse melkproduksie gelewer het. Hoewel hoër melkproduksies positief gekorreleer is met voerinnome, behoort die totale voerinnome van die 32 koeie in melk steeds minder as die oorspronklike 48 koeie te gewees het.

Reproduksiebestuurspeil

Die reproduksiebestuurspeil in die kudde bepaal die gemiddelde melkproduksie van die kudde deurdat koeie met lang interkalfperiodes langer in melk bly. Dit het tot gevolg dat meer koeie in die kudde in die laat stadium van die laktasie is en dan minder melk produseer. Die gemiddelde dae in melk vir 'n kudde is sowat 153 dae vir 'n interkalfperiode van 12 maande en 183 dae vir 'n interkalfperiode van 14 maande. 'n Opname van die gemiddelde melkproduksie van koeie in die Elsenburg kuddes het getoon dat die gemiddelde melkproduksie van die kudde met sowat 1.5 liter per dag afneem vir elke 21 dae wat die gemiddelde dae in melk meer as 155 dae is. Reproduksieprobleme word dikwels ondervind wanneer hittewaarneming en inseminasie tegnieke swak is. In 'n melkkudde waarin die reproduksiebestuur verbeter het, het die totale daaglikse melkproduksie verhoog vanaf 1200 tot 2300 liter per dag. In dieselfde tyd het die aantal koeie in melk toegeneem vanaf 120 tot 135, maar het die gemiddelde dae-in-melk afgeneem vanaf 240 tot 165 dae. Dit beteken dat die doeltreffendheid van die kudde toegeneem het en hoewel die voerkoste toegeneem het met die meer koeie in melk, het die wingsgrens in die kudde dramaties verbeter.

Produktiewe leeftyd

Die produktiewe leeftyd van koeie in 'n melkkudde bepaal die vervangingstempo en die totale daaglikse melkproduksie. Die aantal eerstelaktasiekoeie gee 'n aanduiding van die vervangingstempo terwyl die gemiddelde aantal laktasies van koeie in die kudde 'n aanduiding van die produktiewe leeftyd van koeie in 'n kudde is. Met meer eerstelaktasiekoeie in die kudde is die totale melkproduksie laer. Ongelukkig is die genetiese invloed van produktiewe leeftyd laag, daarom moet goeie bestuur verseker dat koeie lank lewe. Die aantal verse in die kudde word meer indien hulle later as 24-maande ouderdom kalf. Dit verhoog die voerkoste van die kudde omdat die aantal nie-produserende diere toeneem.

Afsluiting

Produsente wat hulself in 'n koste knyptang bevind, kan met goeie bestuur hul finansiële posisie verbeter. Die verbetering van die gemiddelde teelwaarde van 'n kudde is 'n langtermyn aksie en berus op 'n sinvolle bulseleksieprogram. Koeie met lae produksies moet in eerstelaktasie geïdentifiseer en uitgeskot word. Goeie reproduksiebestuur verhoog die totale melkproduksie van die kudde omdat koeie meer gereeld kalf. Dit is afhanklik van korrekte hittewaarnemings- en inseminasie-tegnieke. Die langlewendheid van koeie berus op goeie bestuur.

Issues in defining & mapping high potential and high value agricultural land

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Dr L Reed, Natural Resources and Environment, CSIR, Pretoria



There is an increasing demand for information to define and map areas of agricultural potential and high value in the Western Cape. Such requests originate either from municipalities, provincial or national government, their agents or from Departmental officials who have to comment on or approve applications for land rezoning and subdivision. There is often no simple response to such requests for various reasons.

Agricultural potential and value

There is a fundamental problem in supplying information related to land with a high agricultural potential, because the term is subjective and depends on a number of underlying issues, motivations and interpretation such as:

- High potential for which commodity or enterprise? A mountainside vineyard on rocky ground may produce a fine boutique wine, but would normally not be categorised as “high potential” agricultural land. Potential (in terms of economic viability) for a particular commodity is market driven and can thus change drastically over time as evidenced by the thousands of hectares of old wheat lands in the province that are no longer cultivated.
- Traditional land capability studies are usually based on arability principles developed elsewhere and under-value many of the vineyard and relatively high producing grain areas on shallow, stony soils in the Western Cape.
- Is the measure for agricultural potential for a particular location influenced by socio-economic or political factors such as:
 - Food security issues?
 - The market value/ price of farms in the area?
 - Luxury/high value commodity potential – e.g. wine, export fruit, therefore higher economic output and contribution to local economy?
 - Potential for labour intensive agricultural activities?
 - Land suited to land reform projects?
 - Land suited to the production of bioenergy?
- What determines “high” agricultural potential – is it:
 - the ability to produce a high yielding crop?
 - the ability to produce a high-value crop?
 - Is it simply related to the soil, topography and climate?
 - does it have the required attributes to produce a

specific “niche” crop?

- can it be assigned a high value because of its proximity to a town or city (i.e. markets) or poor communities?
 - is it in close proximity to a water resource such as an irrigation supply which may give it a high potential even though the soil may be relatively poor?
 - Is long term sustainability considered?
- Should potential climate change and land degradation issues be considered? How does agricultural potential relate to actual land value? Is high-priced land with a high “lifestyle” or “hobby” farming contingent a determining factor in agricultural potential in a non-traditional sense? The heterogeneous character of agricultural land lends itself to a variety of uses. Traditionally, agricultural land was regarded mainly as a production factor and characteristics related to productive capacity were the primary determinants of an agricultural property’s highest and best use and market value. These characteristics focused on objective, tangible characteristics related to the income generating capacity of the property which could be measured scientifically. Hence there was a direct relationship between agricultural land value and its potential for agricultural production. Worldwide, however, and particularly in the Western Cape, there has been a transition to a multi-functional rural land market, where buyers of farms often focus on a wider range of land characteristics which are more intangible, subjective and not necessarily related to farm income. These characteristics are associated more with satisfaction derived from the property, the recreation or tourism potential of the land, or the conservation of fauna and flora, as well as aesthetics associated with unspoiled natural landscapes and the (temporary) escape from city life.

Therefore the characteristics of the land are not always important as a means to an end (agricultural production), but can be an end in themselves. For instance, mountainous land is often not the most productive for farming purposes, but it offers undisturbed views and a natural setting. The number of characteristics and use options, together with the interaction between them, increases uncertainty and make the “value” classification of agricultural land more complex.

- Tourism issues may play a role in evaluating the agricultural potential of certain areas with a particular agricultural character or heritage (for example home-steads built in the Cape Dutch style) that may be spoiled by mining or other development. Certain agricultural landscapes in Europe are strictly protected for this reason.
- Areas of unique agricultural character adjacent to expanding urban areas such as the remaining Durbanville winelands are under continual threat from development and should perhaps be afforded particular “value” as a unique, threatened resource.
- Similarly different sub-regions in the province will clearly require vastly different criteria by which to evaluate potential – e.g. extensive grazing areas in the Karoo vs. intensive Stellenbosch viticulture.
- There are various semantic issues which need to be clarified, such as the various classification and zoning nomenclature used by planners which can be ambiguous and misleading. The terminology “unique and significant” agricultural landscapes may be preferable, thereby avoiding the subjectivity of the term “high potential” agricultural areas.

Environmental considerations

There is growing awareness internationally of the value of agricultural land in providing certain ecosystem services, such as carbon sequestration, nutrient cycling, habitat, and even ecologically critical corridors, where there are attempts to connect patches of highly fragmented natural vegetation to provide undisturbed passage to fauna and flora within agriculturally productive areas. This “corridor” land may thus not have high inherent (traditional) agricultural value, but in the ecological context assumes a high value.

Farms in mountainous areas may not be regarded as high potential agricultural land, but may be important as water catchment areas for the surrounding community. In addition, streams flowing through farms which are kept in a good ecological condition may help to ameliorate flooding and provide high quality and quantity water to downstream users.

These environmental services provided by agricultural land may be of very high strategic importance, even if not fully considered in the mapping of the agricultural potential of such land. Payment for the provision of such ecosystem services have been discussed and markets for “trading” in ecosystem services have been developed in some countries, but such markets are still limited in South Africa.

Future requirements

There is unlikely to be a simple solution to address the above issues. The point is made though, that agricultural potential and value can be defined by more parameters than are usually considered if the holistic approach is taken. A multi-disciplinary approach is thus required to research and develop the following:

- A thorough consideration of all issues influencing agricultural potential and value – including those parameters less easily quantified in conventional economic terms.
- Refined maps and spatial statistics to describe the agricultural “footprint”; current land use and agricultural activities in the province
- A defensible model to better describe agricultural potential and define “high” potential or unique and significant agricultural land specific to the Western Cape, leveraging current and (feasibly) obtainable datasets
- A unified planning model, associated data and map set used by both developers and regulators
- Acceptable criteria defining the minimum financially viable size of a piece of land for the predominant agricultural enterprises.

There is ever-growing competition for land resources. Some of the claims are well-publicised such as issues over golf course developments, recent applications to mine in the Durbanville winelands and proposed mining operations affecting highly sensitive natural and agricultural ecosystems near Moutonshoek. Urban sprawl is occurring continuously and many other rezoning applications and developments occur without much publicity with subsequent loss of agricultural land and important environmental habitats. There is thus an urgent need for neutral, transparent and scientifically derived information to guide both planners and regulators in making decisions impacting on our declining agricultural resources. It is hoped that this article will stimulate further thought and contributions towards future work on this important subject.

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WESTERN CAPE BURGUNDY WINE EXCHANGE PROGRAMME CELEBRATES 10 YEARS!!!

Brainchild of Ms Thuthukile Skweyiya, South Africa's former ambassador to France, and named after her, the Thuthukile Skweyiya Western Cape - Burgundy Wine Exchange Programme was launched in 2001. The Exchange Programme falls within the ambit of the Co-operation Agreement which was entered into by the Regional Council of Burgundy and the Province of the Western Cape in 2002.

The Co-operation agreement between Western Cape and Burgundy, which was signed on 12 September 2002 between the Premier of the Western Cape and the President of the Regional council of Burgundy stipulated the following areas for co-operation: education, science and technology, agriculture and economic co-operation.

With regard to agriculture, the co-operation agreement aims at fostering academic and economic ties between both regions, with a specific focus on the exchange of learners and teachers at training centers, the implementation of joint professional training, the exchange of high school pupils and students and the exchange between researchers, laboratories and universities.

As part of furtherance of skills development in Agriculture, the Department of Agriculture: Western Cape, via the Programme: Structured Agricultural Training as training provider, offers previously disadvantaged individuals from the wine industry the opportunity to gain international experience with reference to Viticulture processes and wine processing techniques, barrel management and maintenance, sommelier training (wine and food pairing) and cheese-making through training at the CFPPA in Beaune in Burgundy, France. In exchange, the Cape Institute for Agricultural Training: Elsenburg (CIAT), annually hosts 10 French students for a period of three weeks training at CIAT and three weeks harvesting on a wine estate.

The Western Cape - Burgundy exchange programme is a resounding success. This programme not only adds value to the personal and career development of the participating individuals, but also strengthens the bilateral relations between these two provinces and training institutions.

Two exciting new additions to the agriculture agenda was implemented in 2009. Not only did a development rugby team from Elsenburg spend 10 days in Burgundy, but eight extension staff members from the Department also received training in small farm management in Burgundy. The training of extension staff in Burgundy also forms part of the Extension Revitalisation Programme implemented by the Department.

In October 2010, Gerrit van Rensburg (Minister for Agriculture and Rural Development), Ivan Meyer (Minister for Cultural Affairs and Sport) and Joyene Isaacs (Head of Department: Agriculture) were hosted by the Burgundy Regional Council to celebrate the 10 years of the exchange programme. In his speech to the Burgundy Regional Council, Minister Meyer referred to this programme as an example of "best practice" for international co-operation programmes.

The highlight for the planned programme in 2011 is undoubtedly the 10-year celebrations of this programme in the Western Cape in May, when the Western Cape government will host a delegation of the Burgundy Regional Council. To mark these



2011 Burgundy students

celebrations, a book on this programme will be published. This book will not only tell the story of this programme, but will also contain portraits of some of the participants and estates of both the Western Cape and Burgundy. This is really something to look forward to!!

An excerpt from a letter by Clarence Job who, as a cheese maker, went to France and Switzerland from 27 September to 17 October 2010.

Eerstens wil ek dankie sê vir die wonderlike geleentheid wat oor my pad gekom het.

Om die besondere ervaring in woorde te probeer uitspel is eintlik nie moontlik nie, ek sal egter probeer om u 'n idee te gee hoe ek dit ervaar het.

As jong man wie in die Wes-Kaap gebore is en groot geword het, het ek nog altyd gedroom van die dinge waarmee ons nie hier te doen het nie, as werker en kaasmaker in Ladismith het ek gewonder hoe dit elders gedoen word. Wat se tiepe kaas maak hulle oorsee en hoe smaak dit.

Toe word die groot droom 'n werklikheid en dank die Vader daarvoor, die feit dat ek gekeur is, die groot opgewondenheid om te mag gaan na 'n verre land waar kaasmaak begin is, mense van ander lande te ontmoet, met hulle te mag kommunikeer en te leer, wat 'n wonderlike geleentheid! Vir my wat nog nooit in 'n vliegtuig gery het nie was dit absoluut "awesome". Om my pad te kon vind op die lughawe en alles wat daarmee gepaard gegaan het, het my selfvertoue 'n groot hupstoot gegee.

Ek het nooit geweet van al die soorte kase wat die ouens maak nie en die metodes was so anders. Bokmelkkaas, die klein gesinsfabrieke wat van geslag tot geslag oor gedra word en in baie gevalle is dit slegs die familie wat daar werk. Die kaas wat hulle maak is uniek aan daai familie en baie word nie elders vervaardig nie.

Die fabriek waar daar net Monnike werk sal ek altyd onthou, so gedisiplineerd het ek nog nooit ervaar nie. Seker een van die skoonste fabrieke op aarde. Niemand mag aan toerusting en kaas met die hand raak nie. Baie goed gemengsaam.

Dit het my ook die geleentheid gegee om notas uit te ruil met van die ander ouens wat saam met my daar was en saam-saam het ons baie oor ons bedryf gepraat. Met die praktiese deel het ek baie wyser geword, veral hoe verskillende feite interpreteer kan

word. Wat vir my ook opvallend was, is die feit dat die Franse by elke geleentheid kaas eet met sy wyntjie en 'n lekker vars broodjie (geen rys nie).

Ek beseft vandag meer as ooit dat 'n mens gedissiplineerd moet wees en baie streng, veral op jouself, moet wees. Ek glo, nadat ek teruggekom het van oorsee, dat die groot geheim van sukses is dissipline en nog maals dissipline.

Dit was natuurlik nie net klasdraf, werk en eet nie, al was dit die belangrikste op ons agenda. Die feit dat ons Switserland kon besoek was natuurlik 'n bonus, regtig onvergeetlik.

My ouers het nou die aand ook vir my gevra "Clarence, wat nou vorentoe?"

Mnr Kobus Mulder, ek wil net vir u sê, u het 'n nuwe droom in my wakker gemaak met die toer, nl. ek wil weer oorsee gaan, dalk jare later hiervandaan maar ek gaan daarvoor werk en my bekwaam tot op so 'n vlak dat ek of my werkgewer dit nodig sal ag om my terug te laat keer daarheen - al sal dit dan net wees om eer te bewys aan hulle wat bereid was om deel te wees van dit wat ek in die lewe geleer het. Soos die jare mag aanstap en

dinge begin vervaag sal hierdie ondervinding wat ek opgedoen het en wat ek beleef het in my herinneringe bly voortleef.

Ek het 'n dagboek gehou wat natuurlik nou 'n ere plek in my boekrak gekry het. Ek blaai en lees nog deur dit om die ervaring wat daar was nog langer te laat leef. Wat die toer ook vir my beteken het, was om weer te beseft dat ons moet werk om uit te styg en dan 'n verskil te maak ten goede, nie deur te volg nie maar om leiding te gee.

Dankie vir 'n wonderlike geleentheid wat baie vinnig verbygegaan het. Ek hoop en glo, as ek na myself kyk, dat dit geld is wat goed belê is en 'n beter toekoms sal help bou. My groot wens is dat ek u en my werkgewer, wat die vertroue in my gehad het om my die geleentheid te gee, nooit sal terleurstel nie. Mag hulle wat in die toekoms dieselfde geleentheid kry as wat ek beleef het, dit net so opbouend en meelewend sal vind as wat ek dit ervaar het. Ek glo ook dat die inisiatief sal voortleef ten bate van ons eie bedryf en land.

Noudat ek terug is, wat 'n wonderlike gevoel om van die vliegtuig af te klim en te weet ek loop nou op moeder aarde, my land, ons almal se werêld, dank die Vader.

Cape Premier Yearling Sale

Empowerment in the thoroughbred industry got off to a good start at the recent Cape Premier Yearling Sale, held at the Cape Town International Convention Centre on the 27th and 28th of January. Sweep Forward, from an empowerment co-operative made up of grooms from Klawervlei stud and Highlands stud, became the first yearling to be sold as a result of the thoroughbred industry's empowerment initiative. Sweep Forward fetched R350 000, resulting in a profit of R150 000 for the empowerment co-operative.



Photo caption: From left to right: Riaan Ruiters, Klawervlei; Minister van Rensburg; Japie Booysen, Klawervlei; Donald Mabusela DTI; Thami Klassen DTI; Johnathan Absalon, Klawervlei. The yearling, Sweep Forward, sold for R350 000".

The Grooms' Co-operative Weanling Scheme forms part of a groom training programme, initiated 8 years ago by the Cape Breeders Club. The initial training on horsemanship and general life skills was complemented in 2010 by a mentorship programme, funded by the Western Cape Department of Agriculture. Business management; accounting and taxation issues are covered in the mentorship programme as well as the finer details of the commercial thoroughbred business.

The Co-operative model allows members to access funding from the Department of Trade and Industry to invest in weanlings. These

horses are kept on the farms where the co-operative members are working. This arrangement allows the co-operative to have access to expensive infrastructure and technical services, such as stabling and veterinarian services, without the associated costs that would be involved should all of these facilities have to be built from scratch.

Horses are then sold as yearlings, and profits re-invested in the co-operative for a period of 3 years during which time additional horses will be purchased and sold each year.

Western Cape Minister of Agriculture and Rural Development, Gerrit van Rensburg said: "This is an exciting development and breakthrough for a BEE scheme in the thoroughbred industry and we are very proud of the co-operatives achievement. The mentorship programme allows the transformation process in the thoroughbred industry to ascend to the next level."

Five empowerment co-operatives were established in 2010 in the Western Cape, and the industry plans another ten co-operatives in the Province for 2011.

AN ANALYSIS OF THE INCLUSION OF SA TO BRIC COUNTRIES – THE FIT FOR SOUTH AFRICA’S AGRICULTURAL SECTOR

By Mildred Pheeha and Dr. Dirk Troskie, February 2011

On the 25th of December 2010, the South African International Relations Minister announced that South Africa has been invited to join the BRIC group of countries (BRIC is an acronym for four of the most important developing countries: Brazil, Russia, India and China). A lot of economists expressed surprise and were caught off-guard since no one expected SA to be invited to join BRIC (biggest emerging markets). This acronym was introduced to the world by Jim O’Neill (the current chairman of Goldman Sachs Asset Management); with his 2001 paper “The World Needs Better Economic Brics”.

The acronym has come into widespread use as a symbol of the shift in global economic power away from the developed G7 economies toward the developing world. According to the paper published in 2005 by Goldman Sachs entitled ‘How solid are the BRICS? Mexico and South Korea were the two other countries most suitable to be the next to join BRIC. However, as they were already members of the OECD, they were considered to already be developed. The four BRIC countries combined constitute 25% of world land coverage and 40% of the world’s population (CIA, world fact book, 2010).

Although it does not make sense from an economic perspective why South Africa would be invited to join BRIC, it does from a political perspective. South Africa can be seen as a gateway for BRIC countries to enter Africa. South Africa’s benefit will come by becoming the non-permanent member of the United

Nations (UN) Security Council. Russia and China are already permanent members of the body while Brazil, India and South Africa will become non-permanent members. Despite all the skepticism, each country does have its unique competitive advantage. South Africa and Russia represent the resource based commodity producing countries, China is the manufacturing Centre of the world, Brazil is the agricultural giant and India is the software and IT specialist.

The characteristics of the BRIC countries (including SA)

The BRIC countries before the inclusion of South Africa, were in the top 7 biggest countries by area in the world with Russia first, China fourth, Brazil fifth and India seventh. South Africa is much smaller, ranking 25th on the list. South Africa also has only the 25th biggest population per country, compared to the other four countries that are all ranked amongst the top 10. South Africa also lags behind Brazil, Russia, India and China when it comes to GDP, imports and exports. China has the world’s second largest nominal GDP rate and it is the world’s second biggest exporter and the second biggest importer. Of the four BRIC countries, India has the lowest nominal GDP and comes in at 11th place while Brazil ranks the lowest as the 23rd biggest exporter and 22nd biggest importer. South Africa ranks 27th in the world for nominal GDP rate and 38th in export and 36th in imports. South African GDP per capita is ranked 74th, better than India and China.

Table1: The BRIC statistics including South Africa

Categories	Brazil	Russia	India	China	SA
Area	5th (8 514 877sq km)	1st (17 098 242 sq, km)	7th (3 287 263 sq, km)	4th (9 596 961 sq, km)	25th (1 219 090 sq, km)
Population	5th (201 103 330)	9th (139 390 205)	2nd (1 173 108 018)	1st (1 330 141 295)	25th (49 109 107)
Population growth rate	108th (1.166%)	222nd (-0.465%)	89th (1.376%)	153rd (0.494%)	203rd (-0.051%)
Labour Force	6th (103.6m)	7th (75.55m)	2nd (478.3m)	1st (819.5m)	34th (17.32 m)
GDP (nominal)	8th (\$2 024 000)	10th (\$1 477 000)	11th (\$1 143 000)	2nd (\$ 5 745 000)	27th (\$354 400)
GDP/capita (nominal)	60th (\$10 100)	56th (\$10 600)	143rd(\$1200)	98th (\$4 300)	74TH (\$ 200)
GDP real growth rate	15th (7.5%)	88th (3.8%)	7th (8.3%)	5th (10.3%)	124th (3%)
Exports	23rd (\$199.7billion)	13th (\$376.7 billion)	22nd (\$201 billion)	2nd (\$1.506 trillion)	38th (\$76.86 billion)
Imports	22nd (\$187.7 billion)	19th (\$237.3 billion)	13th (\$327 billion)	3rd (\$1.307 trillion)	36th (\$77.04billion)

Source: Economist.com and World Fact book 2010

The advantages of the SA inclusion to the BRIC Bloc

- South Africa already has the Free Trade Agreement (FTA) with Brazil via mercosur FTA and currently negotiating for one with India, and we might see more trade agreements coming in place.
- The BRIC countries have a large consumption appetite and South African businesses might benefit from this.
- South Africa’s status as part of the BRICS may whet the appetite of some investors for some long term Foreign Direct Investment into the South African market.
- At the diplomatic level South Africa will be taken more seriously.

The disadvantages of the SA inclusion to the BRIC Bloc

- Most of the BRIC countries protect their industries in a form of tariffs that might make it difficult for SA business to benefit, but this may turn into an advantage (preferential market access) if we can turn the membership into a Free Trade Agreement.

South Africa will have to spend more time managing its international linkages. This will entail more senior diplomatic representation in the BRICS countries, everybody must accept more regular international visits by our President and agents of state who, on the surface are not affected (i.e. DAFF), will have to spend more time and energy managing the responsibilities flowing from our BRIC membership. **SOUTH AFRICA’S AGRICULTURAL TRADE WITH THE BRIC COUNTRIES BETWEEN 2005 AND 2009:**

South Africa's top 5 agricultural exports to the world are the following:

HS code	Product description
08	Edible fruit, nuts, peel of citrus, melons
22	Beverage, spirits & vinegar
10	Cereal
17	Sugars & sugar confectionery
20	Vegetable, Fruit, nut etc. (food preparations)

Source: ITC 2011

The top 5 HS 04 products under HS 08 are the following:

HS code	Product description
0805	Citrus fruit, fresh & dried
0806	Grapes, fresh or dried
0808	Apples, pears and quinces, fresh
0809	Apricots, cherries, peaches, nectarines, plums & sloes, fresh
0802	Nuts nes

Source: ITC 2011

The importing countries and destinations for the HS 08 products - edible fruit, nuts, and peel of citrus, melons are the following:

Figure 1: Importing countries of the HS 08 products. Figure 2: Destinations for South African exports of HS 08 products
Source: ITC 2011

South Africa's top 5 agricultural imports by value from the world are the following:

HS code	Product
02	Meat and edible meat offal
10	Cereals
22	Beverages, spirits & vinegar
08	Edible fruit
15	Animal, vegetable fats & oils, cleavage products etc

Source: ITC 2011

Top 5 supplying markets of HS 02 by value are:

Figure 3: The supplying markets for HS 02 to South Africa
Source: ITC 2011

Notes: Brazil is the leading supplying market of product HS 02 – meat and edible meat offal with the value of (USD 133 041) exported to South Africa, followed by Australia (USD 35 090), Canada (USD 33 724), Argentina (USD 28 926) and New Zealand (USD10 801).

Trade with Brazil

Figure 4: South Africa's exports to Brazil

Source: ITC (2011)

Note: South Africa export of HS code 08 products to Brazil amount to USD 1 174

Figure 5: South Africa's imports from Brazil

Source: ITC (2011)

Notes: The top South African import by value from Brazil is the product HS 0207: meat & edible offal of poultry meat with the value of USD 132 785, which has 72.6% share in South African imports %.

Trade with Russia

Figure 6: South Africa's exports to Russia

Source: ITC (2011)

Notes: South Africa exported USD 341 750 of product HS 08: edible fruit, nuts, peel of citrus fruit, and melons to Russia.

Figure 7: South African imports from Russia

Source: ITC 2011
Notes: The top 5 imported from Russia includes the following products (i).HS 12 – oilseed, oleagious fruits, grain, seed, fruit etc, nes; (ii). HS 11 – milling products, malt, starches, inulin, wheat gluten; (iii). HS 52 – cotton; (IV). HS 22 – Beverages, spirits & vinegar; (v). Tobacco and manufactured tobacco substitutes. South Africa imported product HS 12 to the value of USD 23 229 from Russia, which constitute 24.8% of South Africa's imports.

Trade with India

Figure 8: South Africa's exports to India

Source: ITC 2011

Note: South Africa exported (USD 6 834) of HS 08 to India between 2005 and 2009.

Figure 9: South Africa's imports from India

Source ITC 2011

Notes: South Africa imported USD 8910 of the HS 08 products from India between 2005 and 2009.

Trade with China

Figure 10: South Africa's exports to China

Source: ITC 2011

Notes: South Africa exported an amount of USD 11 294 of the HS 08 products to China between 2005 and 2009.

Figure 11: South Africa's imports from China

Source: ITC 2011

Notes: South Africa imported the USD 11138 to China between 2005 and 2009.
Conclusion

The BRIC name will change into BRICS in April this year when South Africa will be making its debut attendance at a BRIC meeting in China. South Africa already has a Free Trade Agreement with Brazil via the Mercosur Free Trade Agreement and is still in negotiations with India. The South African inclusion might trig new negotiations for FTAs with Russia and China and the terms of the FTAs will determine whether the agreements will create trade or will divert trade and also whether there will be welfare gain or loss between the trading partners.

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Less than a hundred years ago the extermination of game to make way for cattle farming was considered the only way for modern agriculture to prosper and wildlife was effectively without value. Since then, the wildlife ranching industry in South Africa has grown to a point where up to 80% of wild animals are kept on privately owned land, and new record prices for wildlife are continually being set.

In 1964, game animals numbered a mere 575 000. By 2007, this figure had grown to 18.6 million. In the same period sheep reduced in number from 39.7 million to 28 million and cattle from 12.2 million to 8 million.

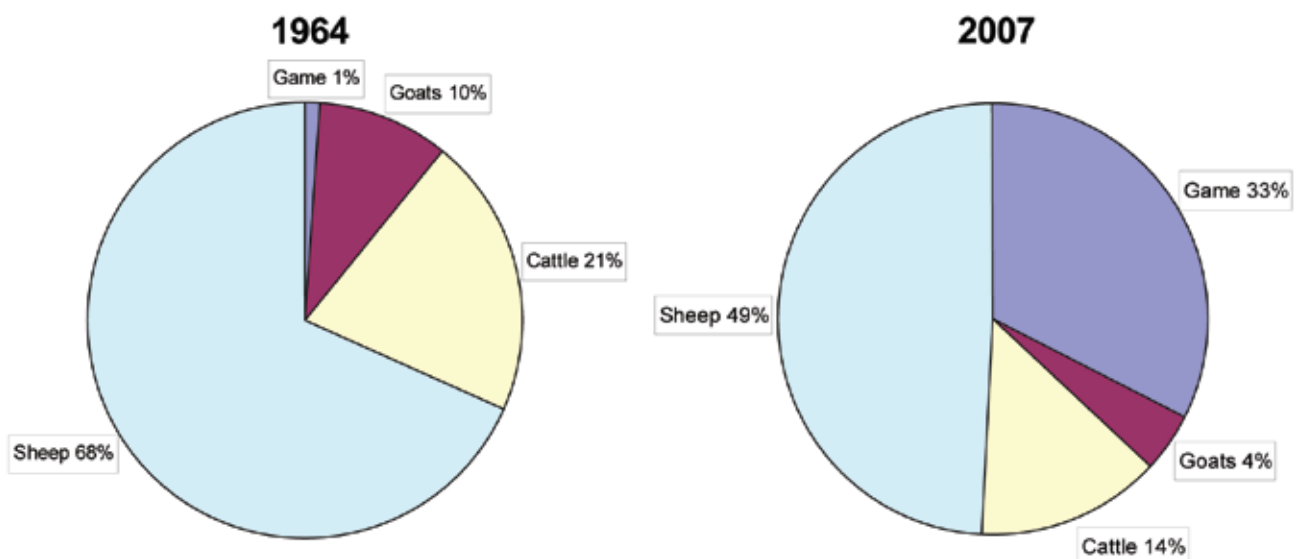


Figure 1: Change in the ratio of domestic animals to game between 1964 and 2007

Possible explanations for this growth include a drop in the net earnings from agriculture, high losses due to livestock theft, as well as climate change, leading to vegetation changes and political uncertainty around land issues.

This trend toward wildlife farming is an international phenomenon recognised by the World Organisation for Animal Health (OIE). They advise the establishment of efficient disease monitoring systems in wild, feral and partially domesticated animals, especially since symptoms and signs of most diseases in wildlife are not readily observable, and specimens for laboratory analysis are more difficult to collect, delaying detection of disease, thereby making responses to disease outbreaks slower to implement.

Other factors which affect disease control in wildlife include the following:

- The relatively free movement of wildlife compared to domestic stock;
- Lack of wildlife management expertise on privately owned land;
- Difficulty and expense associated with vaccination of wildlife;

- Extension of the wildlife–livestock disease interface.

On the 24th of January 2011, the Cape Nature Board approved a new translocation policy for the movement of game species into and within the Western Cape Province. The new policy is the result of deliberations by the newly established wildlife forum. The wildlife forum consists of members from Cape Nature, the wildlife industry and the Western Cape Department of Agriculture and was established under instruction of Minister Gerrit van Rensburg, Provincial Minister of Agriculture as well as Minister Anton Bredell, Provincial Minister of Environmental Affairs and Development Planning.

The new translocation policy effectively allows game farmers to move all but a few South African game species into the Western Cape, provided that the game farm is managed according to a management plan approved by Cape Nature. Such a management plan should specifically address any possible negative impacts of species which do not naturally occur in the Western Cape, such as hybridisation or habitat damage. An approved management plan also affords the game farm owner certain rights which are denied to a game farm owner without a management plan in place.

Veterinary requirements for the movement of certain game species such as zebra and buffalo are not affected by the new policy. Cape Nature is well aware of these requirements and hence no transportation permits will be issued if the veterinary requirements have not been met.

The Western Cape, which is generally considered marginal in terms of its wildlife ranching potential, has not escaped the trend toward wildlife farming. A study done by the Department in 2007 showed that, although small, the wildlife industry in the Western Cape was much larger than anticipated with 56% of the wildlife production units in operation having been



established in the last ten years, and with at least five new wild-life ranches being established annually. The new translocation policy should further contribute to the growth of the wildlife industry in the province, leading to an increase in farming, hunting, and ecotourism opportunities and thus bringing the Western Cape closer to the point of being a one stop tourism destination.

The new translocation policy, including the list of species which will be allowed and the requirements for a management plan is available at the following link:
<http://www.capenature.co.za/resources>.

For more information on transport permits, contact Cape Nature on one of the following numbers: (021) 483 0118 / 0120 /0121 / 0122 / 0123 or visit their website at:
<http://www.capenature.co.za/permits>.

For more information on the new policy or the veterinary requirements for the keeping or transportation of game, contact Dr. Ronald Sinclair on 021 808 5029 or ronalds@elsenburg.com.

Goedgedacht Path out of Poverty Project

“Gerrit van Rensburg, Western Cape Minister of Agriculture and Rural Development, recently paid a visit to Goedgedacht Farm, outside Riebeeck Kasteel. The Provincial Department of Agriculture supports a social improvement initiative on this farm, and contributed R250 000 towards this in the 2010/2011 financial year.

The Goedgedacht social project, Path out of Poverty, focuses on community development and social entrepreneurship. Currently 2500 people are involved in 27 interrelated programmes and initiatives with an annual budget of R4.5 million.

Van Rensburg was deeply impressed with the various programmes; ranging from the crèche; the after school centre in town; the climate change educational project; to the olive processing initiative, run by the farm worker trust with proceeds going back towards community development.

Van Rensburg said the various projects of social development in rural areas can only make progress if government works together with the private sector. “My Department will organise a future event where different rural social development role players can meet and share their experiences; learn, and support one another”



Photo by Wouter Kriel
W-Goedgedacht 1: “From left to right: Karools Wilskuit, farm manager; Anne Templeton, Goedgedacht Trustee; Gerrit van Rensburg, Western Cape Minister of Agriculture and Rural Development; Ingrid Lestrade, Goedgedacht Project Manager.”



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