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Grassroots
Newsletter of the Grassland Society of Southern Africa

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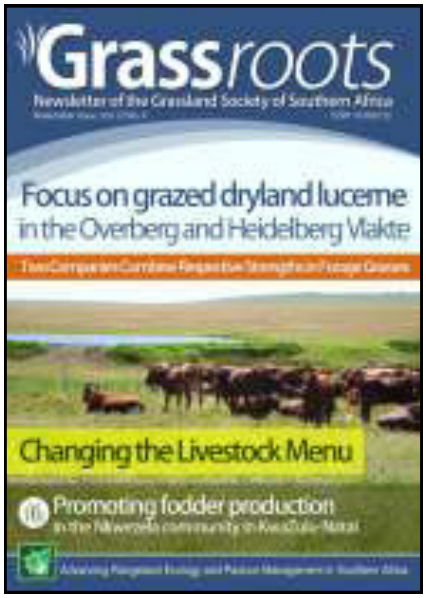

On the Cover: Grazing Cattle: Justin Du Toit

Editor's Note

Welcome to our last edition for 2012! Time is moving fast and yet again we approach the end of another year. During the past year, increasingly more attention has been directed towards systems that are adapted to climate changeand minimisedgreenhouse gas emissions while ensuring food security and sustainingour natural resources.Our grassland scientists and agriculturalists played integral parts in addressing these challenges during 2012. In this issue a range of interesting articles, journal inputs and news snippets have been put together to keep you informed on the latest advances currently adding value to the field of Grassland Science.

News in this issue includes important information about the 'new' South African Council for Natural Scientific Professions (SACNASP) as well asa report-back from the SACNASP Voluntary Associations Workshop held during August 2012. Among other news includedis information about SANSOR's annual congress and new general manager, the Communication Initiative's eLearning Africa 2012 report and the University of Fort Hare's Green Week

Furthermore, we bring you two feature articles related to lucerne production in the Swartland, Overberg and Heidelberg Vlakte.Valuable information about lucerne's exceptional forage properties,which makes it the most productive pasture legume in the Western Cape, is revealed. Motivating approaches on the promotion of fodder production in KZN's rural areas are inspirational and is included as another feature article. Keep reading to find more interesting articles in this issue.

We are looking forward to see what 2013 might have in store for the field of Grassland Science and we strongly encourage everyone to participate in events related to the science and practice of range and pasture management during 2013.

As this year comes to an end, we wish you a happy festive season and a prosperous 2013!

Pieter Swanepoel

Letters

Alan Savory seems to live in a different world than I do: I cannot see "that agriculture is producing more eroding soil than food" nor "vast grasslands turning to deserts" nor the "extreme dangers of man-made desertification and climate change" as Savory does. The world I live in has different features: Never before the globe has been home to 7 billion people with such a high living standard, life expectancy, available technology (communication, mobility, agriculture, and health care), level of security, human rights, and education. The fact that a small part of mankind is still involved in warfare and/or suffering hunger does not change this general picture.

I have been involved in applied research in rangeland and grassland management for 40 years in three different continents with a special focus on the restoration of degraded lands. Undoubtedly, in most parts of the globe, grassland conditions have improved during the last century due to technological and managerial improvements (adapted cultivars of grasses and legumes, fertilizers, herbicides, appropriate machinery, soil conservation tillage, conservative stocking rates, fencing, less use of fire and even improved cattle breeds and veterinary care etc.). Yes, pasture and rangeland improvement may raise carrying capacity by the factor of three or four, but increasing stocking rate per se (even with rotational grazing as Savory suggests) cannot restore degraded rangelands (unless other crucial factors are simultaneously put under control, hidden by Savory's side note of the - considerable - investment of 1.8 $/acre, or unless a series of favorable years pretend sustainable improvement).

Did anyone of the readers of Alan Savory's eloquent essay understand what holism means in terms of the daily and long term decisions to be taken on farm level? I didn't! I am convinced that millions and millions of farmers, ranchers and herders around the world do practice holistic management on their appreciated land (not comprehending the term holism), in a much better way than Alan Savory recommends in his very selective and partly contradictory manner, always following the modern trends of green romanticism which are "en vogue" and therefore a good source for public and private fund raising.

Dr. Albrecht Glatzle

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On behalf of the University of Fort Hare Students Green Campus Initiative (UFH SGCI), I would like to extend our heartfelt gratitude for your participation in the UFH Green Week 2012 held from the 25th of August to the 1st of September 2012, in the Alice and East London campuses. Thanks to your participation, we were able to raise awareness among budding environment enthusiasts about the prevalent condition of our local environment, and how carrying out a tree plantation drive was one of the many ways in which we could help salvage this current deplorable situation.

Thanks to our Green Week events, we were able to attract as many as 75 interested individuals on the opening day, each of whom helped plant 20 indigenous trees. These trees will now be taken care of by our organization. During the course of the week we were also able to hold successfully panel discussions in East London and Alice as well as LKA lectures which were well attended. Up to 1200 students and staff members made a pledge to Make a Green Difference by signing and making a palm print on a piece of cloth. We have also persuaded these individuals to approach us with newer ways of spreading environmental awareness, for which we will conduct many more such events and make our campus a better place to live in.

This event would not have been a success without the generous support you have provided us throughout. We deeply appreciate your support to our efforts to make our campus more habitable. We sincerely hope that this association will be maintained and that you will continue to support us in our future endeavors.

Njongenhle Nyoni

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S.G.C.I

Transparent Soil Reveals Plant Roots

The James Hutton Institute

A new transparent soil is helping to reveal the dark, underground secrets of plant roots. A team of researchers from the James Hutton Institute and the University of Abertay Dundee have developed a see-through soil which will enable them to study roots in detail for the first time. Addressing global issues such as food security, disease transmission and climate change presents researchers with a variety of challenges, including the study of the underground world of plant roots; called the rhizosphere. The creation of the new see-through soil marks a milestone in the study of the rhizosphere and will have applications in many different areas of research. Lionel Dupuy, a theoretical biologist in the Ecological Sciences group at the James Hutton Institute, said: "With this new technique, scientists now have a way to observe soil processes, live and *in situ*. This is exciting because there are so many things to discover in soil and we don't know yet what they are".

After two years of painstaking research to find a compound that could replicate soil chemistry, Dr Dupuy and his colleagues found success with a synthetic composite known as Nafion, often used in power-generating fuel cells. This artificial soil is not especially transparent on its own: it becomes translucent when saturated with a special water-based solution. The product is a substrate which is very similar to real soil in terms of physical and biological variables, such as water retention, ability to hold nutrients and capability for sustaining plant growth.

Dr Dupuy explained: "There are many different scientific disciplines that could benefit from this research. Transparent soils could be used to study the spread and transmission of soil borne pathogens. "In crop genetics, transparent soils could be used to screen the root systems of a range of genotypes. This would help breed crops with more efficient root systems so that agriculture can rely less on fertilisers. "Physiologists could also use transparent soils to understand how plants or microbes access nutrients that are heterogeneously distributed in soil. Soil ecologists could use this system to make microcosm experiments where observation on interactions of different species can be observed," he added.

According to the team behind the see-through soil, future paths of research will focus on controlling a greater range of chemical and physical properties, so that applications of transparent soils to the many disciplines of soil biology are possible. They also hope to lower the overall cost of the technique, so that it can be used by everyone and at a larger scale.

Paper quoted: Transparent Soil for Imaging the Rhizosphere. 2012. Downie, H., Holden, N., Otten, W., Spiers, A.J., Valentine, T.A., Dupuy, L.X. PLoS ONE 7(9): e44276. (doi:10.1371/journal.pone.0044276)

SANSOR Appoints new General Manager

SANSOR Press Release

The South African National Seed Organisation (SANSOR), is pleased to announce the appointment of Dr Lukeshni Chetty as its new General Manager. Chetty brings to the position a wealth of experience in the agricultural industry as a geneticist and biochemist, having worked in laboratories and the field with farmers, to assist in better understanding crop yields and the impacts of natural biodiversity.

"We are delighted that Lukeshni has joined our team and believe she brings with her fresh ideas and a new approach, at a time when the farming industry itself is facing a number of challenges due to climate, land availability and economic support," states Brian Lever, chairman of SANSOR. "I believe she will form an important part of the SANSOR team." Chetty boasts a B.Sc in Genetics and Biochemistry; B.Sc Honours in Genetics; her M.Sc in Genetics with distinction; and her Ph.D in Genetics. She has presented at numerous industry events, is seen as a leader in the industry by her peers and many of her papers have been published.

"As a highly motivated individual who is passionate about this industry I am looking forward to my new role at SANSOR, and in particular working with our members to create improvements in agriculture for the benefit of us all and the country as a whole," states Chetty.

Dr Lukeshni Chetty

Established as a private not for profit company in 1989, through the amalgamation of a myriad of associations that represented the seed industry, SANSOR's mission is to act as a representative of the seed trade, protect and promote industry interests, serve as a Secretariat, and render specific services to its members.

SANSOR

23rd Annual Congress of SANSOR 8 to 10 May 2012

SANSOR Press Release

The South African National Seed Organization (SANSOR) is the leading authority for the provision of industry-related, strategic services to the South African Seed Industry. Its mission is to represent, protect and further the interests of the seed trade to the benefit of its members. The 23rd Annual Congress of SANSOR was recently held on 8 – 10 May 2012 at the Irene Country Lodge, Pretoria, Gauteng. Highlights of the Congress included:

An Outreach Programme at Irene Homes for the mentally disabled where staff and members of SANSOR painted window frames and planted trees.

SANSOR's inaugural Golf Day was held at Irene Country Club with a small group of enthusiastic players enjoying a wonderful afternoon of competition, while also planting trees.

The trees planted at Irene Homes, Irene Country Club and Irene Country Lodge is part of

SANSOR's ongoing effort to reduce our carbon footprint wherever we have our Annual Congresses.

The theme for this year's Congress was Sustainable Trade - Opportunities and Responsibilities. The Keynote Address was by Dr Ferdi Meyer, Director: Bureau for Food and Agricultural Policy covering challenges and opportunities in Agriculture in view of the National Development Plan's vision for 2030. In his presentation he shared views and challenges that face the seed industry.

Other guest speakers included:

Mr Caiphus Ramoroka from Technology Innovation Agency covering technological innovation in the seed industry and how they can assist the seed trade in developing and access technology to the benefit of all South Africans.

Mr Kevin Kabunda from USAID Southern Africa Trade Hub covering the SA seed industry's relationship with SADC and how they plan to work together with the SA seed industry in not just South Africa but throughout SADC.

Mr Jerry Madiba from AgriSETA covering employment opportunities in the SA seed industry and how the SETA can assist the seed industry in learnerships and the funding of bursaries.

During the Congress the Annual General Meetings of the Agronomy, Horticulture and Forage Divisions were held, as well as a new Board elected from these divisions. The new SANSOR Board of Directors (non-executive) for the 2012/13 financial year is:

Brian Lever (Advance Seed) – Chairman
Gert Heyns (Monsanto SA) – Vice-Chairman
Susan Allen (Sakata SA) – Director
Jan Coetzer (Pannar Seed) – Director
David Durandt (Seedcor) – Director
John Odendaal (Pannar Seed) – Director

New SANSOR Board of Directors for 2012/13 (bottom from left: Gert Heyns Susan Allen, Gerrie Reitsma; top from left: John Odendaal, David Durandt, Brian Lever, Jan Coetzer)

eLearning Africa 2012 Report

Julie Levy
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The eLearning Africa 2012 Report describes how Africans are using new technologies to enhance education and training across the continent. The report: uses data collected from 447 survey respondents; contains analyses by a number of commentators, including traditional chiefs, investors, and academics from across Africa; and includes the perspectives of elearning professionals and a range of other stakeholders across 41 different countries in Africa.

The survey results indicate that the majority of respondents use information and communication technology (ICT) in classroom teaching and learning. Although most of those who participated in the survey were encouraged by the potential of ICT to improve the quality of their teaching practices, 16% of respondents were constrained by limitations in bandwidth, funds, electricity supply, and insufficient human resource capacity. The large increase in the number of mobile phone subscriptions across Africa is reflected in the number of respondents who use mobile phones in their teaching practices.

Key findings from the eLearning Africa 2012 survey website:

- The number one factor constraining the African eLearning sector is lack of bandwidth.
- The top consideration for African organisations is access to appropriate content.
- The most important change agent is the government.
- The top motivation for using ICT is to improve the quality of teaching.
- 48% use mobile phones in education.
- 36% use shared resource computing in education.
- 74% use ICT for classroom teaching and learning.

The full report be accessed by visiting http://www.elearning-africa.com/pdf/report/ela_report_2012.pdf.

University of Fort Hare Green Week 2012 Report

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In response to the pressing issues of climate change and sustainability the University of Fort Hare Student Green Campus Initiative (SGCI), a collaboration between World Student Community for Sustainable Development (WSCSD) and South East Africa Climate Consortium-University of Fort Hare, was formed in February 2012. SGCI is leading a student crusade to tackle issues of sustainability and climate change.

We recognise that students, as potential leaders and key players in society, have a responsibility to respond to what has become one of the strongest moral callings of our time by exerting our influence to create more sustainable societies in order to protect the rights of current and future generations to an environment that is not harmful to their health or well-being, as enshrined in Section 24 (a) of the South African Constitution. In order to do so we are working towards the following goals:

1. Our primary aim is the creation of a network that hopes to establish, as a moral and social norm amongst students across South Africa, an engagement with issues of sustainability and climate change;

2. To facilitate discussion and cooperation amongst members, societies, NGOs and individual student researchers;

3. To create and develop a knowledge base, which can be utilised by students and non-students and SGCI and non-SGCI members alike in their endeavours to tackle climate change and issues of sustainability;

4. To create a broad activism base from which to influence policy on an institutional, business and governmental level;

5. To create and develop on-the-ground, practical sustainability initiatives and models that can be utilised to tackle issues of climate change and sustainability in varying contexts, as well as shared through our knowledge network;

6. To raise awareness and funding in order to strengthen the response to issues of sustainability and climate change;

7. To stimulate and collate research in the field of climate change and sustainability;

8. To educate the broader public on issues of climate change and sustainability;

9. To assist Universities to become more environmentally friendly;

10. To assist local communities to sustainably co-exist with their natural environment;

The Green Week 2012

The Student Green Campus Initiative is rapidly becoming one of the most progressive student organizations at UFH bringing together hundreds of different students in varying academic disciplines, year of study, culture, and background to lead a student crusade to tackle issues of sustainable development and climate change. SGCI is a member of the Grassland Society of Southern Africa and works together with a number of other important organizations like the Sustainable Seas Trust, Wildlife Environmental Society of Southern Africa, Bluebuck Network and the Wilderness Foundation as well as various institutions from the four universities across the Eastern Cape. This sort of engagement is most certainly required if we are to tackle issues as complex and difficult as those we are up against as future leaders. However, we set out to bring together representatives from all of these sectors to meet and pilot the way forward for SGCI and its partner organisations. Running under the theme "Make a Green Difference, Be Green, Be Responsible", Green Week 2012 played an incredibly imperative role in charting the way forward for SGCI, developing partnerships, sharing knowledge and experience and pooling our resources and skills to form a more comprehensive response to the defining moral issues of our time.

Tree Planting Day: Saturday 25 August 2012

The green week kicked off with a tree planting day in Alice , where 20 indigenous trees were planted, including the national tree, the yellow wood, in a drive to replenish the local heritage. Over 75 participants were present including the Acting Deputy Vice Chancellor Prof. G. de Wet, Director for Post Graduate Studies Prof. C Nikodem, Dr. Makura from TLC and representatives of various departments and the SRC. Also present were representatives from WESSA, UFH ARDRI, Grassland Society of Southern Africa, Nkonkobe Municipality, Department of Environmental Affairs, Walter Sisulu University and WESSA volunteers from Germany. Thanks to the Green Week, we were able to raise awareness among budding environmental enthusiasts about the prevalent condition of our local environment, and how carrying out a tree plantation drive was one of the many ways in which we could help salvage this current deplorable situation. We also made a commitment to monitor the 100 trees that have survived from the previous year's tree planting.

Green Pledge and Panel Discussion: Monday 27 August/East London and Tuesday 28 August/Alice Green pledge and stakeholders panel discussion kicked off with each panellist presenting how their organization is "Being Green and Responsible".

Discussions then concentrated on issues about making a Green Difference in the context of UFH, South Africa, Africa and the World. A great deal of discussions were focused on the role of students and staff as academics and citizens of the world in bringing issues of a Green Economy, Society and Environment to the fore of our everyday decision making as well as the opportunities that are present for participation. The various organizations who took turns to make up the panel for both the Alice and East London discussions are listed below:

Monday 27 Aug/East London UFH Campus: Panellists

• Dr. S. Mamphweli – Fort Hare Institute of Technology

• Mr. M. Buti – Wildlife and Environment Society of South Africa

Tuesday 28 Aug/Alice UFH Campus: Panellists

• Mr. S. Mhle – Department of Agriculture, Forestry and Fisheries

• Mr. P.Tembela – Department of Agriculture, Forestry and Fisheries

• Dr. M. Lesoli – Grassland Society of Southern Africa

• Prof. C. Nikodem – Govan Mbeki Research Development Centre University of Fort Hare

More than 1500 students and staff members made a commitment to live a Green Life by making a palm print or signing on a Green Pledge cloth. By pledging to live a Green Life one made a promise to consider environmental issues in their day to day decision making whether shopping or travelling.

Media Day and Life Knowledge Action Lectures Alice: Wednesday 29 August/ Alice

On Wednesday 29 August 2012 in Alice, we held a Department of Environmental Affairs career exhibition where students had a chance to find out about career opportunities in the environmental sector and the various bursary and internship opportunities available from the department. Also on the same day we conducted Life Knowledge Action (LKA) lectures during the LKA programme focusing on creating a Green Campus at our University. During these lectures a quiz was undertaken to identify students who were to receive bags donated by the Grassland Society of Southern Africa. Four individuals were identified and walked away proud owners of the lovely bags.

Launch of Green Projects: Thursday 30 August/Alice

The launch of Green Campus Projects on Thursday 30 August 2012 in Alice was attended by interested students as well as project partners such as the Centre for Trans-disciplinary Studies, the Grassland Society of Southern Africa, Nomzamo Co-operative, Students In Free Enterprise (SIFE) UFH team

and the Department of Environmental Affairs. It was during this launch that future strategies of our activities were discussed and made public as well.

Observation of International Environmental Days and LKA Lecture East London: Friday 31 August

The East London Campus version of the LKA lectures took place on Friday the 31st of August with Vice Chancellor of UFH Dr. Tom Mvuyo in attendance. The lectures once again focused on creating a Green Campus as well as the prevailing sustainability issues facing us as future leaders and the steps we can take to address the impending disasters. A Department of Environmental Affairs career exhibition was also held soon after the lecture as well as further pledging.

Green Sports Day: Saturday September

The week finished off with the Green Campus games co-hosted by the Faculty of Science and Agriculture. The games where all played in celebration of the successful Green Week with the spirit to commit to "Be Green and Be Responsible".

Proposed Green Projects

1. Energy Challenge: University of Fort Hare Student Green Campus Initiative aims to create a campus-wide high impact and high-publicity energy challenge that will involve every student and staff member living within UFH residence system.The challenge will thus go out to thousands of students and hundreds of staff across UFH and will receive publicity well beyond UFH campuses. The challenge will be to see how much each residence will be able to reduce their energy consumption per capital (and by extension, how much money they can contribute to fighting climate change). Each residence will be competing against other residences on campus, and thus the competition will harness the competitive university spirit and play on old rivalries within the university. How LKA aim to measure consumption through the installation and monitoring of energy consumption monitoring devices within the each residence.

2. Two Bin Recycling System: University of Fort Hare Student Green Campus Initiative aims to create a two bin recycling system that is easy to use and easy to collect. The system will utilize colour coded bins where the plastic carriers and the bins are coded into a recyclable materials' bin and a non-recyclable materials' bin. The pilot run of the concept will be tested on a few residences before roll out to all the residences on campus and all the buildings eventually. At the dumping site a group of previously unemployed youths who will have been trained and educated will be handed all the recyclable materials for sorting into different categories. Entrepreneurial activities will be established for the use of the recyclable material in collaboration with the Students in Free Enterprise (SIFE) UFH team and these will include selling to recyclers (bottles and cans), melting into plastic pellets, and use as media for vermicomposting (paper).

3. Back to Back Printing: After discovering that almost all assignments and notes at UFH are printed only on one side of each sheet of paper, the SGCI wishes to run a pilot project with the Grounding Programme (LKA) to try and encourage all staff and students to utilize back to back printing therefore saving paper and money. The campaign will then be audited and if successful implemented on a larger scale with the involvement of the entire university.

4. WildREACH: WildREACH proposes to foster a valuable relationship between student volunteers and local communities in which knowledge is shared and applied in an effort to promote social and environmental sustainability through wildlife conservation. Outreach entails getting student volunteers (which we will call student mentors) involved in helping local youth (which we will call mentees) between the ages of 15 and 18 to develop new or further any existing interest in wild areas, the natural environment and their importance. WildREACH's larger projects involve taking a group consisting of 20-40 mentees, 5-10 student volunteers and any potential speakers for a weekend away at a local game reserve or nature conservation area.

Green Week Challenges Faced

The success of the Green Week was one fought for given that there were many challenges that the organisers faced. Co-ordination of the different people handling the different activities was a major challenge. Communication from the various internal and external departments that were supporting the event was sometimes late. This left organisers in some instances having to do more in a short space of time to get things in order resulting in crisis management of situations.

Planning of future events has to be communicated to supporting departments in time to give them the necessary time to make decisions. Budgetary issues were also a major challenge since we had a very stringent budget compared to what had been planned initially resulting in some other activities being cut short. Getting majority of students and staff to participate especially in panel discussions was a hustle but we did manage to get a substantial number of participants in both panel discussions. Going into the future more effort should be put on advertising and incentivising for more participants.

Alice Campus—Green Pledge

Planting trees on campus

Planting indigenous trees

Panel Discussions

Creating Change

Gauteng Department of Agriculture and Rural Development (GDARD) Research Symposium

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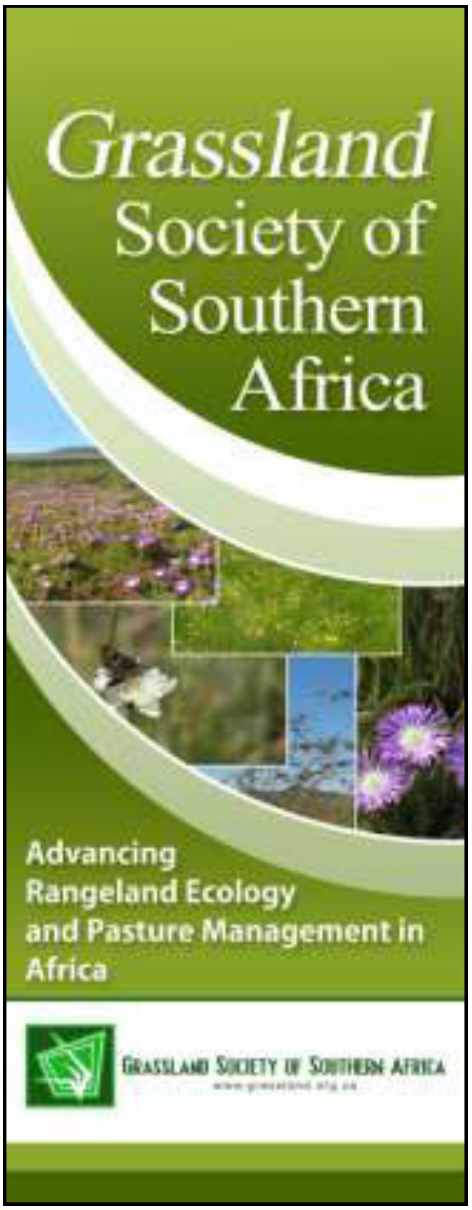
Gauteng Department of Agriculture and Rural Development (GDARD), Directorate: Technology Development and Support (TDS) held a Research Symposium on the 6 June 2012 at Saint George's Hotel, Pretoria.

TDS is responsible for implementation of agricultural research programme, training and advisory on plant and animal production; and agricultural disaster risk management functions.

GDARD: TDS fund agricultural research related projects in Gauteng province, and during the day different researchers from research councils and universities presented their research work funded by GDARD. Calls for submitting proposals are made yearly. This is an opportunity for researchers, especially young researchers conducting research in Gauteng province to apply for such funding.

For more information regarding funding opportunities at GDARD visit www.gdard.gov.za or call 011 355 1374.



National Science and Technology Forum 41st Plenary Meeting

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I attended the National Science and Technology Forum (NSTF) 41st Plenary Meeting meeting on behalf of the Grassland Society of Southern Africa. The NSTF is the stakeholder body for all science, engineering, technology and innovation (SETI) organisations in South Africa and is also registered as a non-profit organization with the Department of Social Development. The commonly asked question is "what is the return on investment or was it worthwhile attending
the NSTF meeting or being a member of NSTF?" I will say yes, because of the following reasons:

- NSTF is a vehicle for organisations to give input to government policy and a platform to express the views of their management and members regarding SETI policies,

- Members can stay updated on developments in SETI policies,

- Organizations can get involved in activities that motivate and enrich the experience of science learners

- NSTF allows members to register and upload their bursary information for free, and gives them total control to edit and update this information.

Some of the discussions held during the meeting included post-school education and training, South African Graduate Development Association (SAGDA), the Square Kilometre Array (SKA) and spin off opportunities, and the finalists announcement for the NSTF-BHP Billiton Award.

The NSTF website has an online Discussion Forum, where anyone (not just members) can discuss and debate current policy issues. A platform like this can be good for the GSSA. The Science Councils and Statutory Bodies Sector Symposium will be held from 26 to 27 September 2012 at the Mintek Auditorium in Randburg. The purpose of the symposium is to provide a platform for awareness of policy issues, to share practices and to identify gaps for green technology in South Africa. The symposium theme is Green Technologies, Innovation and Collaborations.

Finally young researchers or students can learn from NSTF award finalists/ winners in their field of expertise and career opportunities, and as such it was a good return on investment. I will encourage the GSSA to remain as a member of NSTF.

South African Council for Natural Scientific Professions (SACNASP)

Loraine van den Berg, Leslie Brown, Wayne Truter, David Grossman,
Brian Dawson and Mike Peel

SACNASP Voluntary Associations Workshop

Four delegates from the Grassland Society of Southern Africa attended a SACNASP Voluntary Associations Workshop in Pretoria on 3 August 2012. The new CEO of SACNASP and the Chair of the Board stated that the purpose of the workshop was to present the "new" SACNASP to the Voluntary Associations recognized by SACNASP.

The delegates included Wayne Truter, Loraine van den Berg, Dave Grossman and Brian Dawson. At the conclusion of the workshop the delegates agreed upon the fact that SACNASP is making some positive progress in terms of being accommodating and attempting to make the registration process easier, less onerous, and seeking ways to accommodate the groups and prospective members who are "falling between the cracks". Various issues were raised during the workshop and will be discussed in some more detail.

SACNASP legal framework

SACNASP is a function of the Natural Scientific Professions Act (Act 27 of 2003). Any individual not registered with SACNASP and practising science in any of the fields of practice listed in Schedule I of this Act is doing so illegally and can be prosecuted. Therefore it is compulsory for anyone practising Natural Sciences to register with SACNASP. The fact that many have not yet done so is indicative that something was "not right" and hence the "new" approach.

The 'new' SACNASP

This change in legislation in 2003 has led to reorganization within SACNASP resulting in a move towards a 'new' SACNASP, which was introduced during the workshop. To date a total number of 4938 individuals is registered with SACNASP, with an increase of 583 new registrations from 2006 to 2012. SACNASP is also becoming younger and more beautiful with 38% of the members being younger than 40 years of age and 27% being female. The demography of SACNASP is also more representative with 23% black, coloured and Asian members. The distribution of fields of practices in which members are registered are presented in Table 1.

Field of Practice	%
Geological sciences	28%
Earth sciences	11%
Earth sciences	11%
Agricultural sciences	8%
Animal sciences	8%
Chemical sciences	6%
Ecological sciences	4%

Table 1. Distribution of fields of practice

It was announced that SACNASP is also improving on the old registration process by moving towards an online registration process. This system will be in place in the second half of 2012. In addition they will also be introducing a regular newsletter as part of their active media campaign.

They expressed a willingness to be involved in Voluntary Associations' Congresses and Conferences, including advertisements in abstract books or presentations. SACNASP Council members have organised regional breakfast sessions in the Western Cape, KwaZulu-Natal and Gauteng Provinces. A similar event will be organised in the Eastern Cape Province in November. They are also in the process of forming links with industry improving their visibility in this sector as well. SACNASP introduced a Facebook page as well as a website to increase visibility, but more importantly to improve communication with members.

It was indicated SACNASP will approach the GSSA to add a link to SACNASP on our website. It might be a good idea to possibly drive that process from the GSSA's side.

It was stressed that the management of the 'new' SACNASP intends to align their focus with the needs of the Voluntary Associations.

Education and Training

During the workshop SACNASP requested inputs from delegates on the matter of the extent to which SACNASP should be involved in education and training. They indicated that SAQA and CHE requested inputs on curricula development and that SACNASP could provide some sort of function in this area e.g. leading a process of guiding tertiary education to align their curricula to comply with SACNASP registration requirements.

Continuing Professional Development (CPD)

SACNASP instituted a system of CPD in 2011, which is linked to the renewal of registration from 1 January 2011 for all registered persons according to the CPD policy. The CPD document has been circulated to all Voluntary Associations and more information is available from SACNASP.

Voluntary Associations and SACNASP

The role of Voluntary Associations within the SACNASP structure was discussed. According to SACNASP, Voluntary Associations, such as the GSSA, have the following influence on SACNASP:

- The composition of the SACNASP Council
- Professional Affairs Committees (PAC's)
- Qualifications Assessment Committee (QAC)
- Registration Committee
- Continuing Professional Development Committee (CPD
- Finance and Personnel Committee
- Educational matters (Curriculum development, Training Facility evaluation)

Voluntary Association Representation on SACNASP Council

SACNASP indicated that the term of the current Council is coming to an end in April 2013 and that Voluntary Associations could play a major role in determining the next composition of the Council.

The following requirements are set for Council:

- Council must consist of >20 and <30 members
- >12 and <18 members must be Professional Members that must be nominated by Voluntary Associations (Calls for nominations will come from the Department of Science and Technology (DST))
- >4 and <6 members must be nominated and appointed by State
- >4 and <6 members must be nominated through an open process of public participation

Inputs and questions from delegates

Not all SACNASP registered members are members of professional organizations such as the GSSA. Would it be possible to decrease the SACNASP registration fee for those individuals who are members of Voluntary associations? SACNASP indicated that there is no way to decrease registration fees as their fees are in line with, and even cheaper than other professional boards. It could be a possibility if the membership numbers increase drastically.

What happens in the situation where individuals work across sciences (fields of practices) – as is the case with a number of GSSA members. It was indicated that such an individual should be registered in at least one of the listed fields of practice (the primary degree will determine in which field this should be). It was indicated that there could also be an addition to the listed fields of practice in Schedule I of the Act. This should happen in the following way:

- The Voluntary Association should identify a new field of practice

- The Voluntary Association should compile a set of criteria required for the new field of practice including required qualifications and competencies in a specific field

- The Voluntary Association should compile a document on the type of work individuals should be able to do for the new field of practice

- All these documents should then be submitted to the SACNASP Council for perusal and approval.

(The GSSA can contact SACNASP for an example as Toxicological Science was recently added as a new field of practice)

A big concern, especially from the GSSA's side was how to handle situations where members do not have pure science degrees e.g. B.Sc. Tourism or Diploma's etc. SACNASP indicated that the GSSA (PAC) should compile guidelines on the qualifications that could be acceptable and submit it to the Council. SACNASP and the Agricultural Extension Association are also currently in a process to look into how Extension Officers can be accommodated within the SACNASP registration structure.

A common concern from all attendees was that registration and re-registration for more than one field of practice is expensive.

A suggestion was made that individuals, when first applying for SACNASP registration, pay the required registration fee for each field of practice they wish to register in, but in subsequent re-registration years only pay for "one" registration. SACNASP indicated that they will look into this suggestion.

Conclusion

It appears that the 'new' SACNASP is well-intended and superior to the lacklustre and top-down approach experienced by many in the past. It seems that most of the concerns that we as a Society had are being addressed by SACNASP to some extent. The success will depend on how this new approach
is implemented in the future.

"SACNASP strives to establish, direct, sustain and ensure a high level of professionalism and ethical conduct, that is internationally acceptable and in the broad interest of the community as a whole and the natural sciences"

Dow AgroSciences, The Royal Barenbrug Group Announce Strategic Relationship

Two Companies Combine Respective Strengths in Forage Grasses

INDIANAPOLIS AND NIJMEGEN, NETHERLANDS (June 29, 2012) Dow AgroSciences, a wholly owned subsidiary of The Dow Chemical Company (NYSE: DOW), and The Royal Barenbrug Group, have announced today a global strategic relationship for the development and commercialization of advanced germplasm in forage seeds.

Under the agreement, Dow AgroSciences will be a minority shareholder in Barenbrug Holding BV, part of The Royal Barenbrug Group and will provide Barenbrug access to select hybrid Brachiaria germplasm. This relationship will allow the two companies to maximize strengths to realize a shared vision of growth in forage grasses.

Barenbrug will form a new entity in Brazil to build a state-of-the-art cleaning, coating, and packaging facility to process hybrid Brachiaria for Dow AgroSciences, as well as produce other tropical grasses and legumes."We are very pleased to be working with The Royal Barenbrug Group, the industry leader in forage grass and legume breeding and marketing," said Antonio Galindez, President and CEO of Dow AgroSciences. "This collaboration will build upon our current seed portfolio by expanding into forage grass seed, a very important global crop."

"We are excited to collaborate with Dow AgroSciences, a significant player in seeds and traits," said Bastiaan Barenbrug, Chairman and CEO of The Royal Barenbrug Group. "Through this relationship with Dow AgroSciences, we get access to new technologies, germplasm, and the accelerated entrance into the tropical forage seed market with unique germplasm. Together with Dow AgroSciences we will be able to grow further as a company also in the tropical regions of the world." Financial details of this transaction were not disclosed.

About The Royal Barenbrug Group

The Royal Barenbrug Group is a family-owned business, whose core activities are plant breeding, grass seed production and international marketing of seed for turf and forage grasses and legumes. With 25 branches in 16 countries on 6 continents, Barenbrug has been the leading grass seed business in the world for over 100 years. They provide local solutions for the dairy, meat and livestock industries as well as the professional turf grass market in temperate and sub-tropical zones.

For more information see
www.barenbrug.com
www.dowagro.com

Changing the Livestock Menu

Matthew Cawood
Farm Weekly

NEW understanding of animal behaviour can transform the economics of raising livestock, and the landscapes they are raised on, American researcher Fred Provenza believes. The Wildlands Resources Emeritus Professor at Utah State University, Dr Provenza has spent decades digging deep into animal learning and behaviour. For instance, livestock can add weeds to their daily menu - not because they are forced to, but because they get a payback from the weeds' nutrients. Or, stock can be trained not to eat certain plants. Dr Provenza's team has trained sheep to mow vineyard grasses without touching the vines. He will be in Australia soon talking about some of his team's arresting discoveries.

The big picture, Dr Provenza thinks, is creating livestock herds adapted to specific landscapes. These herds could browse a wide suite of plants, denting the competitive vigour of weeds, and maintaining their health and vigour through their intake of different compounds. But achieving this will mean a new angle on farm biodiversity, and on animal behaviour.

"We have to move away from this idea that animals are machines, and that genes are destiny," said Dr Provenza, who ran a Colorado sheep ranch before becoming a scientist." "Animals are learning from conception on, and there's a million knobs and dials to tweak along the way. While they are learning, genes are switching on and off in ways that allow the whole genome to adapt to what's happening."
"If you can wrap your mind around that, you create a ton of opportunities."

When Dr Provenza began working on learned behaviour in animals, the conventional scientific wisdom was that animals couldn't select their diet based on nutrient or toxin feedbacks. "They have this huge rumen, this vat, and everything is mixed together," said Dr Provenza on the thinking of the time. "How are they going to pick up signals?"

Thanks to a research flock of goats that refused to browse platable new growth on blackbrush, a forage shrub, and instead chose to eat old woody growth, Dr Provenza's team established that animals definitely do alter their diet in response to plant compounds.

Over time, this learning can become genetic expression. Young animals pick up understanding from their mothers and peers. Over generations, this morphs from being a behaviour, to being how a group of animals express their genetics in a particular environment - the essence of local adaptation. Dr Provenza's work has progressed through many stages, and along the way linked up with research by CSIRO scientist Dean Revell. Working with the Future Farming Industries CRC, Dr Revell identified compounds in native shrubs that can suppress livestock parasites and improve conditions for rumen digestion. Dr Revell found that diverse stands of selected shrubs can provide animals with on-tap pharmaceuticals that they can use to "self-medicate" according to the needs of their own biochemistry. Shrubs also extend the resilience and usefulness of typical grass and forb-based pastures. Another piece fell into place when Trangie, NSW, farmer and educator Bruce Maynard introduced the Utah State team to his "Stress Free Stockmanship methods", which have since become integral in training animals to eat plants regarded as unpalatable.

Together, this body of knowledge adds up to new ways of managing animals to build landscape, animal and ultimately human health, Dr Provenza said. Put to work on the farm, it also means lower inputs, less labour and greater profitability. Dr Provenza wraps up his thinking as "a philosophy of change" - a process of working with change, rather than resisting it, by harnessing the natural mechanisms of adaptation.

Recent Publications in the Grassland Science and Related Disciplines

The African Journal of Range and Forage Science now has iFirst which enables rapid online publication of manuscripts accepted for publication in the journal. Rapid online publication of articles dramatically reduces the time that the target audience must wait to see the results of current research. Therapid online publication systemfurther eliminates the problem of the "backlog": accepted but unpublished papers. This is a great asset in many fields, where publishing an article can assure priority of discovery.

AJRFS articles published in this manner lack page spans and can be cited using their DOIs, or Digital Object Identifiers, in addition to the article and journal title, see below.The DOI is a unique number assigned to an article that stays with that article throughout its digital life, allowing researchers to find and reference these articles and to hyperlink to the articles. DOIs are persistent - they will always direct readers back to the definitive version of an article, either the version first published online or the subsequent paginated version in the online journal issue. Once the fully paginated version of the article appears in a volume of the journal, all future citations should be made to the fully paginated version.

All subscribers with online access to the AJRFS can access articles published online (see the 'Latest Articles' tab on the journal home page).These "Latest articles" are later assigned to a particular issue of the journal, given page numbers, and published in final form. The first two articles to be published using this system by the African Journal of Range and Forage Science are:

The influence of Pechuel Loeschealeubnitziae (wild sage) on grass sward and soil seed bank composition, MJ Tedder*, KP Kirkman, CD Morris, WSW Trollope and MC Bonyongo, doi: 10.2989/10220119.2012.720280, http://www.tandfonline.com/doi/abs/10.2989/10220119.2012.720280

A novel method for estimating tree dimensions and calculating canopy volume using digital photography, AS Barrett* and LR Brown, doi: 10.2989/10220119.2012.727471, http://www.tandfonline.com/doi/abs/10.2989/10220119.2012.727471

Remote Sensing, 4(1), 303-326, 2012, Exploring Simple Algorithms for Estimating Gross Primary Production in Forested Areas from Satel Data, Hashimoto, Hirofumi, http://www.mdpi.com/2072-4292/4/1/303/htm

Remote Sensing, 4(1), 303-326, 2012, Exploring Simple Algorithms for Estimating Gross Primary Production in Forested Areas from Satel Data, Hashimoto, Hirofumi, http://www.mdpi.com/2072-4292/4/1/303/htm

Trop. Conserv. Sci. 5(1):1-11, 2012, Biodiversity monitoring protocols for REDD+: can a one-size-fits-all approach really work?Harrison,M.E, http://outrop.blogspot.com/2012/03/biodiversity-monitoring-for-redd-can.html

Ecology Letters, Volume 15, Issue 4, pages 365–377, 2012, Impacts of climate change on the future of biodiversity, Céline Bellard, Cleo Bertelsmeier, Paul Leadley, WilfriedThuiller, Franck Courchamp, http://onlinelibrary.wiley.com/doi/10.1111/j.1461-0248.2011.01736.x/full

Conserv. Biol, 26(1):68-77, 2012, Predicting species distributions from samples collected along roadsides, McCarthy, K.P, http://opus.bibliothek.uni-wuerzburg.de/volltexte/2012/7102/pdf/CordDiss.pdf

Global Change Biology, Vol 18, Issue 10, 3160-3170 Long-term variability and rainfall control of savanna fire regimes in equatorial East Africa David M. Nelson, Dirk Verschuren, Michael A. Urban, Feng Sheng Hu http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2012.02766.x/abstract

Environmetrics, Vol 23, Iss 5, 482-492, Regional climate model assessment using statistical upscaling and downscaling techniques, Veronica J. Berrocal, Peter F. Craigmile and Peter Guttorp, http://onlinelibrary.wiley.com/doi/10.1002/env.2145/pdf

Diversity and Distribution, Vol 18, Issue 10, 652-961, Fine-scale group structure and demography of African savanna elephants recolonizing lands outside protected areas, M. A. Ahlering, J. E. Maldonado, R. C. Fleischer, David Western, L. S. Eggert, http://onlinelibrary.wiley.com/doi/10.1111/j.1472-4642.2012.00896.x/abstract

Upcoming Events

Research Skills Workshop
12 to 13 March 2013, Pretoria, South Africa www.grassland.org.za
contact: Freyni du Toit
email: admin@grassland.org.za

48th Annual Congress of the Grassland Society of Southern Africa
Advancing rangeland ecology and pasture management in Africa,
15 to 19 July 2013, Weesgerus, Modimolle, Limpopo, South Africa
admin@grassland.org.za
www.grassland.org.za,
contact: Freyni du Toit
email: admin@grassland.org.za

GIS Day: Discovering the world through GIS
15 November 2012, School of Environmental Sciences, University of Venda, www.univen.ac.za
contact: FaraiDondofema, email: farai.dondofema@univen.ac.za

The Economist - Feeding the World Summit, What Africa needs in order to reproduce the Brazilian miracle
15 to 16 November 2012, Hilton Sandton Hotel, Johannesburg, South Africa, http://cemea.economistconferences.com/event/feeding-world-africa/fees-and-registration, email: africa@economist.com

Advanced Quality Management Systems for Laboratories, Establishing Robust Quality Management Systems for laboratories to establish cost effectiveness and productivity effectiveness
29 to 30 November 2012, Ballaika Hotel, Sandton, Johannesburg, South Africa,
email: martinc@sild.co.za

The Rural Development, Land Reform & Rural Local Governance Summit 2012, The summit is focused on building sustainable partnerships between the relevant stakeholders to enhance service delivery in rural South Africa, 21 to 23 November 2012, Edward Protea Hotel, Durban, South Africa,
contact: Adaxole, email: admin@gytraining.co.za

Siyakhula Trust: Community Project Management Programme,
19 to 23 November 2012, Siyakhula Training Venue, Randburg. http://www.siyakhula.org.za,
contact:MothusiNdlovu,
email: mothusin@siyakhula.org.za

ISF World Seed Congress 2013
27 to 29 May 2013, Intercontinental Athenaeum Hotel in Athens,
http://www.worldseed2013.com,
contact: Nathalie Huguenin,
email: register@worldseed.org

The production of dryland lucerne in the Swartland, Overberg and Heidelberg Vlakte

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Lucerne is the most productive pasture legume in the Rûens area of the Western Cape. It is widely used as pasture for wool/mutton type sheep, as well as a rotation crop for small grains and canola in the Overberg and Heidelberg Vlakte regions. The late prof J T R Sim, however, also found that lucerne was one of the most productive legume pastures he tested at Langgewens Experiment station near Malmesbury in the Swartland. Experimental research by Langenhoven (1975 to 1979) also showed that lucerne was equally productive at Langgewens and at Tygerhoek, near Riviersonderend in the Rûens.

With the exception of small areas between Malmesbury and Paarl, lucerne has never been used on a significant scale as a pasture in the Swartland and Boland regions. Originally, probably due to the fact that soil fertility and pH levels were to low and the focus was more on lupines. The use of bitter lupines as forage and rotation crop for wheat was, however, abruptly been brought to an end in the 70's due to diseases of these crops. Since the 80's medics and annual clovers have been extensively used as rotation crops for wheat and largely fulfilled this role.

The sharp increase in the cost of grain production, relatively lower grain prices and higher wool and mutton prices, however, resulted in a renewed interest in wool and mutton production on legume pastures the last number of seasons. Longer term pastures, have, therefore become an economically more viable option. Longer periods established to a perennial legume, such as lucerne, would also allow farmers to use more cost effective weed control practices. The objective of this research was, therefore, to test the potential of lucerne as dryland pasture in the Swartland area. These results were also compared to those derived from Caledon and Heidelberg.

Other more productive, grazing resistant and persistent lucerne cultivars have been identified recently. The second objective was thus to demonstrate the use of some of the new lucerne cultivars which may serve as a replacement for SA Standard. The data which was derived from these demonstration lucerne pastures, were therefore used as a basis to compare the production potential of lucerne at three sites.

Large scale pastures of various lucerne cultivars were evaluated at Roodebloem, Caledon, Uitsig, Heidelberg and Silwermyn, Malmesbury. These pastures were grazed as part of the commercial pastures on the farms. Five trials were conducted from 2005 to 2009 at Roodebloem and Silwermyn and one trial from 2001 to 2006 at Heidelberg.

Before sowing, the soils of the trial sites were fertilized with P, K and lime, based on soil analyses, and well cultivated. All seeds were inoculated with standard commercial lucerne root nodule bacteria before sowing. At Roodebloem the cultivars WL 414, WL 525, WL 357, PAN 4546, PAN 4764, SA Standard, SA Select, KKS 9595, KKS 3864 and Eureka were planted. In the trials at Silwermyn the cultivars ed. TSA Standard, Alfagraze, Aquarius, Aurora, WL 320, WL 414, PAN 4546, PAN 4764, Sardi 7, WL 357, Eureka, KKS 3864, KKS 9595, SA Select, Super Siriver, Aurora, Magna 601, Sardi 10 and Magna 804 were plant. The trial site at Silwermyn was, however, on a very saline and waterlogged portion of the farm and this influenced the results. The cultivars Super Siriver, Sardi 10 and Magna 804 did not establish well, as they were allocated to a more saline area and could therefore not be monitored. The average annual and seasonal (NDJ (November to January), FMA (February to April), MJJ (May to July) and ASO (August to October)) lucerne DM production during the respective trial periods were compared at the three sites. The average annual rainfall (mm.annum^{-1}) during the trial periods at the three trial sites is shown in Table 1.

Uitsig (mm.annum^{-1})	Roodebloem (mm.annum^{-1})	Silwermyn (mm.annum^{-1})
378	556	476

Table 1. Average rainfall per annum (mm.annum $^{-1}$) at Uitsig, Heidelberg, Roodebloem, Caledon, and Silwermyn, Malmesbury, during the trial periods

The three sites differed in average annual rainfall. Roodebloem received the highest rainfall and Uitsig the lowest. One would therefore expect dryland lucerne to have the highest dry matter yield at Roodebloem.

The distribution of the rainfall is also of importance as we are dealing with a perennial legume, which is able to utilize rain for production through the whole year. The seasonal rainfall (mm.season^{-1}) distribution is thus shown in Figure 1.

The seasonal rainfall distribution was very similar during the period May 2003 to October 2006 at Roodebloem and Uitsig, but, as in the case of the total rainfall, tended to be lower at Uitsig than Roodebloem.

During the period August 2005 and April 2009 the rainfall distribution was also very similar at Roodebloem and Silwermyn. If only the rainfall is considered, we would expect the Lucerne dry matter production to be highest at Roodebloem and lowest at Uitsig.

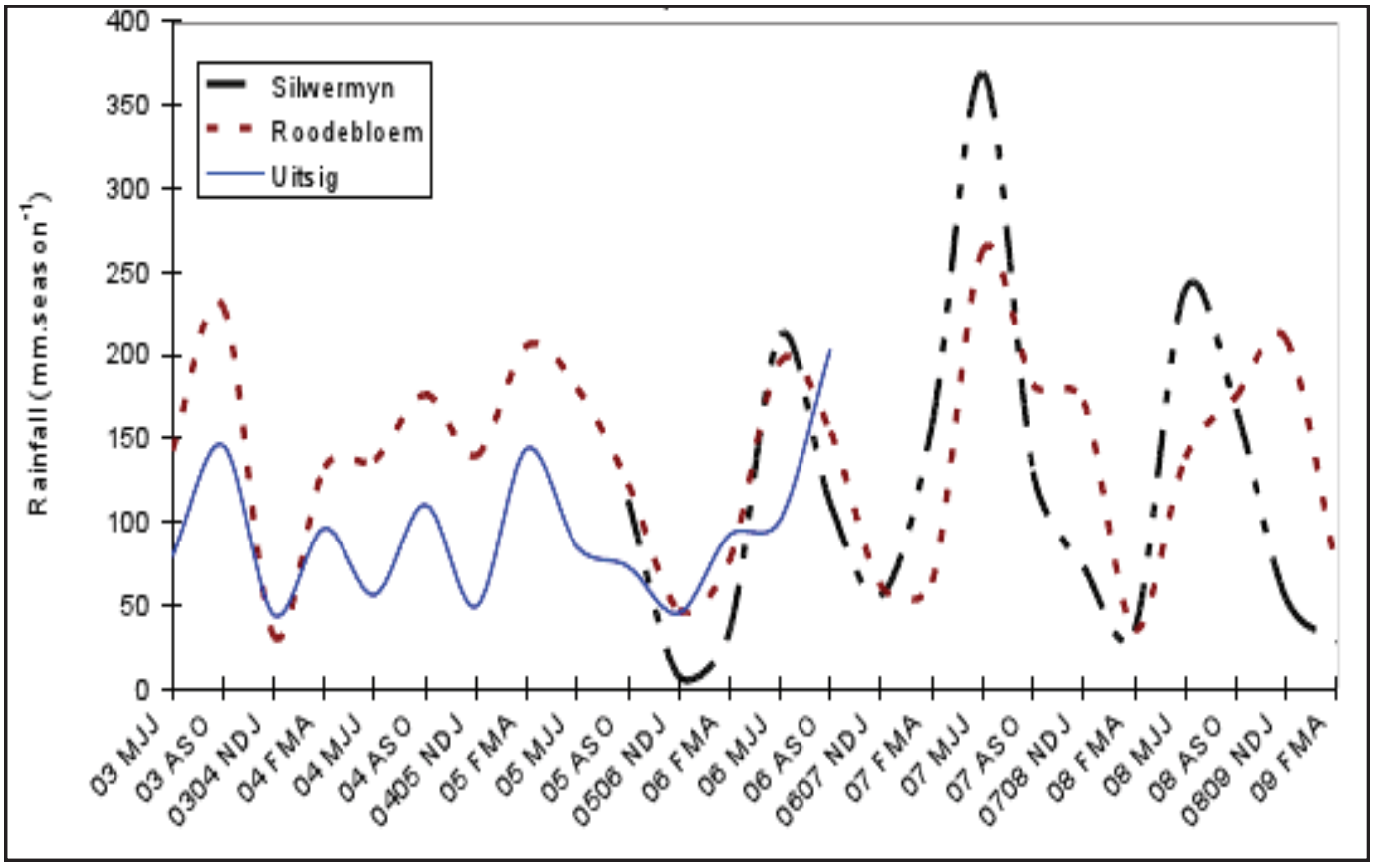

Figure 1. Seasonal rainfall (mm.season^{-1}) during the trial periods at Silwermyn, Malmesbury, Roodebloem, Caledon and Uitsig, Heidelberg, during the period May 2003 to April 2009.

The cultivars in the trials at Roodebloem and Silwermyn were not replicated and they could not be compared statistically. The average data of the cultivars can, however, be used to compare the yield of lucerne at these two sites and at Uitsig. The average annual production of lucerne at the three trial sites during the trial periods is shown in Table 2.

The cultivars at Uitsig were replicated, but there was no significant difference in the yield of the cultivars and they could therefore also not be compared. The average annual production of lucerne at the three trial sites during the trial periods is shown in Table 2.

Uitsig ($kg.ha^{-1}.annum^{-1}$)	Roodebloem ($kg.ha^{-1}.annum^{-1}$)	Silwermyn ($kg.ha^{-1}.annum^{-1}$)
2182	1670	3519

Table 2 . Average lucerne yield per annum (kg.ha .annum) at Uitsig, Heidelberg, Roodebloem, Caledon, and Silwermyn, Malmesbury, during the trial periods

Rain in Africa—Courtesy: Wikimedia Commons

Contrary to the rainfall statistics, the lucerne production was highest at Silwermyn and lowest at Roodebloem. The lucerne yield was in fact more than twice as high at Silwermyn as at Roodebloem and this is also reflected in the seasonal DM production of lucerne at the two sites which is shown in Figure 2. The seasonal lucerne production pattern (kg DM.ha-1.season^{-1}) was very similar at Roodebloem and Uitsig, but production was lower at Uitsig during the period May 2003 to October 2006.

The seasonal lucerne DM production had a very similar pattern at Roodebloem and Silwermyn during the period August 2005 to April 2009, but production was much higher at Silwermyn than at Roodebloem. The fact that the lucerne yield at Uitsig and Silwermyn was higher than at Roodebloem resulted in a much lower rainfall effectivity, in terms of lucerne production (kg DM.mm^{-1}) and grazing capacity (sheep.mm^{-1}) per mm rain at Roodebloem than at the other two sites. This is shown in Table 3.

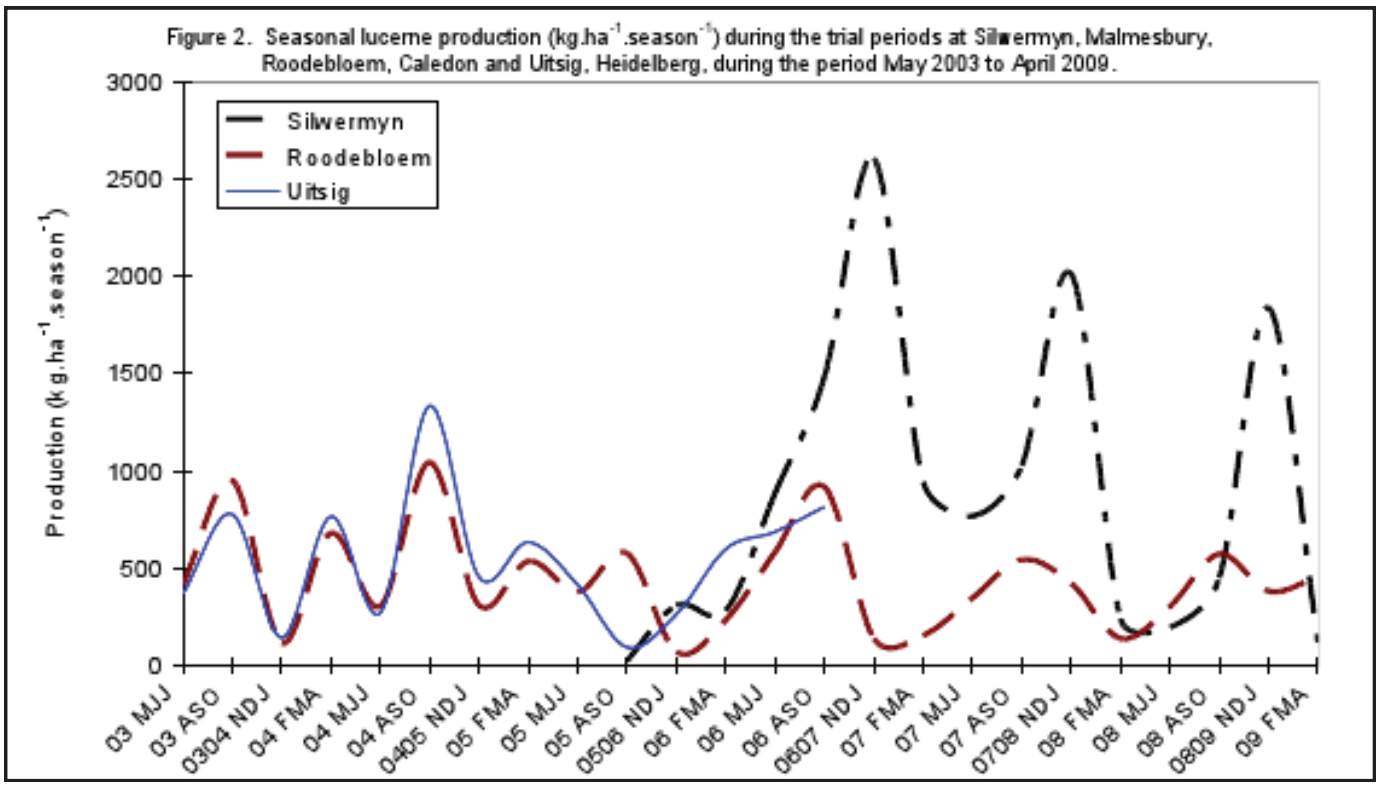

Figure 2. Seasonal lucerne production (kg.ha^{-1} .season) during the trial periods at Silwermyn, Malmesbury, Roodebloem, Caledon and Uitsig, Heidelberg, during the period May 2003 to April 2009.

Parameter	Uitsig	Roodebloem	Silwermyn
DM yield (kg.mm^{-1})	5.8	3.0	7.4
Grazing capacity (sheep.ha^{-1})*	2.99	2.29	4.82

* At 60 % effectivity of dry matter utilisation and a dry matter requirement of 1.2 kg/dry sheep unit/day

Table 3 . Rainfall effectivity in terms of lucerne DM yield per mm rainfall (kg.mm^{-1}) and the grazing capacity (sheep.ha^{-1}) at Uitsig, Heidelberg, Roodebloem, Caledon, and Silwermyn, Malmesbury, during the trial periods

The seasonal pattern in the DM production of lucerne was very similar at the three sites, Uitsig, Roodebloem and Silwermyn. Silwermyn, intermediate at Uitsig and lowest at Roodebloem, resulting in a much lower rainfall effectivity at Roodebloem than at the other two sites. The high production of lucerne at Silwermyn showed that the particular area of the Swartland does have potential for the production of dryland lucerne, as was envisaged by Simm.

Practical problems, however, occurred with the lucerne trial at Silwermyn. Due to the fact that the trial was planted on poor soils which were waterlogged and very saline in parts these limitations accentuated the dry summer of the area and caused many Lucerne to simply die out.

The contention is therefore that if the trial was planted on a better and on a southern slope the results would have been even better. Lucerne in this area should also be rotationally grazed and especially in winter this would prevent it being overgrown with annual grass and broadleaved weeds. Strict grass control measures should also be used annually to prevent the ingress of kweek. If these measures are applied there should be no problem to use lucerne in the Swartland

The influence of seeding rate on the production of grazed dryland lucerne in the Overberg and Heidelberg Vlakte

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Lucerne is the most productive pasture legume in the Rûens area of the Western Cape. The Overberg region lies between Caledon and Botrivier in the western corner of the Rûens, while the Heidelberg Vlakte lies more to the east and south of Riversdal and Heidelberg. Most lucerne pastures in the area are traditionally sown to the land race cultivar SA Standard, which is persistent under grazing, but has poor resistance to endemic insects and other pests.

The presence of the blue-green aphid and the even more destructive spotted aphid, resulted in intensified efforts to introduce more aphid resistant cultivars and to test them country wide. Other more productive, grazing resistant and persistent lucerne cultivars have, therefore, been identified. As the seed of the new cultivars is expensive, lower seeding rates were evaluated as a means to optimize returns. Trials were conducted on the farms Uitsig, near Heidelberg (2003 to 2006), and Roodebloem, near Caledon (2006 to 2009) under dryland conditions.

At Heidelberg the cultivars SAS, WL414, WL320, PAN4764, PAN4546, Alfagraze, Aurora, SA Select, Aquarius and Genesis were sown at two seeding rates, 6 and 12 kg/ha, respectively. In the trial at Caledon cultivar WL 414, was sown at four different seeding rates, 3, 6, 9 and 12 kg/ha, respectively. Before sowing the soils of the trial sites were fertilised with P, K and lime, based on soil analyses and well cultivated.

All seeds were inoculated with standard commercial lucerne root nodule bacteria before sowing. The trials both were part of large commercial and grazed pasture paddocks of approximately 30 ha. Production was determined by cutting samples eight weekly in- and outside exclosure cages. All lucerne samples were dried at 60 ^{o}C and weighed.

The average seasonal rainfall at the two trial sites, Caledon and Heidelberg, is shown in Figure 1.

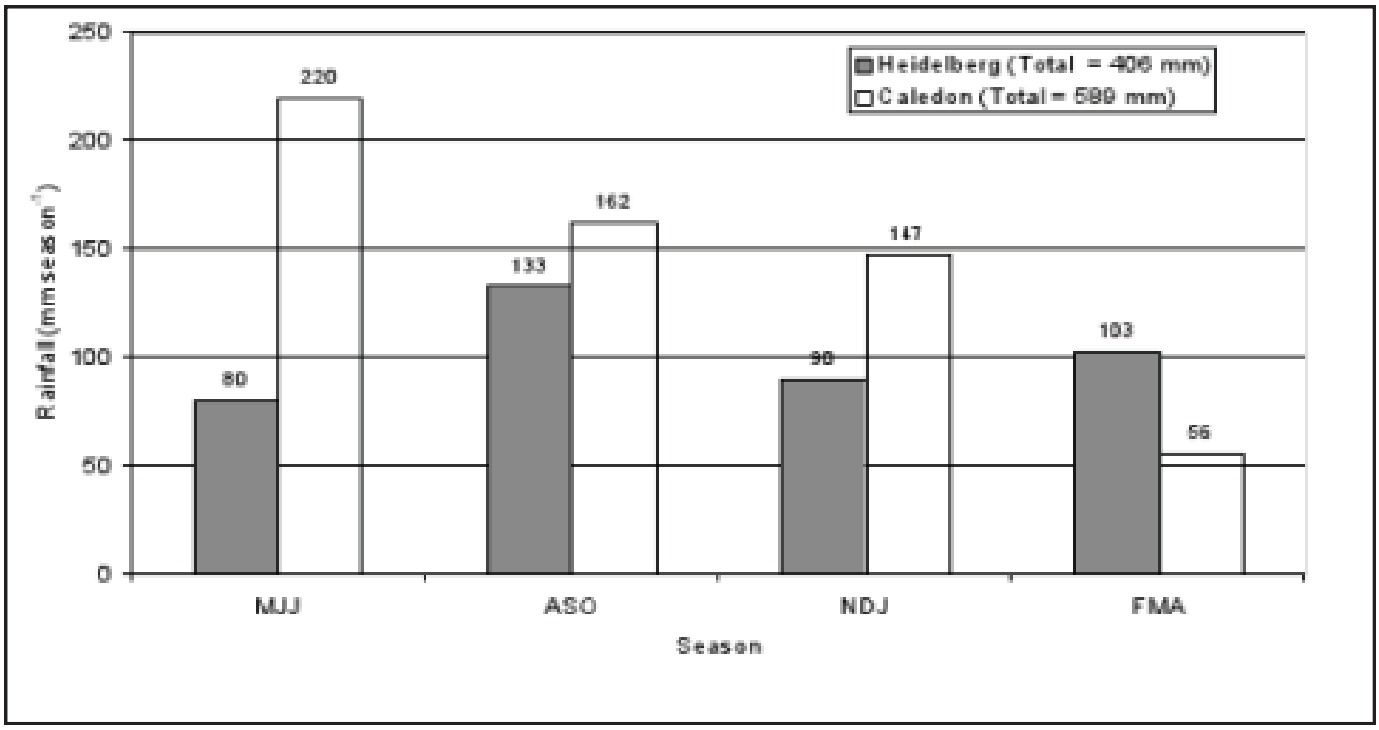


Figure 1. Average seasonal rainfall at Heidelberg (2003 to 2006) and Caledon (2006 to 2009)

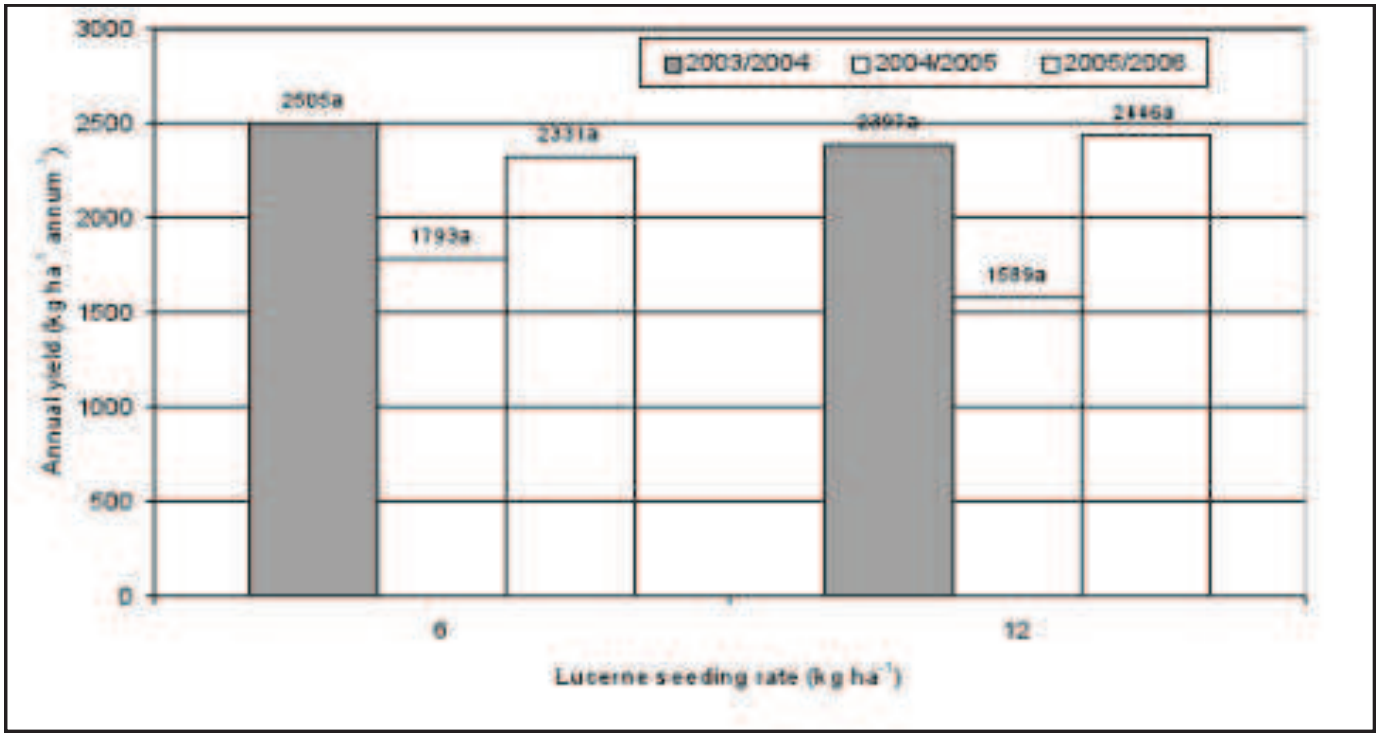


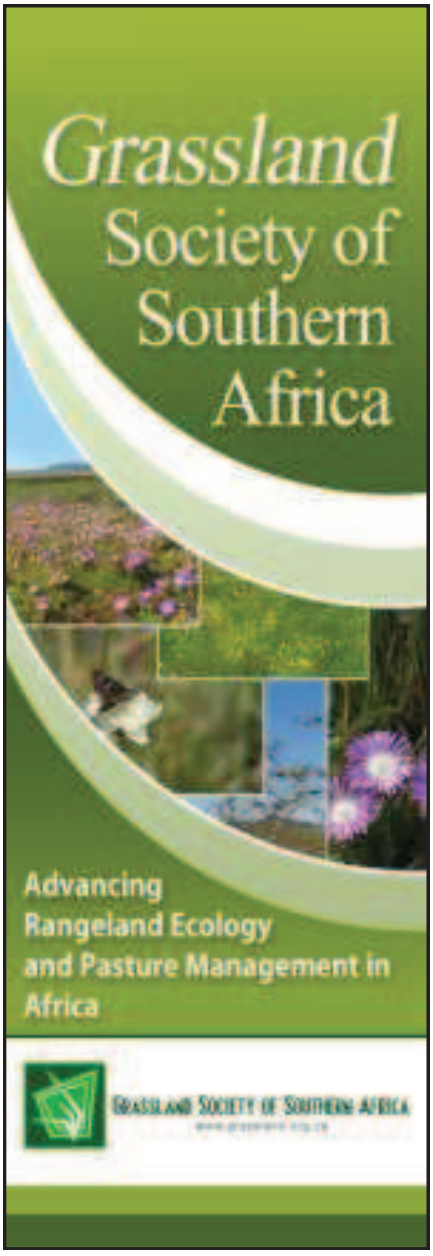
Figure 2. Influence of lucerne seeding rate on the annual lucerne yield during three seasons at Uitsig, Heidelberg

The rainfall was lower, but better distributed at Heidelberg, than at Caledon. The production of the ten cultivars did not respond differently to seeding rate at Heidelberg. The average annual lucerne dry matter yield over all ten cultivars at the two seeding rates (6 and 12 kg.ha $^{-1}$) at Heidelberg is therefore shown in Figure 2.

There was no significant difference in the dry matter yield of lucerne at the two seeding rates during all three seasons. This was very surprising as 6 kg.ha^{-1} was only 50% of the generally recommended seeding rate of 12 kg.ha^{-1}. This resulted in the second trial being planted at Caledon in which lower and a greater number of seeding rates 3, 6, 9 and 12 kg.ha^{-1} were evaluated. There was no significant influence of seeding rate on lucerne dry matter yield during the first season (2006/2007). During the periods 2007/2008 to 2008/2009 the lucerne yield was, however, highest at the 9 kg.ha^{-1} seeding rate. The data of the two trials showed that dryland lucerne seeding rates can be lowered from the standard 12 kg/ha to at least 8 or 9 kg.ha^{-1}.

Using a seeding rate of only 9 kg.ha^{-1} should make possible a saving of 25 to 30% in seed cost. The yield of the new more productive cultivars in previous trials over a four of five year period was from 80% to 100% higher than that of SA Standard.

The combined effect of a lower seeding rate and higher productivity therefore makes the use of the new cultivars much more viable in spite of the higher cost per kg of seed. If the seeding rate is lowered by 25% the seed cost of a particular cultivar like WL 414 has to be more than 300% higher than that of SA Standard before the latter cultivar can be reconsidered to be used.



Promoting fodder production to assist with the nutritional supplementation of livestock in winter and drought periods in the Nkwezela community in KwaZulu-Natal

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The nutritional value of natural veld deteriorates in winter. Poor quality grass results in inadequate nutrition for livestock. Uncontrolled veld fires during mid-winter and beginning of spring exacerbate this problem by further reducing the amount of available forage. There is a lack of knowledge on cultivated pasture establishment by small-scale and subsistence farming sector (McDonald, 2007), but the establishment of pastures is a possible solution for feed shortages during winter.

The objectives of the study were the following:

- To introduce pasture that can grow in the area
- To promote the establishment of fodder under dryland conditions
- To introduce capital extensive methods of fodder establishment.

Study Site

The study was carried out at Nkwezela community in the Bulwer area of the KwaZulu-Natal. Bulwer is a small town that is 120km away from Pieter- maritzburg. The dominant veld type is Moist Highland Sourveld in grassland vegetation and the indicator species are *Alleloropsis semialata* and *Monocybium cereeiiforme*. Altitude ranges from 1008-1496 m above sea level and the extent of cultivation is widespread. The potential soil erosion is low risk. The Bio-Resource Group (BRG) is Moist Highland with the vegetation pattern consisting of mainly grassland and indicator species are *Acacia dealbata, Acacia measnsii* and *Hyparrhenia hirta.* Bio-resource unit (BRU) is 117916ha. The veld condition score is 75 and Current Grazing Capacity = 1.9 with a Potential Grazing Capacity of 1.5ha/LSU. (Camp, 1997)

Materials and Methods

Selection of participants

Criteria for selection of participants were a farmer with livestock next to the road for easy access to the demonstration with a well fenced garden and willing to prepare land without payment of labor. Two farmers were selected to participate and two neighbors were given seeds to replicate what has been learnt in the trial plot.

Site selection and identification

One strata of the same soil type was selected, area of the village was one where farmers let the animals graze in the same camp with same grass quality. Researcher Design Farmer Implemented technique (RDFI) was used at site 1 and 2 (RDFI1 and RDFI2) and the demonstration site was planted and maintained by a researcher and monitoring by both researcher and the farmer. The Farmer Designed Farmer Implemented technique (FDFI) used at site 3 and 4 (FDFI3 and FDFI4), a demonstration was planted and maintained by the farmer inputs supplied same as the researcher demonstration also monitored by the researcher and the farmer.

Soil sampling

Soil sampling was done to check if lime was required, but fertilizer application was not done according to soil analysis recommendations. Planting without soil tests is a current practice by majority of local farmers. Phosphate fertilizer, Di-amino phosphate (DAP) was broadcasted during the seedbed preparation and incorporated by hand using a fork and spade.

Pasture planted

The species planted were Stooling rye, Secale cereale (SR) and oats, *Avena sativa* (O) each. Neighbors were given seeds and fertilizer to plant on their own after being shown in the researcher's demonstration trial. Planting was done in a 5m x 5m area. The seeds were broadcasted in March and no irrigation was applied.

Planting

All plots were planted on the same day. The following quantities were used: 310 g of Di-amino phosphate (DAP) was applied to a 5m x 5m area- not according to recommended rate but there was no lime was required =both oats (O) and Stooling rye (SR) 310 g x 4 seeds broadcasted evenly by hand for both O and SR. 500g of LAN for 5m x 5m area = 2kg in 4 sites at 5cm tall. Observation after two weeks for germination was done. All four plots germinated except in FDFI2 where the seedlings were sparse because of chickens and birds.

Pasture management

The plots were grazed in August. LAN was applied in September during first rains to all four plots.

Field day

A field day was arranged where all neighbors and livestock owners from two neighboring villages were invited to evaluate the demonstration plots.

Results and discussion

Oats and Stooling rye seeds were broadcasted, as mentioned, and no weed competition was experienced in RDFI1, FDFI3 and FDFI4. Observations were done after 2 weeks to check germination. In all three sites O and SR germination was good.

The area was well fenced and no chickens got in, and the house was far from trees- no birds disturbed the performance of the grass. These were the reasons that caused the success of oats in all 3 out 4 sites. If soil fertility was a problem, Stooling rye would have not germinated next to the eaten oats. Soil type was similar in all four sites. Farmers have been using kraal manure to fertilize crops. It was very important to eliminate cost as much as possible for the farmers to buy in the technology. The herbage height in these sites was 50cm as the researcher designed and managed trials in the farmers' sites Grazing height was measured by a ruler before flowering in August after the Field day I order to measure if the herbage was above the 4 grazing height for cattle since they pull be tongues. A grazing height for cattle is 15cm according (Sehested et.al. (2004).

In RDFI2 germination was not good, because the farmer's own chickens ate oats seeds. Birds also got in because the site was close to trees and replanting was done in second site, but the oats failed and assumptions were due to reduced soil moisture. Stooling rye did well in all four sites.

The RDFI1 and FDFI2 was exactly the same in basal cover, herbage height and weed free.

In June, a field day was organized and attended by 20 people. There were comments that all attendees wanted their gardens to be planted with pastures. Farmers were encouraged to come during the planting times so that they learnt to plant at their homesteads. A list of varieties that can be planted in winter was given to the farmers during the field day.

The purpose of the demonstration was to show farmers what could be planted in winter and that could be done in a larger area to over winter livestock. Farmers saw the green and attractive fodder in the middle of August and September. This indicated that it is possible to plant green fodder without irrigation. Grazing oats before flowering kept it short and delayed flowering until October. Farmers allowed one sheep or one goat per time for two hours of grazing.

Grazing pressure was minimal and animals were sometimes allowed to stay a few hours in the oats and Stooling rye per day. The grass was too tall for sheep, but they were only exposed to a lush green feed at home and the veld was dry. One farmer, who had a goat that kidded in winter, grazed the pasture and was able to nurse the kid and produced enough milk.

Future research

- A trial for broadcasting versus row planting pastures with the same seeding rate, specific fertilizer application and same time was identified.
- The area needed to keep a certain number of animals throughout the difficult months without buying other supplements.
- No analysis of samples was done to measure if the dry matter (DM) content was comparable to the normal forage DM despite of minimum inorganic fertilizer applied.

Conclusion

- Farmers developed confidence in oats and Stooling rye due to the fact that they did well without irrigation.
- Farmers learnt more about the fodder crop seeds, because pasture seeds were unfamiliar to them. Farmers used to see green pastures without knowing how to plant them when passing commercial farms.
- Farmers have learnt that pastures are possible to plant by hand equipment like spade, forkspade and handhoe.

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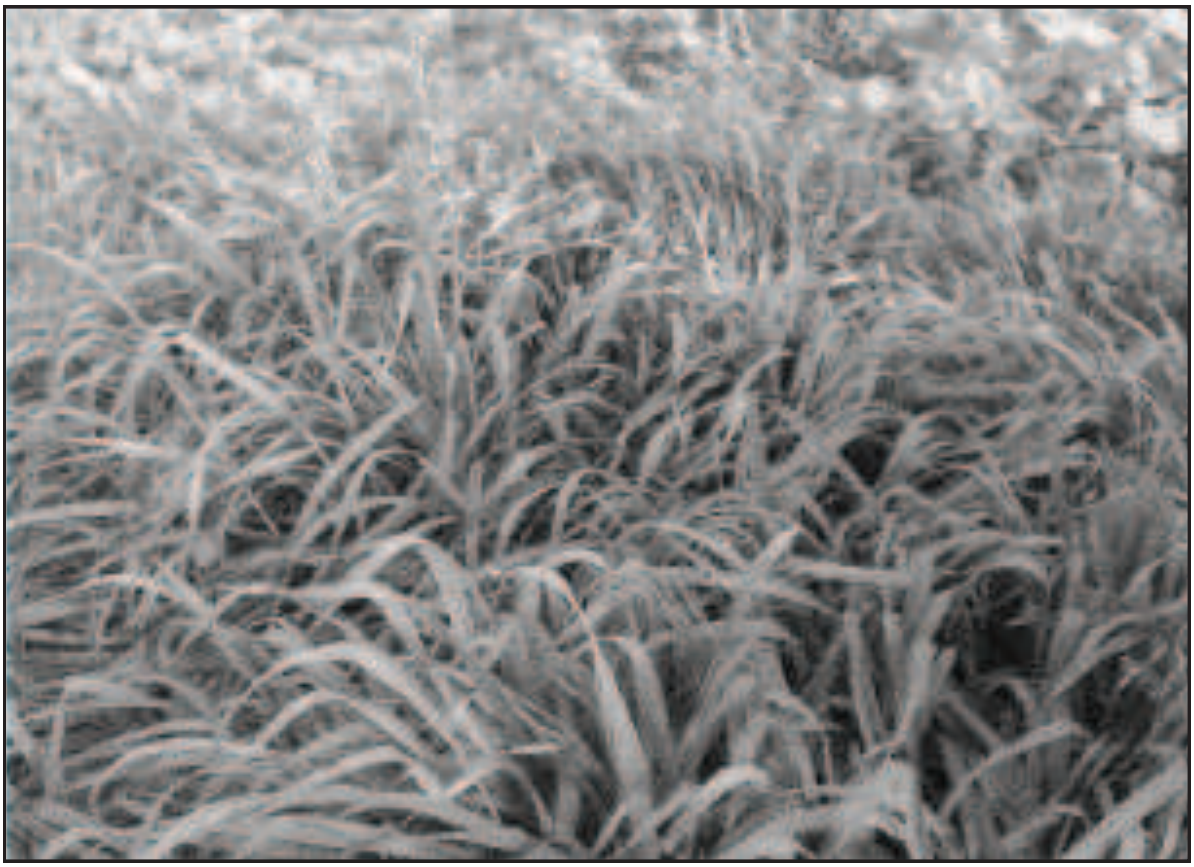

Figure 1. Stooling rye

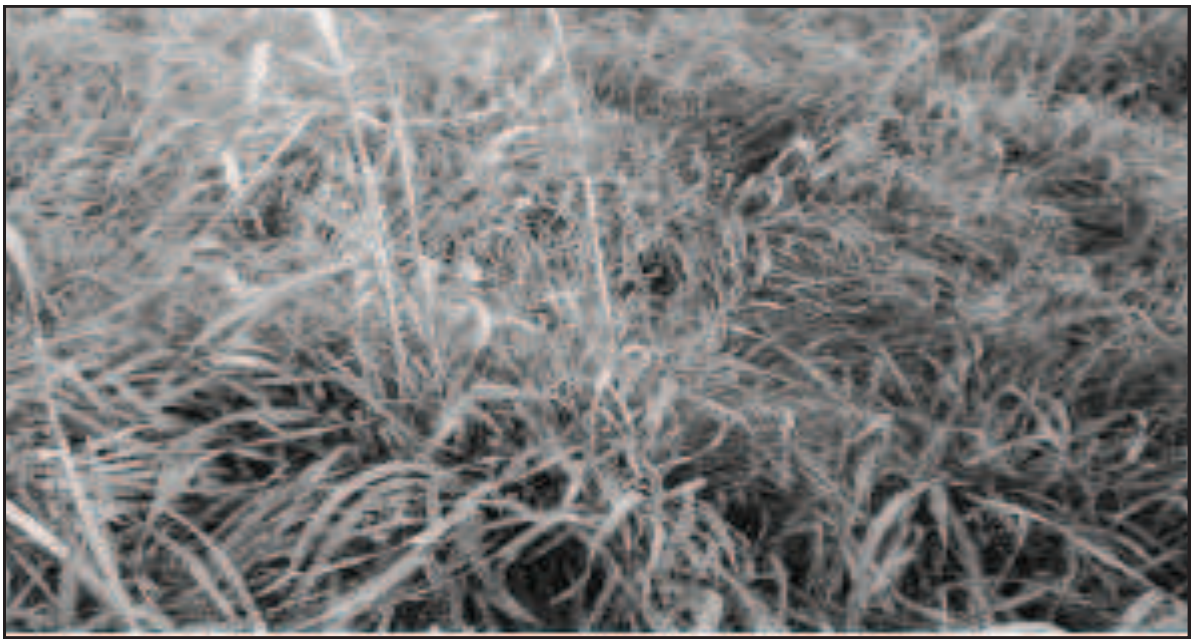

Figure 2. Oats

Biological control of *Cereus jamacaru* (queen of the night cactus) in the Thornveld of the Limpopo Province, South Africa

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Cereus jamacaru (queen of the night) was introduced to South Africa as an ornamental and a barrier plant. The plant is a large, perennial, upright-growing, evergreen, cylindrical cactus species of South American origin. Because of its attractive shape, its large, white flowers and edible fruits, it is a popular ornamental plant in many gardens in South Africa. This cactus is now a serious alien invader in some parts of South Africa, particularly Mpumalanga and certain areas in Limpopo. This cactus is also a problem plant in Namibia (Bromilow 2001).

It mainly occurs in terrestrial areas under temperate and sub-tropical climatic conditions, and as an environmental weed, it transforms the landscape and appears unattractive to tourists, while it can also be a health risk and cause physical injuries to man and livestock due to thorns. It also creates obstructions for livestock, game and humans (Wells et al. 1986).

During spring, the plant produces flowers that open mainly at night and close the next morning. It produces red fruit that are sought after by birds and monkeys, that act as the main seed distributors. The cactus has the ability to produce roots from small plant fragments, making it a highly successful invader (Bromilow 2001, Klein 2002a). *Cereus jamacaru* was proclaimed a Category 1 weed in South Africa in 1982 (Land Care South Africa 1993). The most common control method involves treating *C. jamacaru* plants with MSMA, anarsenic-based herbicide widely used for the control of various woody and succulent plant species. While small plants are sprayed as they are standing, large plants must be injected via holes made in the upright stems (vascular system) of mature plants, some 1.5 to 2.0 m apart (Vermeulen et al. 1991).

Two insect species were introduced to South Africa to control the harrisia cactus (Harissia martini), biologically but were also found to control *C. jamacaru*. They are the *harrisia cactus mealybug*, *Hypogeococcus pungens* and a *stem-boring cerambycid beetle, Alcidion cereicola*, both indigenous to Argentina and Paraguay.

The main topic of this study, the harrisia cactus mealy bug, was imported from Argentina via Australia during 1983. These insects live in colonies in distorted or actively growing stem tips of their host plants. They are apparently less effective in controlling large plants, but appear to be successful in controlling small plants (< 1.0 m) and seedlings.

Adult females are round, fat, light pink, about the size of a pin head, with short, weakly developed legs and long sucking mouth parts. They are covered in a woolly, white, waxy thread. Females are sessile, meaning that they cannot fly and walk only short distances. Males are tiny and pink with two semi- transparent wings and long tail filaments (Klein 2002b).

Approximately three weeks after fertilization, females lay single eggs at a rate of two to four a day, for a period of up to 35 days. Within 20 minutes, eggs hatch and produce nymphs, known as crawlers. Crawlers move to the ends of stem tips from where they are dispersed by wind. They group together at the base of spines and in cracks in the plant surface. They start feeding immediately by sucking plant sap out of the host, at the same time developing their waxy thread cover (Klein 2002b).

Male nymphs move to a more exposed part of their host just before their second moult, spin a white cocoon and pupate. After about a month, they emerge as sexually mature insects which fly away in search of females. Males do not feed at all and live only for a few days.

Female nymphs stay attached to one spot for their whole life (50 – 90 days). They continue producing wax and moult (3 times during their life cycle) and reach sexual maturity about a month after hatching (Klein 2002b).

First infection signs of the host include distorted stem tips. Thereafter, white, woolly masses appear on stem tips and areoles. Affected plants have few flowers and fruit. Mealy bugs also affect and stop tip growth. Distorted growth occurs where single insect individuals feed on one side of the growth tip only, while growth tips are killed when several insects are more evenly spread. Flower heads and fruit buds are also infested. To infect *C. jamacaru* plants with the *harrisia cactus mealy bug*, cuttings infected with the insect are placed on the cactus as close to growth points as possible. Attempts should be made to avoid placing the cuttings in direct sunlight. Plants must not treated by any other means after infection (Klein 2002c).

Methodology

A demonstration study was conducted at the Towoomba ADC during the period 2008 to 2012. The experimental site is situated at the Towoomba ADC, on the southern part of the Springbok flats, near Bela Bela in the Limpopo Province (24° 25'S, 28°21'E, 1 184 m above sea level). The long-term average rainfall is 630 mm per annum. The long-term daily average maximum and minimum temperatures vary between 30.2°C and 17.6°C for December and 21.0°C and 3.0°C for July respectively.

Two soil types were involved, namely a Hutton and an Arcadia form (Soil Classification Working Group 1991). The vegetation type of the Hutton soils is classified as Sourish Mixed Bushveld (Acocks 1988). The woody layer of the plant community is dominated by *Dichrostachys cinerea* and *Acacia* species. The grass layer is dominated by *Eragrostis* species (E. barbinodis and E. rigidior), *Panicum maximum*, *Themeda triandra* and *Heteropogon contortus*.The vegetation type of the Arcadia soils is classified as Turf Thornveld (Acocks 1988). The woody layer of the plant community is dominated by Acacia spp. (A.karroo, A. nilotica and A. tenuispina). The grass layer is dominated by *Aristida bipartita, Eragrostis spp.* and *Ischaemum spp.*

Thirty randomly chosen *C. jamacaru* plants of various heights and ages were treated the *harrisia cactus mealybug* during October 2008. Thirty were left untreated. During April 2012, all 60 plants were surveyed to determine the effectiveness of the treatments. Surveys included the determination of plant height, number of growth points infected, plant mortality, the occurrence of flowers and fruit during infestation and distances between infected and uninfected plants.

Results and discussion

All growth points of plants that were treated were successfully infected after four years (Table 1). On average, one stem per plant was originally treated, while six were infected, indicating that the insects had colonized adjacent stems. Typical symptoms that were encountered were the presence of insects as white, woolly masses on stem tips, areoles, flower heads and fruit buds (Figure 1).

Figure 1: *Hypogeococcus pungens* infection on growth points of *Cereus jamacaru*

No plants died during the four-year period. Results obtained in this experiment are thus similar to those published by Klein (2002b, 2002c), who indicated that it takes several months, and in some cases years, for a plant to die. According to Klein (2002b, 2002c), seedlings and young plants are more susceptible, an aspect that was confirmed by observations in this study. New growth and reproduction of all infected plants were severely retarded. Distorted growth occurred where plants were treated, compared to untreated plants, which grew and reproduced freely without any effect on plant growth.

The survey was conducted after all plants had finished flowering and the actual numbers of flowers plant^{-1} was thus not determined. Using the number of fruits plant^{-1} as the basis to determine successful flower inhibition, it was concluded that flowering and fruit set was affected by the insect treatments. During 2012, no fruit formation occurred on treated plants, while an average of three fruits plant^{-1} occurred on untreated plants.

	Untreated plants	Treated plants
Number of stems plant^{-1}	2 (1; 6)	1 (1; 6)
Number of growth points plant^{-1}	3 (1; 13)	6 (1; 24)
Number of stems treated plant^{-1}	0	1
Number of growth points plant^{-1} infected	0 (0; 2)	6 (1; 24)
Number of flowers plant^{-1}	0 (0; 3)	0
Number of fruits plant^{-1}	3 (0; 15)	0 (0; 2)
Estimated plant height (m)	2.0 (0.5; 6.0)	3.0 (0.8; 9.0)
Number of plants killed	0	0
Distance to the nearest uninfected plant (m)	8.0 (0.5; 36.0)	5.0 (0.5; 24.0)

Table 1: Survey data, expressed as averages, of treated and untreated C. jamacaru plants (numbers in brackets represent minimum and maximum values)

Unfortunately, the main source of control is the sessile female insects, which rarely spread to surrounding plants via the tiny, wind-dispersed crawlers. This resulted in the limited infection of untreated plants. Only two growth points on plants that were not treated appeared to be mildly infected. Both occurred within a 1.0 m radius of treated plants.

The actual aim of infecting *C. jamacaru* at the Towoomba ADC was to control the current *C. jamacaru* population at the station and for the Limpopo Department of Agriculture to have a nursery site available from which farmers in the area could obtain the biological control agent. The effectiveness of control was aimed towards more subjective observations than objective surveys, but collected data emphasized the ability of the biological agent to slow *C. jamacaru* encroachment down. Economically, the use of the *harissia cactus mealy bug* as a biological control agent of *C. jamacaru* has potential in communal areas and for developing farmers. Not only will herbicide costs be minimized, also a more ecologically friendly method of control. It appears as if each plant must be infected individually and that control is not immediate but takes several years. The fact that the rate of encroachment of *C. jamacaru* can successfully be kept to the minimum warrants the use of *harrisia cactus mealy bug* as a biological control agent of this invader species. To augment this impact, .the stem-boring beetle *Alcidion cereicola*, which is also potentially damaging, should also be introduced to invaded areas

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