Grassroots

Newsletter of the Grassland Society of Southern Africa
May issue, Vol 12 No. 2
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The persistence

of grazed lucerne cultivars under dryland in the Overberg

47th Annual GSSA Congress

Scanning for Biomass

Focus on Presentation Skills

Advancing Rangeland Ecology and Pasture Management in Southern Africa

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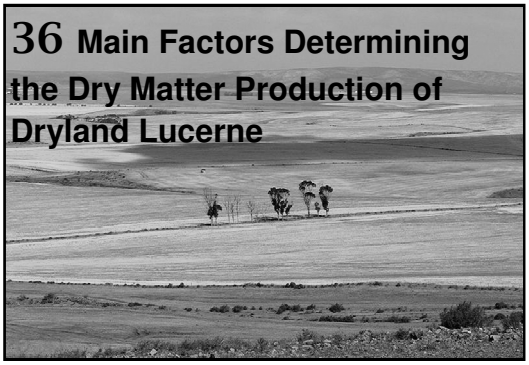

Regulars

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www.grassland.org.za

On The Cover:
Cattle cover photograph by our Honorary Treasurer: Justin du Toit

The Grassland Society of Southern Africa is dedicated to the advancement of the science and practice of range ecology and pasture management.

We welcome any contributions to the Grassroots, in the form of news, informative articles, reports, short research notes, scientific papers and letters to the Editor. For information and submission specifications Email: Julius at jtjelele@arc.co.za or admin@grassland.org.za
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Editor's Note

Welcome to the 2nd edition of Grassroots for 2012. The 47th Annual GSSA Congress to be hosted by Western Cape Province at Club Mykonos in Langebaan is around the corner. Apart from the great line-up of speakers, the place is out of this world. For sure you don't want to miss this year's congress. Start looking for funds and permission to attend the Congress before it's too late.

The Minister of Higher Education has announced that Professors and Lecturers from Universities will retire at 80 and not 60 years as it was in the past. This is to help train desperately needed skills professionals. But the question I have to young GSSA scientists is this, are you taking advantage of our experienced professors?

This issue of Grassroots features an article on 'Presentation skills" – this came at the right time with the Annual GSSA Congress coming. We are also focusing specifically on Dryland Lucerne in the Overberg region with three bumper features on the subject.

I hope you will enjoy this issue of Grassroots. See you in the Western Cape, Langebaan.

Julius Tjelele

Profs: Retirement at 80 years

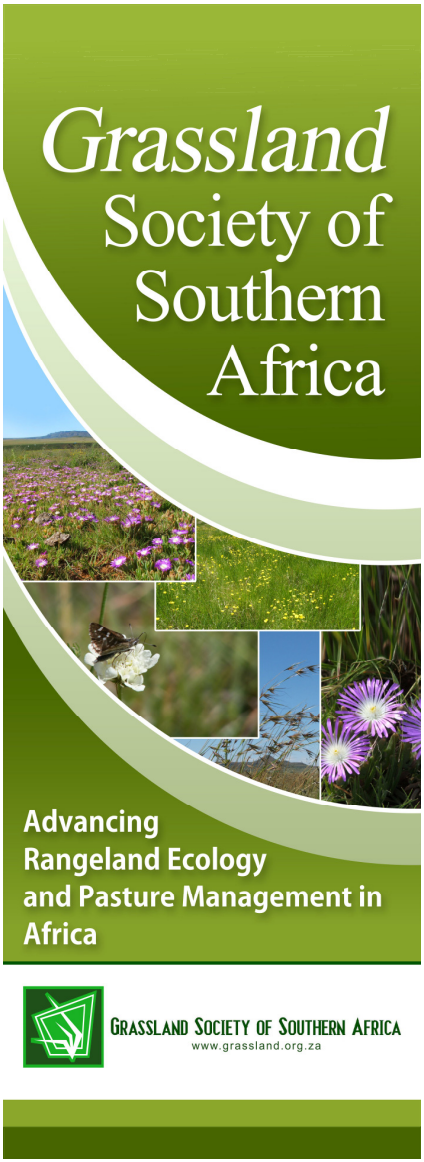
Johannesburg-South Africa is considering increasing the retirement age for university professors from 60 to 80, in a move welcomed by the National Tertiary Education Union (NTEU). Higher Education Minister Blade Nzimande said it was counter-productive to let university professors and lecturers retire at 60, when they could still help train desperately needed skilled professionals.

"We welcome the suggestion; we think it would play a remarkable role in retaining skilled academics," NTEU President Norman Kemp to AFP. "Universities are struggling to attract the right people; younger people are not interested in joining academia. They prefer the private sector."

Sixty is the national retirement age for academics, though universities can extend professors' tenure on a case-by-case basis.

"The average age of a South African academic as of 2012 is 59, so we are looking at this within the broader scheme of revitalizing the academic profession," Nzimande told a press conference.

SAPA-AFP



SAEON Forges New Friendships at COP17

Beate Hölscher, Research Administrator, SAEON

SAEON's participation in COP17 held in Durban from 28 November to 9 December 2011 proved to be a worthwhile exercise in terms of exposure, branding and networking.

The principal purpose of COP17 was to develop legally binding international agreements through international negotiations to help mitigate climate change by controlling emissions of greenhouse gases. Apart from the central negotiations, a Climate Change Response (CCR) Expo was held adjacent to the Durban International Convention Centre where the main negotiations took place.

Global Change Grand Challenge

SAEON exhibited under the banner of the Department of Science and Technology's Global Change Grand Challenge at the CCR Expo, along with the Africa Centre for Climate and Earth Systems Science (ACCESS), the South African Risk and Vulnerability Atlas and *Inkaba ye Africa* Earth Systems Science. The eye-catching exhibition stand focused on SAEON's contribution towards understanding climate change impacts.

Constructive Discussions

A guest register was available for visitors interested in recording specific comments or in receiving SAEON's electronic newsletter. In the process valuable contacts and networks were established.

SAEON's Beate Hölscher and Sue van Rensburg distributed CDs containing recent SAEON publications and a bookmark with information on the International Long Term Ecological Research (ILTER) Network. SAEON Managing Director Johan Pauw was on hand to attend to visitors between participating in COP17 side events.

The DST is gratefully acknowledged for carrying the cost of the floor space. SAEON would also like to thank the DST's Kogilam Iyer and Leluma Matooane for their arrangements and interface with the organisers, as well as Jennifer Russell for kindly offering accommodation to Sue and Beate at no cost.

SAEON Newsletter

SAEON Assists in Building Data Intensive Research Infrastructure for SA

Wim Hugo, Systems Engineer, SAEON

The Centre for High Performance Computing (CHPC) recently launched its DIRISA (Data Intensive Research Infrastructure for South Africa) initiative aimed at empowering scientists to collect massive amounts of data, marking an important step towards solving complex problems like global climate change. Responsibility for the establishment and operationalization of domain-specific resources to serve specific communities has been allocated to SAEON Systems Engineer Wim Hugo.

Domains

The domains under consideration include Earth and Environmental Sciences, Social and Economic Science, Astronomy, and Bioinformatics and Health.

DIRISA has, as a backbone, petabyte-sized storage facilities, currently situated at CHPC in Rosebank, Cape Town, and at CSIR in Pretoria. Policies are available that allow near-real time replication of data objects from one physical location to the other, resulting in very robust fail-over and disaster recovery infrastructure. Data intensive computing capabilities are fundamental for advancing data-intensive sciences, as well as huge volumes of complex data related to energy, health and national security.

Technical Roadmap

A workshop was conducted on 8 December 2011 at the CHPC Annual Meeting at the CSIR in Pretoria, where stakeholders had the opportunity to showcase their work and to collaborate on setting requirements and a collective vision for what DIRISA should provide. The findings of the workshop have been circulated to stakeholders for comment, and will be published shortly, together with a Technical Roadmap to guide the development of DIRISA. In addition to the domain-specific initiatives, three pilot implementations are envisaged for DIRISA during 2012:

- Testing the benefits of the replicated large storage capacity with multi-dimensional, file-based data sets such as typically encountered in atmospheric, ocean, and climate data;
- Evaluating the feasibility of using the storage capacity for 'long tail' type content management systems, invol ing potentially millions of meta-data records and data objects; and
- Using the infrastructure to host a preservation platform that manages format and physical integrity – this will be available as a secondary archiving and preservation service.

Scanning for Biomass

Dr Tony Swemmer, Manager, SAEON Ndlovu Node

Dr Robert Washington-Allen from the USA recently visited the SAEON Ndlovu Node in Phalaborwa and brought one of his favourite toys with him, a terrestrial laser scanner (TLS).

A TLS is a high-tech laser device originally designed to create three-dimensional images of construction sites for use by architects and engineers. It shoots out thousands of laser pulses a second, which reflect off surrounding objects and bounce back to the scanner, a fraction of a millisecond later. The position and return time of hundreds of thousands of these laser returns are recorded as the TLS rotates, creating a high-resolution, 3D image of whatever surrounds it.

Pioneering New Methods

In recent years a few creative and tech-savvy ecologists have begun exploring this technology for collecting ecological data, pioneering new methods for measuring vegetation structure that may revolutionise certain fields of ecology. Some of the Ndlovu Node's vegetation monitoring sites were scanned to compare the accuracy and efficiency of using a scanner with conventional field methods.

"The Use of a Terrestrial Laser Scanner may Ultimately Allow for Much Faster and Cheaper Measurement of the Productivity of African Ecosystems."

Detailed manual measurements of vegetation structure already exist for these sites, making them an ideal location for those with the technological expertise, such as Dr Washington-Allen, to test this new technology under "working conditions".The use of a terrestrial laser scanner may ultimately allow for much faster and cheaper measurement of the productivity of African ecosystems.

Much of the scanning work was done at the Letaba Exclosure in the Kruger National Park, a large research site that includes a fenced area that keeps elephants and other large herbivores out. Big differences in the height and spread of the trees and the quantity of grass exist inside the exclosure thanks to years of protection from mega-herbivores.

A comparison of scans done inside and outside therefore provided an excellent opportunity to test how well a TLS performs at sites varying greatly in vegetation structure

Testing TLS on Afrcican Eco-Systems

While laser scanners have been used successfully in the northern Hemisphere for trees ranging from forest giants to shrubs, they are only now being tested in African savanna environments. The use of a TLS for measuring grass biomass is also something new, and Dr Tony Swemmer is particularly hopeful that this will produce useful results, as the conventional method for measuring grass biomass includes many long hours in the hot sun, clipping grass tufts by hand.

The use of a TLS may ultimately allow for much faster and cheaper measurement of the productivity of African ecosystems.

Dr Washington-Allen is an Associate Professor of Environmental Monitoring and Assessment, based in the Ecosystem Science and Management Department of Texas A&M University.

He was accompanied by an MSc student, Alfredo Delgado on his brief visit to South Africa in August.

47th Annual GSSA Congress: Advancing Rangeland Ecology and Pasture Management in Africa

The Annual Congress will be hosted by the Western Cape Province at Club Mykonos in Langebaan from 16 to 20 July 2012. The preliminary programme, planned mid- and post-Congress tours, registration fees and other information is now available.

The Annual Congress will be hosted by the Western Cape Province at Club Mykonos in Langebaan. The Greek-themed resort is on the shores of the Langebaan Lagoon about 120kms north of Cape Town (airport shuttle available). The town of Langebaan was originally a whaling station but has been transformed into a idyllic seaside destination for holiday-makers.

The Lagoon is part of the Cape West Coast Biosphere Reserve, is a RAMSAR site, temporary home to migratory birds from as far afield as Russia and nursery to a population of Southern Right whales. The Society is looking forward to a Congress where everyone can stay together for easy networking and experience the magic of the West Coast!

Special Sessions, Workshops & Invited Speakers

Several special sessions and workshops with invited keynote addresses are being organised in addition to the standard sessions. Further details will become available over the coming weeks BUT if you would like to submit an idea, please do so as soon as possible. Organisers of special sessions, workshops, etc. are encouraged to publish contributions in a special issue of the African Journal of Range and Forage Science. Remember that page charges for all papers published by members of the Grassland Society of Southern Africa will be ZERO!!

Confirmed Special Sessions, Standard Sessions &Workshops

- Rangeland Fire Ecology
- The Whole and the Sum of the Parts: Exploring Alternative Approaches to Rangeland Management
- Soil Quality for Sustainable Pasture Production
- Payment for Ecosystem Services: Putting Rangelands into the Mix Sustainable Planted Pasture Systems

Confirmed Speakers Include

- **Dr Alan Anderson** (Chief Research Scientist, CSIRO Tropical Ecosys tems Research Centre, Australia) will be addressing the topic, *Burning or biodiversity in tropical savannas: the Australian experience*, in the Rangeland Fire Ecology session

- **Dr Anthony Mills** (CEO, AfriCa bon (Pty) Ltd and C4 EcoSolutions (Pty) Ltd, South Africa) will be adressing the topic of *Carbon seque tration and plant-soil relationship*, in the Soil Quality for Sustainable Pa ture Production workshop

- **Mr Jozua Lambrechts** (Associate Consultant, Savory Institute, South Africa) will be addressing the topic, *Holism: The future of range manag ment to address global challenges*, during the special session, The Whole and the Sum of the Parts: Exploring Alternative Approaches to Rangeland Management

- **Dr Urs Kreuter** (Professor, Texas A & M University, USA) will be a dressing the topic, *Rangeland sustainability, capital and investment in ecosystem services: A social ecological systems approach*, in the session, Payment for Ecosystem Ser vices: Putting Rangelands into the Mix

Mid-Congress Tours

1. Vula Environmental Services: A Scientific Approach to Environmental Rehabilitation at the West Coast Fossil Park: When the West Coast was WILD!

2. Khwa ttu: A Celebration of the San Culture, Present and Past

3. Cape West Coast Biosphere Reserve: Focus on Langebaan RAMSAR Site and Educating Future Generations

4. Buffelsfontein Game Reserve: A Novel Approach to Alien Control

Post-Congress Tours

1. Malgas Island & Verlorenvlei
2. Robben Island & Table Mountain
3. Darling/Riebeek Kasteel Wine Route

The Persistence of Grazed Lecerne Cultivars Under Dryland in the Overberg

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Pastures in the Rûens area of the Western Cape are mainly legumes, with lucerne being the most important and productive pasture legume. The Overberg region lies between Caledon and Botrivier in the western corner of the Rûens.

Lucerne has a dual role in the Overberg and serves not only as a pasture, but also as a rotation crop for grain (barley and wheat) production. Frequent cropping prohibits the division of land into small paddocks and the lucerne pastures are, therefore, often submitted to continuous heavy grazing. Such a grazing regime is very stressful to lucerne, due to trampling, tugging, waste excretions and frequent defoliation by the grazing animals. Sheep are able to graze down to ground level and graze more severely than cattle. This results in added stress on dryland lucerne pastures in the Overberg. Grazing resistant and persistent lucerne cultivars must therefore be identified for this region in grazed trials using Merino sheep, the main grazing animal in this area.

Lucerne cultivars are generally grouped into eleven classes, with class one cultivars being most winter dormant and usually more persistent under grazing and class eleven cultivars most winter active and least persistent under grazing.

Comprehensive studies in Australia showed that in general, although winter activity was positively related to yield, it was negatively related to persistence when a diverse set of natural germplasm was evaluated It was, however, also found that grazing tolerance of lucerne is not necessarily in all cases only linked to winter dormancy and growth form It was possible to breed lucerne lines/cultivars which were high yielding and less winter active, as well as cultivars which were persistent but also winter active. It is thus possible to select persistent lucerne cultivars which are more winter active and upright growing with open crowns. It was, however, found that selections derived by submitting winter active cultivars to heavy grazing and selecting the surviving population, tended to have lower winter activity than that of the original population.

Due to the continuous input of new commercial cultivars in South Africa for both hay and grazing purposes the evaluation of new cultivars is an ongoing process. Two trials have been conducted consecutively over an eight year period (2001 to 2009) and involved the evaluation of two sets of lucerne cultivars for yield and persistence in the Overberg under local grazing conditions.

In Trial 1 eleven lucerne cultivars were evaluated (Figure 2) and in Trial 2 twenty three cultivars/lines (Figure 3). The cultivars were compared to South African Standard under dryland conditions and heavy continuous grazing with Merino sheep at the Roodebloem experiment farm of Overberg Agri in the Caledon district of the Overberg. Trial 1 was conducted from 2001/2002 to 2005/2006 and Trial 2 from 2005/2006 to 2008/2009.

The cultivars, which were evaluated, varied in winter dormancy (Figures 2 and 3). PAN 4956, which is a class nine and hay only cultivar and very sensitive for grazing, was included as one of the controls in both trials. PAN 4956, not recommended for grazing under these conditions, was used as a control to measure the severity of the grazing treatment. The third cultivar of special interest, SA Select, is a local cultivar and was included in Trial 2. SA Select was selected from SA Standard. The other cultivars/lines in both trials are imported and intended for grazing and/or hay production by farmers in the area.

The trials were fenced-off in areas of approximately two hectares and continuously grazed at a stocking rate of 10 Merino sheep.ha-1. Before sowing the soil of the trial sites were fertilised with P, K and lime, based on soil analyses and well cultivated. The cover or stand density of each lucerne cultivar was determined at regular intervals.

The seasonal rainfall (mm/season) at the trial site during the trial period (May 2001 to April 2009) is shown in Figure 1. The period May to October tended to be wettest (183 + 47 mm), with the rainfall most stable. The rainfall in November to April tended to be lower (104 + 60 mm) and to vary more. Due to this and the low temperatures, the moisture regime during the first mentioned period was generally most favorable for lucerne growth. The plant cover of the respective licerne cultivars at the sampling dates is shown in Figures 2 (Trial 1) and 3 (Trial 2).

In both trials the cultivars varied in persistence. In Trial 1 PAN4956 was least persistent. The decline in lucerne cover on PAN4956 shows that the grazing treatment was a proper test for lucerne persistence. The cultivars Alfagraze, PAN4546, WL414, Meteor and SA Standard were most persistent. In Trial 2 all the cultivars tended to have a low lucerne cover, which may be due to the poor soil of the trial site and severe water logging during the establishment year (2006). The cultivars/lines Alfagraze, Magna 601, CW 86085, Meteor, Venus, and WL 357 were the most persistent. SA Select had a higher persistence than SA Standard and its persistence was not significantly lower than five of the six most persistent cultivars.

Persistence was clearly determined by the level of winter activity of the cultivars and the cultivars with lower winter activity were the most persistent in both trials. More dormant cultivars displayed a more stable lucerne cover. In both Trials 1 and 2 the persistence of the class two to five cultivars tended to be high. The persistence of classes six, seven and eight cultivars varied, while the class nine cultivars were not persistent.

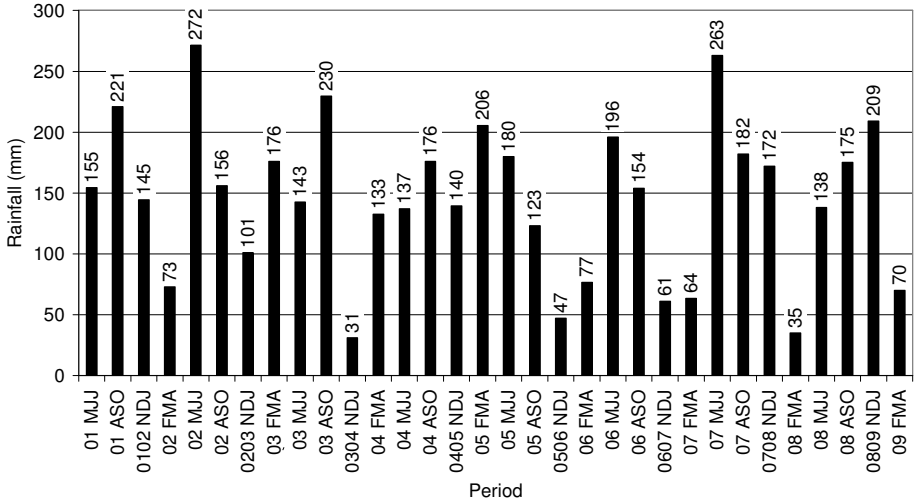

Figure 1. Seasonal rainfall (mm) at Roodebloem between April to July (MJJ) 2001 and February to April (FMA) 2009

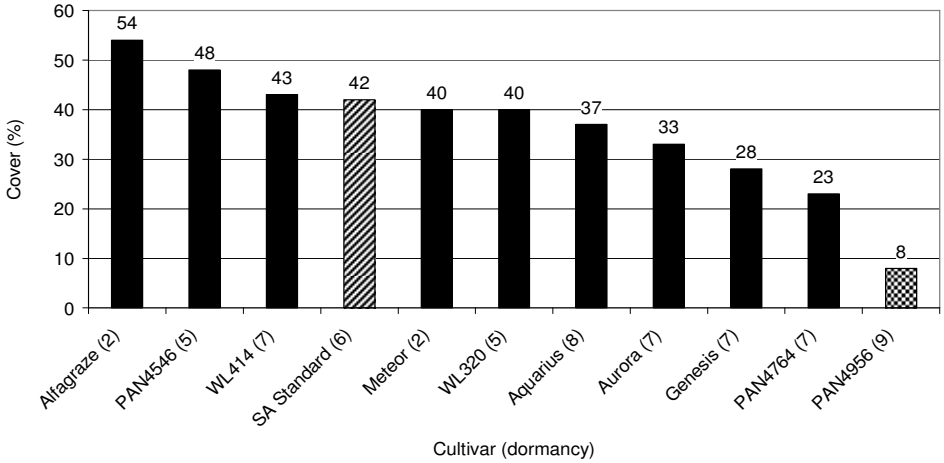

Figure 2. Percentage lucerne cover for 11 cultivars in Trial 1 from 2002 to 2006 under dryland at Roodebloem, Caledon at the end of the trial in 2006

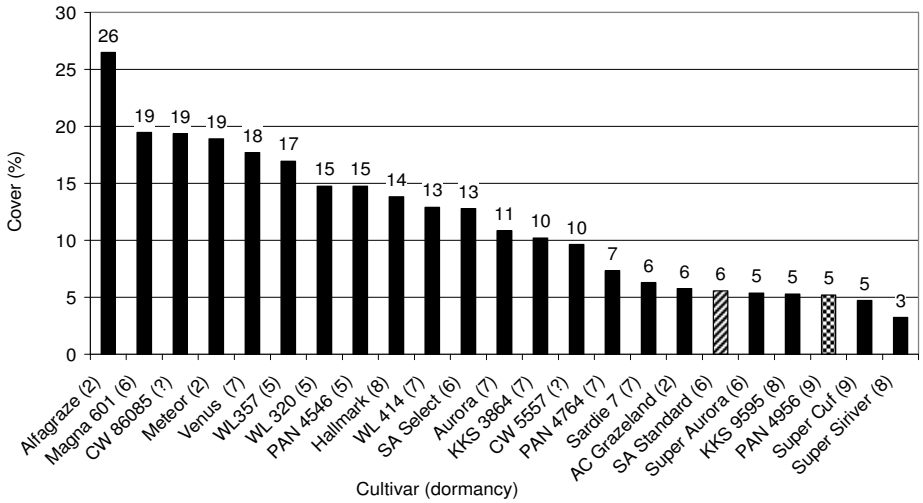

Figure 3. The lucerne cover of 23 lucerne cultivars in Trial 2 at Roodebloem, Caledon at the end of the trial in 2009

Wheat Fields in the Overberg—Taken by Winfried Bruenken - Wikimedia Commons

Presentation Skills

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Whether you are a student or an experienced researcher, giving seminars and other oral presentations to a variety of audiences is an important and integral part of your activities. While giving presentations can be very daunting, a good understanding of how to do them effectively, preparation and experience all help to make the experience less terrifying and more rewarding. A seminar or conference talk may reach more people, and in a more immediate and accessible manner, than a research paper and often helps "put you on the map" as a young researcher.

Why are seminars important?

Being able to communicate effectively – getting your message across, making an impression, and keeping your audience interested – is a skill that will serve you well in life, whatever career you are embarking on or established in – starting with those inevitable job interviews that stand between you and your future career if you are still a student.

If you read job adverts (for the sorts of jobs you would be interested in after doing a BSc, Honours or even higher degree.

What makes a good seminar?

From your own experience of giving seminars and watching other people give seminars (and lectures), try to think about:

- What sets a really good seminar apart from an ordinary one?
- What are the worst kinds of things you can think of that can spoil a seminar?
- What main pieces of advice would you give a friend who has to give a seminar?

Different kinds of seminars require different approaches

Some general principles apply to all types of oral presentations, but different types of seminars (proposal, research, paper presentation) and lectures (to different audiences) require a different approach to timing, detail, emphasis and style.

For example, you will spend more time explaining background and methods in a proposal seminar, while a research seminar emphasizes the results and discussion (though it is very important that you explain the necessary background and explain and substantiate your research questions and hypotheses in both). A 45-minute lecture to undergraduate students requires a totally different pace, level of detail and audience interaction than a 15-minute research seminar.

I discovered this first-hand when I started lecturing – my first lectures were delivered at what to my second year students seemed breakneck pace, making it hard to follow, understand and take notes. Once I had adjusted and my lectures proceeded at a more appropriate pace (with time to ask students questions and discuss their answers to make sure they understood the concepts and ideas) I had trouble sticking to time when giving a conference presentation – the "5 minutes to go" sign flashed up while I was still trying to make sure the audience all really understood the background to the research!

How does the seminar fit into the research process?

Often, students (and many more mature scientists) simply view a seminar as an "add-on" – i.e. when the research (or the proposal) is done, analysed and written up, the seminar is prepared afterwards to present the research to an audience.

This is OK (especially if you find it easier to write a paper first and develop a presentation later – not everyone does) but doing it this way you miss out on a chance to use preparing the seminar as a way to tease out the main findings and conclusions of your research and to improve the "telling of your story" in your write-up. In preparing your seminar, whether it is for a proposal or a final research presentation, time is limited and your audience has a limited attention span – so you need to distil out the most important message. This entails really focusing on:

- What's the main question the research is trying to answer? Why does it need answering? (Introduction)

- What evidence is required to answer the question (Methods, research approach?)
- What evidence do you have to answer the question (Results?)
- What's the answer to the question? (Discussion and conclusions).

In both your written work and seminars, being able to cohesively tell the story – question, background, what you did, what you found and hence what the answer is – is really important. In written work it is, however, quite easy to get sidetracked, to ramble, and generally to lose focus. The same is true for a seminar, but when the seminar is presented it is much more obvious whether a story hangs together well or not. How good your story (and hence your seminar) is ultimately depends on the quality of your research project. A project without a clear hypothesis, or that lacks a central focus and instead combines various bits of descriptive data, will never make a fascinating seminar.

The process of developing your seminar – trying to tell the story in a way that engages your audience – can therefore help you at the proposal stage to identify whether your project "works" or whether you should think more carefully about your research questions and how you will answer them to develop an exciting piece of research.

The bottom line is that it is worth working on a seminar at the same time (or even before) writing up the paper. It can really help tease out the main story, the logical sequence of ideas and thus provide the skeleton on which your write-up builds. This is partly the reason you are generally asked to give seminars a few days before the hand-in is due. The other part is that a seminar is a great way to elicit feedback from colleagues and gives you a chance to address this feedback.

Some tips for preparing your seminar

Below is a list of tips for preparing seminars. It is based on years of watching conference talks, student seminars and often being required to assess them.

Designing the seminar:

It is often useful to 'work backwards' and start with your main findings.

What key results did your research come up with, and what conclusions do these lead you to? Then work backwards to ensure the methods you present are those that you used to obtain the results shown in your presentation (not more, not less), and finally the introduction which sets the scene to posing the research questions that your findings answer.

Give yourself enough time to prepare.

This sounds obvious, but now that Power Point makes it very easy to do presentations last-minute it is very tempting to leave it too late.

(at university, I've seen some students still sit in the computer lab an hour before seminars start – and I've known people at conferences who spend half the night in their room preparing the next morning's presentation. Sound familiar?). You will need time to design your talk, prepare your slides, go over and edit and rehearse your seminar (and do more edits after rehearsing it showed you what didn't work). Aim to be completely done (and having rehearsed and edited it to your satisfaction) at least the night before. This WILL translate into a better presentation (and, if you are a student, better marks) – with better content and flow, better slides (with no sloppy errors), confident and flowing presentation and ability to answer questions with confidence.

Make sure your seminar fits comfortably into the allocated time slot.

This means that you can present the seminar at a suitable pace, without rushing, in the allocated time. The only way to be really sure of this is to rehearse it, silly as you may feel while doing it. You will most probably find that actually talking through your seminar takes longer than doing it "in your head". While preparing the seminar, a useful guideline is to aim for one slide per minute (your title and "any questions" slides can be in addition as they don't really take up speaking time). This may seem like very few slides and you may struggle to fit your whole story into so few slides, but the truth is that you will need on average a minute per slide (assuming that each slide doesn't correspond to one sentence, spelled put on the slide, which is a bad way of going about it – see "visual aids" below).

Fitting your story into a small number of slides will also help (or should I say force) you to strip out the main story and be selective about the detail to include. If you do this well, your seminar will work really well and come across as focused and cohesive. The way NOT to do it is to decide, after 10 introductory slides, that you only have five left and to cram the rest of your presentation into a few last ones. Start by making the seminar as long as you initially think it needs to be to tell your whole story, then go over it again and again and progressively strip out the details that aren't essential.

Don't try to cram in too much information

An audience listening to a seminar can only take in a few main points. If you overload the presentation with facts, results and lengthy recommendations they will lose the thread and become distracted. Remember your seminar should be the "cherries" and not everything included in your report or paper needs to be in your seminar. Focus on your most exciting results and feel free to leave out the experiments that yielded no interesting results (or mention them briefly without going into detail). But having said that, bear in mind that negative results from a well-designed study (e.g. finding no difference in species richness between a heavily grazed and ungrazed area) are valid results and worth reporting – and often the unexpected results that contradicted your predictions can be quite exciting, pointing to the fact that your study system works differently than expected, prompting exciting new hypotheses that will need to be tested.

Good structure makes a good seminar.

Typically this follows the sequence of background – research question and/or hypothesis – methods – results – discussion (though it may be different for other types of seminars, such as paper presentations). But this generally very useful and sensible sequence may be adapted, for example if your study consisted of two quite distinct components. In such a case, you may want to introduce the study overall, then present each component separately in its entirety (i.e. methods, results, discussion for the first component and then for the second) followed by a conclusion which ties them both together. This is a good way of keeping the audience on top of things – make sure it is easy to follow the thread and you will have a more attentive audience.

Follow a logical structure but avoid being too formulaic

Structure is there to help the audience follow your talk, not to make your talk look and sound as if it is being delivered by a robot. You don't need to head your slides "introduction", "methods" etc. if there is another (perhaps more informative) way of labelling each slide which nevertheless allows the audience to easily follow what's going on. Similarly, it can be useful to give an outline of your talk early on (especially if the sequence is unusual, it helps the audience know what to expect). But if your seminar follows the standard sequence (introduction, methods, results, and discussion) it's not worth bothering.

A good seminar needs good science.

I made this point earlier and it is true – no amount of good presentation skills can save a seminar that reports on badly executed research, where the data collected are not suitable for answering the research question, or where clear research questions are lacking in the first place. Thinking about communicating your work form an early stage can help you spot weaknesses in your research project and prompt you to address them early on so your project gets off to the best possible start.

Your audience wants evidence!

Whether you present your research findings or your proposal, you will convince the audience only if you can substantiate them with evidence – your own data, the literature, and good argument.

Unless you have a particular reason, don't state null hypotheses in your introduction.

The null hypothesis is something that a statistical test compares your data against and which is rejected if $p < 0.05$. This is a statistical technicality (which you need to understand) but the null hypothesis is not normally of interest in a seminar. In your introduction, state the hypothesis that you are testing (i.e. what you think is going on). This is usually the alternative hypothesis (i.e. that there is a significant difference between treatments, or a significant correlation between two variables), but it can be the null hypothesis (e.g. if you are expecting that a rehabilitated area does not differ in species richness from an undisturbed area).

In your methods, under data analysis, you can then go into a bit more of the statistical detail (e.g. "I will compare species richness the rehabilitated and undisturbed areas using Student's t-test. If rehabilitation was a complete success the null hypothesis will not be rejected, as rejecting the null hypothesis – i.e. a significant difference between the two sites – implies that species richness remains different"). This level of detail is appropriate in a proposal seminar. In a final seminar or conference talk you'll have to see how much methodological detail is appropriate and you have time to include.

"No amount of good presentation skills can save a seminar that reports on badly executed research..."

Visual Aids:

The role of your visual aids is to guide you and your audience through the talk and illustrate what you cannot say in words – not to present the words of your talk.

Your seminar is essentially an oral presentation. Your audience should be listening to you and spend more time looking at you than at the screen. Don't let your slides deviate your audience from listening to you speak. A common scenario where this happens is when the slides essentially contain the text that you speak. The audience ends up reading the text (often ahead of what you are saying) and they end up not listening to you.

The same happens when your figures or tables contain too much information – audience members end up getting sucked into trying to decipher the data and they stop listening to you. Keep the text in your slides as brief as possible, so that the audience listens to you speak. Slides should also contain images that illustrate your study species, study area and your data.

Hit the right balance between boring and overkill.

In general, scientific audiences value simplicity and clarity over fancy fonts, colours and graphics. This doesn't have to mean black Times New Roman font on a white background – you can keep things simple and elegant and still give the presentation a nice "look". On the other hand, limit your use of images to those that are informative and suit a scientific presentation rather than overdoing the clip-art or pretty pictures. You may want to use some of the animation features power point comes with – but make sure they work as intended (rehearse on the computer you will be doing your presentation on) and don't overdo it. Too many bouncing letters are a real turn-off for a scientific audience and detract from your content.

Individualise your presentation style.

Many people like me who sit through dozens of Power Point presentations at a time (whether at a conference or series of student seminars) suffer from Power Point fatigue. Although there are zillions of ways you can style your presentation, somehow the Power Point templates end up looking generic and lame. In my opinion they are also more aimed at a business crowd than scientists and often the styles seem inappropriate for scientific seminars. They are, of course, convenient and you are welcome to use them, but consider creating your own look using simple fonts, a colour scheme of your choice and pictures that you arrange to make a template for your slides. Pictures of your study area along one side of the slide, for example, are more meaningful than fake dew drops or some other Microsoft clip-art.

Choose fonts and colours that'll work for your audience.

This means they have to be easily legible and suit a scientific presentation style-wise. Choose a font that reads easily and looks good (it is safer to stick with more "standard" fonts that different versions of Power Point can read, or you may end up with a nasty surprise when you open your presentation on a different computer). Check if you have access to the computer where you will do your presentation. Check your font size is easily legible from the back (but it doesn't have to be enormous and fill the whole screen). The same goes for colour schemes – they often look very different when projected, and sometimes surprisingly bad! (I had a lovely orange background in my first lecture course, until a student came and literally begged me to change to something less bilious). A useful general guideline when choosing font and background colours are to go for contrast – dark font on a light background and vice versa.

A surprising number of people are colour blind and struggle to tell red from green and some other colours that are similar in tone.

Pictures as backgrounds can work really well but use them carefully.

You can set up the background of your slides to consist of a picture (e.g. a picture of your study area). This is a nice way to individualise your presentation and set the theme for your talk, but you need to remember a few basics. Text on top of a picture is harder to read than on a plain background, especially if the picture has lots of contrast so that neither light nor dark text works on all parts of the picture. There are several ways of getting around this. The easiest is to choose a picture that has a large area of plain colour (e.g. sky or grass) so that you can position the text on top of that and leave other parts of the image as a "frame". You can also use a "busier" picture but reduce the contrast to give it a more faded look that will make the picture look more like a background. You can also fill your text boxes and set the fill to be semi-transparent – that way one can see the picture but the text is more clearly legible. Finally, experiment with the text colour to maximise the contrast. This is easiest if your picture is either quite dark (and you use light text) or fairly light (with dark text).

Check your spelling, grammar and punctuation!

This includes consistent and correct use of capital vs. lower case letters, use of full stops and commas, and sentence structure. You will most likely use point form but even so there should be no grammatical errors. Go over your seminar carefully – better still, get a friend or colleague to help and help them in turn as it is easy to miss your own errors when you've been staring at the same slides for days.

How to include references?

One of the things your audience look for is evidence that your seminar (especially proposals and general seminars if you are a student) draw on a suitable, up-to-date selection of relevant literature. This means you need to show that you have consulted the literature as you do your presentation. Many students include a slide with a reference list at the end. This is really pointless – no-one will be able to read it as it flashes up for a second at the end and contains way too much information. You should include reference to key literature (without including unnecessarily long lists) in your slides so people can follow your literature trail as you go. A good idea is to use a smaller (but still legible) font for your citations so they don't break up the flow of the slides too much.

I've seen people include a short citation (i.e. author, date, journal, volume and page numbers) at the bottom of the slide. This can be very useful if audience members are interested enough in the topic that they'll want to look up some of the literature and can thus make a note of the reference as they watch your seminar (ideally they should, especially in the case of conference presentations).

Don't forget a good title!

Making an impression is crucial when giving a seminar, and your title is the first thing people see of your presentation, often days before you are giving it if a programme is circulated. If you are presenting a departmental seminar or at a conference, your title will often determine whether or not someone comes to your talk, based on whether they expect to see a talk that will interest them. It is therefore important that your title is informative. It should represent accurately what the research is about and possibly hint at key findings. It should be brief enough so people can "digest" it (and so the person introducing your talk can say it without running out of breath), but contain enough information so the audience (and the person introducing your talk!) gets a good idea of what the talk is about. Catchy and even witty titles often work well (if people think the title is clever, they are more likely to expect a talk that is well thought through and entertaining), but only if the wit or humour doesn't come at the expense of giving a clear impression of what the talk is about.

Presentation style:

Good audience contact is vital.

There's nothing so quick to lose the interest of your audience than a speaker who stands and reads their notes or the slides. The audience may as well read the seminar themselves. Speak freely, engage with your audience, look people in the eye (you can find the ones that are least scary and stick to those).

Needless to say, you will only be able to do this if you know your topic and your seminar well. Having a seminar with a good structure and logical flow will also make this easier. So remember to rehearse!

Deliver the seminar at a suitable pace.

Don't rush (you'll lose your audience) but also don't dawdle or repeat yourself unnecessarily. Again, the key to achieving this is practice.

Aim for a suitable, professional tone.

Engaging with your audience does not mean you should be too informal. A scientific seminar should be delivered in appropriate language and style – no slang, but you also don't have to be too stuffy. Also avoid sounding too much like a salesman or consultant trying to push the importance of their contribution to the greater world. You should of course take care to make the relevance and applicability of your research clear, but blowing your trumpet too hard can turn the audience off – especially if your claims exceed what your data support!

Humour can work, but don't overdo it.

Starting or concluding the seminar with a witty opening line can work, but beware of longwinded jokes, humour that can be offensive to members of the audience, or that many members of the audience won't get. Making members of your audience feel left out is never a good idea, nor is trying too hard and having your attempt at humour flop miserably.

Conclude your seminar with a bang, not a whimper.

Your seminar must end with a clear conclusion and not just peter out or end abruptly, with the audience waiting for the next slide, only to be confronted with a blank screen and "any questions?". As you deliver your last slide, your audience should be in no doubt that this is it, and feel satisfied that the questions you raised in your introduction have been answered. As you get onto the last couple of slides, signal that you are wrapping up (especially if you are nearly out of time, you don't want people to start fidgeting as they think there's no end in sight).

This will help people focus on your final conclusions, even if they've drifted off a bit, and they'll at least take home your main message. Of course, you also need to end with some clear conclusions for them to take away! Avoid lengthy conclusions that repeat and summarise your discussion. A nice way to conclude is to revisit your original research question(s) and answer it.

It is good practice to briefly acknowledge those who funded, supervised and otherwise supported the research (without turning this into a lengthy Oscar-style acceptance speech), and then put up a final slide (maybe with some attractive relevant pictures – or even something humorous like a well-chosen cartoon) which stays up while you thank the audience for their attention and answer questions.

Question time:

You've prepared your seminar, but are you prepared for question time?

If you have done a good job of preparing your seminar you should be ready for questions. You obviously need to know your research (and the related literature) well. Rehearsing with friends or colleagues and getting them to think of questions can be useful. Also, you know your topic, and looking critically at your seminar, perhaps you can anticipate some questions that are likely to arise from certain quarters. Or you may have left out an aspect of your research to keep the seminar concise – then be ready to elaborate on this in question time so be sure you know the whole of your material, not just what's in the seminar. Give this some explicit thought while you prepare and you'll be in a better position to handle questions.

Listen carefully and keep your answers to the point.

This is easier said and done when you still have the shakes and are feeling on the spot. Part of your psyching up for the seminar should be preparing to stay calm during question time. Listen carefully to the question, asking for clarification if necessary. You may also want to paraphrase the question before you answer it (for your benefit and that of the audience), especially if the question was not very audible or ended up rather rambling and complicated.

The first step to answering a question well is to be sure what is being asked to avoid going off on the wrong tangent. Asking for clarification and rephrasing the question can also buy you a bit of time. Then make sure your answer focuses on the question. Long, rambling answers that don't directly answer the question make a bad impression, notably that you don't really know your stuff. Also, answering more than what was asked runs the risk of giving a wrong answer to something that wasn't even asked.

Use the feedback from question-time.

You may feel as if you've simply been hauled over the coals, but when people at question times identify weaknesses in your research design or arguments (or simply identify something you failed to communicate clearly enough), take note – and use it to improve your report or paper. That means when you sit back down, make notes immediately. Then you can sit back and start dreaming of that hard-earned beer (or some tough questions for the next speaker).

"A Seminar is a Great Way to Elicit Feedback from Colleagues and Gives you a Chance to Address this Feedback."

Dry Matter Production of Grazed Lucerne Cultivars under Dryland in the Overberg

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Pastures in the Rûens area of the Western Cape are mainly legume based, with lucerne the most important and productive pasture legume. 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 (Acyrthosiphon kondoi) and the even more destructive spotted aphid (Therioaphis trifolii), resulted in intensified efforts to introduce more aphid resistant cultivars and to test them country wide. Due to the continuous input of new commercial cultivars in South Africa for both hay and grazing purposes, the evaluation of new cultivars is an ongoing process. Two trials were conducted consecutively over an eight year period and involved the evaluation of two sets of lucerne cultivars for yield in the Overberg under local grazing conditions.

In Trial 1 eleven lucerne cultivars were evaluated (Figure 2) and in Trial 2 twenty three cultivars/lines (Figure 3). The cultivars were compared to SA Standard under dryland conditions and heavy continuous grazing with Merino sheep at the Roodebloem experiment farm of Overberg Agri in the Caledon district of the Overberg. Trial 1 was conducted from 2001/2002 to 2005/2006 and Trial 2 from 2005/2006 to 2008/2009.

The cultivars, which were evaluated, varied in winter dormancy (Figures 2 and 3). PAN 4956, which is a class nine and hay only cultivar and very sensitive for grazing, was included as one of the controls in both trials. PAN 4956, not recommended for grazing under these conditions, was used as a control to measure the severity of the grazing treatment. The third cultivar of special interest, SA Select, is a local cultivar and was included in Trial 2. SA Select was selected from SA Standard. The other cultivars/lines in both trials are imported and intended for grazing and/or hay production by farmers in the area.

The trials were fenced off in areas of approximately two hectares and continuously grazed at a stocking rate of 10 Merino sheep.ha-1. Grazing of the two trials started during October 2001 (Trial 1) and October 2005 (Trial 2) respectively. The sheep were removed when feed shortages occurred, but were placed back on the trials as soon as sufficient grazing was available.

Before sowing the soil of the trial sites were fertilised with P, K and lime, based on soil analyses and well cultivated. Seeds were sown shallowly at 25 kg.ha-1 in 150 mm wide rows during May of 2001 (Trial 1) and 2005 (Trial 2). All seeds were inoculated with standard commercial root nodule bacteria before sowing.

Yield was determined by cutting samples with sheep shears to ground level every six to eight weeks in- and outside round randomly placed welded galvanised wire mesh exclosure cages. The cages were moved to a new random position in a plot after each sampling. The cut samples were washed, dried to constant mass at 59oC and weighed. Yield was expressed as kg DM.ha-1.season-1 for each of four seasons (May to July, August to October, November to January and February to April). The seasonal rainfall (mm/season) at the trial site during the trial period (May 2001 to April 2009) is shown in Figure 1.

The period May to October tended to be wettest (183 + 47 mm), with the rainfall most stable. The rainfall in November to April tended to be lower (104 + 60 mm) and to vary more. Due to this and the lower temperatures, the moisture regime during the first mentioned period was generally most favorable for lucerne growth. The relative annual dry matter yield of the cultivars varied between years in both Trials 1 and 2. The average annual dry matter yield of the eleven cultivars evaluated in Trial 1 during five years (2001/2002 to 2005/2006) is shown in Figure 2.

SA Standard was out yielded by most of the other cultivars. WL320, WL414, PAN4546, Alfagraze and Aquarius were on average the highest yielding. The annual dry matter yield of the twenty three cultivars/lines which were evaluated in Trial 2 during four years (2005/2006 to 2008/2009) is shown in Figure 3.

The average production of five of the cultivars/lines WL 414, KKS 3864, Magna 601, Venus, PAN 4764, and SA Select were on average the highest yielding. SA Standard was once again very low yielding. In contrast to the Trial 1, PAN4546 and WL320 did poorly. This difference in results is difficult to explain, but may be attributed to the poor stands in Trial 2 due to water logging.

The average annual dry matter yield of the cultivars was higher in Trial 1 than in Trial 2. This may be attributed to the poorer lucerne stands in Trial 2 than in Trial 1. In both trials the annual yield declined significantly in the final year. This can also be attributed to the sharp decline in lucerne stands during the last season of each trial. The dry matter yield of the cultivars was not influenced by winter activity and probably more related to the level of persistence.

In conclusion, it is clear that the cultivars SA Select, WL414 and Magna 601 should be recommended for use under dryland in the area.

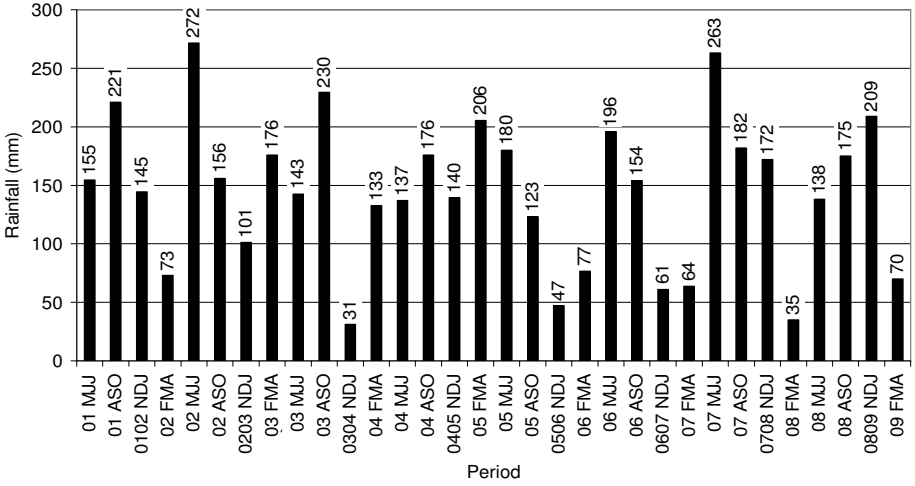

Figure 1. Seasonal rainfall (mm) at Roodebloem between April to July (MJJ) 2001 and February to April (FMA) 2009

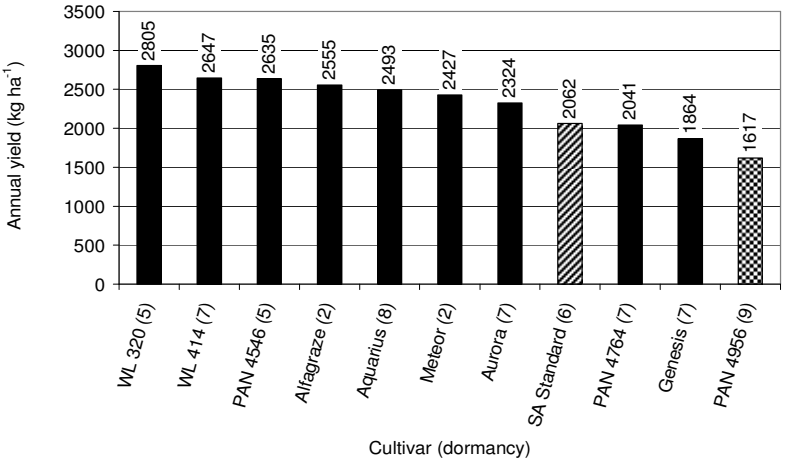

Figure 2. Average annual production of 11 lucerne cultivras at Roodebloem, Caledon from 2001 to 2006.

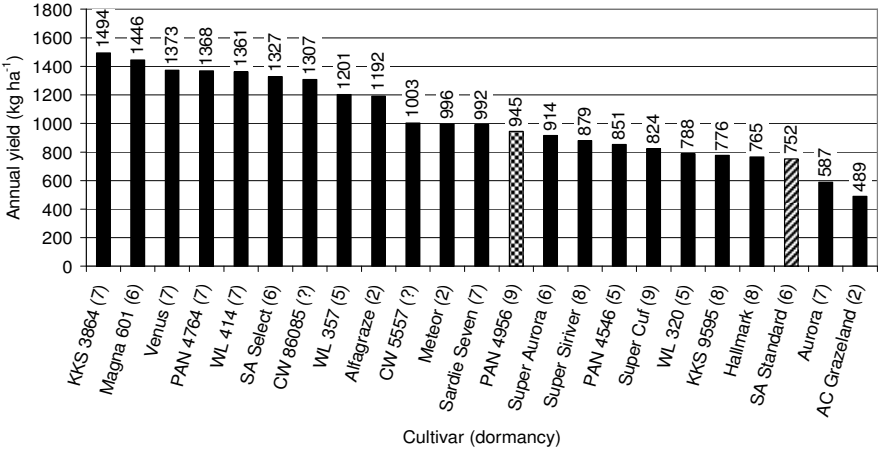

Figure 3. Average annual yield of 23 lucerne cultivars at Roodebloem, Caledon from 2005 to 2009

The Overberg—Taken by Winfried Bruenken - Wikimedia Commons

Special Session GSSA 2011 Middelburg, Eastern Cape

Communal Rangelands and Policy Workshop: Aligning the Realities of Livestock Keepers with Government Priorities

Monique Salomon, Susi Vetter, Igshaan Samuels, & Kedibone Chueu

Introduction

This report describes the process and results of a stakeholder workshop titled Communal rangelands and policy: Aligning the realities of livestock keepers with government priorities. The workshop was a follow up on an expert workshop held in March 2010 Mainstreaming new paradigms in communal rangelands: How can we influence policy in South Africa? At the workshop in 2010, researchers presented key findings from research on communal rangeland management in different localities in South Africa.

Participants made practical suggestions to improve the draft Range and Forage policy. They expressed the need for a platform to facilitate knowledge-to-policy processes, and proposed to write a position paper to articulate new paradigms in communal rangeland. It was agreed that an annual gathering would be desired to continue discussions and follow up on actions. Such gathering could best be convened during the Annual Congress of the Grassland Society of Southern Africa which is the main forum for researchers, policy makers, and development workers

Objectives were to:

- Provide a platform for researchers, policy makers, and development workers to dialogue on issues emerging from research and development practice in communal rangeland management in South Africa

- Discuss key components for a draft position paper on new paradigms in communal rangeland management

- Input into the draft Range and Forage Policy

Results:

Objective 1: Provide a platform for researchers, policy makers, and development workers to dialogue on issues emerging from research and development practice in communal rangeland management in South Africa

Igshaan Samuels and Monique Salomon presented research with sheperds in the Northern Cape and cattle keepers in the uKhahlamba Drakensberg mountains respectively.

- They identified the following key issues to be addressed in communal rangelands policy.

- There are too many pieces of legislation which confuse land users on access rights and land Administrators.

- Land users do not understand livestock management system introduced by the Department of Agriculture on new commonage. Department staff regards people's traditional management system and farming objectives as backward and unproductive;

- Land use rights are unclear and conflicting because municipality does not understand their own regulations and others manipulate this uncertainty.

- There are many variations in which people look after livestock. Livestock keeping in a communal context is essentially a social practice and not merely an economic venture;

- Our research and that of others challenge commonly held beliefs and assumptions underpinning Government policies and programmes in rangeland management;

- Livestock keeping practices are affected by ecological, economic and socio political factors at macro (global and national) and micro (local) level.

Alan Short shared his experiences in managing the National Rangeland Monitoring and Improvement Programme. The NRMI Programme focused on collaboration and working with local expertis. Programme support was provided by 16 intern technicians across 300 survey sites with a mix of farming types – but predominantly Moist Grasslands and Savanna Biomes-, and reporting to land user groups.

Lessons Learned:

- Stakeholder engagement

- Set targets

- Capacity building must be continuous (field work, data management, research methods etc.

- "Hierarchical" approach (regions/ biomes/veldtype; multiple sites on farms/ communal areas)

- Technology: Trimble GPS to capture data on site with accurate location (digital camera,

- Cybertracker or other software, GIS & Remote Sensing)

- Need for GIS and database programming and management expertise

- Land users' involvement is critical (simple scoring techniques, direct benefit, short term monitoring of fodder flow)

- Arid areas underrepresented, involve new generation rangeland scientists

Objective 2: Discuss key components for a draft position paper on new paradigms in communal rangeland management Susi Vetter presented the scope of and key issues that needed to be addressed in a position paper.

What are the aims of veld & forage policy (in communal rangelands and land reform areas)?

- Greater contribution of livestock to rural livelihoods

- Better resource management.

Who are we dealing with?

- What groups/types of farmers farming systems does the policy recognise?
- Can we identify distinct groups with different potential/needs
- Consider present situation and future land reform scenarios.
- Move beyond "communal" vs. "commercial".

What vision etc. does the current range & forage policy has for communal farmers of different types?

- How does this align with what is currently happening in communal rangelands, and the aspirations and constraints of communal and emerging commercial farmers

- What economic models underpin agricultural policy, and are these realistic given the actual situation in communal areas and land reform projects?

What do we know about the status quo of communal rangelands (objectives, practices, outputs, constraints, socio-economic context, institutions)

- What are the implications of these for agricultural policy?

- Examples are small mixed herds, little real "subsistence" or "commercial" farming (but e.g. wool), multiple livelihoods.

- What is the scope for successful interventions and what policy should be in place to support these?

- Are these similar across agro-ecological zones?

What science is currently underpinning R&F policy

- Current draft leans largely on rangeland science. Is this appropriate?
- What ecological and economic models should be underpinning range & forage policy?

- What models have clearly failed and should be discarded (at least in particular contexts)?

Draft Range and Forage policy emphasizes "stability" and "efficiency"

- Does/should the policy rather focus on ecological resilience and adaptive capacity of communal farmers? e.g. to drought, climate change, economic shocks?

What is the ecological state of communal rangelands?

- Are they all degraded and in need of stock reduction or other forms of improved management?
- Are there particular habitats/ landforms/ areas/ biomes/ vegetation types that are in greater need of ecological improvement and are there others where improved veld management is less of a priority
- Are some more resilient to heavy grazing than others?
- Can we generalise in a way that is useful for policy and that helps focus resources on areas where investment is needed most?
- What data are we missing but necessary for effective policy formulation and implementation?

These could include data on:

- Livestock (e.g. numbers at different scales down to the household level, herd composition, transactions such as sales, slaughter, animal health)

- Veld (e.g. condition and whether/how it is changing over time)

- How these differ between land use types

- Should the range & forage policy address these data needs, and if so, how?

What is needed in communal rangelands but not addressed in policy?
e.g. more mobility, access to key resources, support for diversification of rural livelihoods

- integration with other policies affecting livelihoods

- farmer typologies as descriptions of farming practices with different objectives, needs,constraints

- integration of socio-economic aspects rather than simply focus on ecology

- No "one size fits all"?

- Policy needs to provide for plurality in ecological and economic models appropriate to different contexts
Which are applicable under what circumstances?

Can we generalise, make any recommendations to guide policy?

Way forward for policy development:

- Land users and NGOs to be involved
Informed by peoples objectives, practices, and constraints

- Complex socio-economic context in land reform and communal areas

- Coordinate aims and strategies with other Departments

- It was argued that the strict distinction between "communal farmers" and "commercial farmers" is artificial and does not do justice to many facets and complex realities of farmers. Alternative concepts are needed instead.

Objective 3: Input into the draft Range and Forage Policy

Kedibone Chueu gave an update on the current status of the draft Range and Forage Policy. She highlighted that the condition of rangelands has been a concern since the early 1900s. A National Grazing Strategy was outlined in 1985. In 2003 the draft Range and Forage Policy was drafted, and reworked in 2006-2007, and renamed Draft policy for the sustainable management of veld (range) and forage resources in South Africa.

Objectives of the Draft Policy are:

- To provide a framework and guidelines that promote and facilitate the sustainable use of South Africa's veld and forage resources for animal production
- To provide a framework and guidelines for effective veld monitoring, and veld and forage improvement initiatives with the capacity to support compliance to the relevant legislation/regulations regarding the sustainable use of these resources
- To provide guidance and motivation for the amendment of legislation on the sustainable management of veld and forage resources, as well as more effective and consistent regulation thereof.

To support and facilitate the revival of existing biome-linked research and technology development structures across provincial boundaries.

The action plan from the policy included the establishment of the National Rangeland Monitoring and Improvement Programme (NRMIP). The programme was instituted in 2006 and had been designed to meet critical national issues such as:

- Rangeland Management Technical Capacity Building - to ensure that suitably qualified graduate are trained and deployed to all the biomes/production areas to provide technical support for the roll-out of NRMIP;

- National Rangeland Monitoring System Development - to ensure efficient animal production within the constraints of the natural resource.

What science seeks?

What opportunities exist to integrate different components of rangeland management, biodiversity & farmer land & water management practices to increase productivity & livelihood benefits of livestock production systems, while enhancing ecosystem health?

Critical need:

- To translate Research into Policy that will influence Practical Decisions on the ground

- Improve linkages between Development - Transfer- Adoption

Way forward

Participants were asked to indicate their involvement in the position paper as co-author or reviewer. 5 participants offered to be co-author, while 15 indicated to want to review and comment. Susi Vetter and the organizing team would take the lead in drafting the position paper and circulate a first draft for input. Participants expressed satisfaction with the session. A government official said that although he had worked for many years in rangeland management he learnt some new things.

It was proposed that a special session on communal rangelands would be repeated at the 2012 Annual Grasslands Congress.

Aligning policy with the socio-ecological dynamics of rangeland commons

This workshop provides a platform for researchers, policy makers, and development workers to dialogue on issues emerging from policy and practice in communal rangeland management in South Africa.

A position paper will be presented on issues and challenges, emerging from more than ten years of research in communal rangelands in South Africa, to be considered in the draft Policy for the Sustainable Management of Veld (Range) and Forage Resources as well as other relevant policies.

Invited speakers are asked to respond supporting or challenging a particular idea or issue presented in the position paper. Issues include the multiple use of rangelands; farmers and rangeland users as a heterogeneous group; rethinking fencing and herding; institutions and governance; farmer innovation in rangeland management; involving youth in agriculture; livestock in land and agrarian reform; complex systems and ecosystem-services approaches to rangeland management.

The workshop will culminate in a special issue of the African Journal of Range and Forage Science.

Main Factors Determining the Dry Matter Production of Dryland Lucerne

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Pastures in the Overberg area of the Western Cape are mainly legume based. Lucerne has a dual role in the Overberg and serves not only as a pasture, but also as a rotation crop for grain (barley and wheat) production. Lucerne is usually planted after five cropping years and then grazed, mainly with sheep, for five years or longer. Frequent cropping prohibits the division of land into small paddocks and the lucerne pastures are, therefore, often submitted to continuous heavy grazing. Grazing resistant and persistent lucerne cultivars must therefore be identified for this region in grazed trials using Merino type sheep, the main grazing animal in this area.

Studies in Australia clearly showed that, although winter activity was positively related to yield, it was negatively related to persistence when a diverse set of natural germplasm was evaluated. Due to the continuous input of new commercial cultivars in South Africa for both hay and grazing purposes, the evaluation of new cultivars is an ongoing process. Two trials have now been concluded and will be reported. Research was conducted consecutively over eight years and involved the evaluation of two sets of lucerne cultivars for yield and persistence in the Overberg under local grazing conditions.

The data was used to determine which of the relative yield of a range of cultivars.

In Trial 1 eleven lucerne cultivars were evaluated (Table 1) and in Trial 2 twenty three cultivars/lines (Table 2). The cultivars were compared to SA Standard under dryland conditions and heavy continuous grazing with Merino sheep at the Roodebloem experiment farm of Overberg Agri in the Caledon district of the Overberg. Trial 1 was conducted from 2001/2002 to 2005/2006 and Trial 2 from 2005/2006 to 2008/2009.The cultivars, which were evaluated, varied in winter dormancy (Tables 1 and 2).

PAN 4956, which is a class nine and hay only cultivar and very sensitive for grazing, was included as one of the controls in both trials.

PAN 4956, not recommended for grazing under these conditions, was used as a control to measure the severity of the grazing treatment. The third cultivar of special interest, SA Select, is a local cultivar and was included in Trial 2. SA Select was selected from SA Standard. The other cultivars/lines in both trials are imported and intended for grazing and/or hay production by farmers in the area.

The trials were fenced off in areas of approximately two hectares and continuously grazed at a stocking rate of 10 Merino sheep.ha-1. Grazing of the two trials started during October 2001 (Trial 1) and October 2005 (Trial 2) respectively. The sheep were removed when serious feed shortages occurred, but were placed back on the trials as soon as sufficient grazing was available. The cover or stand density of each lucerne cultivar was determined at regular intervals. Yield was determined by cutting samples with sheep shears to ground level every six to eight weeks in- and outside round randomly placed welded galvanised wire mesh exclosure cages.

A relationship between lucerne cover and annual lucerne yield was developed over all the data of the two trials. The relationship between annual lucerne yield and lucerne cover (%) is shown in Figure 1

The yield in the two trials differed and the yield in Trial 1 was much higher than in Trial 2 probably mainly due to the poor and waterlogged soil of Trial 2. The important positive relationship between lucerne cover and yield in both Trials 1 and 2 respectively is obvious. Differences in the yield of the cultivars within a particular trial were clearly mainly attributable to differences in lucerne stand between the cultivars and years.

The relative lucerne cover was also related to lucerne dormancy class (Figure2).

The lower relative lucerne cover in Trial 2 than Trial 1 and the decline in lucerne cover with increased winter activity beyond class six are obvious. The lower lucerne cover in Trial 2 than Trial 1 may again be attributed to the poor site of Trial 2. Within the two sites and between the respective cultivars differences in lucerne cover were negatively related to dormancy class. Dormancy class, due to its influence on lucerne cover, is therefore the most important factor determining lucerne yield (Figure 1) at a particular site. The influence of trial site and trial age on the average yield of lucerne in Trials 1 and 2 is shown in Figure 3.

From Figure 3 it is again clear that the average lucerne yield was higher in Trial 1 than Trial 2. At both sites the lucerne yield, however, declined over time, resulting in the yield being much lower in the last than the first year. The results confirmed the impact of lucerne stand density on lucerne yield and that stand density declined with pasture age. The decline in lucerne yield, due to a decline in lucerne cover, is strongly modulated by the winter dormancy of the cultivar. More dormant cultivars displayed a more stable lucerne cover and long term yield. In both Trials 1 and 2 the persistence of the class two to six cultivars therefore tended to be highest. The persistence of class seven and eight cultivars varied, while the class nine cultivars were not persistent. Although the more dormant cultivars are slower to establish, they should generally be used in systems with longer pasture phases (>3 years). Most of the more winter active cultivars in the two trials are clearly better suited for systems with shorter pasture phases.

The more winter dormant cultivars also tended to be relatively more productive during the drier and warmer seasons, while the more winter active cultivars were more productive during the cool and moist seasons. The yield of all the cultivars was lower in Trial 2 than Trial 1, due to the poor lucerne stands in Trial 2.

In both trials the average lucerne yield declined over time, which is common to all lucerne stands and was related to the decline in lucerne stands over time. Lucerne cultivars should be able to adapt to as wide a range of sites as possible, as large variations occur in soil conditions even within a particular paddock. The results of both trials are, therefore, relevant and highly applicable.

Table 1. Eleven lucerne cultivars evaluated in Trial 1 under dryland at Roodebloem, Caledon

Cultivar	Dormancy Class
PAN4956	9
Aquarius	8
Aurora	7
Genesis	7
PAN4764	7
WL414	7
SA Standard	6
PAN4546	5
WL320	5
Alfagraze	2
Meteor	2

Table 2. Twenty three lucerne cultivars in Trial 2 evaluated under dryland at Roodebloem, Caledon

Cultivar	Dormancy Class
PAN 4956	9
Super Cuf	9
Hallmark	8
Super Siriver	8
KKS 9595	7 or 8
Venus	7
WL 414	7
Aurora	7
KKS 3864	7
PAN 4764	7
Sardie 7	7
Magna 601	6
SA Select	6
SA Standard	6
Super Aurora	6
WL357	5
WL 320	5
PAN 4546	5
Alfagraze	2
Meteor	2
AC Grazeland	2
CW 86085	?
CW 5557	?

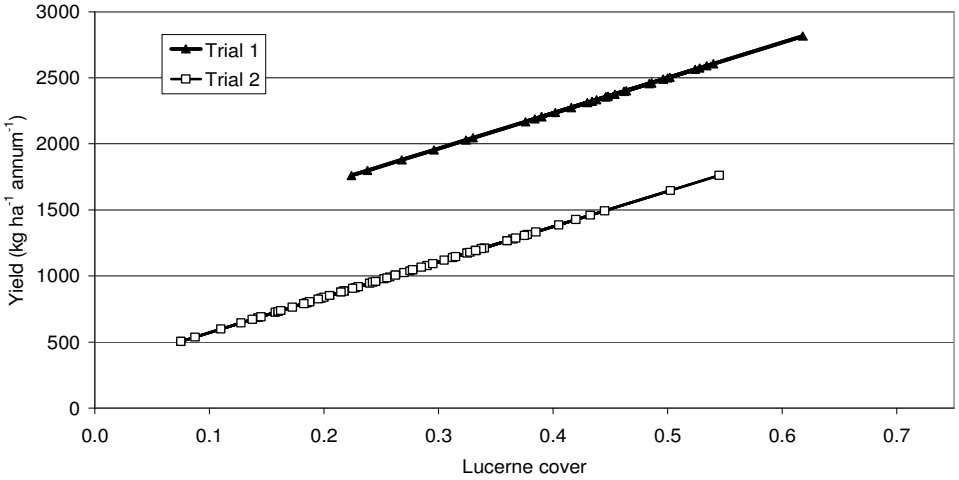

Figure 1. Influence of lucerne cover on the average annual lucerne yield in two trials.

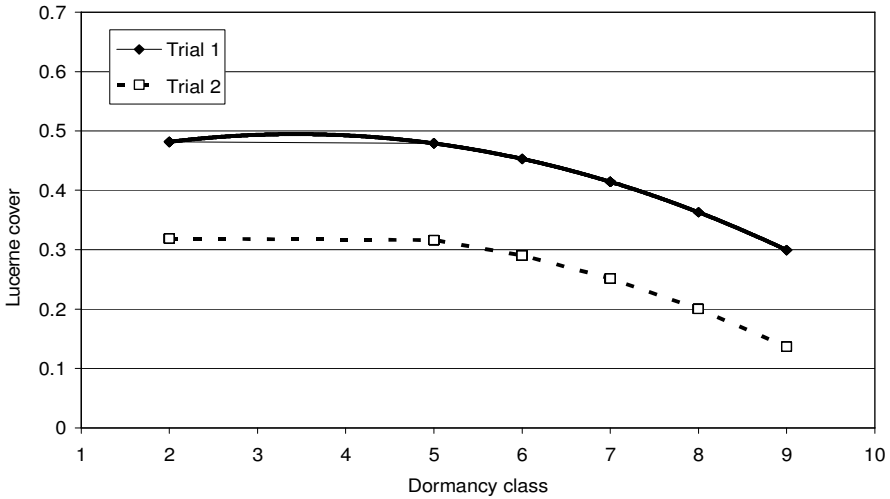

Figure 2. Influence of lucerne winter dormancy on the average lucerne cover in two trials.

Post Graduate Opportunities

TWOWS Postgraduate Training Fellowships for Women Scientists

The Third World Organization for Women in Science (TWOWS) is an international autonomous organisation based in Trieste, Italy.

TWOWS offers fellowships to support female students from Sub-Saharan Africa and Least Developed Countries (LDCs) who wish to pursue postgraduate training leading to a PhD at centres of excellence in developing countries outside their own country. The fellowship supports research projects in the following basic natural sciences: chemistry, mathematics, physics and basic biology. Experience Required The minimum qualification of applicants is an MSc degree (or equivalent) or an outstanding BSc honours degree in a field of the natural sciences. Both sandwich (part-time) and full-time fellowships are available.

Application Procedure:

Please see www.twows.org under the "Activities" tab for more information on the application procedure, eligibility criteria and to download the application form.

Contact Details TWOWS Secretariat, Third World Organization for Women in Science (TWOWS), c/o TWAS, the academy of sciences for the developing world

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11 – 34014 Trieste – Italy
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