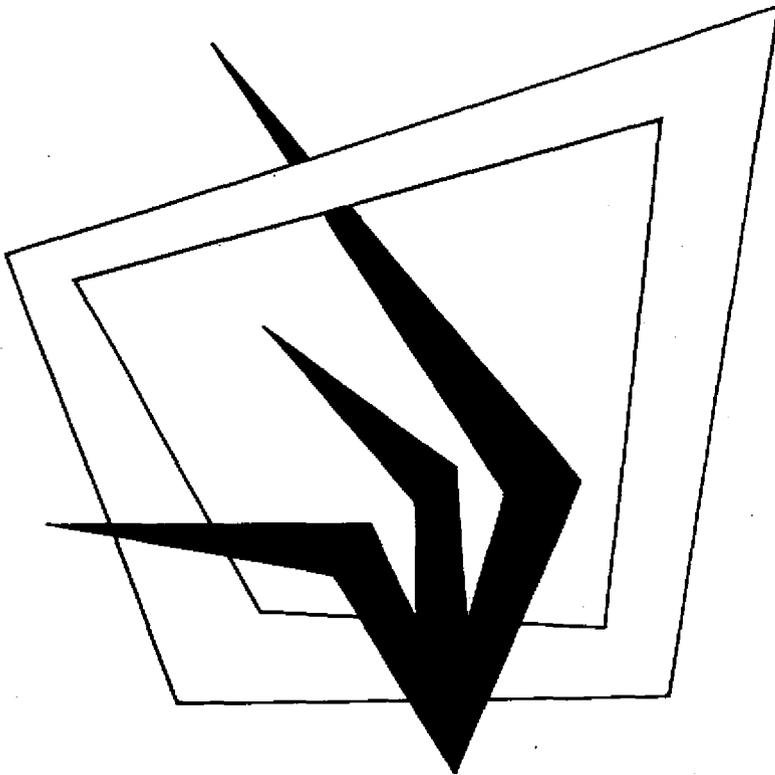


**BULLETIN OF THE  
GRASSLAND SOCIETY OF  
SOUTHERN AFRICA**



**Volume 2 (1)**

**December 1991**

*BULLETIN OF THE  
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## EDITORIAL

With the recent political changes in South Africa, greater acceptance of southern African ecologists by the world scientific community can be expected. At present, our Journal is one of the top scientific publications in this country, and with increased chances of our research being exposed to international scrutiny through the referencing and abstracting journals, competition for the publication of papers in the Journal will increase.

An issue covered in a previous number of the Bulletin concerned the publication of all articles in the Journal in the English language. This proposal (Meissner 1991) was based on the fact that many overseas libraries have been restricted by financial restrictions, and are therefore limiting the number of non-English journals that they subscribe to. It is furthermore to the advantage to southern African authors to publish in English as their research will be exposed to much wider peer review and publicity through the referencing and abstracting journals.

The Bulletin is sent to a number of overseas libraries, and academic and research institutions. It therefore plays an important role in exposing overseas readers to local ideas and trends in range ecology and pasture science. The potential also exists for researchers to advertise themselves and their work by publishing thesis abstracts and project proposals. The latter facility has not yet been used in previous numbers of the Bulletin, and could fulfil a convenient means of getting feedback on planned research from local as well as overseas colleagues.

The GSSA recently received some good publicity in the Newsletter of the Tropical Grassland Society of Australia, thanks to one of the Aussie delegates at our 1991 Congress, Richard Silcock. He gave a brief description of our last Congress, and a description of the objectives of the Society. With this sort of publicity in the newsletters of overseas societies, we can only go from strength to strength.

### REFERENCES

- Meissner, H. 1990. Tydskrif slegs in Engels. *Bulletin of the Grassland Society of southern Africa* 1(1): 12-13.

### POST SCRIPT

Due to unforeseen circumstances, we have run into trouble getting this issue of the Bulletin printed – this should not be a permanent problem as we will now be using printers in the private sector to do our printing, which will hopefully alleviate these problems in the future. We trust that members of the Grassland Society will accept this delay in good faith.

## ARTICLES

### *A SURVEY TO DETERMINE THE GRAZING VALUE OF IMPORTANT GRASS SPECIES IN SOUTH AFRICA*

#### INTRODUCTION

The determination of grazing values of different grass species is necessary as all grasses do not have the same value for grazing. By considering the grazing value of dominant grass species in a specific camp or vegetation unit, one can obtain an indication of its grazing potential. Through this, a more realistic carrying capacity can be maintained. The grazing value of grass species is, like most things in nature, subjective and difficult to determine because of the influence of a diversity of factors. In spite of the subjective nature of the data, this information can still have important management implications for the landowner. During 1990, a survey was conducted (see Procedure below) to determine the grazing value of important grass species and to identify the problems related to such a determination.

#### WHAT IS GRAZING VALUE ?

Grazing value can be defined as the genetic ability of a grass species to produce plant material suitable for grazing. It can also be perceived as the value of a grass species for utilization by grazers, especially bulk grazers such as cattle, zebra, buffalo and waterbuck. This grazing value is a non-seasonal, long-term value under normal growth conditions.

For practical purposes, grazing values of grasses can be classed into the following orders:

- \* grazing value very low;
- \* grazing value low;
- \* grazing value medium;
- \* grazing value high;
- \* grazing value very high; and
- \* grazing value variable.

The following factors have an influence on the grazing value of a grass species.

**Sward production ability** The genetic ability of a grass species to produce much or little leaf material in comparison with other grass species under the same growing conditions.

**Palatability** The general acceptance of a grass species by grazers. Palatability is influenced by factors such as nutritive value, fibre content, unacceptable chemical substances, and moisture content.

**Nutritive value** The ability of a grass species to absorb nutrients from the soil, produce carbohydrates through photosynthesis, and supply these to grazers.

**Vigour** The ability of a grass species to recover quickly after defoliation by grazing or burning.

**Digestibility** Digestibility is directly influenced by the fibre content of the leaves and stems. The higher the fibre content, the lower the digestibility, and *vice versa*.

**Habitat preference** The habitat to which a species is adapted will have a determining influence on its grazing value by influencing the above-mentioned factors such as sward production, palatability and nutritive value.

To prevent any confusion, it is important to draw a distinction between the grazing value of a particular grass species and the grazing value of the veld. The grazing value of veld is determined by the composition and grazing value of grass species in a specific camp or vegetation unit. The grazing value of veld is dynamic and changes constantly. These changes are caused mainly by the following two factors:

- \* veld management practices – the influence of good or bad veld management practices on the composition, vigour and sward production of grasses in a specific camp or vegetation unit; and
- \* rainfall fluctuations – the influence of seasonal rainfall fluctuations in an area on the sward production and species composition of grasses in the area (this influence tends to be more significant in the drier parts of the country).

## PROCEDURE

The survey was conducted by the use of questionnaires sent to all members of the Grassland Society of Southern Africa, and some agricultural specialists. Each questionnaire consisted of a short description of what was meant by the term "grazing value", and a list of 400 important South African grass species. Respondents were asked to rate the grass species on a grazing value scale from zero (i.e. grazing value very low) to nine (grazing value very high) for all grasses which they were familiar with. These values were derived by taking the factors influencing grazing value into consideration. After all questionnaires were returned (a response of 121 out of 288), each species evaluated by ten or more respondents was individually processed. The data were processed by dividing the scale (i.e. 0–9) into five grazing value classes (refer to "What is grazing value?" above). All grass species data were then divided into these grazing value classes and presented graphically.

## RESULTS

A sample of the results of the survey is presented in Figure 1 to illustrate the patterns obtained. The remainder can be obtained on request from the author at the address provided at the end of this article.

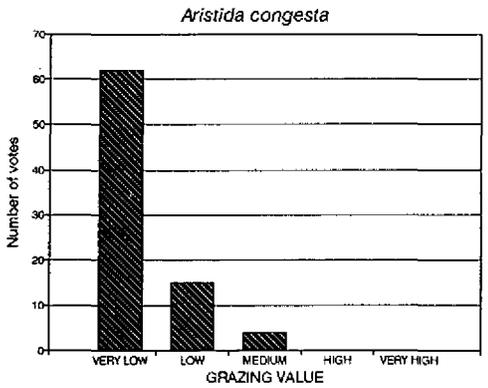
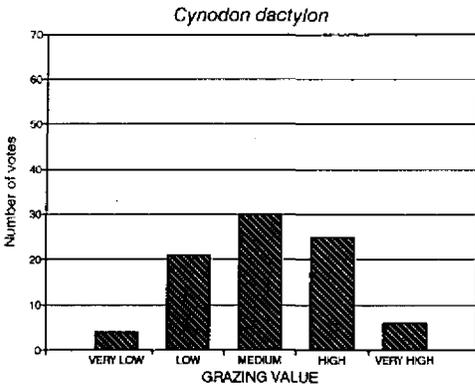
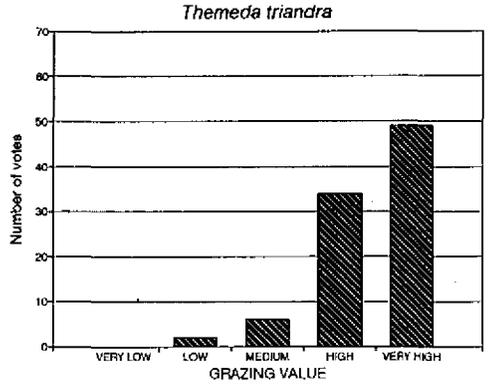
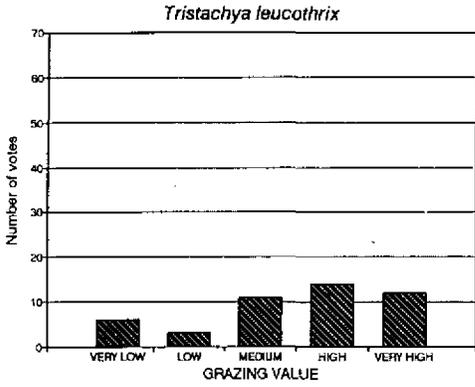


Figure 1 Subjective determination of the grazing values of four grasses

## DISCUSSION

Although the grazing value graphs of many species tend to show a definite trend, many species also show a variable grazing value. These variations can be attributed mainly to the following factors.

**Differences in environmental conditions** Variable grazing values for some species can be caused by differences in rainfall, temperature, soil, topography, etc. throughout the range of species with wide distributions.

**Genetic variation** Grazing value differences exist between subspecies, varieties, ecotypes, etc. of a single species.

**Differences in opinion between grass specialists** Differences in opinion occur between grass specialists on the grazing value of a grass species in a specific area.

**Confusion with other species** It could also happen that some respondents confused a specific species with other species, and so caused variation in the grazing value graph for that species.

Differences in environmental conditions and genetic variation are related, because genetic variation results from adaptation to different environmental conditions through natural selection. Therefore a species that is adapted to various environmental conditions (usually species with a wide distribution and much genetic variation) can have a variable grazing value. To enhance the use of this survey, it will be necessary to refine these grazing values on a regional basis.

## ACKNOWLEDGEMENTS

The authors would like to thank all contributors for their valuable time, effort and information. We believe that information such as this will make grasses more interesting, and stimulate people to learn more about different grass species to the advantage of range management and nature conservation in general.

## REFERENCES

This survey was specially conducted for publishing the results in the following publication, and all the above-mentioned information can be obtained from it.

Van Oudtshoorn F.P. 1991. *Gids tot grasse van Suid-Afrika*. Briza Publikasies, Pretoria.

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## CORRESPONDENCE

### *ESTABLISHMENT OF A SOUTHERN AFRICAN FARMING SYSTEMS RESEARCH AND EXTENSION (FSR/E) NETWORK*

A FSR/E network has been established. The network is an informal association of persons who willingly exchange ideas and disseminate information on FSR/E in southern Africa. FSR/E is a multidisciplinary approach to research conducted in real life situations with the purpose of improving the productivity of farmers by providing them with better and proven technologies. It does this by focusing on elements that farmers can control, as well as the manner in which the latter are affected by the farmer's physical, biological, social and economic environment.

By including farming households in the dynamic process of developing improved and adapted technology, FSR/E strives to meet the socio-economic needs of rural families, as well as promoting efficient and sustainable resource use. The smallholder farmer is considered an important group in this respect. FSR/E can thus contribute to balanced rural development.

The network aims to (1) promote the FSR/E concept; (2) serve as a forum for both operational and academic FSR/E specialists; (3) stimulate exchange between those interested in, and involved with, FSR/E; and (4) thereby contribute to ecologically sustainable and economically efficient agricultural and rural development.

The southern African FSR/E Network hopes to reach all FSR/E practitioners in southern Africa, inclusive of most SADCC countries. The reason for this is the firm belief that an exchange of ideas would be of mutual benefit as South Africa has a plethora of local research knowledge, "on the shelf" technology and resources, while largely lacking in understanding of small farming systems. What needs to be done is to take South African generated basic and applied research and adapt it through adaptive research station and on-farm research to the local circumstances facing smallholder farmers in developing areas. Secondly, the southern African FSR/E Network aims to improve networking between individuals, institutions and professional societies in the subcontinent. The Network publishes a FSR/E Network newsletter that currently is available free of charge to interested parties. For more information contact the writer at the address below, or on (011) 313-3138.

Ted Stilwell  
Secretary: FSR/E Network  
P.O. Box 1234, HALFWAY HOUSE 1685

### *PROPOSALS FOR METHODOLOGY HANDBOOKS*

A proposal has been received from one of our Zimbabwe members, Geof Calvert, for the publication of a handbook which provides details of approved methodology for various aspects of the discipline (e.g. vegetation surveys, grazing capacity calculations). Such a handbook would also

provide references to the relevant literature for those who wish to obtain more detail about any particular method or technique.

We invite other members to provide Council with some indication of the need for such a handbook or handbooks. Obviously, this project would require much planning and effort from expert in various fields, and will only be considered further provided that sufficient support can be expected from the membership. If you have strong feelings about this issue, please write to the Bulletin Editor.

## SOCIETY NEWS

### *AWARDS PRESENTED AT CONGRESS DINNER, 7 MAY 1991*

#### **HONORARY LIFE MEMBERSHIP – DR HAROLD HEADY**

Dr Harold Heady has been elected an Honorary Life Member of the GSSA in recognition of his truly outstanding leadership in the profession of range management. We list a few of his achievements.

He was instrumental in the organization and structure of the International Rangeland Congress. He was closely involved in the organization of the First International Congress held at Denver in 1978, is a past president of its continuing committee, and has been involved with these congresses ever since.

He was instrumental in the formation of the American Society for Range Management, and served as its first Secretary/Treasurer and later as its President.

He has worked in countries as diverse as Kenya, Uganda, Tanzania, Australia, Saudi Arabia, Soviet Union, Central and South America. He has also visited many other countries, including South Africa, on lecture tours.

Dr Heady's awards include a Guggenheim Merit Award, two Fulbright Research Scholarships, the Honour Achievement Award from the College of Forestry, Wildlife and Range of the University of Idaho, which also appointed him to its Alumni Hall of Fame. He has also been honoured on three separate occasions by the Society for Range Management.

The GSSA deems it an honour to invite Dr Heady to join its distinguished list of Honorary Life Members in recognition of his long and distinguished service to the science and practice of rangeland production.

#### **HONORARY LIFE MEMBERSHIP – DR R.W. BROUGHAM**

Dr R.W. Brougham is awarded Honorary Life Membership of the GSSA. The basis for this award is his strong interests in the progress of the discipline in this country, and indeed throughout the world. In 1984 he visited South Africa at the invitation of the Department of Agriculture to investigate the administration of its research. At this time he strongly supported an independent research organization, and the development of a grassland research centre.

Dr Brougham is arguably the most-widely respected living exponent of the grassland science discipline in the world today. He has produced approximately 100 scientific research publications, 14 plenary or invited papers at international meetings scattered over eight countries. He has acted in an advisory capacity in no fewer than 16 countries, consults for world aid organizations (e.g. FAO and the World Bank) in 11 countries, and has acted in an advisory capacity for individual organizations.

Dr Brougham has played a major role in the New Zealand Grassland Society and is President Elect of the 17th International Grassland Congress scheduled for 1993. He is a member of its Organizing Committee and a member of the Continuing Committee of the International Grassland Congresses. Added to these, he has to his credit a number of prestigious awards, including the OBE.

Ray Brougham is an excellent friend of South Africa (and would love to see the Springboks face the All Blacks again!). He carries considerable clout in the world grassland councils. He will add stature to our Society, and we believe he will be doing us a great honour in accepting Honorary Life Membership of our Society.

#### **PRESTIGE AWARD – DR AMIE AUCAMP**

Amie Aucamp receives the GSSA's prestige award for his considerable contribution to the theory and practice of grassland science in southern Africa over a period of some 20 years.

After a relatively short career as a researcher with the Department of Agriculture, first in the Valley Bushveld and later in the more open bush/grass communities of the eastern Cape, he moved into the field of research administration. In 1978 he was appointed Head of Pasture Research in the Eastern Cape Region, where he soon built up an extremely strong research unit. It was no doubt his success here that prompted his appointment as Head of the Grassland Research Centre when it came into being in 1987.

Here again he has shown a remarkable ability to get things done and in a short period of considerable financial constraint, he has successfully set this unit on its feet. Added to this achievement are the advances he has made towards a nationally coordinated research effort, against what have often been almost impossible odds.

For his single-minded dedication to the grassland science profession, and for his considerable contribution we, the GSSA, award Amie Aucamp the Society's most prestigious award.

#### **PRESTIGE AWARD – DENIS BARNES**

Denis Lorimer Barnes has been actively involved in the discipline of grassland science for over 40 years. He is a founder member of the Society and has served as President and in various capacities on its executive committee through its 26 years of existence. Denis is still active in the Society as a highly respected (and feared!) referee. He also played an important role in the formation and functioning of the Rhodesian Grassland Group which was affiliated to the Society.

Throughout his long career, Denis has been extremely productive; he has over 43 scientific publications to his credit, as well as 20 semi-scientific articles. Included in this list are invited chapters in two books, both published internationally. Denis's exceptional productivity is illustrated by the fact that he has averaged just over one scientific publication a year for the last 40 years. This average is even more impressive when it is remembered that this period included many years in largely administrative posts as a research leader. Denis has addressed an amazing variety of topics through his career, and his published papers range from those on cultivated pasture grasses and legumes, to autecology and plant physiology, to work on grazing systems and vegetation survey methods.

Perhaps Denis's greatest contribution to grassland science has been in his role as research leader. While, on one hand, setting high standards for researchers, he always led by example and encouraged and inspired young researchers fortunate enough to work under his leadership. The fact that many of his protégés such as Brian Walker, Peter Dye, Mick Gammon and Ian Macdonald are today internationally renowned scientists says a lot for Denis's guidance.

Denis has displayed a high degree of scientific ethic throughout his career as a grassland scientist. He has never hesitated to query the validity of research, but, at the same time, he has

unwaveringly stood by "unpopular" results derived from soundly-conducted experiments. An example of this is his refusal to endorse short-duration grazing in Zimbabwe, despite the virulent criticism to which he was subjected from certain quarters.

By virtue of his outstanding achievements in the discipline of grassland science, we believe that Denis Barnes is a worthy recipient of the Society's Prestige Award.

#### *ACOCKS NOTES*

Copies of this publication are still available to members of the Society at a reduced rate. Costs are R35 for the soft-cover edition, and R75 for the leather-bound, hard-cover edition. Orders together with R5 per book for postage and packaging can be sent to Mrs M. Zacharias, P.O. Box 10327, SCOTTSVILLE 3209. Prices to non-members are double, so place your orders now!

## RECENT CONGRESSES, CONFERENCES AND SYMPOSIA

### *IMPRESSIONS OF THE IVth INTERNATIONAL RANGELAND CONGRESS, MONTPELLIER, FRANCE, APRIL 1991*

I was privileged to attend the IVth International Rangeland Congress as a result of funding received from the Grassland Society of Southern Africa and from the University of Fort Hare. For this I am extremely grateful.

By way of introduction, perhaps a brief summary of statistics is worthwhile. The Congress was attended by 820 delegates from 68 countries. More pertinent is that 25 delegates from South Africa attended, which was the seventh best representation. I believe that this was an outstanding achievement, not because we should be showing the rest of the world how good we are, but rather because we should be sending as many as possible of our young scientists overseas to learn from their peers, and to gain the experience and background required to become competent researchers. In this regard, it was particularly pleasing to see the number of young researchers attending the conference.

The format of the conference was unusual, but I believe it had the potential to work very well. Unfortunately, in many instances the intentions of the organizers were not implemented by the participants. The essential difference between this and most other international conferences was the absence of platform presentation of individual contributions. Instead, papers were allocated to one of 16 themes. Rapporteurs were then selected to compile a synthesis of the papers in each respective theme, and then these syntheses were presented verbally at separate symposia held for each. This was followed by discussion relevant to the theme. Individual contributions were presented in poster form. In my opinion, this format had potential to work well. Unfortunately there were a few administrative problems. Firstly, papers were not always correctly allocated to themes. For instance, I was given the task of compiling a synthesis of 54 papers in the theme "Dynamics of Rangeland Ecosystems". At least a third of these papers were not really relevant, and dealt with issues ranging from phytosociology through range assessment to ecophysiology. This made it difficult for rapporteurs to highlight recurrent issues for debate, particularly when we were given the instruction to take into account each and every contribution.

Secondly, most rapporteurs did not compile a synthesis of debatable issues, but merely summarised the papers in their particular session. This was despite specific instruction to the contrary from the organizers.

Finally, poster presentations relevant to the various symposia were not linked to that particular symposium, and were sometimes presented days apart. I believe that if, after each synthesis, the delegates had been given around an hour to peruse the specifically relevant posters, the debate that followed would have been far more vigorous and constructive.

Despite the above "criticisms", it would be totally wrong for me to give the impression that the Congress was not a success. Indeed, it was an enormous success. The most important facet of any international congress is one-on-one contact and debate with international colleagues, and at

the IVth IRC there was more than ample opportunity for this – both formally and informally. The latter refers to numerous "social" functions ranging from those arranged by the organizers to less-formal, "boiler room" discussions such as those held in Pete Zac's bedroom at 3 am (incidentally, the latter resolved indisputably the mutual exclusivity of Mango Rash and AIDS !).

Returning to the South African contribution, it would be imprudent for us to compare our work with the output of many developing countries. Indeed, the quality of research coming out of many third world countries leaves much room for improvement. Instead, we should compare ourselves with researchers operating from Australia, the United States, and even China. I believe that our work has lagged behind in many respects. I would be honest if I had to say that the South African contributions to the theme that I had to review (with some exceptions) were not of the highest standard. We would be well advised to attend more congresses and read more widely.

The International Grassland Congress takes place in New Zealand and Australia in little over a year's time. Let me take this opportunity to encourage as many of our members as possible to attend this congress. I would also urge our Society and other organizations to assist with funding wherever possible – it is certainly a wise investment.

Finally, let me repeat my thanks to the trustees of the Grassland Society for assisting me financially to attend the IVth International Rangeland Congress. I found the visit thoroughly rewarding, and would like to believe that I returned with something to contribute to grassland science in South Africa.

Jock E. Danckwerts  
Department of Plant Sciences, University of Fort Hare  
ALICE, Ciskei

### *MEETING RANGELAND CHALLENGES IN THE 1990s*

In its 26th year, the Grassland Society of southern Africa hosted an international conference at the CSIR conference centre in Pretoria from 6-10 May 1991. Entitled "Meeting Rangeland Challenges in southern Africa in the 1990s", this conference will probably be regarded by many as a milestone event. Unlike the usual annual congresses, many of the papers presented were synopses rather than reports of original research. Of both, however, quality was not lacking. Both the nature of dissertations as well as the fact that all had to be presented in English indicated that much was aimed at the relatively few international delegates. In retrospect, however, this approach was indeed necessary. Southern African grassland researchers were essentially trying to gauge the effects of years of academic isolation, and it was encouraging to see the intensity with which the international scientists responded and involved themselves. The value of their contributions was immeasurable, and almost certainly deeply appreciated by all. Those with an alternative first language must be commended, both for the quality of their presentations, as well as for the diligence with which they participated in the proceedings.

Also emerging during the course of events was the realization that our Society simply has to evolve to address the potentially radical new demands of the future South Africa. Along these lines delegates expressed concern that future politics may increasingly dictate land use. With this in mind it was generally agreed that, for the good of the region and our Society, a higher public profile must be adopted so that the electorate become more aware of environmental issues. Concern was also expressed, usually informally, that our discipline is deviating too far from true ecology and, unless this is addressed, the likelihood of losing members with weaker agricultural leanings can only increase.

The inclusion of Communal Rangelands as one of the central themes is something which the congress conveners must be applauded for. This topic was directly addressed by at least fifteen delegates, headed by Dr Roy Behnke, a social anthropologist with extensive experience among African communities. The fact that other participants in this topic ranged from the more traditional, biologically-orientated grassland scientists to pure economists served to emphasize that our discipline will have to interact closely with others which hitherto may have been regarded as unrelated. The importance of communal rangelands was reinforced when it featured to a greater or lesser extent in the four remaining topics of Resource Management, Range Condition and Monitoring, Technology Transfer and Game Production. The latter topic too was something of an anomaly to our discipline according to Dr David Cummings from Zimbabwe who pointed out that only 5% of some 600 GSSA papers make reference to rangeland management making use of more than one ungulate. Nevertheless, much interest was shown by delegates, and notable presentations were received from many southern African regions including Bophuthatswana, South Africa and Zimbabwe.

In his keynote address on the subject of Technology Transfer, Dr Crouch from Australia, a world acclaimed expert in the field of extension services, stressed the need to approach those requiring assistance at a level which they could accommodate. The day-long session on Resource Management was rather disjointed and presentations covered a wide range of topics. Despite this apparent lack of cohesion, Dr Schuster provided an effective overview of the proceedings and

identified, based on his experiences as well, stocking rate as the most important issue in rangeland management.

No doubt the minutes of the AGM will be published elsewhere, but the conference organizers might in future schedule it to be held during the day and also allow intermissions if events become too tedious. If participants were not exhausted from a full day of concentrating on other matters this essential meeting might attract bigger audiences and become more effective.

Another feature was the various group discussions relating to the conference themes. These were most useful, especially since there was seldom sufficient time to ask questions, let alone generate debate immediately after any presentation. This procedure should definitely be included in future congresses. A highlight was undoubtedly the Thursday morning workshop session. Although recovering from a monumental formal dinner held the previous evening, the many delegates attending were not disappointed and were treated to three well-prepared papers. Most notable was that presented by Dr Jock Danckwerts, whose "no-punches-pulled" assessment of the Grassland Society's possible role in the future South Africa fully embraced the theme common to both the conference and workshop session. Continuing in this line was the overview of the conference proceedings presented by Dr Ray Brougham of New Zealand in the final session held the following day. As was so characteristic of the other international delegates, he spoke frankly and constructively. Among other issues, he emphasized the need for all to work together, criticized the fact that delegates fail to subject the opinions or work of their fellows to greater scrutiny, and urged that southern Africans stop agonizing and regain their once leading position in rangeland science. The conference could hardly have ended on a higher note.

Special mention has to be made of Barney Foran. Aside from his inimitable brand of Aussie poetry which held delegates at the formal dinner spellbound, his contribution towards the more formal content was indeed significant. Not only did he actively participate in many discussions, conduct a workshop which lasted well into Tuesday night, but in the penultimate congress address provided a noteworthy critique on veld condition and monitoring in South Africa.

One disappointment was the poster sessions, not because of the quality of these dissertations, but because the format of their presentations was just too informal and contributors never seemed to get the attention they deserved. Perhaps organisers of future congresses could revert to the familiar and more effective system of displaying posters in rooms reserved for just that purpose and providing authors with a chance to verbally deliver their work as well.

The scheduling of presentations and events was indeed impressive and the chairmen, presenters and other organisers should be commended for the smooth procedure. It is, however, regrettable that so little time was available for debate immediately after any one paper. Reinforced with Ray Brougham's very valid remarks concerning the lack of criticism which presentations received, aspects of time allocation should receive careful consideration by future congress organizing committees.

Following the Thursday workshop, delegates had the choice of relaxing, travelling to Sun City or visiting a farming enterprise outside Pretoria. Both outings were thoroughly enjoyed, but judging by the number who attended it was clear that most people had chosen to relax elsewhere. Although these particular trips opportunistically coincided with the public holiday, similar events at future congresses could perhaps be arranged for earlier on in the program.

In conclusion, this conference was definitely atypical, and may well become a landmark for the Grassland Society, but only if the challenges identified are tackled now. In the end, full-marks must be given to Dr Amie Aucamp and his organizing committee, the program sub-committee chaired by Frans du Toit, the conference co-ordinators, and finally the delegates themselves for making this occasion such a success. Regrettably, no conference proceedings are to be published as such.

Congress delegate

#### *FIRST SYMPOSIUM OF THE NATAL BUSHVELD WORKING GROUP*

The idea of organizing a symposium to assess the status of research in the valley systems of Natal was born at the Valley Bushveld/Subtropical Thicket Symposium held at Grahamstown in November 1990. The objective of the symposium was to review what research has been done in Natal's valley systems in the past, what research projects are currently being conducted, and to address the future research needs in these areas. The symposium was multidisciplinary, and presentations varied from vegetation dynamics to inventories of vertebrates to Iron Age land use patterns to the domestication of elephants.

The first day took the form of a bus trip through parts of the Mgeni and Tugela basins. Delegates were able to discuss various aspects of the ecology of the systems in the field (until the heat prompted an attack on the cooler box before reaching the final destination, Spiokenkop Nature Reserve). The symposium presentations were held at the reserve on the second day, with 12 papers being presented in the morning sessions, and 15 posters in the afternoon. The final day of the symposium took the form of a workshop session to plan a strategy for future research in the valley systems. A working group consisting of Zak le Roux (Natal Parks Board, Chairman), Dr Dick Yeaton (Dept of Botany, University of Natal), Greg Stuart-Hill (Dept of Grassland Science, University of Natal), Mark Hardy (Natal Region, Dept of Agricultural Development), and myself (Grassland Research Centre, Agricultural Research Council) was nominated and given a mandate to define the scope of the working group and to identify the role players before organizing a workshop to coordinate research and funding.

The proceedings of the symposium will be published shortly. Special thanks are due to Zak le Roux and Denise Woods of Natal Parks Board who undertook most of the organization, and to Umgeni Water for sponsorship of the folders.

Rich Hurt

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## THESIS ABSTRACTS

### *THE OVERSOWING OF ITALIAN RYEGRASS INTO KIKUYU*

1991, M.Sc. Thesis, Department of Grassland Science, University of Natal. Supervisor : Mr J.R. Klug.

Three cutting trials were conducted, two at Cedara Research Station in the Natal Mistbelt, and one at n'Tabamhlope Research Station in the Highland Sourveld, to ascertain whether the oversowing of ryegrass into irrigated kikuyu is a viable management option for farmers who have limited land area and/or limited irrigation facilities. Two trials (one at Cedara and a duplicate at n'Tabamhlope) were designed to identify the most suitable ryegrass cultivar and seeding rate for oversowing into kikuyu. The third trial on Cedara was designed to test the effects of seedbed preparation, time of planting, height of defoliation and the timing of spring fertilizer nitrogen on oversown kikuyu.

It was found that oversowing at Cedara could provide limited ryegrass off the dormant kikuyu in winter and substantial amounts of ryegrass in spring. No ryegrass production occurred at n'Tabamhlope in May, June and July. However, the ryegrass production in early spring served to shorten the winter feed period by up to three months. The tetraploid varieties established better than did the diploid varieties, however, this did not result in significant yield differences between cultivars over the whole season. A seeding rate of 30 kg.ha<sup>-1</sup> was found to provide an adequate stand of ryegrass in the kikuyu. The cultivars Exalta and Billion yielded well at both sites while Midmar and Billion were the cultivars which allowed earlier kikuyu regrowth in the summer. Time of planting and seedbed preparation were important factors affecting the establishment of the oversown ryegrass. The early (March) plantings had lower ryegrass plant populations than the late (April) plantings. However, forage was available from the early planting in April and May; the forage from the April planting was first harvested in August. Severe disturbance (rotavation) of the kikuyu at planting set back the spring regrowth of kikuyu considerably. Grazing management could be used to minimise the competitive effects between the ryegrass and kikuyu both at the beginning and end of the season. Competition from the ryegrass delayed the spring regrowth of the kikuyu.

The study showed that the successful oversowing of ryegrass into kikuyu is possible provided the management options are suitably selected.

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## SPECIES AND AREA SELECTION PATTERNS IN THE SOUTHERN TALL GRASSVELD OF NATAL

1991, M.Sc. Thesis, Department of Grassland Science, University of Natal. Supervisor : Prof. N.M. Tainton.

A study to examine seasonal patterns of species selection, and the incidence of area-selective grazing, was conducted on two sites in the Southern Tall Grassveld of Natal. Three species were identified as key forage species based on the extent of utilization by cattle. The species were *Themeda triandra*, *Tristachya leucothrix* and *Hyparrhenia hirta*. Seasonal patterns in selection of the three key forage species by cattle were examined within a four-camp rotational grazing system applied at two stocking rates.

In the post-burn spring grazing period *H. hirta* emerged as the most preferred species while selection for *T. leucothrix* and *T. triandra* increased with increased stocking and decreased veld condition. Selection patterns during the late summer/autumn period were characterised by low values for the extent, intensity and frequency of grazing with indistinct patterns in selection between species. It was proposed that this was the consequence of area-selective grazing within the sward. Increased stocking with decreased veld condition induced less selection for the three species and hence greater uniformity of sward defoliation. *T. triandra* was the most preferred species during the winter period, with intermediate selection for *H. hirta* and little selection for *T. leucothrix*. Given the influence of area-selective grazing on species-selection patterns, the consequences of area-selective grazing by cattle were investigated at both sites under three stocking rate treatments. Soil compaction was found to significantly distinguish area-selected patches from non-selected veld ( $P \leq 0.01$ ), while non-significant differences in soil nutrient and moisture status were recorded. Area-selected and non-selected patches may be distinguished on the basis of species composition. Area-selected patches are characterised by *Aristida congesta* subsp. *barbicollis*, *Microchloa caffra* and *Eragrostis racemosa*. Non-selected veld is characterised by *T. triandra*, *T. leucothrix* and *H. hirta*. Although *T. triandra* could not be considered as the most preferred species for all periods during the season it was designated as the most important (key forage) species for the Southern Tall Grassveld based on potential to provide forage for animal production.

Some implications for management of the extensive areas of old lands, which are dominated by *H. hirta*, in the mixed and sourveld regions of Natal are discussed.

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**DIARY****21 – 24 JANUARY 1992**

**Event:** GSSA Congress 27  
**Venue:** University of Stellenbosch  
**Contact:** Steve Barnard, Elsenburg Agricultural Development Institute, Private Bag, Elsenburg 7606

**9 – 14 FEBRUARY 1992**

**Event:** 45th Annual Meeting of the Society for Range Management  
**Venue:** Spokane, Washington, United States  
**Contact:** Grant Harris, Dept of Natural Resource Sciences, Washington State University, Pullman, WA 99164-6410, United States of America

**JULY 1992**

**Event:** GSSA Prestige Farmers Day, Burning in bushveld  
**Venue:** Swaziland and eastern Transvaal  
**Contact:** Rich Hurt, Game Production Unit, P/Bag X9059, Pietermaritzburg 3200  
 (Tel: (0331) 3-3371)  
 (Fax: (0331) 43-1253)

**OCTOBER 1992**

**Event:** 3rd International Wildlife Ranching Symposium, Wildlife Ranching : A Celebration of Diversity  
**Venue:** CSIR Conference Centre, Pretoria  
**Contact:** Conference Coordinators C.153, CSIR, P O Box 395, Pretoria 0001  
 (Fax: (012) 86-2856)

**8 – 23 FEBRUARY 1993**

**Event:** XVIIth International Grassland Congress  
**Venue:** Massey University, New Zealand, and Rockhampton, Australia  
**Contact:** Executive Secretary, XVII Grassland Congress Organizing Committee, Agronomy Department, Massey University, Palmerston North, New Zealand

**28 JUNE – 2 JULY 1993**

**Event:** VIIIth World Conference on Animal Production (WCAP)  
**Venue:** Edmonton, Alberta, Canada  
**Contact:** WCAP 1993, Faculty of Extension, University of Alberta, Edmonton, Alberta, Canada T6G 2J7  
 (Fax: (403) 492-0627)

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