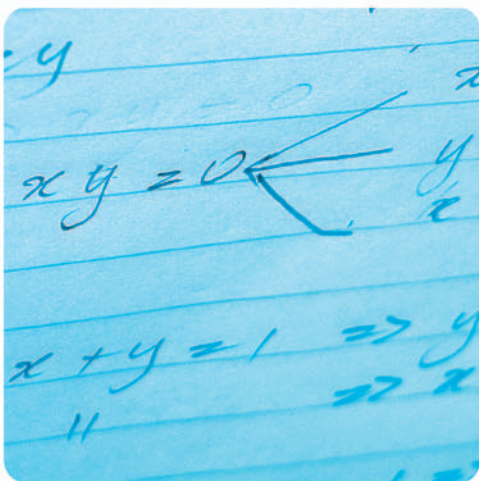
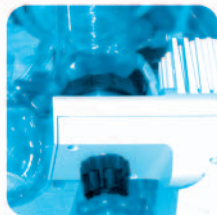


Faculty of Natural and Agricultural Sciences

Report 2008



Faculty of

**Natural and
Agricultural Sciences**

Report 2008

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Preface

From the Dean's Office

In 2008 the Faculty of Natural and Agricultural Sciences once again lived up to its vision to be acknowledged as a faculty that is at the forefront of the practice of natural and agricultural science where the highest levels of quality and credibility are reflected.

During the year the faculty not only remained one of the leaders in training and career development in the natural and agricultural sciences, but it also made a concerted effort to enlarge its international footprint and to establish itself internationally. This is evident in the visits of staff from the faculty to universities such as the USA-based University of Minnesota and Virginia Polytechnic Institute and State University (Virginia Tech) and the extension of international agreements between the University of the Free State (UFS) and these institutions. The faculty also had the privilege of hosting a high-level delegation from the University of Minnesota on the Main Campus in Bloemfontein in August 2008.

The turmoil in the international markets firstly led to very high oil prices, which spilt over to the grain markets and high food prices. This, in turn, led to high inflation levels and therefore high interest rates. Eventually the exchange rate also deteriorated against the major currencies. In the latter part of the year the whole situation was turned upside down with the collapse of the financial markets. The faculty did not escape this and the price of equipment for which orders were placed sky rocketed. Innovative skills had to be applied to remain on track with our equipment strategy.

Although 2008 was an exceptionally difficult year for the UFS and the institution had to bear the brunt of the Reitz video and the reaction of the national and international community, the faculty still managed to perform and expand its core business.

The faculty offers multi-disciplinary and holistic courses to send skilled and capable students into the South African workplace and to empower the labour force. Our general and extended programmes are continuously assessed and improved in order to improve our throughput rates and quality of teaching.

The staff at the faculty worked tirelessly this year to broaden our product offering and to provide our students with the best quality teaching in the country. I applaud their efforts of expanding capacity, developing programmes and strengthening re-



Prof. Herman van Schalkwyk.

lationships both within and outside the faculty and the university.

I also want to applaud the staff and students of the faculty with their achievements this year – whether it is on a personal level, in their capacity as staff member of their respective department/centre or for the faculty. To mention a few:

- Ms Estelle Heideman HIV/Aids coordinator of the Lengau Agricultural Development Centre, received a bursary to participate in a leadership programme in the United States of America (USA), which trains female leaders in South Africa who contribute to the prevention of HIV at a local, regional and national level;
- In the Department of Agricultural Economics, Prof. Johan Willemse, known for his contribution towards agriculture, was appointed on the non-executive board of Absa;

Staff in the dean's office



The staff working in the dean's office are, from the left, front: Ms Stefanie Naborn, Manager: Marketing and Liaison, Ms René Bloem, Secretary, Prof. Neil Heideman, Vice-Dean: Faculty of Natural and Agricultural Sciences; back: Mr Clasia Claassen, Assistant Administrative Officer, Mr Johan Kruger, Faculty Manager, Ms Lorinda Rust, Secretary, and Ms Mitzie Cloete, Typist/Clerical Assistant.

- Prof. James du Preez, Departmental Chair of the Department Microbial, Biochemical and Food Biotechnology, received the silver medal for exceptional published research awarded at the biennial conference of the South African Society for Microbiology hosted in Graham's Town. It was only the seventh time since 1986 that the medal was awarded;
- A study of the UFS about how the change in the packaging of DNA with cellular development is influenced by the expression of genes, in which Prof. Hugh Patterson played a leading role, was published in a leading peer-reviewed scientific journal *Proceeding of the National Academy of Sciences* of the USA (PNAS). The PNAS journal has an impact factor of 10, which means that studies published in this journal are referred to by ten other scientific studies within the scope of two years;
- Prof. Riaan Luyt, professor in Chemistry and head of the Natural Sciences Programme at the Qwaqwa Campus, received an honorary medal from the Polymer Institute of the Slovak Academy of Sciences during a conference hosted in the High Tatras mountains of Slovakia;
- Prof. Maryke Labuschagne from the Department of Plant Sciences was the recipient of the National Science and Technology Forum's (NSTF) research capacity-development award. A team consisting of Prof. Jan van der Westhuizen and Dr Susan Bonnet from the Department of Chemistry, Prof. Kenneth Swart and Prof. Thinus van der Merwe from FARMOVS-PAREXEL also

received the innovation award for an outstanding contribution to science, engineering and technology by either an individual or a team over the last ten years from the NSTF;

- Prof. Maryke Labuschagne received a second prestigious national award for her research when the 2008 Cereal Science and Technology - SA's (CST-SA) Award for research and development was awarded to her; and
- Prof. Ivan Horak, extraordinary professor at the university's Department of Zoology and Entomology, became the third person in the history of the UFS to receive the D.Sc. degree.

In closing I would like to thank the faculty's lecturing staff for their support and enthusiasm during the past year. However, none of these achievements would have been possible without the interest and hard work of the administrative staff.

During 2008 we have all worked together to live up to the faculty's motto: "There is no substitute for excellence!" This report covers the activities of the faculty in 2008. It is a reflection of a year's commitment from a team of highly skilled academic and support staff.

Prof. Herman van Schalkwyk
Dean: Faculty of Natural and Agricultural Sciences
University of the Free State

Faculty news

Successful visit from delegation of the University of Minnesota

A senior delegation from the University of Minnesota in the United States of America (USA) paid a very successful visit to the University of the Free State (UFS) in May 2008 to explore ways of strengthening already existing ties between the two institutions.

Teacher training, capacity building in health sciences and student preparedness were among the areas of cooperation that were investigated, within the context of the Strategic Academic Cluster initiative of the UFS. Poverty reduction strategies were also a strong focus area.

The Faculty of Natural and Agricultural Sciences has had a cooperation agreement with the University of Minnesota's Department of Applied Economics since 2002 and the exchange of staff



During the visit are, from the left: Prof. Herman van Schalkwyk, Dean: Faculty of Natural and Agricultural Sciences at the UFS, Prof. Robert Jones, Senior Vice-President: System Academic Administration at the University of Minnesota, Dr Meredith Quiad, Associate Vice-President and Dean: International Programmes, University of Minnesota, Prof. Teuns Verschoor, Acting Rector of the UFS and Prof. Ezekiel Moraka, Vice-Rector: Student Affairs at the UFS.

has been taking place on a regular basis. This agreement will be expanded and both institutions are now exploring the possibility of

applying it across faculties. Both institutions have committed seed funding to formalise the cooperation agreement.

50 years of Agriculture celebrated



The faculty celebrated 50 years of the teaching of agriculture at the UFS in November 2008. Part of the celebrations was a seminar with the theme "Challenges in a changing agricultural environment". Some of the guest speakers are, from the left: Mr Corwyn Botha, Chairman: Agri Business Chamber and Managing Director of the Cape Agri Group, Mr Motsepe Matlala, President of NAFU, Mr Hans van der Merwe, Executive Head: Agri SA, Prof. Herman van Schalkwyk: Dean: Faculty of Natural and Agricultural Sciences at the UFS, and Mr Sugar Ramakarane, Head: Department of Agriculture, Free State Province.

Winners of NSTF awards assist with recruitment of students



Here are, from the left: Dr Martin Ntwaeaborwa, senior lecturer at the Department of Physics and finalist in the category for black researchers, Prof. Kenneth Swart, FARMOVS-PAREXEL, Prof. Maryke Labuschagne, head of Plant Breeding at the UFS's Department of Plant Sciences and female recipient of the award for the development of research capacity over the past five to ten years, and Prof. Jan van der Westhuizen, Department of Chemistry at the UFS; front: Ms Kedibone Aphane, MRC. Prof. Swart and Prof. Van der Westhuizen were the leaders of the team who received the award for the development of innovation by a corporate organisation or institution.

Representatives of the South African Medical Research Council (MRC) visited the UFS to recruit students who want to study in the fields of sci-

ence, engineering and technology. To assist with the recruitment, the winners of awards made by the National Science and Technology Forum (NSTF) earlier this year,

made presentations to create an interest amongst students. The UFS had four finalists of whom two were the winners in their respective categories.

Young scientists learn what faculty can offer



Young science lovers gathered in Sasolburg for the annual Sasol TechnoX in August 2008. The faculty's exhibition captured the learners' attention through an interactive representation of the application fields of science. Delegates from the Departments of Mathematics and Applied Mathematics, Chemistry, Zoology and Entomology, as well as UFS Marketing stood ready to answer the questions of the 20 832 learners who attended the event. Pictured here is Theo Viljoen, M.Sc. student in Forensic Entomology, sharing interesting facts regarding insects with learners.

Two UFS academics appointed on the Land Bank Board



Prof. Herman van Schalkwyk (left), Dean: Faculty of Natural and Agricultural Sciences, and Mr Theo Potgieter from the UFS School of Management were appointed on the Land Bank Board in March 2008. Prof. van Schalkwyk was appointed as Director and Deputy Chairperson and Mr Potgieter as Director of the Board. The appointments were made by the Minister of Agriculture and Land Affairs, Ms Lulu Xingwana, and are effective for a period of four years.

UFS extends exchange agreement with USA university



Here are, from the left, front: Dr SK de Datta, Vice-Rector: International Affairs, VT, Prof. Herman van Schalkwyk, Dean of the Faculty of Natural and Agricultural Sciences, UFS, Dr Martin Ntwaeaborwa, senior lecturer at the Department of Physics, UFS; back: Prof. Jim McKenna, Department of Crop, Soil and Environmental Affairs, VT, Prof. Izak Groenewald, Director of the Centre for Sustainable Agriculture and Rural Development at the UFS and responsible for the faculty's international liaison, Dr Michael Bertelsen, VT's international office, Dr Aldo Stroebel, Head: Internationalisation at the UFS and Dr Liesel Herselman, senior lecturer at the Department of Plant Sciences, UFS.

A delegation from the faculty visited the Virginia Tech University (VT) in the USA in June 2008 to confirm and extend the existing student exchange agreements between the two institutions.

During the visit the agreement, which started in 1997, was extended for the next five years. More than 150 students from both institutions have already taken part in this exchange agreement and it is the most successful student exchange agreement that VT is involved in. Although agricultural students from the UFS initially took part in the agreement, it was extended to other departments in the faculty and also to the rest of the UFS.

Itjoriseng Project launched



The faculty launched the Itjoriseng Project on the Main Campus in Bloemfontein in March 2008. The aim of the project is to improve the skills of teachers in the subjects Mathematics and Physical Science for Grades 10–12. "Itjoriseng" is the Sotho word for "sharpen yourself". At the launch were, from the left: Mr Mzamo Jacobs, Director: Curriculum Development for Further Education and Training, Free State Department of Education, Mr Johan Kruger, Faculty Manager, Ms Elna Marais, Chief Education Specialist: Curriculum Development, Free State Department of Education, and Prof. Herman van Schalkwyk, Dean: Faculty of Natural and Agricultural Sciences at the UFS.

2007 Faculty report launched



The faculty once again produced another report in which the various departments and centres highlighted their activities for 2007. The report was so well received that a second edition had to be printed. Here are some of the departmental chairpersons during the launch of the report in June 2008.

Department of

Animal, Wildlife and Grassland Sciences

“We want to deliver scientists and innovative agriculturalists who can serve the industry” - Prof. Johan Greyling.

Overview

The Department of Animal, Wildlife and Grassland Sciences is the most specialised group servicing the farm animal industry in South Africa. The department focuses on the breeding, nutrition, physiological manipulation, conservation and utilisation of natural resources and management of a variety of livestock species (cattle, sheep, goats, pigs, poultry) in production systems ranging from intensive to extensive and from communal to small scale to large commercial units.

Fields of study in animal nutrition include the fundamental principles of digestion and metabolism in ruminants and monogastrics, with the evaluation of fodder in terms of digestibility and the protein and energy requirements of animals during different physiological stages. The practical aspects of evaluating breeding merit, selection goals, breeding systems and selection methods are researched together with the manipulation of reproductive techniques to accelerate genetic progress. The conservation of the natural resources or ecosystems forms the basis of animal production and the restoration of degraded vegetation and sustainable wildlife management is therefore an integral part of this whole animal production chain.

The main objective of the department is the delivery of scientists and innovative agriculturalists who can serve the industry, while concentrating on relevant applied research and performing commu-



Prof. Johan Greyling.



nity service. The increase in animal production while maintaining the quality and sustaining the natural resources, remains of prime importance.

From the department's research outputs it is evident that it has an active research programme with specialisation in the different disciplines. Funding, which is limited and often lacking, is generated from external national institutions. The National Research Foundation (NRF) remains the most reliable sponsor with additional funds also being generated by Cape Mohair and Wool, the National Wool Growers' Association (NWGA), Meadow Feeds, Voermol Feeds, central research funds of the Uni-

versity of the Free State (UFS), the National Lucerne Organisation, Nutrifeds, Supreme Chickens and Pfizer (including contract research and sponsorships).

Some of the research highlights include the following:

In the discipline of Grassland Science and Nature Conservation several critical factors are being addressed. Restoration ecology and the restoration of degraded veld and the sustainable utilisation of the pasture ecosystems in the semi-arid grasslands in terms of production, water usage, efficient ground temperatures, organic material and root studies are among these. The effect of fire on the grassland ecosystem and



Students and farmers are trained in the artificial insemination of cattle.

the dynamics of problem plants are also being investigated. Many Karoo plants are spread over a large area of South Africa yet there is currently little information regarding the dynamics of production, adaptability and distribution capabilities of certain tasty and dominant Karoo bushes. The reaction of the plant growth following different defoliation intensities and frequencies under different ground water conditions is also being investigated. Furthermore, the habitat preferences and diet selection of the eland and the feeding ecology of other herbivore game species in areas ranging from the Western Cape, Central Free State and Limpopo Province are being recorded. Studies on the ecological effect of tree thinning on different savanna ecosystems are also being evaluated.

In the discipline of Animal Nutrition, poultry research is very active and contract research has been concluded for Nutri Feeds and Supreme Poultry. The aim is to determine the effect of different dietary lysine and energy levels on production parameters, as well as carcass characteristics in different

genetic strains of broilers. The effect of different lipid sources and inclusion levels on production parameters and carcass composition of broiler cockerels, as well as the oxidative and sensory characteristics of broiler meat cuts were also investigated. Further studies were executed to determine the effect of different dietary ionophores and inclusion levels in feedlot sheep finisher diets on certain production parameters and carcass characteristics. The potential of *Opuntia* (prickly pear) as a feed supplement or silage has also been evaluated in terms of growth performance, digestibility and carcass characteristics in sheep. This is a typical example of the quest for alternative feed sources in farm animals. The chemical and digestibility characteristics of lucerne hay graded according to quality have been comprehensively determined by analytical procedures. The variation that occurs in energy and protein composition emphasises the need for a rapid and accurate quality evaluation system for lucerne hay and predicting animal performance (e.g. milk yield, Average Daily Gain (ADG), etc.). The inclusion of 15-20% Neutral Detergent Fibre (NDF) from Medics hay and 13-21% NDF from eragrostis hay supplemented in the finishing diets of lambs was also evaluated. Here the dry matter and metabolizable energy intake was measured and compared. The effect of the physical form of maize grain in a lamb finishing diet was similarly tested in terms of its playing a role in digestibility.

In the discipline of Animal Physiology, research on multiple ovulation (superovulation) using various techniques during different seasons and embryo transfer in goats, received much attention. A colleague, Dr Khoboso Lehloenya, obtained his Ph.D. degree in this field. The use of in vitro embryo production (sheep and cattle) as an alternative to generate embryos was undertaken. The cryopreservation of sperm (cattle, sheep, pigs) plus the use of anti-oxidants in the preservation process to increase sperm viability after thawing is also being investigated. The aim here is

to increase the conception rate in different farm species following Artificial Insemination (AI) with frozen semen or embryos. The effect of anabolic steroid treatment on the reproduction performance of buck and rams is another aspect that is currently being investigated. The possible negative feedback of steroid treatment on testis development and spermatogenesis could negate its use.

Regarding animal breeding in sheep, cattle and also ostriches, the genotype by environmental interaction for milk and wool production, ADG, etc. is being investigated. With the use of animal breeding models the information from traditional breeding value estimation is combined with molecular genetic information to provide more accurate breeding value estimations of the animals. Methods to combine data of different production traits are being analysed.

To illustrate the productivity of the department in terms of research, Animal and Grassland Scientists attended the 10th World Conference on Animal Production (WCAP) in Cape Town with a total of 44 presentations. Prof. Johan Greyling was awarded the silver medal for his contribution

Student practical in Grassland Sciences conducted on the university's Main Campus in Bloemfontein.





Attending the World Congress of Animal Production (WCAP) in Cape Town are, from the left, standing: Prof. Japie van Wyk, Dr Luis Schwalbach, Prof. Frikkie Nesor, Messrs Foch de Witt, Mike Fair (all from the department), and Prof. Izak Groenewald, Director: Centre for Sustainable Agriculture and Rural Development at the UFS; seated: Prof. Johan Greyling, Departmental Chairperson, Mr Ockert Einkamerer, and Mr Thapelo Makae.

to research. He also serves on the council, together with Dr Luis Schwalbach. Three Grassland scientists (Profs Hennie Snyman, Nico Smit and Mr Paul Malan) attended an international Grassland Science Conference in Hohhot, China, with six scientific presentations. Natio-

nally, Prof. Hennie Snyman and Mr Paul Malan attended and made presentations at the Grassland Society Congress in Badplaas, and Prof. Nico Smit and Mr Gideon Janse van Rensburg attended the Wildlife Congress in Port Alfred.

Certain other research projects have also been funded by the industry (National Wool Growers' Association, Cape Mohair and Wool, Redmeat Producers Organisation, Meadows, Lucerne Producers' Organisation, Supreme Chickens, Virbac). More such actions are however necessary to help alleviate the financial research burden. Here Profs Hentie van der Merwe, HO de Waal, Dr Luis Schwalbach and Mr Foch de Witt made major inputs. Under the supervision of Prof. De Waal, methods are being investigated to look into the control of predators in the small stock industry. High level talks are being conducted with local and national government to address this problem (funded by the industry). Great financial losses are incurred annually due to predators.

In 2008 staff attended various national and international congresses with 87% of them making contributions. At a recent World

Congress of Animal Production (WCAP) in Cape Town, the contributions from the UFS were overwhelming – emphasising the fact that the department is the biggest and the best in South Africa.

Community service actions were again maintained and used as a way of advertising the department, Faculty of Natural and Agricultural Sciences and the university. The small-scale egg production project for women in rural areas had to be scaled down in 2008 due to the lack of funds. Nevertheless, the team of Prof. Johan Greyling, Mr Thapelo Makae, Mr Foch de Witt and Dr Luis Schwalbach are still providing the necessary health and managerial support.

Other community projects involve the training of small-scale livestock farmers in Bothaville (Prof. HO de Waal and Dr Luis Schwalbach) in basic husbandry skills. Cattle and sheep AI courses were presented in conjunction with Glen Agricultural Development Institute (Prof. Johan Greyling, Drs Luis Schwalbach, Khoboso Lehloenya) to students and farmers. An intensive three-day Animal Breeding workshop on modern breeding techniques was





At the inaugural lecture of Prof. Frikkie Nesor were, from the left: Prof. Johan Greyling, Departmental Chairperson of Animal, Wildlife and Grassland Science at the UFS, Prof. Nesor, Prof. Herman van Schalkwyk, Dean: Faculty of Natural and Agricultural Sciences, and Prof. Teuns Verschoor, Acting Rector of the UFS.



The Board of Trustees of the Northern Cape IDC Nguni Cattle Development Project held a meeting on the Main Campus of the UFS during the year. The UFS, the Industrial Development Corporation (IDC) and the Department of Agriculture and Land Reform in the Northern Cape are involved with this project, which aims to develop first-time farmers into Nguni stud farmers. The department assists with the training of the farmers. Here are, from the left: Ms Jacqui Maisela, Vice-Chairperson of the Board of Trustees and Chief Director: Agricultural Development Services of the Northern Cape Department of Agriculture and Land Reform, Prof. Herman van Schalkwyk, Dean: Faculty of Natural and Agricultural Sciences at the UFS, and Mr Tommy Mohajane, Chairperson of the Board of Trustees.

organised by Prof. Frikkie Nesor, Prof. Japie van Wyk and Mr Mike Fair, in conjunction with Breedplan, for breeders nationally and from Namibia.

Two major projects (in the Northern Cape and the Free State) have been launched in conjunction with the Industrial Development Corporation (IDC) to empower selected black livestock farmers by providing them with Nguni cattle. These projects are being managed by Prof. De Waal and Dr Schwalbach and supported with training and technical advice. Another highlight in terms of community service was a goat information day presented at the Paradys Experimental Farm. Altogether 110 delegates (from first-year to

postgraduate students as well as farmers) attended this event. The sixth annual Cattleman's Conference was held by the department together with Glen Agricultural Development Institute, focusing on the economic environment and trends in the beef industry. Speakers were invited and the conference was attended by 130 people from the livestock industry. To further emphasise community involvement in general, contributions were also made on farmers' days.

To illustrate activities in which the department, faculty and university is propagated, staff have been involved as judges in the National Breed Plan and Voermol Cattle and Sheep Farmer of the Year (Profs Johan Greyling and Frikkie Nesor), the SA Dairy Farmer of the Year (Prof. Hentie van der Merwe) and the SA Young Farmer of the Year (Prof. HO de Waal) competitions. They also serve on formal agricultural committees such as the Red Meat Producers Organisation, the Free State Game Association, National Lucerne Organisation, South African Society for Animal Science, Grassland Society of Southern Africa (GSSA), World Poultry Organisation, National Woolgrowers Association, SA Veterinary Association, Arid Zone Forum, and so forth. Several members also serve on the editorial boards of national and international scientific journals (*Small Ruminant Research*, *Livestock Science*, *SA Journal of Animal Science*, *SA Journal of Grassland Science*, *Journal of Arid Environments*). ■

Research outputs

Research articles

Botha, P.R., Meeske, R. & Snyman, H.A. 2008. Kikuyu over-sown with ryegrass and clover: Dry matter production, botanical composition and nutritional value. *African Journal of Range and Forage Science* 25(3): 93-101.

Botha, P.R., Meeske, R. & Snyman, H.A. 2008. Kikuyu over-sown with ryegrass and clover: Grazing capacity, milk production and milk composition. *African Journal of Range and Forage Science* 25(3): 103-110.

D'Almeida, A.M., Schwalbach, L.M.J., De Waal, H.O., Greyling, J.P.C. & Cardoso, L.A. 2008. 3-Methylhistidine in the male goat as an experimental model: Serum concentrations and an indicator of protein breakdown. *Scandinavian Journal of Laboratory Animal Science* 35(4): 1-5.

Du Toit, G. van N., Snyman, H.A. & Malan, P.J. 2008. Physical impact of grazing by sheep in the Nama Karoo subshrub/grass rangeland of South

Africa on litter and dung distribution. *South African Journal of Animal Science* 38(4): 326-330.

Engelbrecht, A., Cloete, S.W.P. & Van Wyk, J.B. 2008. Direct heterosis for liveweight and chick mortality in ostriches. *Australian Journal of Experimental Agriculture* 48(10): 1320-1325.

Joubert, D.F., Rothauge, A. & Smit, G.N. 2008. A conceptual model of vegetation dynamics in the semi-arid Highland savanna of Namibia, with particular reference to bush thickening by *Acacia mellifera*. *Journal of Arid Environments* 72(12): 2201-2210.

Kassahun, A., Snyman, H.A. & Smit, G.N. 2008. Impact of rangeland degradation on the pastoral production systems, livelihoods and perceptions of the Somali pastoralists in Eastern Ethiopia. *Journal of Arid Environments* 72: 1265-1281.

Kassahun, A., Snyman, H.A. & Smit, G.N. 2008. Livestock grazing behaviour along a degradation gradient in the Somali region of eastern Ethiopia. *African Journal of Range and Forage Science* 25(1): 1-9.

Lehloeny, K.C., Greyling, J.P.C. & Grobler, S. 2008. Effect of season on the superovulatory response in Boer goat does. *Small Ruminant Research* 78: 74-79.

Lemma, G. & Smit, G.N. 2008. Relationships between plant and soil nutrient status and position in the landscape on Pellic Vertisols of Ethiopia. *South African Journal of Plant & Soil* 25(2): 119-126.

Neser, F.W.C., Erasmus, G.J. & Scholtz, M.M. 2008. The use of a cluster analysis in across herd genetic evaluation for beef cattle. *South African Journal of Animal Science* 38(1): 51-57.

Van Wyk, J.B., Swanepoel, J.W., Cloete, S.W.P., Olivier, J.J. & Delpport, G.J. 2008. Across flock genetic parameter estimation for yearling body weight and fleece traits in the South African Dohne Merino population. *South African Journal of Animal Science* 38(1): 31-37.

Books

Smit, G.N. 2008. *Field Guide to the Acacias of South Africa*. Pretoria: Briza Publications.

Reports

Scholtz, G.D.J. 2008. *A preliminary study on the extraction of Lucerne (Medicago Sativa L.) protein concentrate (LPC) under laboratory conditions*.

Progress report to Griekwaland West Corporation, Douglas, South Africa.

Scholtz, G.D.J. 2008. *Lucerne production in South Africa*. Final report to Griekwaland West Corporation, Douglas, South Africa.

Conference contributions

Banga, C.B., Neser, F.W.C., Garrick, D.J. & Van der Westhuizen, J. 2008. *Economic values for dairy production traits under different milk payment systems in South Africa*. Paper presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.

Botha, P.R., Meeske, R. & Snyman, H.A. 2008. *The evaluation of two cultivated methods to over-sow perennial clovers into kikuyu*. Poster presented at the 21st International Grassland Congress and the 8th International Rangeland Congress, Hohhot, China. 29 June-05 July.

De Witt, F.H., Kuleile, N.P., Van der Merwe, H.J. & Fair, M.D. 2008. *Effect of limestone particle size on egg production and eggshell quality during late production*. Paper presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.

De Witt, F.H., Kuleile, N.P., Van der Merwe, H.J. & Fair, M.D. 2008. *Effect of limestone particle size on bone quality characteristics at end-of-lay*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.

De Witt, F.H., Kuleile, N.P., Van der Merwe, H.J. & Fair, M.D. 2008. *Effect of limestone particle size on bone quality of layers*. Poster presented at the 23rd World Poultry Congress, Queensland, Australia. 30 June - 04 July.

De Witt, F.H., Kuleile, N.P., Van der Merwe, H.J. & Fair, M.D. 2008. *Influence of limestone particle size on egg production and eggshell quality of layers*. Poster presented at the 23rd World Poultry Congress, Queensland, Australia. 30 June - 04 July.

Einkamerer, O.B., De Waal, H.O., Combrinck, W.J. & Fair, M.D. 2008. *The effect of Opuntia-based diets on feed utilization and growth of Dorper wethers*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.

Einkamerer, O.B., De Waal, H.O., Combrinck, W.J., Fair, M.D. & Hugo, A. 2008. *The effect of Opuntia-based diets on carcass characteristics of Dorper wethers*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.

Staff

Professors: Profs Johan Greyling, Frikkie Neser, Nico Smit, Hennie Snyman, Hentie van der Merwe, Japie van Wyk

Professors Extraordinary: Profs Amie Aucamp, Schalk Cloete, James Hayes, Michiel Scholtz

Associate Professors: Prof. HO de Waal

Senior Lecturers: Dr Luis Schwalbach, Mr Wikus Vorster (contract)

Lecturer: Dr Khoboso Lehloeny, Messrs Foch de Witt, Mike Fair, Paul Malan

Junior Lecturer: Messrs Ockert Einkamerer, Thapelo Makae

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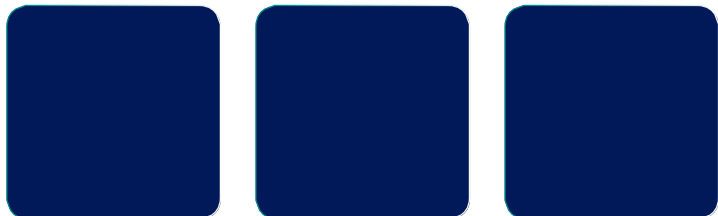
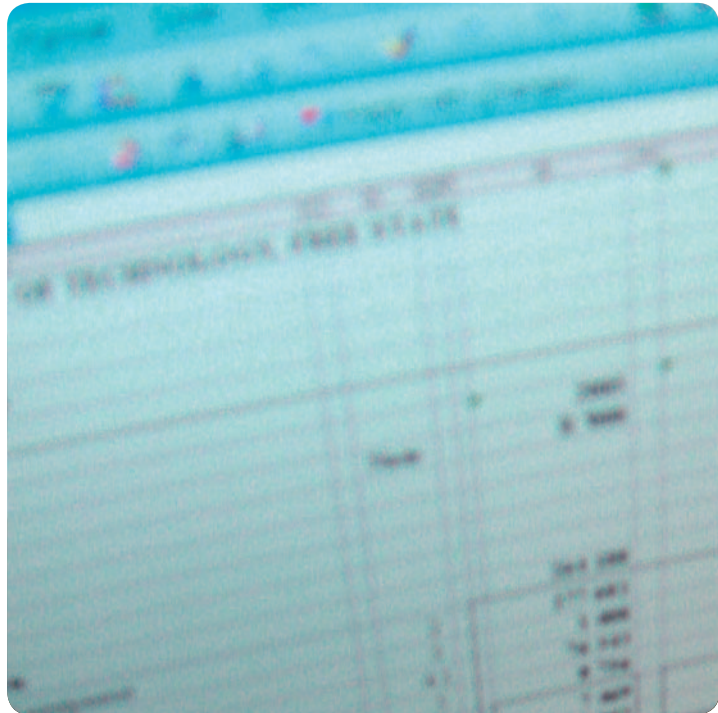
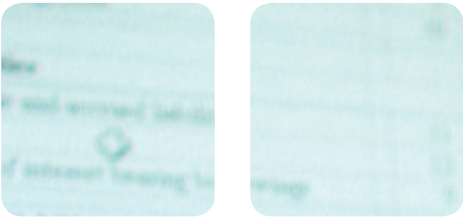
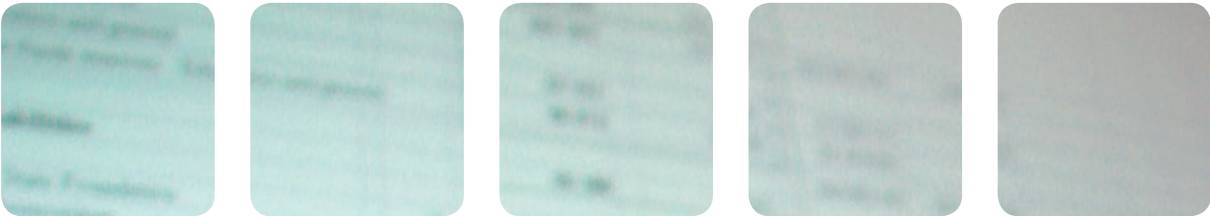
Website: www.ufs.ac.za/animal

- Els, S.P., De Witt, F.H., Van der Merwe, H.J., Fair, M.D. & Hugo, A.** 2008. *Effect of dietary lipid sources on production performances of broilers*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Els, S.P., Hugo, A., Bothma, C., De Witt, F.H. & Van der Merwe, H.J.** 2008. *Influence of dietary lipid sources on sensory characteristics of broiler meat*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Els, S.P., Hugo, A., De Witt, F.H. & Van der Merwe, H.J.** 2008. *Effect of dietary lipid sources on lipid oxidation of broiler meat*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Els, S.P., Hugo, A., De Witt, F.H., Van der Merwe, H.J. & Fair, M.D.** 2008. *Influence of dietary lipid sources on carcass traits of broilers*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Engelbrecht, A., Cloete, S.W.P. & Van Wyk, J.B.** 2008. *Direct heterosis for live weight and chick mortality in ostriches*. Poster presented at the 4th International Ratite Science Symposium (4IRSS), Brisbane, Australia. 29 June - 04 July.
- Fair, M.D., Van Wyk, J.B. & Cloete, S.W.P.** 2008. *Genetic parameter estimates for certain production traits of ostriches*. Paper presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Foss, S., Nedambale, T.L., Greyling, J.P.C. & Schwalbach, L.M.J.** 2008. *Piglets born from frozen-thawed epididymal sperm obtained post mortem: A case study*. Paper presented at the 10th World Conference on Animal Production (WCAP), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Foster, L.A., Fourie, P.J., Neser, F.W.C. & Fair, M.D.** 2008. *Differences in physical traits such as coat score and hide thickness together with tick burdens and body condition score in four beef breeds in the Southern Free State*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Foster, L.A., Fourie, P.J., Neser, F.W.C. & Fair, M.D.** 2008. *Effect of heat stress on six beef breeds in the Zaïron district: The significance of breed, coat colour and coat type*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Hassen, H., Neser, F.W.C., De Kock, A. & Van Marle-Koster, E.** 2008. *Phenotypic and genetic variations of native chicken populations in northwest Ethiopia*. Poster presented at the 23rd World Poultry Congress, Queensland, Australia. 30 June - 04 July.
- Hassen, H., Neser, F.W.C., De Kock, A. & Van Marle-Koster, E.** 2008. *Village chicken production and marketing systems in northwest Ethiopia*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Janecke, B.B. & Smit, G.N.** 2008. *Assessment of faecal nitrogen as an indicator of nutritional status of browser and mixed feeder game species in the central Free State*. Paper presented at the Southern African Wildlife Management Association (SAWMA) Conference, Biodiversity Conservation: The Science Management Interface, Mpekweni Beach Resort, Port Alfred, South Africa. 16-19 September.
- Janse van Rensburg, G., Snyman, H.A. & Kellner, K.** 2008. *Rangeland restoration and soil water improvement in a semi-arid South Africa*. Poster presented at the Southern African Wildlife Management Association (SAWMA) Conference, Biodiversity Conservation: The Science Management Interface, Mpekweni Beach Resort, Port Alfred, South Africa. 16-19 September.
- Joubert, D., Rothauge, A. & Smit, G.N.** 2008. *Periodicity of recruitment of Acacia mellifera in semi-arid central Namibia*. Poster presented at the Southern African Wildlife Management Association (SAWMA) Conference, Biodiversity Conservation: The Science Management Interface, Mpekweni Beach Resort, Port Alfred, South Africa. 16-19 September.
- Lehloeny, K.C., Greyling, J.P.C. & Grobler, S.** 2008. *Can repeated superovulation and embryo recovery in Boer goats limit a donor participation in MOET programme?* Paper presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Malan, P.J. & Snyman, H.A.** 2008. *Dry matter production and partition of two palatable Karoo shrubs*. Poster presented at the 21st International Grassland Congress and the 8th International Rangeland Congress, Hohhot, China. 29 June-05 July.
- Malan, P.J. & Snyman, H.A.** 2008. *Rooting of Karoo shrub cuttings*. Poster presented at the 21st International Grassland Congress and the 8th International Rangeland Congress, Hohhot, China. 29 June-05 July.
- Mantiziba, C.W., Raito, M.B., Schwalbach, L.M.J., Greyling, J.P.C. & Nedambale, T.L.** 2008. *Effect of addition of bsa to extenders on survival time and motility rate of South African landrace boar semen*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Munyai, P.H., Mphaphathi, M.L., Raito, M.B., Makhafola, M.B., Mantiziba, C.W., Schwalbach, L.M.J., Greyling, J.P.C. & Nedambale, T.L.** 2008. *Effect of different extenders and preservation period on the survival rate of South African indigenous ram semen stored at 5°C*. Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention

- Centre, Cape Town, South Africa. 23-28 November.
- Price, M.M., De Witt, F.H., Einkamerer, O.B., Greyling, J.P.C. & Fair, M.D.** 2008. *The effect of different ionophores on production performance of feedlot wethers.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Price, M.M., Einkamerer, O.B., De Witt, F.H., Greyling, J.P.C. & Fair, M.D.** 2008. *The effect of dietary ionophores on carcass characteristics of lambs.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Raito, M.B., Mphaphathi, M.L., Schwalbach, L.M.J., Greyling, J.P.C. & Nedambale, T.L.** 2008. *Brilliant cresyl blue staining improve the quality of selected indigenous cattle oocytes and their developmental capacity to blastocyst in vitro.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Rust, J.M., Visser, D.S., Venter, J.E., Boshoff, M.P., Foss, S. & Greyling, J.P.C.** 2008. *The effect of season on aspects of in vitro embryo production (IVEP) in sub-fertile beef cows.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Scholtz, G.D.J., Van der Merwe, H.J. & Tylutki, T.P.** 2008. *A model for assessing Medicago sativa L. hay quality.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Scholtz, G.D.J., Van der Merwe, H.J. & Tylutki, T.P.** 2008. *Evaluation of models for assessing Medicago sativa L. hay quality.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Scholtz, G.D.J., Van der Merwe, H.J. & Tylutki, T.P.** 2008. *Prediction of chemical composition of South African Medicago Sativa L. hay from a near infrared reflectance spectroscopy spectrally structured sample population.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Scholtz, G.D.J., Van der Merwe, H.J. & Tylutki, T.P.** 2008. *Sample preparation of Medicago sativa L. hay for chemical analysis.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Scholtz, G.D.J., Van der Merwe, H.J. & Tylutki, T.P.** 2008. *The nutritive value of South African Medicago sativa L. hay.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Smit, G.N.** 2008. *Rare and endemic Acacia species from South Africa.* Poster presented at the Southern African Wildlife Management Association (SAWMA) Conference, Biodiversity Conservation: The Science Management Interface, Mpekweni Beach Resort, Port Alfred, South Africa. 16-19 September.
- Smit, G.N.** 2008. *Understanding the problem of bush encroachment in southern African savannas: Lessons to be learnt from root studies.* Paper presented at the Southern African Wildlife Management Association (SAWMA) Conference, Biodiversity Conservation: The Science Management Interface, Mpekweni Beach Resort, Port Alfred, South Africa. 16-19 September.
- Smit, G.N. & Hagos, M.G.** 2008. *Effect of soil and subhabitat differentiation on seedling establishment and growth of Acacia mellifera subsp. detinens in a semi-arid savanna of South Africa.* Poster presented at the 21st International Grassland Congress and the 8th International Rangeland Congress, Hohhot, China. 29 June-05 July.
- Smit, G.N. & Pienaar, F.C.** 2008. *The influence of tree thinning on grass dry matter yield, with and without grazing by herbivore game species in the Marakele Park, South Africa.* Poster presented at the 21st International Grassland Congress and the 8th International Rangeland Congress, Hohhot, China. 29 June-05 July.
- Snyman, H.A.** 2008. *Efficiency of water use by cactus pear (Opuntia spp.).* Poster presented at the 21st International Grassland Congress and the 8th International Rangeland Congress, Hohhot, China. 29 June-05 July.
- Snyman, H.A.** 2008. *Productivity loss due to fire in a semi-arid rangeland of South Africa.* Poster presented at the 21st International Grassland Congress and the 8th International Rangeland Congress, Hohhot, China. 29 June-05 July.
- Van Niekerk, D.J., Nesor, F.W.C. & Van der Westhuizen, J.** 2008. *The possibility of a genotype x environment interaction in the South African Jersey population with reference to age at first calving.* Poster presented at the 10th World Conference on Animal Production (WCAP) and the Annual General Meeting of the South African Society for Animal Sciences (SASAS), Cape Town International Convention Centre, Cape Town, South Africa. 23-28 November.
- Vermeulen, S. & Snyman, H.A.** 2008. *Evaluation of the dry-weight-rank technique to determine the botanical composition of cultivated pastures.* Poster presented at the 43rd Annual Congress of the Grassland Society of Southern Africa, Badplaas, Mpumalanga, South Africa. 21-25 July.



Statistical data

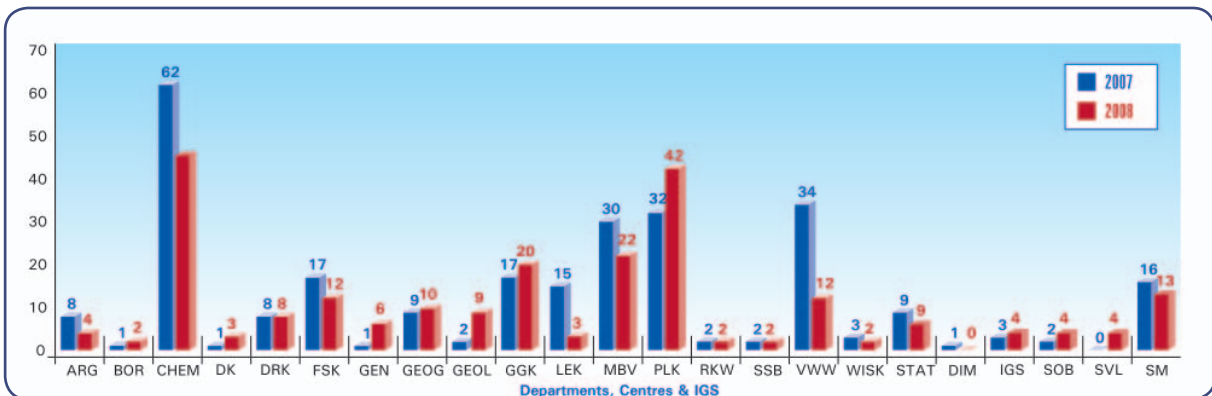


Research outputs: 2007-2008

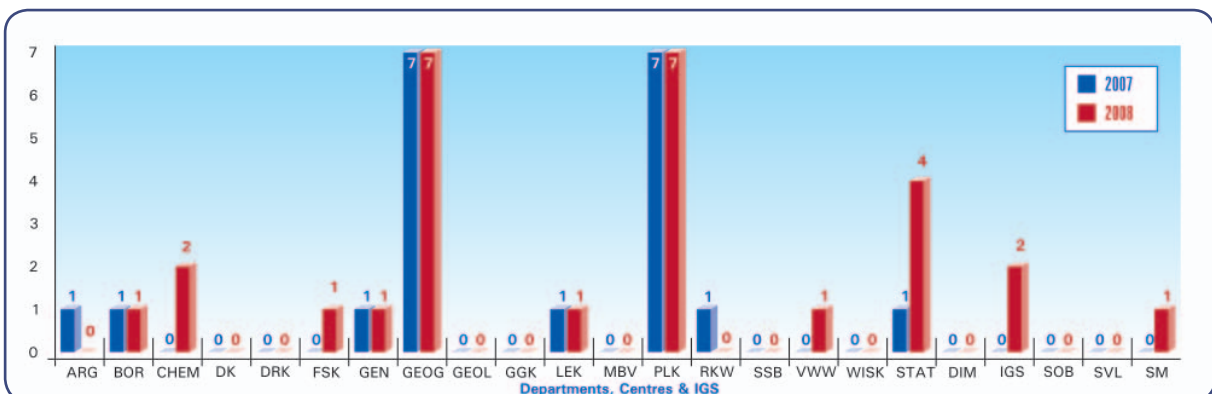
List of abbreviations

Abbreviation	Name	Abbreviation	Name
ARG	Department of Architecture	GGK	Department of Soil, Crop and Climate Sciences
BOR	Department of Quantity Surveying and Construction Management	IGS	Institute for Groundwater Studies
SOB	Centre for Environmental Management	LEK	Department of Agricultural Economics
CEM	Department of Chemistry	MBV	Department of Microbial, Biochemical and Food Biotechnology
SM	Centre for Microscopy	PLK	Department of Plant Sciences
SVL	Centre for Sustainable Agriculture and Rural Development	RKW	Department of Computer Science and Informatics
DK	Dean's Office	SSB	Department of Urban and Regional Planning
DRK	Department of Zoology and Entomology	SRB	Disaster Management Training and Education Centre for Africa (DIMTEC)
FSK	Department of Physics	VWW	Department of Animal, Wildlife and Grassland Sciences
GEN	Department of Genetics	STAT	Department of Mathematical Statistics and Actuarial Science
GEOG	Department of Geography	WISK	Department of Mathematics and Applied Mathematics
GEOL	Department of Geology		

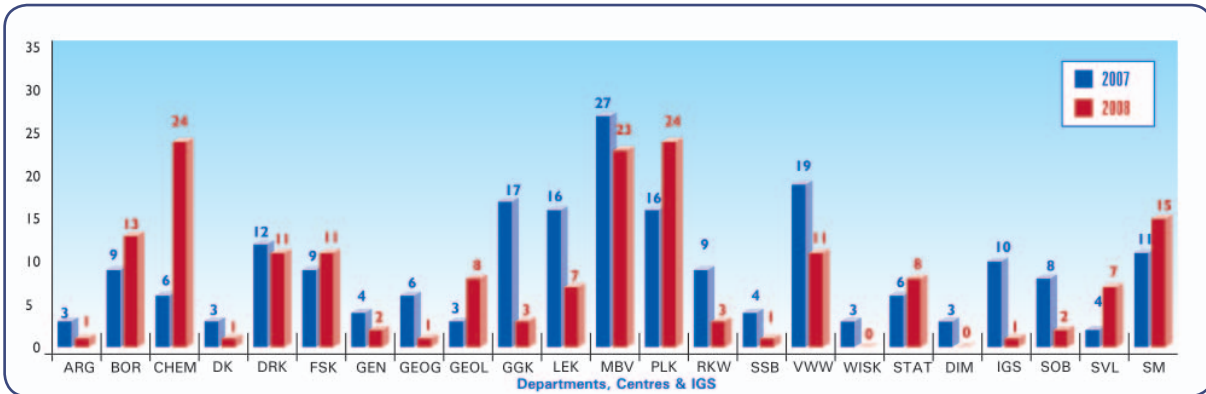
Accredited articles



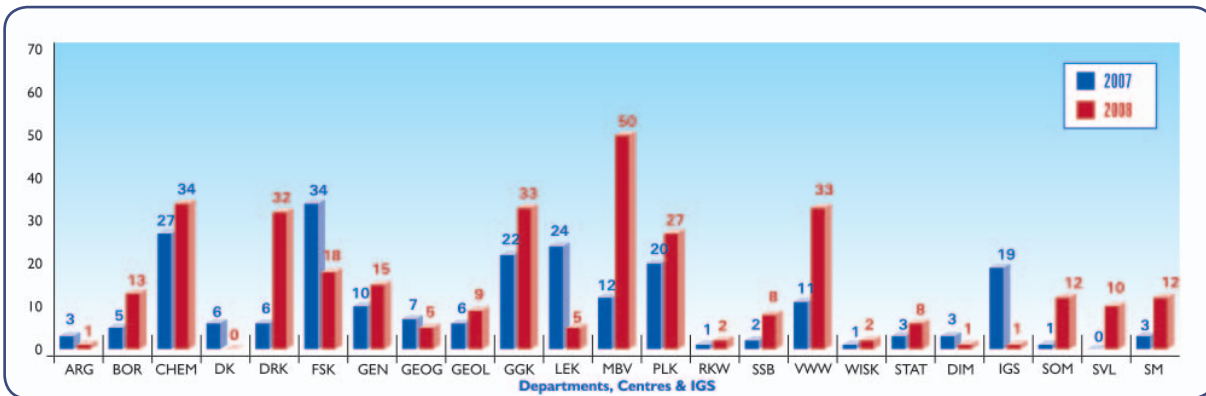
Books



International conferences



Local conferences



Student figures: 2007-2008

Student figures

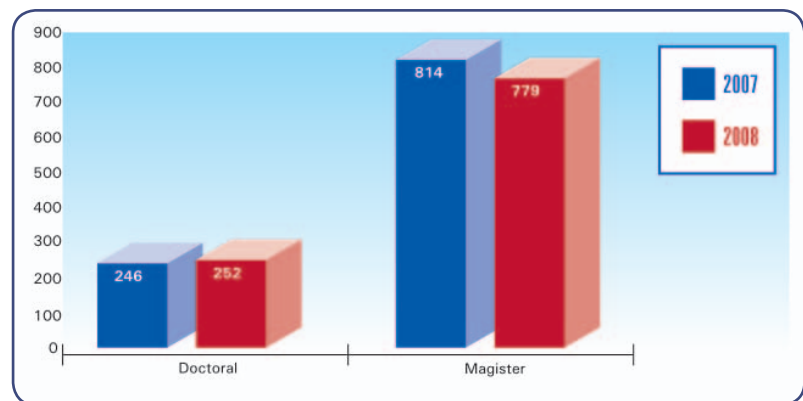
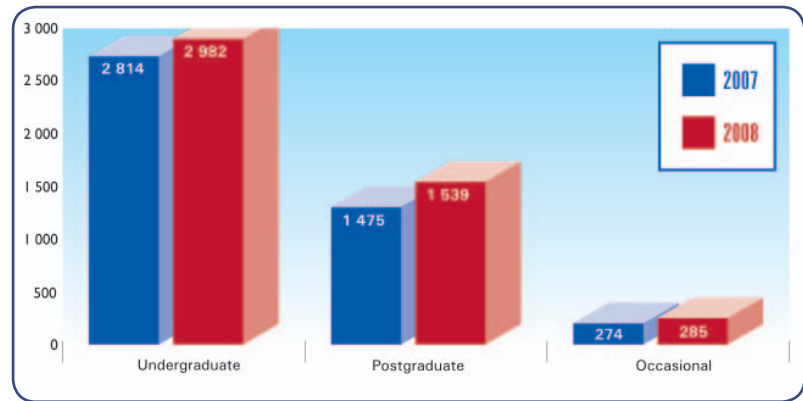
Year	Description	Black	Coloured	Asian	White	Total
2007	Undergraduate	1492	66	38	1218	2814
	Postgraduate	710	41	40	684	1475
	Occasional	230	6	2	36	274
*TOTAL		2432	113	80	1938	4563
2008	Undergraduate	1667	51	37	1227	2982
	Postgraduate	755	40	43	701	1539
	Occasional	260	5	1	19	285
* TOTAL		2682	96	81	1947	4806

International students

Nationality	Year	Year
	2007	*2008
Angola	2	0
Asian countries	20	24
Botswana	17	23
Democratic Republic of the Congo	0	1
European countries	9	10
Lesotho	118	144
Malawi	3	5
Mauritius	2	3
Mozambique	4	7
Namibia	54	65
North America	15	5
Other African countries	47	69
South America	1	0
Swaziland	5	6
Zambia	7	7
Zimbabwe	48	60
Total	352	429

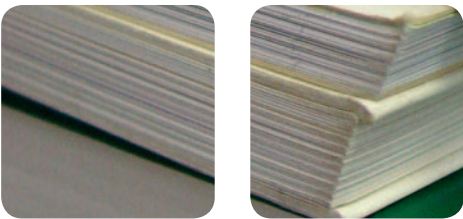
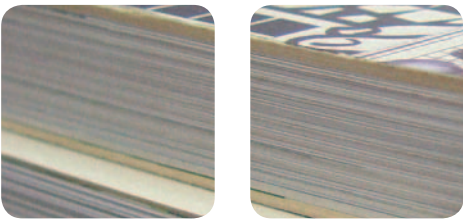
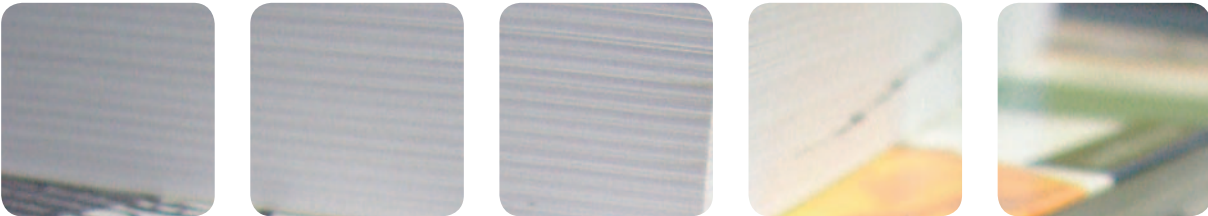
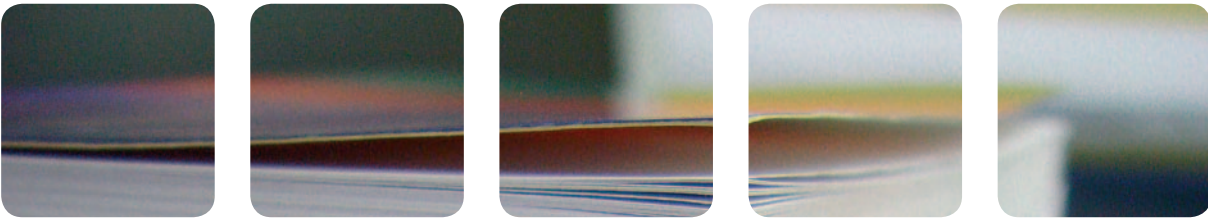
*2008 Final HEMIS figures not available

Comparison for the Faculty of Natural and Agricultural Sciences





Glossary



Glossary

A

AACC -	American Association for Cereal Chemists
AACE -	Association for the Advancement of Cost Engineering
ADF -	Amsterdam Density Functional Programme
ADG -	Average Daily Grain
AEASA -	Agricultural Economics Association of South Africa
AEON -	the African Earth Observation Network
AGU -	American Geophysical Union
AI -	Artificial Insemination
ARC -	Agricultural Research Council
ARV -	Antiretroviral
ASC -	Architecture Student Conference
ASAQS -	Association of South African Quantity Surveyors
ASOCSA -	Association of Schools of Construction of Southern Africa

B

BBSRC -	Biotechnology and Biological Sciences Research Council
BMBF -	Federal Ministry of Education and Research, Germany

C

CAA -	Commonwealth Association of Architects
CANSA -	Cancer Association of South Africa
CAB -	Centro de Astrobiología
CED -	Centre for Education Development
CePHMa -	Centre for Plant Health Management
CHESD -	Centre for Higher Education Studies and Development
CHPC -	Centre for High Performance Computing
CIDB -	Construction Industry Development Board
CIOB-SA -	Chartered Institute of Building, South Africa
CSIR -	Council for Scientific and Industrial Research Organisation
CSTA -	Cereal Science and Technology Association
CUT -	Central University of Technology

D

DiMTEC -	Disaster Management Training and Education Centre for Africa
DMISA -	Disaster Management Institute of Southern Africa
DRRW -	Durable Rust Resistance in Wheat
DST -	Department of Science and Technology
DWAF -	Department of Water Affairs and Forestry

E

ECA -	European Crystallographic Association
EGIC -	Economic Growth and International Competitiveness
EMSA -	Environmental Management Systems Association
EMS -	Environmental Management Systems
EPWP -	Expanded Public Works Programme

F

FAO -	Food and Agricultural Organisation
FETWater -	Framework Programme for Research Education and Training in Water
FMP -	Facilities Management Programme
FSRDPP -	Free State Rural Development Partnership Project
FTIR -	Fourier Transform Infra Red Spectrometer

G

FGAP -	Facility for Genomics and Proteomics
GIS -	Geographical Information Systems
GMO -	Genetically Modified Organisms
GRDM -	Groundwater Resource Directed Measures
GSSA -	Grassland Science Society of South Africa
GSSA -	Geological Society of South Africa

H

HCI -	Human-computer Interaction
HRTEM -	High Resolution Transmission Electron Microscopy

I

IAMA -	International Food and Agribusiness Management Association
IAU -	International Astronomical Union
ICACS -	International Conference on Atomic Collisions in Solids
ICCC -	International Conference on Coordination Chemistry
ICEC -	International Cost Engineering Council
ICRISAT -	International Crops Research Institute for the Semi-Arid Tropics
ICSU -	International Council for Science
IDC -	Industrial Development Corporation
IGC -	International Geological Congress
IGS -	Institute for Groundwater Studies
IMWA -	International Mine Water Association
INCRoP -	Insects on New Crops Programme
IPMP -	Intensive Project Management Programme
ISI -	International Statistical Institute
ISME -	International Society for Microbial Ecology
IT -	Information Technology
IUMS -	International Union of Microbiological Societies

L

LPI -	Lunar and Planetary Institute
LRAD -	Land Redistribution for Agricultural Development

M

MCEE -	Minnesota Council on Economic Education
MDC -	Maputo Development Corridor
MEC -	Member of the Executive Council
MNS -	Material and Nanosciences Cluster
MOU -	Memorandum of Understanding
MRC -	Medical Research Council
MSA -	Masters in Sustainable Agriculture
MSSA -	Microscopy Society of Southern Africa
MUCPP -	Mangaung University Community Partnership Programme

N

NAMC - National Agricultural Marketing Council
 NASA - National Aeronautics and Space Administration
 NASSP - National Astrophysics and Space Science Programme
 NBN - National Bioinformatics Network
 NCEE - National Council for Economic Education
 NDF - Neutral Detergent Fibre
 NECSA - Nuclear Energy Corporation of South Africa
 NERPO - National Emergent Red Meat Producers Organisation
 NGO - Non-Governmental Organisation
 NRF - National Research Foundation
 NSTF - National Science and Technology Forum
 NWGA - National Wool Growers' Association

O

OECD - Organisation for Economic Cooperation and Development

P

PAQS - Pacific Association of Quantity Surveyors
 PDMS - Provincial Disaster Management Centre
 PRT - Protein Research Trust

R

RDP - Redress and Development Programme
 RIBA - Royal Institute of British Architects
 RICS - Royal Institute of Chartered Surveyors
 RIEP - Research Institute of Education Planning
 RMMA - Red Meat Abattoirs Association
 RPO - Red Meat Producers Organisation
 RTPI - Royal Town Planning Institute

S

SA - South Africa
 SAAPMB - South African Association of Physicists in Medicine and Biology
 SAB - South African Breweries Limited

SABC - South African Broadcasting Corporation
 SACAP - South African Council for the Architectural Professions
 SACPCMP - South African Council for the Property Valuers Profession
 SACPLAN - South African Council of Planners
 SACQSP - South African Council for the Quantity Surveying Profession
 SADC - Southern African Development Community
 SAFA - South African Feedlot Association
 SAFEFE - South African Foundation for Economic and Financial Education
 SAFOI - South African Fryer Oil Initiative
 SAIA - South African Institute of Architects
 SAIM - Society for Industrial and Applied Mathematics
 SAISC - Southern African Institute of Steel Construction
 SANBI - South African National Biodiversity Institute
 SANCID - South African Commission on Irrigation and Drainage
 SANPAD - South African Netherlands Research Programme on Alternatives in Development
 SANSA - South African National Survey of Arachnida
 SAPOA - South African Property Owners Association
 SAPPS - Symposium of the South African Pecan Producers Association
 SAQA - South African Qualifications Authority
 SASA - South African Statistical Association
 SASHS - Southern African Society for Horticultural Sciences
 SASM - South African Society for Microbiology
 SAWMA - South African Wildlife Management Association
 SAWSS - Southern African Weed Science Society
 SCM - Scientific Computing and Modeling
 SEG - Society of Economic Geologists
 SEM - Scanning Electron Microscope

SLE - Senior Lecturer Equivalent
 SSSSA - Soil Science Society of South Africa
 SWMA - Southern African Wildlife Management Association

T

TEM - Transmission Electron Microscope
 THRIP - Technology and Human Resource for Industry Programme

U

UCT - University of Cape Town
 UEC - Unit for Earth Construction
 UFS - University of the Free State
 UJ - University of Johannesburg
 UK - United Kingdom
 UN - United Nations
 UNESCO - United Nations Educational, Scientific and Cultural Organisation
 UNU - United Nations University
 UP - University of Pretoria
 USA - United States of America
 USAID - United States Agency for International Development
 UWC - University of the Western Cape

W

WCAP - World Conference on Animal Production
 WITS - University of the Witwatersrand
 WRC - Water Research Commission

