CELEBRATING 60 YEARS OF AGRICULTURE
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Contact details

For information, please contact the School of Agricultural Sciences and Agribusiness at:
Tel: +27 33 260 6075
Email: sasa@ukzn.ac.za
They say that diamonds are forever. If this is true, which I am sure it is, it indicates that Agriculture at UKZN is in fine health. As we celebrate and acknowledge 60 years of academic agriculture in KwaZulu-Natal, we have the time to reflect and remember, but also to gloat just a little. This brief volume is designed to give us all – new, old and those who are part of the furniture – the opportunity to relive the past but also to see what the future has in store.

I will not be criticised for claiming that the "AgFac", as the collective group of agriculturalists has always been known, has had a significant influence on this continent – from pigs, poultry, paw paws and pecans through to farm finance, fuel, food security and veld fires! Our contribution is not only in these complex fields of the agricultural sciences, practised here for 60 years, but covers the full ambit of civil society, community engagement, research and teaching. Many innovations now in general use in the university originated from the AgFac – also a name used to describe the grand and somewhat stately Rabie Saunders Building. An important example of this is the module assessment which was provided by the Agricultural Student Council in the early 1980s. It is used to provide student feedback to lecturers and is a critical tool in the maintenance and assurance of quality of teaching and course content across the university. We also led the development and implementation of semesterisation in the mid-1970s, a concept that was not popular at the time and one that is not favoured by some people today. However, it made curriculum planning for students more flexible – especially for those who drop a course or two along the way! A feature of student life since the supplementary exam was invented and students developed the skills of ‘going for the supp’ – a high risk game with obvious consequences that can only be solved by a flexible curriculum.

In civil society many leaders in professional life, in the Departments of Agriculture, the Agricultural Research Council and other national agencies are made up of those whose undergraduate or postgraduate training emanated from the AgFac. One or two prominent politicians and many captains of business spent their formative professional years at the bottom of Carbis Road.

And why should we be surprised by this? The symbolic act by Rabie Saunders, the first Dean of Agriculture, in personally laying the slate paving which forms the first tread of the stairs leading to the glass façade of the building, set the tone which has endured for 60 years.

When there is a job to do, get on with it. And if you can’t, get someone from the AgFac to do it!

I hope you will enjoy this brief publication and that its content will inspire you to regain a closer connection to the University of KwaZulu-Natal, the College of Agriculture, Engineering and Science, and the ‘new’ Faculty of Science and Agriculture. All the disciplines of agriculture are alive and well and far from their dotage. All are ready to tackle the next 60 years. With your support – in whatever form – they will be better equipped to do so.

Professor Pete Zacharias
The significance of this publication lies in recognition of the rich contribution and dedication to teaching, research and service to society of three generations representing more than 100 academics in 18 agriculture-related disciplines over six decades. The articles herein depict the significant contribution made by these academics to life at the University and its predecessor, the University of Natal; their meaningful role in building much needed agricultural science capacity for our nation and continent and the lead role they have played in research related to agricultural productivity, technology advancement, marketing, policy analysis and rural development.

The history captured here reflects the formation, reformation, renaming, merging and parting of disciplines that mirrors the trends in and nature of South African agriculture over the past six decades – including times of wealthy apartheid government investment (evidenced in the grand architecture and materials of the Rabie Saunders building); disinvestment in agricultural development (as evidenced by decreasing student numbers over time); and social transformation (evidenced by the changing staff and student demographics and the new UKZN).

Reflecting on the past, grants us an opportunity to celebrate our achievements; encourages us to pause and take stock of where we are now; and inspires us to refine our vision for the future of agriculture at UKZN. This role is embodied in the vision of the institution - to be the Premier University of African Scholarship, in which the University of KwaZulu-Natal draws inspiration from an African identity and takes seriously its responsibilities to the development of the African continent through academic excellence, innovation in research and critical engagement with society. Agriculture is clearly a vehicle for realising this vision – even more so in the current context in which a Green Revolution for Africa is hailed as the solution to hunger in Africa amidst a global food, fuel and economic crisis.

The Faculty of Science and Agriculture, through the collective and collaborative efforts of its Schools, Disciplines and partners, is committed to furthering agricultural sciences and the application of this knowledge to solving the complex problems of our society, through continued and deepened contributions to African development and international debates on agriculture and food security.

Professor John A Cooke

Dean and Heads of Schools, Faculty of Science and Agriculture, 2008. Left to right: Sadha Pillay (Physics), John Cooke (Dean), Dharmanand Baboolal (Mathematics), Joseph Kioka (Science Access), Fethi Ahmed (Environmental Sciences), Rob Slotow (Acting Deputy Dean, Westville), Andrew Kindness (Chemistry), Deshendran Moodley (Computer Science), Steve McCourt (Geology), Sheryl Hendriks (Agricultural Sciences and Agribusiness), Deo Jaganyi (Deputy Dean, Pietermaritzburg), Kevin Kirkman (Biological and Conservation Sciences) and Bala Pillay (Biochemistry, Genetics, Microbiology and Plant Pathology). Missing: Delia North (Statistics and Actuarial Sciences).
The first rumblings of a Faculty of Agriculture at the Natal University College began in 1939 when a Natal Agricultural Research Advisory Committee was formed, of which the University was a key member. However, it was only in 1944 that Robert Dennison, Principal of the University, asked Dr John Fisher, Head of the College of Cedara, to prepare a report on a possible Faculty of Agriculture. Fisher’s plan of a three-pronged Faculty situated at Pietermaritzburg, Cedara and Baynesfield ultimately proved impracticable and it was Ernst Malherbe, third Principal of the University, who finally championed the cause.

Known for not letting the grass grow under his feet, Malherbe approached the Minister of Agriculture in 1946 and eventually persuaded the Smuts government to approve the idea of a Faculty of Agriculture. As part of the agreement, the University accepted responsibility for providing accommodation for the agricultural students as well as expanding its science facilities to cater for the students’ preliminary science instruction. Malherbe also assured the government that the medium of instruction would be English and Afrikaans. In exchange, the Department of Agriculture agreed to provide the total cost of a building to house the Faculty of Agriculture and an annual stipend to cover running expenses. In addition, Malherbe was instrumental in ensuring that the right candidate was chosen to lead the new Faculty: Rabie Saunders, a distinguished plant geneticist who conducted most of his work at the Potchefstroom College of Agriculture. According to Arthur Rayner (Dean of the Faculty of Agriculture from 1958–1959), ”it is difficult to imagine anyone more suitable for the job of founder and first Dean”.

Progress on the creation of the new Faculty was hampered by administrative issues and Saunders officially commenced his appointment on 1 April 1947, almost a year after government’s initial approval. However, the Faculty of Agriculture was only formally recognised as a faculty on 15 March 1949, the day on which the University of Natal received independent status. In the interim period, it operated under the Faculty of Science because the University of South Africa, under which the Natal University College was a constituent college, had no Faculty of Agriculture.
Saunders’ proposal for a Faculty comprising 12 departments (Agricultural Chemistry; Agricultural Economics; Agricultural Engineering; Animal Husbandry, Poultry Husbandry and Animal Diseases grouped together; Agronomy; Biometry; Dairy Industry; Entomology; Genetics; Horticulture and Forestry; Pasture Management and Soil Conservation; and Plant Pathology and Microbiology) was accepted by the University and the inaugural group of 29 students enrolled for their first year science subjects in 1947. This provided a year’s breathing space to consolidate plans and recruit staff before the beginning of agriculture studies proper. One of the immediate problems was that of accommodation and, at one stage, it was even seriously suggested that tents would have to be used. Saunders and his clerk, Colenbrander initially occupied two rooms in the old Police barracks in Alexandra Road. Fortunately, at the beginning of 1948, the old World War II military hospital at Oribi camp was allocated to the Faculty for offices and lecture rooms. Space was at a premium and there was only one ‘main lecture room’ with a corrugated roof. “Naturally it was extremely hot in summer and if it hailed lectures had to stop.’ The old kitchen became the chemistry laboratory and the x-ray lab was transformed into a genetics laboratory. In fact, it was not until 1954 that the Faculty was able to offer lectures in its own building on campus.
The Faculty building was constructed on the old Pietermaritzburg outspan land in close proximity to the new Wattle Research Institute. It was forecast for completion in 1950 or 1951 and then for 1951 or 1952 but was delayed for various reasons. One of these was the highly controversial proposal to shift the whole University, except for the newly authorised Faculty of Agriculture, to Durban. The plan involved consolidating certain faculties in Durban which would free up the existing Arts and Science buildings for the housing of Agriculture. The funds saved on the Agriculture building could then be spent on the operations in Durban. Eventually the battle to retain the University in Pietermaritzburg was won and the Rabie Saunders Building was completed and became the official home of the Faculty of Agriculture as well as the Headquarters of the Natal region of the Department of Agricultural Technical Services (ATS). Designed to accommodate a maximum of 30 students per annum, the original building had only three floors. Cramped and inadequate space led to the addition of a fourth floor in 1961. Limitation of student intake was later avoided when the Department of ATS moved to Cedara.

Although 25 posts were approved in October 1947, only four professors took up positions in February 1948: James D Scott (Pasture Management & Soil Conservation), GB Laurence (Animal & Poultry Husbandry & Animal Diseases), ER Orchard (Agricultural Chemistry & Biochemistry) and Josiasas C Le Roux (Horticulture & Forestry). The fledgling Faculty soon expanded with the arrival of further professors and lecturers to staff the planned twelve original departments. When the Faculty was formally recognised in 1949, there were 92 students registered for agricultural studies.

Practical work and instruction was initially conducted at Cedara but ultimately it proved unsatisfactory and the Faculty felt the need for its own experimental farm. In 1950, the 500 acre farm ‘Roblyn’ which constituted part of ‘Shortt’s Retreat’ just outside Pietermaritzburg was purchased by the State for R64 000. It was aptly named *Ukulungo* (meaning ‘to test’ or ‘to endeavour’ in isiZulu) by Effie Scott, the wife of James D Scott. Adjoining land was later purchased increasing the farm to 356 ha. In 1973, it was transferred to the University with the proviso that it continued to be used for educational purposes. In March 1998, an agreement between the Pietermaritzburg Msunduzi Transitional Local Council and the University was signed, formalising the joining of 100 hectares of Ukulinga to the Bisley Nature Conservancy. This brought to fruition a vision of Frits Rijkenberg, then Dean of the Faculty of Agriculture: the creation of a conservative reserve.
ancy area that would provide the Faculty's Wildlife Science students with innovative and interactive training and learning opportunities.

Since its inception, Ukulinga has been the site of unique and ground-breaking research in several agricultural disciplines. Two of the world's longest running ecological trials, the Veld Fertilisation trial and the Burning and Mowing trial, were started by Scott in 1951 and have continued uninterrupted since then. In the 1960s, George Hunter conducted revolutionary research that involved the use of rabbits as intermediate living incubators to transport fertilised ova from ewes in England to South Africa, where they were successfully transferred into local surrogate ewes resulting in the birth of twin lambs, Romulus and Remus – now immortalised in an ornate clock (see the photograph above) created by John De Villiers as part of his Masters in Fine Arts dissertation, which hangs in the foyer of the Rabie Saunders building. In 1995 another turning point in animal breeding was achieved when Africa's first test-tube calf was produced involving the Department of Animal and Poultry Science. The breeding of hybrid maize and the testing of all hybrid maize bred in the country before being released has been carried out at Ukulinga. Over the years pioneering research in the area of Poultry Science has been undertaken and Ukulinga currently boasts internationally recognised facilities for poultry production.

Agricultural Engineering is another department that has always been prolific at the farm. Its research on hydrology and the development of simulation techniques and systems to reduce the cost of transporting agricultural products is known far and wide. Horticultural research on many kinds of fruits and nuts, including the release of the scab tolerant 'Ukulinga' pecan nut cultivar and 'Honey Gold' female pawpaw – the oldest pawpaw clone in the world, has also borne much fruit.

A significant year in the life of the new Faculty, 1950 was the first year in which students were registered in all four years (116 students in total) and was also the year in which the first group of students completed their agriculture degrees. In March 1951, BSc Agriculture degrees were conferred on 18 candidates. The first Master's candidate graduated in 1952 and in 1958 the PhD degree was conferred for the first time on two students (Hector de Meulenaire and Peter Allan) who received their undergraduate training in the Faculty.

The Faculty recorded a steady growth rate into the late 1950s, reaching a peak of 269 registered students in 1960. Several factors, including the increased aggregate required for matriculation and the new military training scheme, resulted in a considerable drop in numbers in 1961 and 1962. Figures, however, increased markedly in the following years especially in the area of postgraduate study which recorded only 17 students in 1960 and approximately 80 in 1964.

In the early years, one of the difficulties of the Faculty – perhaps also one of its strengths – was its dual character. Every member of the Faculty of Agriculture was also an officer of the Department of Agriculture and a staff member of the University. In this regard, members were subject to the laws and regulations governing the public service while at the same time answerable to the University. In 1963 this agreement changed and staff members were relieved of their onerous regional duties and were appointed by the Department on the recommendation of the University. This granted Faculty members total freedom in their lecturing and research work and also exempted them from departmental regulations. In 1964, for the first time since the establishment of the Faculty of Agriculture, all posts were filled.

In 1973 to 1975 the Faculty faced a major crisis when the Department of ATS and National Education transferred the administration of the four faculties of Agriculture to their respective universities. The Faculty found itself in a fight for its life with pressures from the government to rationalise its departments and from the University administration regarding the financing of its activities.
Unfortunately this take-over also coincided with a period during which student numbers were at their lowest since 1953. Ultimately, it left the Faculty in a weaker position than it had been prior to the event. The main changes that took place were: the demise of the Department of Diary Science; the transfer of the Departments of Biochemistry and Entomology to the Faculty of Science; the recognition of the Department of Statistics & Biometry as a dually affiliated department (Science:Agriculture); the transfer of the Department of Agricultural Engineering to the Faculty of Engineering and staff reductions in the academic and non-academic sector.

During this precarious period, the Faculty was fortunate to have an excellent leader in its Dean, Pieter de V Booysen. Although there were regrettable losses, he managed to steer the Faculty into recovery mode. To counter the low student numbers, a three-year Bachelor of Agricultural Management degree was introduced and student enrolments more than tripled between 1973 and 1983. Of significance in 1986 was the relaxation by government on restrictions to the enrolment of black school-leavers for agricultural (and several other professional) degrees at so-called white universities. As a result, the Faculty was able to register 23 first-years, seven senior undergraduate and three postgraduate non-white students in 1987.

The latter half of the 1990s was dominated by the decision to amalgamate the Faculties of Agriculture and Science to create a new powerhouse capable of dealing with the changing educational environment. The two faculties shared a common scientific culture and although the loss of identity was a real fear amongst many stalwarts, the benefits far outweighed the risks.

A single faculty would lead to more efficient use of resources, interdisciplinary research, increased relevance to community and industry, increased focus on academic expertise, a reduction in work load and more time to conduct research. After much deliberation and strategic planning, the new Faculty of Science and Agriculture comprising six academic schools came into effect on 1 January 1999.

Despite initial teething problems, the new Faculty went from strength to strength and numerous notable agricultural achievements were recorded in the new millennium. In 2002, with support from the Rockefeller Foundation, the African Centre for Crop Improvement – the first of its kind in Africa – was established. Its primary aim is to alleviate poverty and hunger on the continent by training African plant breeders in the applied breeding of African crops using conventional and biotechnological breeding tools.

In line with the University’s strategic initiatives, the Faculty focused its energies on strengthening its teaching and research in the area of forestry. In 2004, these efforts culminated in the construction of a new Forestry Building on the Life Sciences Campus. It represented the nucleus of an extensive infrastructure aimed at creating a new centre of excellence.

In 2006, cognisant of the growing food security crisis enveloping Africa, the School of Agricultural Sciences and Agribusiness established the African Centre for Food Security. Its raison d'être was to contribute to building and sustaining the critical mass of African expertise required to alleviate hunger on the continent.
The Centre’s achievements in its short existence have been considerable. Some of these include: an endorsement by NEPAD as the lead agency in the food security activities of the Comprehensive African Agricultural Development Programme; formal recognition as the SADC Regional Centre of Excellence for Vulnerability Assessment and Analysis; and the only facility in the world to offer transdisciplinary training and named degrees in the field of food security.

Agriculture at the University has come a long way in its 60 years of existence. UKZN is home to one of the oldest agricultural programmes in southern Africa and currently boasts the widest range of agricultural disciplines at any one South African institution. Coupled with its location on the eastern side of the country, it has a strategic advantage in terms of solving major problems related to food security and wealth creation in Africa.
Agriculture at UKZN today

Agricultural disciplines at UKZN are currently dispersed across six schools in the College of Agriculture, Engineering and Science and its two faculties: the Faculty of Science and Agriculture and the Faculty of Engineering. Agricultural disciplines are contained in the following schools:

2. School of Bioreosources Engineering and Environmental Hydrology – Agricultural Engineering and Hydrology.
4. School of Environmental Sciences – Agricultural Meteorology, Soil Science and the Centre for Environment, Agriculture and Development.
5. School of Biochemistry, Genetics, Microbiology and Plant Pathology.
6. School of Statistical and Actuarial Sciences – Biometry.

While the ‘AgFac’ of the past no longer exists as an entity, these 20 disciplines and three internationally recognised centres still represent the widest range of agricultural offerings at any African university. They offer a diverse suite of under- and postgraduate training and research, contributing significantly to the training of our future agricultural experts and researchers.

The current context in which we function is radically different to that of a decade ago. At the faculty’s 21st anniversary celebration in 1968, SM Naudé, President of the South African Council for Scientific and Industrial Research, stated: “It has been said that one of the main justifications for the autonomy of universities is that, in their role of detached communities of scholars, with no aspirations to power, they can reflect without having to decide, observe without having to participate, and criticise without having to reform”. Few people in the new South Africa can remain detached, removed and unchanged. We cannot possibly remain detached amidst rapid and all consuming change which has been thrust on the university by: government transformation plans; drastic public expenditure cuts; rapidly changing student demography; a mammoth change in the schooling system resulting in increasing numbers of under-prepared students; the impact of powerful pervading political and social realities related to crime, land insecurity, labour issues, political uncertainty; and a massive brain-drain from the country. As educators and researchers, we take our responsibility for sound and relevant education and research very seriously. This commitment stretches to our active engagement with communities as part of our teaching programmes, in-service learning and research activities at local, national, continental and international levels.

Many of the abovementioned factors have led to a rapid turnover in a previously static academic staffing system. Many recently retired academics have served 40 years or more and those remaining feel a real sense of loss as we struggle to attract new staff in a highly competitive global society. Graduate demand way exceeds our output and academic salaries remain miserably uncompetitive. Despite the changes and the demise of agriculture internationally, most agricultural programmes
have maintained or grown their student numbers through the UKZN merger. Agricultural disciplines and centres employ 78 full-time academic staff – many productive and internationally recognised researchers and gifted teachers (two with University Distinguished Teachers’ Awards). Currently, 298 undergraduate students are registered under these disciplines. In 2008, eight PhD, 28 MSc and 115 BSc students graduated with qualifications in Agriculture.

Gone too are the days where academics have “no aspirations to power”, and “can reflect without having to decide”. Academia has progressively become more competitive and demanding of delivery. As with most institutions nationally and internationally, staff are required to: publish more in prestigious journals; increase student numbers; improve throughput and quality of students; and source external funds for research, travel and equipment in order to maintain the allocation of government and university budgets. Every resource decision has therefore to be carefully weighed with strategic goals, operational necessities and resource efficiency amidst tight budgets. Decision-making is a daily necessity in designing academic programmes and student support systems; balancing the demands of the information age with research and writing time; and finding time to reflect in order to make strategic decisions.

Professor Sheryl Hendriks
Head of School: Agricultural Sciences and Agribusiness
As we celebrate 60 years of agricultural training and research at UKZN we are faced with an unique and unpredicted global food crisis – a daily reminder of the critical role of agriculture in feeding our rapidly growing population and a sore reminder of decades of neglect and underinvestment in the agricultural sector. The competing demands for food, fodder and fuel have outstripped production and driven up prices, curbing the very driver of demand – growing consumer buying power.

The crisis does, however, provide much needed incentives for farmers to increase production and productivity across a wide range of staples and highly developed value chains. While increased input costs consume some of the potential profit reaped from higher food prices, farmers in Africa stand to benefit considerably from the structural adjustment in prices and the constraints faced by farmers in the developed world related to land, labour, and declining productivity. Indeed, the west is looking to Africa for supplying future needs – especially for food and fodder for Asia.

Who would have thought that we would reach a situation where the world no longer has surplus stock to feed Africa? Where transportation costs prohibit the movement of what stocks do exist from the west to fill consumption gaps in Africa? Where an economic slump and incredible financial volatility in the developing world has led to food aid agencies begging for money to feed the growing numbers of hungry people? Where market confidence has resulted in speculation beyond market supply? The state of food insecurity is a global tragedy, adding approximately 100 million more to the 800 million people who are food insecure. Hope of achieving the Millennium Development Goal of halving hunger and poverty by 2015 is rapidly dwindling.

Never before has the world needed competent scientists grounded in well-integrated theory and practice to solve complex problems in agriculture, infrastructure, economics and society than today!

UKZN’s sustained contributions to the development of agricultural science, communication of practical applications of fundamental disciplinary theory and our innovative approaches to education and research set us in good stead for taking up the UKZN mission and vision for African scholarship and leading new innovations, driving evidence-based policy reform and breaking additional new ground in technology advancement. As we engage more deeply with training and researching local, regional and continental issues, we continue to contribute to building capacity for addressing Africa’s problems through competent and confident Africa-relevant scientists.

UKZN could benefit considerably from the current food crisis. Our engagement in Africa and our international reputation grant us many opportunities for greater influence and impact. The magnitude of the benefit we derive depends only on our willingness and ability to make careful strategic adoptions to our programmes and delivery and the nurturing of strategic partnerships to scale up and meet the capacity development and research needs of our country, region and Africa.

May we rise to the challenge as we play a central role in contributing to practical solutions and continue a tradition of excellence for the decades to come!

Sheryl Hendriks
Head of School: Agricultural Sciences and Agribusiness
Disciplines and Centres
Agricultural Economics

Ian Behrmann was appointed in 1948 as the first lecturer in Agricultural Economics. Eksteen de Waal, a senior lecturer, arrived the following year and became the Head of Department. The first two graduates in Agricultural Economics completed their BSc Agriculture degrees in 1951, the same year in which de Waal was promoted to Professor.

Agricultural Economics research was conducted in collaboration with economists from the Division of Economics and Markets of the Department of Agriculture. De Waal assisted with the agro-economic survey of South African farming, and Behrmann participated in economic and cost surveys of dairy farming in Natal.

In 1953 de Waal was offered the chair at the University of Stellenbosch and difficulties arose in finding a replacement. Behrmann was promoted to Senior Lecturer in 1956. However, he was alone in the Department until 1957 when Louis Fourie was appointed as Lecturer. In 1959 Eckart Kassier was the first candidate to complete the MSc Agric degree, with a thesis on the economics of wattle farming. Behrmann, having completed a PhD degree on the economics of sugar-cane production, was appointed Professor and Head of the Department in 1960. He chaired the Department until his retirement in 1982. Behrmann passed away in December 2006.

Kassier joined the Department in 1962 after completing a DÄgrar degree at Stuttgart-Hohenheim in Germany. In two years he made a significant contribution to the Department having started a farm management recording scheme with John Graham, a regional economist in the Natal region.

The Department made significant strides when Jan Groenewald and John Graham joined in 1964. Groenewald was well equipped, having completed course work for a PhD at Purdue University. He was granted leave in 1966 to complete his PhD thesis and left the following year to become Head of the Department of Agricultural Economics at the University of Pretoria.

Lieb Nieuwoudt succeeded Groenewald as Senior Lecturer in 1967. In a short time the Department recognised that it had acquired a highly talented economist and skilled econometrician. In 1970 he was awarded a PhD that focused on the demand for resources and supply of output based on data from the agro-economic regions of South Africa. The study was awarded the Agricultural Economics Founders medal and prize of the Economic Society of South Africa, the same award received by Behrmann in 1960.

In 1980 Nieuwoudt established the Agricultural Policy Research Unit (APRU) in the Department with state (Human Sciences Research Council) funding. This unit had a profound impact on the quality and quantity of postgraduate research as it provided the seed funding for approximately 12 to 15 full-time postgraduates annually. Nieuwoudt was...
promoted to Professor in 1982 and became Head of Department when Behrmann retired. When government's funding policy for units changed in the early 2000s, the APRU closed when Nieuwoudt retired at the end of 2003.

Gerald Ortmann was appointed as a lecturer in October 1979 after spending close to five years in the Division of Production Economics of the Department of Agriculture at Cedara, and in the Western Cape as a regional economist. He was promoted to Professor in 1995 and is currently Head of Discipline. Mike Lyne was appointed as a lecturer in 1982 after serving in the KwaZulu Department of Agriculture as Head Economist. His experience and interest in rural development issues drove much of his research at the University. He was promoted to Professor in 1997 and resigned ten years later to emigrate to New Zealand. His PhD thesis, which he completed in 1984, also won the Founders medal of the Economic Society of South Africa.

Mark Darroch joined the Department in 1984. He graduated with a BSc Agric degree (summa cum laude) and was the first student to receive the Dux medal for the top student in the Faculty of Agriculture. He subsequently completed his MSc Agric degree cum laude and was promoted to Senior Lecturer in 1992. Stuart Ferrer joined the Department as a contract lecturer after completing his PhD in 2000 and was appointed as a lecturer in 2004.

Staff expertise has developed in several areas, notably small-scale farming, commercial agriculture, agricultural policy and agribusiness. Staff members regularly visit overseas institutions on sabbaticals and present papers at national and international conferences. They have distinguished themselves with various awards, including best published paper awards, the Ernest Oppenheimer Memorial Trust Travelling Fellowship and the BP Research Scholarships in Agriculture and Rural Development. The Department also benefited during the 1970s and 1980s from top former Rhodesian (Zimbabwean) students who studied in South Africa, producing six Rhodes scholars and one Beit scholar between 1970 and 1985. In recent years, the main sources of funding for postgraduate research have included the USAID BASIS project, Ford Foundation, National Research Foundation, SA Cane Growers' Association and the National Agricultural Marketing Council.

In order to attract undergraduate students from diverse interests, agribusiness options (co-majors with Animal Science, Crop Science, Food Processing, Horticultural Science or Wildlife Management Science) were initiated in 1998. under the new school system launched in 1999, together with the amalgamation of the Faculties of Science and Agriculture, Agricultural Economics became part of the School of Agricultural Sciences and Agribusiness.

Agricultural Economics is a growth area at UKZN. Government's identification of it as a scarce skill has recently led to an increase in scholarships and a consequent increase in student numbers and student interest. This bodes well for the future of Agricultural Economics at UKZN. The Discipline will continue to serve commercial agriculture, its core business, and will also maintain its research profile in agricultural policy and rural development.
The Department of Agricultural Engineering was established in 1948 when the Faculty of Agriculture was formed. Geiger was the first lecturer and was appointed to give two service courses to agriculture students and to act as a service engineer to the Department of Agriculture and the Faculty. After Geiger’s resignation, the Department gained momentum under the late Piet Vorster who became the first department chair in 1960. He established a five-year Agricultural Engineering degree programme that was changed in 1968 to a four-year programme to align it with the other engineering degrees.

In 1972, in order to comply with the Professional Engineers Act, the Agricultural Engineering degree was transferred to the Faculty of Engineering. However, the Department remained on the Pietermaritzburg campus in order to facilitate links with the other agricultural disciplines.

Potgieter (Pottie) Meiring, who was appointed as a lecturer in 1956, succeeded Piet Vorster as Head of Department in 1976. He was responsible for the development and expansion of a research programme in Power and Machinery which became a leading, internationally recognised tractor and fuels research centre. Peter Lyne joined the Department in 1977 and, together with Alan Hansen, joined Meiring to form the core team of this centre of excellence.

Many students will fondly remember Pottie Meiring for his congeniality, his foreboding presence, and his high standards and incisive intellect. He always seemed to ask the difficult questions, did not tolerate barefoot students in his classes and ruled the Department with an iron rod. Kay Temple ably assisted him as his secretary.

When Pottie Meiring retired in 1991, Peter Lyne was appointed Professor and Head of Department, a position he held until his early retirement in 2003 to take up a position at the South African Sugar Research Institute (SASRI). Lyne forged strong links with the sugar industry and initiated negotiations with SASRI to fund a senior research fellow in the School. He also established an ongoing research programme involved in optimising transport systems in the sugar and timber industries.

Hydrological research in the Department started in 1974 under the leadership of Jack Burney and was continued by Roland Schulze from 1976. In 1981 Schulze initiated a Hydrology degree programme in the Department of Agricultural Engineering. His focus, dedication and prolific research output have resulted in a thriving, nationally and internationally recognised applied hydrological research group. It currently consists of 12
academics with expertise ranging from hydrological modelling to the impact of water resources and agriculture on climate change. Following Schulze’s retirement in 2007, Graham Jewitt was appointed as Professor of Hydrology.

The restructuring of the University in 1999 brought a change in name from the Department of Agricultural Engineering to the School of Bioresources Engineering and Environmental Hydrology. The growing demand for agricultural engineers, a name change to reflect current strengths and activities, and the availability of bursaries have resulted in double the number of undergraduate agricultural engineering students in the past four years. Similarly, there has been a demand in the country for qualified hydrologists, particularly those with a postgraduate qualification.

Jeff Smithers was appointed head of the School of Bioresources Engineering and Environmental Hydrology in 2002, a position he occupies to this day. During his tenure he has secured a chair in Hydrology as well as University-funded academic and technical staff to sustain the delivery of the Hydrology undergraduate programme. (Previously the programme was solely dependent on contract staff). There are currently seven academics receiving funding from the University and six dependent on external research contracts. There are a further five technical and support staff, also funded by external contracts.

The Agricultural Engineering curriculum has recently been revised and restructured to include new fields such as food processing and engineering, sustainable bioenergy systems and soil and water conservation engineering. The third and fourth years of the programme are now conducted in Pietermaritzburg, leaving only the second year of study on the Howard College campus.

The School has a strong postgraduate component that depends largely on external research contracts for work and funding. Historical and current research thrusts focus on power and machinery, alternative fuels, hydrology, water resources, impacts of climate change and transport supply chains.

UKZN is currently the only university in South Africa to offer an accredited degree in Agricultural Engineering. It is also home to the oldest and largest Hydrology degree programme in the country. Given the industry’s growing demand for graduates in these two fields, the future of the School of Bioresources Engineering and Environmental Hydrology is well secured.
In 1949 elements of Agrometeorology fell under the Pasture Management and Soils Conservation Course III: Climate and Erosion. In 1951 a separate introductory course in Meteorology and Climatology was delivered by Margie Roberts, a junior lecturer. The relation between rainfall and crop production formed part of the Agronomy I syllabus in 1957. Jimmy de Jager was appointed as an agrometeorologist in 1961 and Agrometeorology became a separate discipline a year later. In 1965 the Department of Pasture Science and Agrometeorology was formed, offering more than one Agrometeorology course. Pieter de V Booysen replaced de Jager for three years while he completed a PhD in Wales.

In 1974, the year after Soil Science’s 25th anniversary, the Department of Soil Science and Agrometeorology was formed under Malcolm Sumner. A large, well-equipped agrometeorological observatory was established adjacent to the Rabie Saunders building where precise experiments for undergraduate and advanced research were, and still are, conducted. In the mid-1970s, Agrometeorology was an optional part of the Physics Honours degree that allowed a number of Physics students to continue their studies in Agrometeorology instead of Physics. Also around this time, several agriculture postgraduate students became involved in Agrometeorology.

Although always offering undergraduate courses, the emphasis in Agrometeorology has consistently focused on research. In the 1970s the Discipline was put on the map by de Jager’s crop growth modelling activities. His model, appropriately referred to as PUTU (isiZulu word for maize), was the focus of his attention for more than twenty years.

While floods and their impact is the domain of the Agricultural Engineers and Hydrologists, Agrometeorology was the first to demonstrate the effect of a flood in the Rabie Saunders building. In the 1960s Agrometeorology was located on the top floor of the building and as part of a student practical, de Jager was testing some hydraulic lysimeters, large water-filled bags which indicate the imposed weight by a reading showing the height of a liquid in a glass tube. Not satisfied with the increase in the level, de Jager decided to use students as weights. As one of the last students added his weight, the bag burst and an avalanche of water
cascaded from the top floor, clearly demonstrating the power of water and overland flow!

Following the appointment of de Jager as the Head of Agrometeorology at the University of the Free State (UFS) and the arrival of Mike Savage as an agrometeorologist in 1977, the focus was on soil-plant-atmosphere energy and water relations. The first homebred Agrometeorology student, Sue Walker, graduated with a BSc Agriculture degree in 1978 and an MSc degree (cum laude) in 1981.

Many months after Savage’s appointment, a large box arrived from an overseas company containing psychrometer equipment that had been ordered by de Jager prior to his resignation. Researching how to use psychrometers proved challenging and resulted in several significant achievements: a PhD for Savage, MSc Agriculture degrees for Walker and Khuvutlu, the first Agriculture postgraduate degree awarded to a black South African, dozens of papers in international journals and sabbatical visits by world-renowned plant physiologists.

In 1981 Agrometeorology was the first discipline at the University to use a desktop computer, much to the surprise of Computer Services who were curious as to what they would do with it. Laboratory technician, Ahmed Bawa (later to become DVC: Research), and Mike Savage worked on connecting their computer to an external data storage device for the storage of data from an automatic weather station data logger. Agrometeorology was also the first discipline in the early 1980s to use another strangely named piece of equipment: a laser-jet printer.

In 1994 the Department of Agronomy, led by Savage, was established. An increasing focus on the environment resulted in the formation of the School of Applied Environmental Sciences followed by the School of Environmental Sciences. Savage was the head of both these Schools from 1999–2007.

Today, Agrometeorology offers undergraduate modules and is nationally and internationally renowned for research in agricultural and environmental instrumentation, agricultural and forest meteorology and environmental biophysics.
Animal and Poultry Science celebrates 60 years of research, passion, teaching, learning and innovation. The 1947 cohort of animal scientists included P du Plessis (Poultry), Clem W Abbott and JW Claasens (Dairy) and GB Laurence (Animal Husbandry). They were followed by Kotze, George Hunter and G Bishop.

Research interests in the Discipline have evolved over the years as each member of the lecturing staff has brought their particular passion to the Department. Teaching styles have developed too, as the Discipline has sought to mirror the requirements of graduates in industry. The inputs of Rob Gous, Neil Ferguson and Gail Bradford have been significant in these two areas. An experiential learning approach to the teaching of small classes of animal scientists has produced consistently high quality graduates who are sought after in industry.

Although he retired in 2007, Rob Gous has been a pioneer in poultry research and an advocate for quality instruction and preparation of graduates. He remains active in research at the world class poultry research unit that he developed at Ukulinga Research Farm. Work conducted at the state-of-the-art poultry facilities result in many publications on nutrition, reproductive physiology and modelling for broilers, layers and broiler breeders. Rob's amazing contribution to poultry and pig research and simulation modelling will be sustained by lecturers Nicky Tyler and Mariana Ciacciaiello.

Neil Ferguson supervised extraordinary research into lions and crocodiles, while concentrating on simulation modelling in pigs.
Arthur Lishman, Greig Stewart (dairy) and Jannes van Ryssen (ruminant nutrition) were responsible for significant research on cattle. Dallas Shaw and Chloe Bowles pioneered reproductive physiology in this country with the first test-tube calf and induced twinning. The Steers Project has for many years been a focal point of the Discipline's experiential approach to learning. Currently, Ignatius Nsahe focuses on ruminant nutrition while Marion Young concentrates on equine nutrition and prophylactic strategies for African Horse Sickness.

The discipline has been privileged to watch many quality graduates begin their careers in animal science (including two winners of the prestigious Nelson Mandela Scholarship), and contribute to agriculture in Africa and around the world. Every year, the corridors of Animal Science are full of students from countries such as the Netherlands, France, Turkey, the United States, Costa Rica, Eritrea, Sudan, Cameroon, Nigeria and Argentina. They step away from here as agents of change, leaving behind a rich heritage of success and achievement.

What does the future hold? Sixty more years of excellence in research and training!
Biochemistry

The Department of Agricultural Chemistry and Biochemistry was one of the twelve founding departments of the Faculty of Agriculture when it began operations on the Pietermaritzburg campus in 1948. ER Orchard was the Head of Department and WJ Folscher a lecturer in Agricultural Chemistry. George Quicke became the first Lecturer in Biochemistry in July 1950. As a result of Quicke’s efforts, Biochemistry was recognised as a major subject in 1952 and the first Biochemistry student completed the BScAgric degree in 1954.

Together with the other departments of the new faculty, Agricultural Chemistry and Biochemistry was initially housed in the former military hospital built at Oribi Camp during the Second World War. The old kitchen block (tin roof, no ceiling, wooden benches and no cupboards) served as the only primitive laboratory until the Faculty moved to the Rabie Saunders Building in January 1954. The Department occupied the ground floor of the west wing and was also allocated the small Animal House behind the main building, now part of the Controlled Environment Facility. This was not only used for the rat feeding trials that formed an essential part of the studies on the nutritive value of maize crops, but for the essential Adenosine Triphosphate (ATP) utilisation trials that involved a race from Lab 44 through the basement to the Animal House with the adjudicators watching from the Lab 44 windows for the opening of the door of the Animal House. Legend has it that a particular record-breaking run was thwarted by a locked Animal House door.

The Faculty of Agriculture’s proposal that Biochemistry be accorded full departmental status was initially resisted by the Faculty of Science. At a watershed meeting on 4 April 1955, of a joint Science-Agriculture sub-committee, the Science delegates agreed to withdraw their opposition. Independent departmental status became effective in January 1956 and the Chair of Biochemistry was established in 1959 with Quicke as the first incumbent.

The Department of Agriculture, later renamed the Department of Agricultural Technical Services (DATS), financed the Faculty of Agriculture and hence the Discipline of Biochemistry for the first 28 years. Much of the early research work centred on maize, the region’s major grain crop, and forages, mainly veld grasses, its most abundant natural resource. The biochemists investigated the protein quality of maize crops, analysed high-lysine cultivars and explored expression of gene coding for carotenoids in leaves and kernels to identify white and yellow

Marie Stephenson (Mrs S) at amino acid analyser.
maize plants. They also looked at the role of lignin and structural carbohydrates in grass species that contribute to pastures’ low palatability and digestibility. This research required the development of South Africa’s first rumen analysis equipment and the major contributor was Tom Dooley, a fistulated sheep that was reported in the local press as having a “window in his side”. A decided disadvantage of the relationship with DATS was that Biochemistry was subject to their research policy. On three occasions this led to the curtailment of promising research programmes and to involvement in research projects which were regarded as academically less desirable. The restrictive publication policy of DATS was another disadvantage and it was some years before publications could be submitted freely to overseas journals.

The first Chair of Biochemistry, George Quicke, served twice as Dean of the Faculty of Agriculture (1962-64 and 1973-75). On his retirement in 1984 he was accorded the title of Emeritus Professor. In 1994 the third-year laboratory was named the Professor George V Quicke Laboratory in recognition of his services to the Department. Mike Dutton joined the Department in 1980 and became the second Chair in 1989, a position he held until 1992 when he became Professor and Head of the Department of Physiology in the Faculty of Medicine on the Durban campus. He established an active mycotoxin research group and a mycotoxin analysis laboratory that analysed feed samples from around the country.

John Lonsdale-Eccles came to the Department from the International Laboratory for Research on Animal Diseases in Nairobi to take up the position of Professor and Head of Department in 1993. He established research on the proteases of African trypanosomes, but left in 1995 for the United States to allow his wife to further her career in medicine. The fourth Head of Department, appointed in 1997, was Clive Dennison. He joined the Department in 1980 and established the protease research group that gained international recognition. He was a founding member and former council member of the International Proteolysis Society. His legacy, amongst others, is three phase partitioning (TPP) and the book, A Guide to Protein Isolation, now in its second edition. On his retirement in 2004 he received the title of Emeritus Professor. The first female Chair is the current incumbent, Theresa Coetzer appointed in 2006. She joined the University in 1986 and continued the work on trypanosomal proteases and teamed up with researchers from around the world on European Commission 5th and 6th Framework research grants aimed at developing an anti-disease vaccine for trypanosomosis.

The study of proteins continues to be the research strength of the Discipline with four staff members: Theresa Coetzer, working on proteases of livestock trypanosomes; Dean Goldring, on Malaria kinases and diagnostic targets; Edith Elliott, on Matrix Metalloproteases and cancer; and Phillia Vukea, on Infectious Bursal Disease Virus protease. Trevor Anderson pioneered and established the Science Education Research Group (SERG). His work has attracted international recognition and adds unique insight and understanding in biochemistry and science education within the Discipline and the Faculty. Carola Niessler introduced stem cell research on her arrival in 2006. Most members of the Discipline attract local and international funding. Staff have recently published six articles in the Journal of Biological Chemistry, ranked 6th best in biochemistry, and two articles in Molecular Microbiology which is ranked 5th in microbiology by the Institute for Scientific Information. Anderson is a regular contributor to the leading biochemistry education journal Biochemistry and Molecular Biology Education.
The Department of Biometry was first introduced at the Pietermaritzburg campus in 1949 under the auspices of the Faculty of Agriculture and the Ministry of Agriculture. Both organisations recognised the importance of biometry in the development of sound and effective agricultural research practice. Arthur Rayner, Peter Clarke and Harvey Dicks were prominent staff members within the Department.

To meet the demands of an expanding university, Biometry merged with Statistics to form the Department of Statistics and Biometry. As of January 1999 the University abolished its department structures, opting instead for schools. The former departments of Mathematics and Applied Mathematics, Statistics and Biometry and Computer Science merged to form the School of Mathematics, Statistics and Information Technology. At the same time the Faculties of Science and Agriculture also merged to become the Faculty of Science and Agriculture. In 2005, owing to the merger of the former Universities of Natal and Durban-Westville, a new school structure was formed, namely the School of Statistics and Actuarial Science, which houses Biometry.

Biometry, since its inception, has formed an integral part of the curriculum of students in agriculture. A number of biometry courses have been offered to satisfy the demands of various curricula in the different agricultural disciplines. All Agriculture students take at least one of these courses, which are now computer-based – a far cry from the clackety ‘Facit’ machines few now remember!

Biometry is an exciting statistical field and its applications go hand in hand with research in agriculture, biology, medicine, etc. The rapid growth of biological and medical research promises that, on a worldwide scale, the need and role of biometricians/biostatisticians will continue to grow. The School of Statistics and Actuarial Science provides mainstream biometry to Agriculture students from first degree to PhD levels. Although the BScAgric (Biometry option) was discontinued in the last decade, the School has not finalised the necessary preparations to reinstate the BSc and BSc Honours programmes in Biometry. The integration of statistics and biology/agriculture is the distinguishing feature of the programme. It is distinct from the Statistics Programme in its interdisciplinary emphasis and reduced depth in statistical theory. The PhD and MSc are well structured programmes for advanced applied biometricians and they attract many students from all over Africa. Graduates hold leading positions in international and national research centres, and government and non-government organisations.
Community Resources

Community Resource Management evolved from Home Economics which started in 1972 under Eva Ricketts. In 1973 Maryann Green was the first lecturer appointed in the Discipline comprising three students in Dietetics and one in Home Economics. The undergraduate degrees of Dietetics and Home Economics were similar with many overlapping courses. Lectures were held on main campus until 1979 when they moved to the basement of the Rabie Saunders building. Home Economics had the first black student on campus as a special dispensation from the Minister of Education.

In 1979 Maryann Green was the first student to obtain an MSc degree in Community Resource Management followed by Sheryl Hendriks in 1997. In between these years there were a few Honours graduates but the heavy lecturing loads of the academic staff precluded further studies and research. Maryann Green returned to the University with a PhD from the United States in 1987 and subsequently, there was a steady stream of postgraduate students. Green was later joined by Ann Haselau (Food Science) and Sue Hodgkiss (Clothing and Textiles) and later by Sheryl Hendriks (Household Resource Management and Small Enterprise Development). The first PhD candidate graduated in 2004 and since then at least one PhD has been awarded each year. A total of 22 Masters students have graduated since 2004.

In 1992 a new qualification with a development focus was approved and Home Economics transformed into Community Resource Management (CRM), forming part of the Bachelor of Social Science degree. The offerings comprised the following options: consumer behaviour, project management, household resource management, housing with a development focus, process and theories. Students were linked to community-based organisations in order to experience real development issues. The capstone module was programme evaluation and students were placed with NGOs in order to learn about evaluation, project design, research and management. Subsequently students were also placed with government departments and university outreach programmes. Over time, the focus on local economic development and the informal sector has become an important part of the curriculum. Today graduates can be found throughout South Africa in positions of authority in government, NGOs and faith-based organisations.

In 1999 Community Resources split from Dietetics, and Maryann Green and Sheryl Hendriks established a separate programme in the School of Agricultural Sciences and Agribusiness. In time, Sheryl relocated to the newly-formed Food Security Programme and Joyce Chitja was appointed in Community Resources. Joyce became the first woman PhD graduate in this Food Security in 2008. She left UKZN to join Land Affairs in early 2008. Unathi Kolanisi joined CRMS in 2006 under the Leadership Equity Advancement Programme (LEAP). The retirement of Maryann Green coincided with increasing resource constraints, which ultimately resulted in the phasing out of the programme. However, the essential elements of Community Resource Management are being revised and refined to serve the disciplines of Dietetics, Human Nutrition, Food Security and Forestry.
The African Centre for Crop Improvement (ACCI)

The African Centre for Crop Improvement (ACCI) was envisaged in 2000, but only came to life in 2001 with an injection of funds from the Rockefeller Foundation. In only four months it went from a concept to a centre, training eight PhD students each year from 14 countries in Africa. The first of its kind in Africa, the Centre focuses on the applied breeding of African crops for increased drought tolerance and improved food security. The crops range from the traditional African crops such as maize, sorghum, cassava and rice to include finger millet, cowpea and pigeon pea, which have hardly ever been studied or bred.

When the Director of the ACCI, Mark Laing, told a Botany professor from another university that the ACCI would be training 40 PhD students at a rate of eight a year, he laughed so much he almost fell off his chair. Today the ACCI is training a second group of 40 students, with funding from both the Rockefeller and Gates Foundations. Its concept has been copied in West Africa, and the West African Centre for Crop Improvement at the University of Ghana-Legon was recently established.

The ACCI is staffed by three Zimbabweans, two Kenyans, a Dutchman, an Ethiopian and four South Africans, a diversity which matches that of the students. The ACCI students work on topics relevant to their home situation. They complete two years of coursework at the University before returning to their home countries where they undertake three years of field study with the support of their UKZN and in-country co-supervisors.

Fourteen ACCI students have graduated thus far, and all of them are back in their home countries working on plant breeding projects in an effort to release new crop varieties. The ultimate aim of these breeders is to slowly shift the momentum of crop research into the hands of national research programmes.

The Centre is investigating the establishment of a foundation to provide for its ongoing funding, as well as a new building alongside the African Centre for Food Security. The synergy between these and other UKZN centres creates an optimistic future with ongoing linkages directly into countries in southern and eastern Africa.
Above: Hydroponic trials.

Cohort 3 with Professor Torbert Rochford (University of Illinois, Urbana, Champagne).

Left: Richel Greenhouse.

Above: Hydroponic trials.

Cutting trial on pawpaws.

ACCI cohort 1 graduates with John Derera, 2007, the first ACCI graduate.

Plans for an African Institute for Agricultural Sciences.
In 1998, enthused by a food security conference in Zambia and by her PhD research in agricultural growth, Sheryl Hendriks approached the Dean of Agriculture (Frits Rijkenberg) about establishing a collaborative programme or research area in food security. Discussions culminated in the presentation of an academic programme, designed by a team of staff (including Sheryl Hendriks, Mike Lyne, Gerald Ortman, Ignatius Nsahlai, Philip Copeland, Fiona Ross, Marie Paterson, Maryann Green, Eleni Maunder, Neil Fergusson and Rob Gous) to the Dean, Ray Haines, the Deputy Dean, Pete Zacharias and the Deputy Vice-Chancellor, Ahmed Bawa. In 1999 the University approved an innovative transdisciplinary food security programme and agreed to a three-year trial programme starting in 2000.

By the end of 1999, Likeleli Makhotla from Lesotho was the only applicant for the programme. She was asked to defer her registration until further applicants could be enlisted and eventually registered with four other candidates in 2001. She was the first graduate in the world to attain a Postgraduate Diploma (Food Security) and a MAgriC (Food Security) degree. In April 2008, Samuel Chingondole and Joyce Thamaga-Chitja were the world’s first two PhD graduates in Food Security.

In a relatively short time, 17 students have attained postgraduate diplomas, 15 Masters degrees and three PhDs. A further 12 Food Security students will graduate in April 2009. In addition, short course training has been provided to more than 80 students. There are currently 34 students registered for Food Security degree programmes. Drawn from 16 African countries, they come from a variety of academic, research, public service and civil society organisations.

In response to the growing demand for places in the programme from applicants across southern and eastern Africa, and in recognition of the pressing need for capacity development in Africa, the Food Security Programme was expanded to form the African Centre for Food Security (ACFS) in 2006. The centre was formally recognised as a research centre in 2007. The ACFS offers the only postgraduate training in food security in the world. At its most fundamental level, the mission of the ACFS is to contribute towards eradicating food deprivation and promoting sustainable livelihoods among the people and nations of sub-Saharan Africa.

The Centre’s core activities include capacity building in a wide range of skills and competencies required by practitioners and policy makers involved in vulnerability assessment, analysis, policy making and impact assessment. The Centre covers aspects from food production, availability, access and utilisation
at national and household levels to social protection opportunities, food rights and policy. The ACFS is formally located in the School of Agricultural Sciences and Agribusiness, but its 30 affiliated UKZN-based teaching staff and researchers are drawn from 15 disciplines across the four UKZN Colleges. Collaboration with other UKZN centres and units such as the Health, Economics and HIV/AIDS Research Division further strengthens educational and research endeavours. Scholars from several other African universities participate in supervision of postgraduate research projects and act as peer reviewers for modules, dissertations and theses.

The most exciting opportunities have been provided to UKZN and ACFS staff through the Centre’s nomination as NEPAD’s lead institution for the Comprehensive Africa Agriculture Development Programme’s (CAADP) Pillar III (Food Security) activities and policy development. The Centre has led the development of the CAADP Framework for African Food Security (FAFS) – the only continentally agreed on plan for international action. It was also selected as the SADC Centre of Excellence for Vulnerability Assessment and Analysis in November 2006.

Future programme iterations will focus on the key areas of the FAFS and on developing and scaling up sorely and urgently needed capacity in reducing risk and malnutrition and increasing food supplies and economic opportunities. In collaboration with the African Union, NEPAD and SADC and with regional partner institutions and international partners such as IFPRI, FANTA, WFP, ACFS will provide numerous short course and degree training programmes, research and advocacy to reduce hunger and poverty in Africa.
The Centre for Environment Agriculture and Development (CEAD) was established in 2005. Its constituent centres were the Centre for Environment and Development (CEAD), founded in 1996; Farmer Support Group (FSG), founded in 1985; and the Centre for Rural Development Systems (CERDES) founded in 1999. CEAD is now an integral part of the School of Environmental Sciences (SES).

CEAD’s offerings include a Postgraduate Diploma (PGDip) in Rural Resource Management (RRM), a Masters Programme (MAg) in Extension and Resource Management (ERM) and a Masters in Environment and Development (MEnvDev). The MEnvDev has three streams offering full and part-time study options: Environmental Management (EM), Land Information Management (LIM) and Protected Area Management (PAM). CEAD also offers a PhD programme.

The EM stream is targeted primarily at mid-career professionals and is particularly popular with environmental and local government agencies. The LIM stream produces graduates who understand the concepts and principles of land information management in local and southern African contexts. Launched in 2001 with funding from SAPPI, the PAM programme ran successfully in contact learning mode for five years. Conscious of the need for the programme to expand its reach, CEAD and the International Centre for Protected Landscapes (ICPL), University of Wales, developed the current distance learning mode. Crucial support and funding was forthcoming from the Darwin Initiative in the United Kingdom.

Students in the MAg in Extension and Resource Management extend their learning to rural development and learn to apply methodologies to ‘real world’ situations and to incorporate these into project planning and management.

In the Farmer Support Group (FSG), CEAD has a strong community development and outreach facility. Since its inception 22 years ago, FSG has gone on to provide extension services to undertaking participatory action research to resolve the needs of resource-poor farmers, other land users and development practitioners in sustainable agriculture, natural resource management, institutional development and entrepreneurship.

CEAD has a traditional and international reputation for its teaching programmes. These cannot, however, be sustained without a focused and influential research programme that informs them. This research programme is now in place and the first two PhD students from CEAD graduated in early 2005.

The growing and vibrant PhD programme attests to the enthusiasm of doctoral candidates to participate in the transdisciplinary research work offered within CEAD. All programmes reflect a strong partnership approach with other African...
and international universities and private and public institutions. Students can participate in these research programmes to study towards masters (MSc) or doctoral degrees.

The Centre has a highly experienced and qualified group of research associates and two Professors Emeritus, Charles Breen and Rob Fincham who provide a highly valuable contribution to the PhD programme and to a number of outreach activities which include: the African Leadership Seminar in People and Conservation Programmes and the Msunduzi Innovation and Development Institute (MIDI), in association with leading academic, public and private sector institutions around the world.

CEAD and its component centres have produced 84 MEnvDev, eight MAgric, two MSc and six PhD graduates.

Owing to the urgency, severity and complexity of demands on humankind’s ability to respond wisely and collectively to environmental challenges, CEAD is in the process of refocusing its Masters programme in Environment and Development. There is an increasing need for lifelong learning at a high level in organisations responsible for environmental, protected area, and land information management. Emphasis is shifting from environmental policy formulation to integrated implementation of policies, in a multi-organisational and trans-disciplinary environment. Boundaries between organisations, disciplines and political entities are blurring. New, integrated, scientific and management disciplines are emerging in these changing organisational landscapes. As a consequence, the Centre is streamlining, focusing and integrating its various offerings in line with world trends and innovative delivery modes.
Crop Science

Crop Science started out as the Department of Agronomy and was led by Sakkie Smuts. He was succeeded by Sompie Hulme who also held the position of regional head of Natal Agriculture. When Hulme was promoted to higher office in national agriculture, Karl Nathanson took over the leadership of the Department. Following current trends at agricultural institutions, he changed the Department’s name to Crop Science. This more accurately reflected the scientific endeavours related to professional training within the field. During his term of office, Nathanson made a significant contribution to seed legume production and research.

Following Nathanson’s death from a brain tumour, John Lea was appointed as Head of Department. Lea was active in founding the Subsistence Agriculture Study Group which contributed substantively to the upliftment of communities in the Vulindlela district. Also under his tenure, a common bean crop improvement programme, overseen by Rob Melis, was initiated. The programme resulted in the release of a number of rust resistant cultivars, revolutionising the productivity of the crop for resource-poor farmers. When Lea retired, Crop Science was incorporated into the new Department of Agronomy together with Soil Science and Agrometeorology.

In recognition of the importance of crop scientists to the sugar industry, the South African Sugar Association Chair of Crop Science was established in 1988 in the Faculty of Agriculture. Andy Cairns was the first Chair followed by Peter Greenfield. In 2003 Crop Science realigned itself with Horticultural Science and Plant Breeding to form an academic programme focused on agricultural plant sciences. This resulted in shared access to research facilities and technical resources. Over the last decade the disci-
pline has expanded its traditional postgraduate programme in sugarcane, oil and protein crops to include seed technology and indigenous crop development. Albert Modi has contributed substantively to these new fields. Joseph Adjetey currently focuses on groundnut production.

Crop production in South Africa is currently in a position of strength as farmers are able to provide sustenance for our people and compete in the international marketplace. The University has produced many graduates who have gone on to become captains of industry and innovators of new technology both locally and abroad. A high proportion of the Crop Science graduates in the period 1960-1980 came from the former Rhodesia. In addition, almost all the agronomists involved in the development of the internationally acclaimed agricultural development in that country were trained at UKZN. Local companies such as Pannar Seeds have predominantly employed UKZN Crop Science graduates in their agronomic production and research divisions. Like-

wise, the regional Department of Agriculture and the Agricultural Research Council’s research programmes on conservation tillage, crop modelling and soil fertility have been led by our graduates. The sugar industry, the pre-eminent employer of people in KZN, has been particularly well served.

The face of crop production in the future is likely to change radically, either with or without land tenure. Attention has to be paid to training future crop scientists who are able to accommodate the requirements of the small farm sector, as the upliftment of small farmers is essential for rural stability. Future students must also be able to act as team members to solve production problems. To accomplish this they must have sufficient science-based disciplinary skills in crop science to make meaningful contributions to agronomic solutions.
Although Agriculture celebrates its 60th anniversary this year, the Discipline of Dietetics and Human Nutrition has not even reached middle age! The Discipline started with the appointment of Eva Ricketts as Head of Department. In 1971, six weeks after she resigned from the University of Nairobi, Ricketts received a request from the Registrar of the University of Natal to attend an interview for the newly established Chair of Home Economics and Dietetics. In her book entitled Light on the Horizon: 30 Years in Education in Africa 1952-1982, she explains how she was "driven up the fifty miles from Durban to Pietermaritzburg" for the interview and that there were "twelve men on the interviewing committee." She was subsequently appointed to the position and started work in 1972.

The Discipline opened its doors to students for the first time in March 1973 with five Dietetics and three Home Economics students. The medium of instruction was English, making it the first course of its kind to be offered in English at a South African University (other universities offered these courses in Afrikaans). Today the Discipline boasts an annual intake of approximately 60 first year students (20 BSc Human Nutrition and 40 BSc Dietetics).

Four years after Ricketts' appointment, the Department offered not only Bachelors degrees in Home Economics and Dietetics but also Honours, Masters and Doctoral degrees. When Ricketts submitted her resignation in 1977, the first black dietitians were due to graduate. The Department boasted the highest enrolment figures for Dietetics at a national level and was the only remaining university offering tuition in English.

In 1979 the Department was relocated to the basement of the Rabie Saunders Building where it remains to this day. Elma Nel became Head of Discipline from 1981 to 1996. During this period she became the first chairperson of the Professional Board for Dietetics in South Africa, a position she occupied for over a decade.

In 1987 the first students enrolled for the Postgraduate Diploma in Dietetics, a qualification that entitled them to register and practise as professional dietitians. Prior to this, students with the three-year BSc Dietetics degree had to leave the province to complete this postgraduate diploma at another institution.

The 1990s brought change to the Department of Home Economics and Dietetics. The name of the Department changed to Dietetics and Community Resources in 1992, and Eleni Maunder took over the reins as head in 1996. She remained in this position until her early retirement in 2008. In 1997 Dietetics and Community Resources went their separate ways. The Discipline of Dietetics and Human Nutrition was formed out
of the country’s urgent need for health professionals capable of functioning at community level. In order to train nutritionists, the BSc degree in Human Nutrition was developed. This degree was complemented by the Postgraduate Diploma in Community Nutrition, offered for the first time in 2000.

In 2001 Marie Paterson, a staff member in the Department, was the first Masters graduate followed a year later by the first PhD graduate, Penny Love. Love’s research involved the development of Food Based Dietary Guidelines for South Africans older than seven years of age. This research was significant as it was the first time in the history of South Africa that there were standard nutrition messages based on the country’s cultural diversity that were suited to address the problems faced by local health professionals.

The future looks bright for the discipline of Dietetics and Human Nutrition. Currently there are 34 students studying towards a Postgraduate Diploma in Dietetics and five students enrolled for the Postgraduate Diploma in Community Nutrition. 2009 will see the start of nutritionists also registering with the Health Professions Council of South Africa and it is foreseen that by 2011, nutritionists will start doing compulsory community service (as dietitians have been doing since 2003).

By the end of 2008 all full-time staff within the Discipline will hold a Masters degree and future areas of research will include functional foods, programme development to address HIV/AIDS at community level and nutrigenomics. The importance of the Discipline in the public and private health sector of South Africa is aptly described by Hippocrates (460 BC to ca 370 BC) whose wise words still ring true today: “Let food be your medicine and medicine your food. Whosoever gives these things no consideration and is ignorant of them, how can he understand the diseases of man?”
Forestry

Do you believe in elephants? In southeast Asia they are, or were, used to move timber, but as a wise old man once said, "... if an elephant stands on your foot, do you measure the pounds per square inch, or say 'Ouch!'" Pounds per square inch? Well, it was an old man!

So, first some numbers, and then the ‘ouch’ in the story behind Forestry at UKZN. The UKZN Forestry Initiative was launched in 1999. Despite our much heralded coming, the first lessons were held under a tree which seemed more in keeping with the ethos of Forestry’s ‘heartly, adventurous’ outdoor profile and, anyway, it was a nice sunny day and our small group echoed around in the large classroom provided.

In April that year, with the arrival of Janusz Zwolinski, things changed. Forestry was very kindly adopted by Colin Dyer and the Institute for Commercial Forestry Research (ICFR) and the new infant had a temporary home for a year. Actually, it turned into four-and-a-half years until we moved into the ground floor of a new three-storey building in 2004, which was opened with pomp and circumstance by Chief Director Forestry, Linda Mossop.

Student numbers rose rapidly with Head of Discipline, Zwolinski, responsible for Commercial Forestry, Michael Underwood in charge of Community Forestry and a new member of staff, Duncan Wilson, teaching Forest Management. These new enrolments helped boost graduation rates. To date, Forestry has produced 26 degrees, of which 16 are Masters and Doctorates. In addition, 142 undergraduates have elected to undertake various Forestry courses, mainly from the Faculty of Science and Agriculture.

Right: Forestry staff and postgraduate student (left), 2008.
During the formative years, Forestry signed memora-
danda of understanding with numerous institutions from Brazil to China and Kenya to Finland. Much of the credit goes to Janusz Zwolinski for his tireless efforts which included links with the European SILVA Network, resulting in students coming from Europe and UKZN learners studying Masters in Europe. In addition, the South African Agroforestry Network was launched in 2005 by Mike Underwood and now boasts 172 members.

Enough of the dry figures and back to the “ouch” of the elephant! Despite successes, all was not smooth sailing. In 2005 Duncan Wilson returned to the United States and in 2006, after an exhausting sabbatical, Janusz Zwolinski was away for two years owing to ill health. Yet, out of adversity comes triumph, sometimes miracles. The first was the incredible support from staff within the School of Agricultural Sciences and Agribusiness, in particular, John Bower in Horticulture and the ever faithful ICFR, for whom there can never be too much praise. There was also assistance from all the forest companies, Mondi, NCT, Sappi, as well as from private individuals. Then there were the students who, under demanding conditions with new lectures, cheerfully accepted an Academic Programme Co-ordinator who at times must have represented a stretched piece of bubblegum crossed with a confused mother chicken who was trying to get all her ducks in a row (pun intended). And the miracle – Janusz Zwolinski’s stubborn recovery from illness during which time he received a DSc.

In the future, Forestry will continue to change and adapt to the demands of the market. A new transdisciplinary programme with Crops and Horticulture is planned for 2010 along with closer collaboration with ACFS as the role of food security becomes increasingly more important as Africa seeks better practical solutions to not only growing food, but generating new improved sources of income.
The Department of Genetics was one of the 12 founding departments when the Faculty of Agriculture began operations in 1948. Head of the Department, Wilhelm Weyers was responsible for the majority of genetics lectures in the early years. He possessed a remarkable ability to choose a new and difficult topic, read about it, and present a flawless lecture without much preparation. Weyers was joined in the Department by Rabie Saunders, who was appointed first Dean of the Faculty. However, due to his other responsibilities, Saunders only presented five lectures per year on maize breeding, his area of specialty.

After graduating in 1951, as part of the inaugural cohort of agricultural students, Dieter Reusch moved on to become a lecturer in the Department of Genetics. After two and a half years he left for Wales to pursue postgraduate work, and was replaced by Gilly Geldenhuis. On his return to South Africa, Dieter Reusch accepted a post at Cedara College. When Weyers left for a stint overseas, he filled in for him, giving part-time lectures in the Department.

A new lecturer, Ben Cilliers, joined the Department in the early 1960s. By this time, Rabie Saunders had left the University and had started a plant breeding operation in the western Transvaal. In 1966 Dieter Reusch re-joined the Department on a permanent basis, and together with Weyers and Cilliers, ran operations successfully until 1990.

Molecular work with a focus on genetic manipulation was launched during this time. Courses on the modification of crops using laboratory techniques were introduced into the genetics curriculum. In addition, important work on soya beans and maize was conducted at Ukulinga Farm. Students gained valuable practical experience by engaging in holiday work at research stations around the province.

Past staff since 1990 include Anabelle Fossey, Caroline Handcock and Mervyn Beukes. Currently, the Genetics staff includes Emil Kormuth and Michael Meusel. Recent appointments include accomplished Molecular Biologist Ché Pillay and Animal Breeder Edgar Dzomba who will work closely with the Animal Science colleagues in developing this area.
The Department of Pasture Management and Soil Conservation was one of the original departments formed 60 years ago in the fledgling Faculty of Agriculture. The first Head of the Department was the late James Scott. Scott also served as Dean of the Faculty of Agriculture before his retirement. He was followed by the late Pieter de V Booyzen, who went on to become Dean of the Faculty of Agriculture and then served as Vice-Chancellor of the University. Under his leadership, the name of the Department changed to Pasture Science. Neil Tainton took over as Head from Booyzen and the name of the Department changed to Grassland Science. This change brought an increased focus on rangeland ecology and conservation. Tainton, following tradition, also served as Dean of the Faculty of Agriculture. Indeed, four of Grassland Science’s ten staff over its 60 years, have achieved leadership roles as deans or higher at UKZN – probably a record at the University.

Tim O’Connor took over as Head of the Department after Tainton’s retirement. Following the precedent of name changing, the Department then became known as the Department of Range and Forage Resources. During this time the Faculty of Agriculture merged with the Faculty of Science and various schools were formed as part of the rationalisation process. In keeping with the move towards an increased focus on ecological and environmental science and management, the Department of Range and Forage Resources became part of the newly formed School of Applied Environmental Sciences. Wildlife Science became a popular option for many students. Kevin Kirkman took over from O’Connor in 2001. The focus on rangeland ecology and management continued and the involvement with intensive or cultivated pastures declined. The name reverted back to Grassland Science.

The merger between the Universities of Natal and Durban-Westville had significant implications for the structure of the newly merged institution. The School of Applied Environmental Sciences was disbanded, and the discipline of Grassland Science moved to the newly formed School of Biological and Conservation Sciences. This new positioning followed the international trend of rangeland ecology/ grassland science becoming more focused on biodiversity, conservation and ecological management.

Grassland Science undergraduate teaching (housed in a three-year Grassland Science major, an Ecological Sciences Programme and a four-year BSc Agriculture degree) is focused on specialising in the soil-plant-animal-climate interface, with further specialisation at Honours and postgraduate levels.

Grassland Science has a broad base and is involved in a range of focus areas from production agriculture (livestock) through game ranching to conservation involving grazing and browsing animals. In addition, the general expertise leads to involvement in some focus areas where grazing and browsing animals do not play a major role, such as the conservation areas of the Drakensberg (grassland areas managed using fire). Rural development is a strong focus area, with emphasis on development of sustainable livestock production and husbandry systems for rural communities, and a focus on resource conservation and rehabilitation in degraded areas.

Among many research accomplishments, the long-term grassland research conducted at Ukulinga stands out. They are the longest-running field experiments in Africa and are among the longest running in the world. The two trials still running at Ukulinga are the Veld Burning and Mowing Trial (BMT) and the Veld Fertiliser Trial (VFT). Both were started in 1950, and the original objectives were primarily agricultural. Treatments in the BMT were designed to examine the influence of mowing moist tall grassveld at different times in summer, and removing the aftermath in winter by burning or mowing, on the yield and quality of hay. The VFT was designed to examine possible ways of increasing the yield of veld by fertilising with various elements. These trials are the focus of several internationally funded research projects aimed at examining ecosystem processes across continents. This approach epitomises the change from an agricultural focus many decades ago to an ecological focus, which in turn feeds back into agricultural management.
The first head of the Department of Horticulture and Forestry was Josiasas le Roux (1948-1969), whose interest was subtropical fruits. He was followed by Peter Allan (1970-1988) who has remained an Honorary Research Associate since his retirement at the end of 1990. His interests were: eco-physiology and vegetative propagation of pawpaw, low chill deciduous fruits, macadamia nuts and kiwifruit. He was followed by Nigel Wolstenholme (1988-1998), who specialised in ecology and manipulation of subtropical fruits, especially avocado and pecan nuts. John Bower was appointed Head of the Discipline of Horticulture in 1999, a position he occupies to this day. His research focuses on pre- and post-harvest physiology of citrus, avocado and other subtropical fruits.

In the early years staff conducted all the horticultural advisory work for the Natal region of the Department of Agricultural Technical Services. They were also involved in the start of various fruit enterprises in Natal. Horticultural Science courses were based on ecology, management and physiology. Recent changes have included courses in pre-and post-harvest physiology.

The number of Horticultural Science graduates increased dramatically in the mid-1970s, and reached a peak of 10 to 20 graduates per year around 1985 to 1995. Nigel Wolstenholme was involved in the establishment and lecturing of the introductory agro-ecology course, Agri110, in 1975. This coincided with increased interest in Horticultural Science as a major, resulting in it being the most popular BSc Agric major in the 1980s and 1990s.

The Department of Horticultural Science developed a reputation for producing well-trained graduates who were adaptable to all branches of Horticulture. Its research in subtropical fruit and nut crops placed it on the world map, with staff and students prominent in local and overseas conferences and in demand as speakers. The citrus and avocado industries were major employers of graduates and at one time almost all horticulturists in the former Rhodesia were University of Natal graduates.

Some notable graduates include HOD’s Peter Allan, Nigel Wolstenholme and John Bower, as well as Prof David Hall (UK), Prof Irwin Smith (Canada), Dr Tony Whiley (Australia), Dr Deirdre Holcroft (USA), Dr John Lea-Cox (USA), Prof Gerard Jacobs and Dr Graham Barry (University of Stellenbosch), Prof Puffy Soundy and Dr Nicki
Taylor (University of Pretoria), Marc Brutsch (University of Fort Hare), Dr Luiz Pereira (Cedara), and Dr Tracey Campbell (UK). Graduates with responsible positions in the avocado industry include Colin Partridge, Derek Donkin, Dr Guy Witney (California), and Dr Jonathan Cutting (New Zealand). Leaders in the citrus industry include, Dr Cameron McOnie, Louis von Broembsen, and Dr Andrew Krajewski (Australia).

Many of our graduates have served and continue to serve the subtropical, citrus and deciduous fruit industries in RSA, eg. Zac Bard, Hans Boyum, Dr Zelda Van Rooyen, Dr Roy Impoy; and have been involved in horticultural research at inter alia, CSFRI/ITSC, Nelspruit (Frans Kuhne, Dr John Robinson), and Stellenbosch (INFRUTEC – Dr Gavin Linsley-Noakes, Mike North). These graduates serve a wide variety of industries and institutes across the world and demonstrate the versatility of the degree.

Current staff include John Bower, Isa Bertling, Renata van Niekerk and John Klug. Notable research accomplishments include the release of a scab tolerant ‘Ukulunga’ pecan nut cultivar; development of vegetative propagation of pawpaw and release of female ‘Honey Gold’ clone 45 years ago; use of pine bark as a growing medium; better understanding of lack of winter chilling for deciduous fruits in areas with mild winters; soil, ecological and manipulation requirements of subtropical fruits; pollination requirements of various fruits; post-harvest treatments to extend life of export fruits. Ground-breaking physiology research on avocado fruit growth, as well as ripening and post-harvest physiology, has been conducted in well-equipped physiology laboratories.

From a future perspective, varied and interesting challenges await. Horticultural products have high value and are increasingly in demand both locally and internationally. Challenges in production costs and transport will require improved practices. Consumers’ demands for convenience foods, as well as a focus on quality and nutritional value, will add further challenges. It will be necessary to ensure that the research activities and preparation of graduates reflect this.

While important, the production of food is not the only area of relevance for horticultural scientists. Landscaping, aesthetics, sport facilities and floriculture are very much part of the urban environment. It is thus essential that students are adequately prepared for these industries. The degree course has already been modified to cater for this direction of study. However, it is envisioned that further modifications will be necessary so as to reflect increasing value adding of primary products.
In 1948 the former military hospital at Oribi accommodated lectures and practical classes in Microbiology and Plant Pathology. In 1955 the Rabie Saunders building was officially opened and housed all the agricultural disciplines.

Initially Microbiology could only be taken as a major subject in the four-year BSc Agric degree. Susarah Truter, a graduate of Stellenbosch and Utrecht (in the Netherlands), became the first lecturer in Plant Pathology. After promotion to Senior Lecturer, she became the first Professor of Plant Pathology and Head of the Department of Plant Pathology and Microbiology.

Johan Joubert was the first fully-fledged microbiologist appointed as Lecturer in 1963. Three years later Mike Loos was appointed as Senior Lecturer in Soil Microbiology. Joubert resigned in 1974 to return to the University of Pretoria (his alma mater) and Loos later left for Stellenbosch where he eventually became Professor and Chair of Microbiology. These first two microbiologists were replaced by John Erskine and Mike Wallis. Erskine left after a short stay but Wallis enjoyed a long tenure and was promoted to full Professor in 1996. Eric Senior was concurrently appointed as Professor of Microbiology – the first time ever that the discipline had two professors.

In 1995 Frits Rijkenberg was appointed Dean of the Faculty of Agriculture and Wallis took over as Head of the Department of Microbiology and Plant Pathology. He subsequently became Head of the newly introduced School of Applied and Environmental Sciences which accommodated the discipline of Microbiology – a position he occupied until his retirement in 2004.

When the former Universities of Natal and Durban-Westville merged to form the University of KwaZulu-Natal, Microbiology joined the new School of Biochemistry, Genetics, Microbiology and Plant Pathology. It is now present at both the Pietermaritzburg and Westville campuses. Since the merger, the following staff have been responsible for the leadership of the discipline: Charles Hunter, George Tivchev, Sumaiya Jamal and Stefan Schmidt.

In the early years, microbiology research focused on plant pathogenic bacteria and parasitic green algae. However, the range of topics increased over time and included areas of applied and industrial microbiology such as wastewater treatment processes, landfill microbiology, heavy metal attenuation, as well as biocontrol research. Current topics deal with the microbial ecology of processes such as the formation of methane from agricultural waste materials or mycorrhizal communities. The potential of bacteria to tackle high production volume chemical (HPVC) pollutants is also under investigation.

Microbiology is a popular and sought-after area of study that has grown considerably over the years. The increase in undergraduate and postgraduate student numbers is clearly reflective of the continued interest in this versatile and interesting subject.
Plant Breeding

Rabie Saunders was the first Dean of the Faculty of Agriculture as well as a professor of Genetics. He initiated the Natal breeding programme for the development of maize hybrids in 1947. In 1951, together with Arthur Rayner, he published *Statistical Methods with Special Reference to Field Experiments* (third and Revised edition), *Science Bulletin* no. 200. This excellent but now out of print text is still an invaluable reference book for plant breeders, agronomists and silviculturists who carry out field trials.

Hans Gevers, a maize breeder in the Department of Agriculture’s Summer Grain Sub-Centre, based in the Rabie Saunders building, famously released the high lysine maize cultivars HL1 in 1979 and HL2 in 1982. The latter provided the maize industry with competitive yielding high lysine cultivars. Subsequent breeding advancements led to the development of opaque-2 hybrids (with high lysine content) that produced yields equal to the best normal commercial cultivars. Gevers was made an Honorary Professor in the then Faculty of Agriculture and after retiring from the Department of Agriculture, continued breeding opaque-2 maize hybrids under the auspices of his private breeding company Quality Seed (cc) which is based at Ukulinga and is still in operation.

Rob Melis initiated the first dry bean breeding programme for small scale farmers in KZN from 1981 to 1990. The programme was sponsored by the De Beers Chairmans’ Fund. The objective was to develop disease-resistant dry bean cultivars. This led to Melis establishing Pro-Seed in 1990, which is a private plant breeding business at Ukulinga research farm. For three decades Melis has released over 27 registered cultivars of dry bean, tomato and pepper. He is also an Associate Professor in the African Centre for Crop Improvement (ACCI) and plays an active role in supervising the training of PhD students conducting research on the breeding improvement of cassava, sweet potato and several legume crops.

In 1984 Plant Breeding was first offered by the Department of Genetics as a major subject in the BSc Agric degree. In 1991 the Faculty of Agriculture established a new academic post in Plant Breeding (aligned to the Department of Genetics) to which Paul Shanahan was appointed. In 1993 Shanahan established a guaranteed curriculum in Plant Breeding which has formed the basis for the training of several graduates ever since. Shanahan supervises the training of postgraduate students in a range of crop species including cassava, dry bean, maize, soybean, sugarcane, sunflower and sweet potato. He is also associated with the ACCI in the supervision of students.

The ACCI was established at the University in 2001 under the Directorship of Professor Mark Laing. It has significantly boosted the profile of the Discipline of Plant Breeding at UKZN and has an established academic staff of four plant breeders, namely: Pangirayi Tongoona, Rob Melis, John Derera and Githri Mwangi.

The disciplines of Genetics, Crop Science and Plant Breeding have made a significant contribution to the training of plant breeders in South Africa and Africa. Many of the graduates have developed illustrious careers as plant breeders, and given the quality of the training offered to current students, the discipline can look forward to continued success.
“Look at that wonderful field of diseased plants. What a beautiful epidemic!”

Pietermaritzburg is a perfect setting for Plant Pathology. Set in the KwaZulu-Natal midlands, the weather allows for the growing of both temperate and tropical crops, and encourages the vigorous development of many diseases. Plant disease epidemics flourish here, tough for farmers but great for plant pathologists. Grey leaf spot of maize and soybean rust were first discovered in South Africa in or around Pietermaritzburg. We have been working on cabbage diseases for 26 years!

Plant Pathology has trained students from South Africa, and many other countries, including Benin, Botswana, China, Eritrea, Ethiopia, France, Ghana, India, Kenya, Nigeria, Norway, Portugal, Rwanda, Sweden and Zimbabwe.

Timeline
1948 Faculty of Agriculture established at the University of Natal.
1949 Department of Plant Pathology established under Professor Susarah Truter
1965 Microbiology starts within Department of Plant Pathology
1975 Mike Martin appointed Professor and Head of Department
1978 Department of Microbiology and Plant Pathology formed
1988 Frits Rijkenberg appointed Professor and Head of Department
1999 DACST Innovation Fund awards a R7.5 million project to Plant Pathology and partners
2000 Plant Pathology returns to being a discrete Discipline, within the Schools of Applied Environmental Sciences, and Agriculture and Agribusiness.
2000 Mark Laing appointed as Professor and Chair of Plant Pathology
2002 Second DST Innovation Fund award of R6.9 million project to Plant Pathology and partners
2002 Rockefeller Foundation funds the African Centre for Crop Improvement, in Plant Pathology, to train 40 PhD students
2006 Plant Pathology moves to School of Biochemistry, Genetics, Microbiology and Plant Pathology
2007 AGRA funds the African Centre for Crop Improvement, for a second cycle of 40 PhD students
2009 Plant Pathology moves to School of Agriculture and Agribusiness.

Staff members
- Susarah Truter, 1948-1977: First Professor
- Mike Martin, 1965-2001: Second Professor, Virologist
- Frits Rijkenberg, 1966-1999: Third Professor, Mycologist, rusts, Electron Microscopy
- Mike Wallis, 1965-2005: Bacteriologist, became Professor of Microbiology and moved into Industrial and Environmental Microbiology
- John da Graca, 2001-1998: Virologist, moved to Texas A&M, USA
- Mark Laing, 1984-present: Fourth Professor, Epidemiology, Biocontrol, Plant Breeding, Cabbage Diseases
- Gus Gubba, 2000-present: Virologist, Biotechnologist
- Pat Caldwell, 1998 – present: epidemiology, electron microscopy

Mr MM Martin examines a maize leaf infected with Helminochysporium turcicum, the incitant of leaf blight.
Contract lecturers

- Tonie Putter – Went to UN FAO, now runs own business in Pretoria
- Brian Garman – Now a Lecturer in Journalism at Rhodes University
- Mike Relihan – Runs his own business, Plant Aid Services, Pietermaritzburg
- Sackey Yobo – Lecturer in Plant Pathology, UKZN.

Some well-known alumni

- Peter Knox-Davies, Past HOD, University of Stellenbosch
- Mike Wingfield, University of Pretoria, FABI, many local and international awards
- John da Graca, Director, Citrus Research Centre, Texas A&M
- David Nowell, AGPS, IPPC, United Nations, FAO, Rome
- Teresa Coutinho, Associate Professor, University of Pretoria
- Terry Aveling, Associate Professor, University of Pretoria
- Cheryl Lennox, Senior Lecturer, University of Stellenbosch
- Sakkie Pretorius, HOD Plant Pathology, University of Free State, Bloemfontein
- Kobus Leroux, Director, ARC-SGC, Bethlehem
- Neal McLaren, Professor, UFS, Bloemfontein
- Brad Flett, Senior Researcher, ARC-GCI, Potchefstroom
- Lindsey du Toit, Associate Professor, University of Washington, USA
- Alison Robertson, Assistant Professor, Iowa State University
- Amanda Bennett, Research Scientist, Warwick HRI, UK
- Ken Craddock, Assistant Professor, University of Ohio
- Kulani Machaba, Head of Regulatory Affairs, Syngenta, South Africa

Professor Frits Rijkenberg, Professor Mark Loing, Professor Mike Martin and Professor Mike Wallis.

Mike Wallis, Pat Wallis, Melloney Martin, Mike Martin (Professor Emeritus, Plant Pathology), Merle Rijkenberg and Frits Rijkenberg.
Soil Science

The Department began as Agricultural Chemistry, with Professor ER (Jimmy) Orchard as first HOD, and later split into Soil Science and Biochemistry Departments. Jimmy Orchard had Malcolm Sumner, John de Villiers and Johan le Roux as fellow lecturers in the earlier years. Sumner and de Villiers both served subsequently as Heads of Department. Other lecturers included Alf Cass, John Hutson and Mike Johnson in Soil Physics, Jimmy de Jager and Mike Savage in Agrometeorology, Martin Fey in Soil Chemistry, Fertility and Pedology and Jeff Hughes in Pedology and Mineralogy. More recently Dick Haynes, Jeff Hughes, Chris Bester and Louis Titshall have made up the core academic staff in Soil Science. Periodic mergers and reorganisations of departments and faculties took place during the last two decades and the Discipline is currently aligned as closely with Environmental and Earth Science programmes as it is with Agriculture and Plant Sciences.

Some highlights have included the Tugela Basin soil survey which created a platform for the subsequent development of the South African soil classification system and, through John de Villiers and Chris MacVicar, the national inventory of soils information in the form of land type maps; and the development and application of the Diagnosis Recommendation Integrated System (DRIS) system for improved crop nutrition by research fellow Roger Beaufils in conjunction with Malcolm Sumner. Staff and graduates have built up a strong tradition of overseas collaboration and of publishing regularly in top international journals, and a number of graduates have secured academic posts at overseas universities (Sumner, Fitzpatrick, Hutson, Cass, Fey). The progress of South African agricultural and environmental research is filled with a wide range of contributions from UKZN Soil Science staff and graduates and much of this success can probably be attributed to the high standards demanded by Jimmy Orchard, summed up in his insistence that to practice Soil Science well requires a solid grounding in chemistry and in his dictum that "if you can’t say it, it’s not worth knowing it".

The Discipline of Soil Science currently resides within the School of Environmental Sciences, though the subject is strongly linked to both Environmental and Agricultural Sciences. Current staff include Jeff Hughes, Chris Bester and Louis Titshall, with Tad Dorasmy and Rajiv Singh as Technicians.

At present, Soil Science has five PhD, six MSc students and six fourth year BSc Honours/ BSc Agriculture students registered. Since 2005 Soil Science has also seen four PhD and four MSc graduations. The Discipline has published 17 peer-reviewed articles and four research reports since 2005. Currently the Discipline is involved in 11 collaborative projects with both industry and other research organisations.
The future of Soil Science lies in marketing the niche aspects of this field, but also encouraging related disciplines, such as Agriculture, Crop Science and Hydrology, to make use of Soil Science to support their own teaching and research. With a near complete complement of both academic and support staff a far greater effort can now be placed on developing the Discipline into a class-leading field. Courses will be re-evaluated over the next few years to ensure their suitability for target markets, but that will maintain a very high standard with regard to ensuring the knowledge students take to these markets. Links with both agricultural and industrial sectors will help in this regard.

Jeff Hughes.

Louis Titshall.

Michael Johnston.

Chris Bester.

Martin Fey.

Soil Science staff and postgraduate students (year unknown).
Deans – past and present

1947–1950: AR Saunders
1950–1951: JD Scott
1953–1954: ER Orchard
1955–1956: CW Abbott
1957: PL Kotze
1958–1959: AA Rayner
1960: MJ Oosthuizen
1963–1965: GV Quicke
1965–1966: PJC Vorster
1967: SA Hulme
1971–1973: K Nathanson
1973–1975: GV Quicke
1975–1977: P de V Booyzen
1977-1979: WJ Stielau
1979-1981: T Bosman
1981-1982: WJ Stielau
1982-1984: NM Tainton
1985-1987: JM de Villiers
1988-1990: WJ Stielau
1995-1998: FHJ Rijkenberg
1999-2001: R Haines (Science & Agriculture, PMB)
2002-2004: PJK Zacharias (Science & Agriculture, PMB)
2005-Present: J A Cooke (Science & Agriculture, UKZN)
Present: N Ijumba (Engineering, UKZN)
Investment opportunities for agricultural development

Never before has South Africa required the capacity and skills necessary to ensure agricultural development than it does now. Amidst a global food crisis, economic recession, environmental degradation, technological advancement, and impoverishment, not to mention the complex socio-political demands of equitable land distribution and reform, it is critical to the future well-being of society that this country is equipped with a cadre of agricultural policy-makers, practitioners and researchers who are qualified to lead South Africa’s agricultural sector in the 20th Century. To this end, UKZN has engaged in two important ventures. The first is an Endowment to Secure the Future of Agriculture and the second is an ambitious new building project.

To address the serious and growing skills shortage in this sector, SASA and the UKZN Foundation have established an Endowment to Secure the Future of Agriculture, the yields of which will be used to undertake a concerted long-term campaign to market intensively, both in schools and in the broader community, careers in the Agricultural Sciences, Agribusiness and related trans-disciplinary fields such as Food Security, Crop Sciences, and Sustainable Rural Development.

The Endowment was launched in May 2007 at a dinner that coincided with and was hosted during the Show at the Royal Agricultural Showgrounds. The target for the Endowment is R3.5 million and gifts have already been received from UKZN staff and generous corporates whose contributions are gratefully acknowledged. The Endowment is managed by the Trustees of the UKZN Foundation, including some of South Africa’s most eminent business people. Should the need for the Endowment cease, or if it grows beyond the requirements of the campaign to promote agriculture, the proceeds of investments will be directed towards provision of scholarships or bursaries for undergraduate study in the Agricultural Sciences and allied fields.

Contributions towards this important cause are invited from individuals and organisations with an interest in securing the future of our country and its agricultural production and marketing systems. All investors will be acknowledged in the annual report of SASA, its website and a flyer to be produced annually pertaining to the Endowment. Those who commit in excess of R100 000 will be entitled to display their logos on all publicity materials relating to the School and its activities.

Due to space pressures in the Rabie Saunders Building, UKZN is actively engaging our partners in seeking funds to construct a new building to house the ACCI, ACFS and further transdisciplinary developments in Soil Health, Rangeland Management and Post-Harvest Processing under the banner of the African Institute for Agricultural Sciences (AIAS). The building has been designed by Paul Mikula and Tony Wilson of Mikula, Wilson and Associates. The site for the R100 million ‘green technology building’ has been identified as being on the east side of the Rabie Saunders Building, running parallel with this building on the other side of the existing access road leading past the Rabie Saunders Building. A walkway would be built between first floor lobbies to enable direct access between the two buildings. The building will provide:

1. Offices and ancillary rooms to house five centres and the Microbiology Unit
2. Accommodation for postgraduates, visiting scientists and short course delegates
3. Seminar and common rooms for visitors and students
4. A cafeteria for conference delegates, visitors, staff and students
5. Laboratories for the applied disciplines
6. A 200-seat lecture theatre which can be readily converted into a four x 50 seat complex
7. Postgraduate seminar rooms
8. Wireless LAN access throughout.

To make a contribution to either of these funds, please contact Prof Sheryl Hendriks or Mr Bruno van Dyk (Executive Director: UKZN Foundation).
L-R: Professor John Cooke, Dean of Science & Agriculture; Mr Hollie Clarkson, Acting Chief Finance Officer; Professor Sheryl Hendriks, Head of Agricultural Sciences & Agribusiness; Dr Imtiaz Sooliman, Director of Gift of the Givers; Ms Lebogang Botsheleng, Deputy Director of the National Department of Agriculture; and Professor Pete Zacharias, Deputy Vice-Chancellor and Head of the College of Agriculture, Engineering and Science, at the launch of the endowment.

Banking details

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Account Name: UKZN Foundation Trust
Branch: Corporate Account Services-Durban
Branch Number: 223626

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Reference for endowment: Endowment to Promote Agriculture

Prof Sheryl Hendriks
Tel: +27 (0) 33 260 6075
Fax: +27 (0) 33 260 6080
Email: Hendriks@ukzn.ac.za

Mr Bruno van Dyk
Tel: +27 (0) 31 260 2389
Fax: +27 (0) 31 260 2536
Email: vandyk@ukzn.ac.za
Apologies and messages

I wish you every success for a very enjoyable event.
Tom Lewis (in Germany)

Congratulations on 60 years of involvement in agriculture at UKZN!
Norman Hill (out of the country). Graduated 1983

Good luck with the day.
Gavin Brockett

I was at Natal University from 1951 to 1954 and we were the first Graduates from the then new Faculty. The first three years were at Oribi and to this day I have very fond memories of the place, I trust you will have a good attendance and that much goodwill and fond memories will flow from that time. The four years in Pmb were a highlight.
John Matthews

Please accept our congratulations and best wishes for the next 60 years of agriculture at UKZN.
Dr Julie Howard, Partnership to End Hunger, Washington DC

Congratulations, AgFac, on reaching 60. Your teachings have been applied all over the world and, 40 years on, I am still engaged in building new agribusinesses in Eastern Europe and the Americas.
Richard Clothier

Congratulations and best wishes in the future.
SB Foster (in New Zealand)

Congratulations to the School of Agricultural Sciences and Agribusiness on 60 years of outstanding teaching and research. May the coming years bring further honour to the School.
Professor WA Pringle (in USA) Grad. 1958

My best wishes to you all for a fantastic, successful celebration of the Faculty. I will be with you all in spirit.
Rev. Glen Craig, 1954-1957

Congratulations on the Faculty’s achievements. May UKZN and the Faculty of Agriculture continue to play an important role in shaping the future of our country.
Professor Eckart Kassier

Good wishes for a wonderful day.
Mrs Pam Johnson (nee Scotney)

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