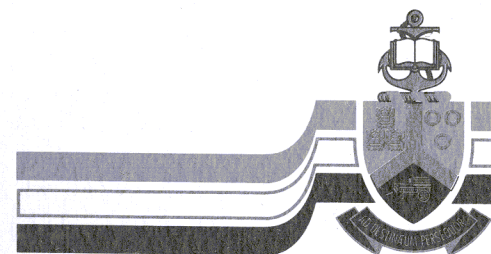


NUWE REEKS Nr 318  
ISBN 1-86854-211-4

**TRAINING AGRICULTURAL ECONOMISTS FOR  
SOUTHERN AFRICA AND THE 21<sup>ST</sup> CENTURY**

**PROF J F KIRSTEN**



University of Pretoria

## INTRODUCTION: PROFESSOR J F KIRSTEN

Johann Frederick Kirsten was born in Cape Town, South Africa, in December 1961. He completed his school career at the Jan van Riebeeck High School in Cape Town and then studied at the University of Stellenbosch for a BSc (Agric) in Agricultural Economics which he obtained in 1983. He subsequently obtained the Honours and MSc degrees, both *cum laude*, from the Universities of Stellenbosch and Pretoria respectively, and in 1994 the University of Pretoria conferred a PhD in Agricultural Economics on him.

He began his career in January 1987 as an agricultural economist with the Directorate of Agricultural Economics in the Department of Agriculture, transferring to the Directorate of Marketing in January 1989. From November 1989 to February 1992 he was appointed as the agricultural attaché in the South African Embassy in London. This appointment provided valuable international exposure and he made useful contacts with the British and European agricultural economics establishment. After he joined the University of Pretoria as a lecturer in April 1994, some of these contacts resulted in a number of collaborative research efforts between his colleagues in the Faculty of Biological and Agricultural Sciences and agricultural economists in the UK, which are still fruitful today.

Recognising his sterling qualities, the University of Pretoria soon promoted him to senior lecturer in January 1995, and then in July 1996 to Associate Professor and Head of the Department of Agricultural Economics, Extension and Rural Development. He is involved in various international research projects, for example the collaborative research project on rural livelihoods between this University and the ODA, DBSA and the University of Sussex in the UK. His many trips abroad include a visit in 1994 to the Department of Agricultural Economics at the University of Wisconsin-Madison in the USA, research collaboration with Chris Delgado of IFPRI in Washington, DC and a visit to the Agricultural and Natural Resources Division of the World Bank in the same city. Invitations to regional conferences and seminars include being invited to participate in a regional seminar on agricultural policy and analysis presented by the World Bank in Harare, as well as the many papers he has read at local and international conferences.

Professor Kirsten is a member of several national and overseas professional associations and serves on several committees and boards. In addition

to winning several awards and bursaries, he has to his credit an impressive list of publications in journals, chapters in books and as co-author and author of various scientific and popular publications. Many students at undergraduate and postgraduate level have benefited and will continue to benefit from his expert guidance.

Professor Kirsten is married to Marié and the couple have a daughter of six years and a son of three.

**Professor J van Zyl**  
**Vice-Chancellor and Principal**

## **TRAINING AGRICULTURAL ECONOMISTS FOR SOUTHERN AFRICA AND THE 21ST CENTURY**

**Johann F. Kirsten**

**Inaugural lecture presented at the acceptance of the Chair of the Department of Agricultural Economics, Extension and Rural Development at the University of Pretoria on 30 July 1997.**

### **Introduction**

In preparing a lecture of this nature one faces a number of obstacles or challenges mainly of an intellectual nature. There are, however, a number of aspects which in my case make the preparation of this lecture even more difficult than under normal circumstances. In my introduction I would like to highlight these.

This lecture is only the second inaugural lecture in agricultural economics at the University of Pretoria. The previous lecture and the first at this University (according to my records) was presented on 24 August 1939 by my grandfather, Prof. F.R. Tomlinson. This makes this lecture a special and unique event. The Department of Agricultural Economics at TUCS was formally established in 1928 with Prof. Leppan, an agronomist, as the first head of department and was succeeded in 1939 by Prof. Tomlinson. Prof. Tomlinson was also the first person to obtain a doctorate in Agricultural Economics in South Africa and is therefore considered to be one of the first and most respected agricultural economists in South Africa. He was respected for his contribution to the discipline and also famous as the chairperson of the Commission of Inquiry into the socio-economic development of the Bantu areas (the Tomlinson Commission) during the early 1950s. For any person to fill his shoes would be very difficult. The historic character of this lecture (and also of the position) could create expectations and I hope I will live up to these expectations.

Prof. J.G. Smith succeeded Prof. Tomlinson as head of the Department in 1956. He was head of department for 12 years before he moved to Bloemfontein without presenting an inaugural lecture. His successor was the well-known Jan Groenewald who was head of department from 1968 until 1994. He is one of the "characters" of the agricultural economics discipline in South Africa and also one of the legends of the University of Pretoria. He was always a challenge to any university authority and somehow he

managed to convince his superiors he would not need to present an inaugural lecture and until today it is still a secret how Jan Groenewald managed to escape this gruelling ordeal. Prof. Groenewald handed the reins of the department over to Helmke Sartorius von Bach. When he was in the process of preparing his lecture, his father died suddenly. Being the only son he inherited the family farm under strict conditions, therefore he had no choice but to resign at the end of 1995. This chronology of events explains why this lecture is only the second inaugural lecture in agricultural economics in the history of this University.

I have chosen "Training agricultural economists for Southern Africa and the 21st century" as the title of the lecture to show the way forward for the Department to become the centre of excellence in the Southern African region in the next century. I will therefore highlight what the focus areas of the Department should be for the future. Since I am an agricultural economist, the lecture will naturally concentrate mainly on the agricultural economics discipline, although I will at some point in the lecture refer to certain issues pertaining to agrarian extension.

In view of the historic nature of the proceedings, it is appropriate to show the evolution of the agricultural economics discipline in South Africa since 1939. This will be the theme of the first part of the lecture.

### **The agricultural economics ideology in 1939**

When Prof. Tomlinson delivered his inaugural address in 1939 agricultural economics was still in its infancy as a science. Agricultural economic issues were largely treated in a philosophical way. The address by Tomlinson in 1939 provides a good perspective on the nature of the discipline at the time and it is therefore appropriate to reflect briefly on the main aspects of his address.

The issue that concerned agricultural economists at the time was the profitability of *modern commercialised and mechanised agriculture* (my italics) and this was an important aspect to address in research and reports. It was argued (among others by Tomlinson) that in many parts of South Africa, farms were already too small to provide a decent livelihood for their owners and that farms should be larger. This was particularly important in view of the prospect that farmers' sons also needed to earn a living from the same piece of land. The two or three decades following the 1930s saw the modernisation of (white) agriculture in South Africa, with the sector becoming an important component of the economic system. The sector progressed from

being largely subsistence-oriented to producing and selling those commodities for which the individual farms were best suited.

As mentioned, agricultural economists in those years concerned themselves with the factors that influence profitability and also the low incomes and relative poverty of white farmers. Tomlinson identified the following factors influencing the relative profitability of farm holdings:

- Size of operating unit (in terms of land size, turnover, gross income or capital investment)
- Labour productivity
- Capital productivity
- Optimal combination of enterprises
- Prices

Yield per hectare (i.e. land productivity) and labour productivity were regarded as far more important than size. Despite this acknowledgement, Tomlinson and many other agricultural economists were concerned about farm size issues especially the "small uneconomic farm units in grain farming". Tomlinson saw opportunities for agricultural economics research in the process of rehabilitating irrigation settlements where farmers went bankrupt as a result of "too small units" (according to Tomlinson). The solution to this problem was to provide these farmers with larger units.

It is noteworthy how the problems of black farmers and issues related to black agriculture were for obvious reasons not even mentioned. The development of the agricultural sector in the former homeland territories was only attended to through some half-hearted efforts during the fifties, sixties and seventies.

For many years the concept of economic farming units was nurtured and promoted by many agricultural economists and teachers of agricultural economics. The concerns of too small farming units that could lead to degradation of the land resource played an important role in the promulgation of the Subdivision of Agricultural Land Act (Act 70 of 1970). This act provided the legal means by which government could prevent the subdivision of farms into "small uneconomic units", something that Tomlinson had already advocated in his 1939 inaugural address.

Reading Tomlinson's 1939 address one can easily trace the source of the idea of economic farm units. Tomlinson did his PhD at Cornell University under the leadership of Prof. George Warren. George Warren had a pro-

found influence on Tomlinson and he always spoke highly of Warren. A quotation from Warren used by Tomlinson (1939) explains to large extent the origin of the economic unit concept. Warren used to say: "Rather be a hired-man on a good-sized farm than the owner of an uneconomically small unit."

Another problem in South African agriculture which Tomlinson identified in 1939 is the overcapitalisation of South African agriculture and the consequent increase in farm debt. Despite the concern about overcapitalisation in 1939, this trend continued as a result of distortions in the cost of capital. Tax rebates and subsidised interest rates encouraged overcapitalisation and the resulting shedding of labour. Tomlinson's warning in 1939 seemingly fell on deaf ears and for 50 years capital investment in South African agriculture continued rapidly.

The agricultural economics discipline during the early years was also largely structured around the perceived tasks of the agricultural economist. For many years it did not differ much from the broad categories of tasks outlined by Tomlinson (1939), namely

- to advise to farmers on the most profitable or least cost combination of input and production factors;
- to advise on the marketing of the farmer's products;
- to assist the government in policy making;
- to assist in the economic valuation of farming enterprises and economic decisions such as farm purchases and long-term investments.

Although these still remain the central roles of agricultural economists, things have changed considerably since 1939. The discussion in the following three sections illustrates how the environment in which the agricultural economist operates has changed since Prof. Tomlinson gave his inaugural address.

### **The change in the agricultural landscape: 1939 - 1997**

The change in the agricultural landscape is clearly reflected in the differences in the policy debate then and now, and also in the different issues addressed. Let us, however, first consider the differences in the institutional framework between 1939 and 1997.

When Tomlinson gave his lecture in 1939 the agricultural scenario and institutional and legal frameworks of agriculture at the time were largely determined by the following facts:

- The drought and depression years of the 1930s were still fresh in the memory and the poverty of (white) farmers was cause for great concern.
- It was just more than 30 years after the Anglo-Boer War had brought about substantial destruction of fixed and movable assets, and farmers were still struggling to rebuild the capital base of their farms.
- The Marketing Act of 1937 was being promulgated. (In his address Tomlinson questions whether this radical change would be wise and states that more thorough research was needed to justify the establishment of parastatal marketing boards to control agricultural marketing).
- The 1913 Land Act had been promulgated and the policy of racial segregation was strengthened by the promulgation of the 1936 Land Act.
- The Land Bank established in 1912 became a key institution in financing commercial agriculture after more than two decades in operation.
- The profile of the commercial agricultural sector in those years can be highlighted by the following short list of statistical indicators:
  - \* 107 500 farming units
  - \* Gross value of agricultural production = R799,6 million (1996 prices)
  - \* Permanent labourers: 886 650 (22,5% white)

At present the scenario could best be described by the following facts:

- The process of racial segregation has been ended with the repeal of the 1913 and 1936 Land Acts and land reform has become one of the key objectives of the new democratic government.
- The Marketing Acts of 1937 and 1968 and their amendments have been repealed and replaced by the Marketing of Agricultural Products Act (Act 47 of 1996) which effectively meant the discontinuation of the functions of the various marketing schemes and boards.
- The new political dispensation in South Africa paved the way for greater economic integration with the rest of Africa.
- The Land Bank is currently engaged in a restructuring process.
- The key statistical indicators of the sector are as follows:
  - \* 61 564 commercial (mainly white) farming units

- \* Gross value of agricultural production: R35 503,9 million (1996 prices)
- \* Permanent workers: 656 772 (1,4% whites)

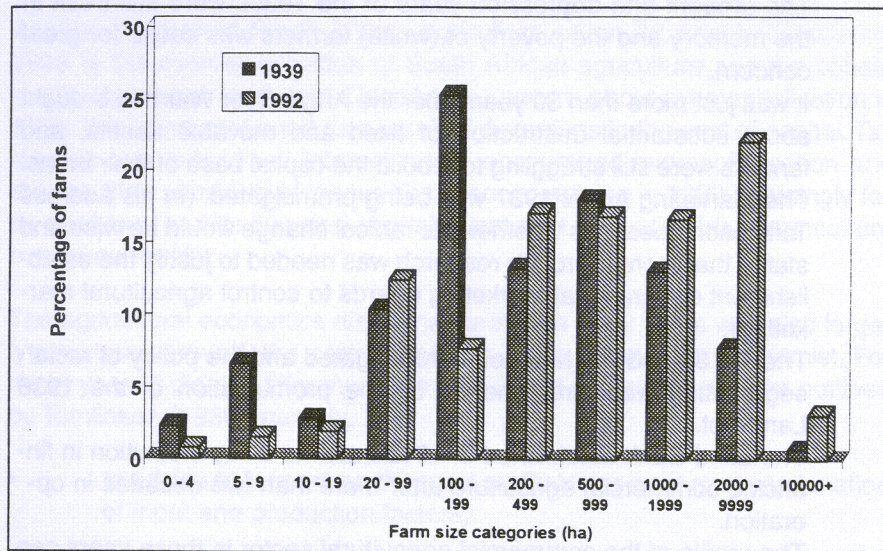


Figure 1: Change in farm sizes from 1939 to 1992

The changing times are also reflected in the issues being debated and researched. Some of the major research themes on which agricultural economists focused during the 1930s and 1940s can briefly be summarised as follows:

- ⇒ Economics and profitability of farming
- ⇒ Uneconomical farm units
- ⇒ Overcapitalisation of agriculture
- ⇒ The increasing debt burden
- ⇒ High production costs
- ⇒ Marketing issues in the light of the Marketing Act of 1937.

In contrast, the current agricultural debate largely reflects the themes listed below:

- ⇒ Land reform and agricultural restructuring
- ⇒ Water policy reform

- ⇒ International trade and market liberalisation
- ⇒ Economic integration in Southern Africa
- ⇒ Rural poverty and food security
- ⇒ Empowerment of farmers previously denied farming opportunities
- ⇒ The drafting of a new and comprehensive agricultural policy
- ⇒ The change in labour legislation.

In 1939 the agricultural establishment was still grappling with the issues of rebuilding commercial agriculture in the aftermath of the Anglo-Boer War and drought and depression in the 1930s. Today we face the challenges of rebuilding and empowering the farming community that has been gradually destroyed since 1936 through the policy of segregation and exclusion. Agricultural economists today therefore have a great responsibility to ensure that the process of empowering previously disadvantaged farmers is successfully completed.

In addition to the changing agricultural scenario in South Africa, the agricultural economics profession globally has also changed considerably since the 1940s. In the next section I reflect on these changes.

### The shift in focus in the agricultural economics discipline

The agricultural economics profession has over the past 50 years developed through at least four overlapping phases: farm economics, agricultural projects, environmental economics and economic liberalisation. I have borrowed selectively from an article by Carruthers and Kydd (1997) to provide a brief glimpse of the changes in the discipline over the past five decades.

#### *Farm economics*

The farm economics branch of agricultural economics is dominated by farm management, peasant farm-household decision making and technology planning and evaluation. Agricultural economists were never really at the forefront of the economics discipline but were nevertheless very good at following up and exploring new theoretical propositions, in testing analytical techniques developed elsewhere and in carrying this out using good quality data collected in the field. This is well illustrated in the farm management branch of the discipline. In farm management a lot of use was made of the most powerful tool of the economist, namely the enterprise budget. This tool has, however, been neglected lately and it is likely that we will and should see a revival in the use of the enterprise budget especially since we are in an era where advances in farm productivity will have to come from

increasing yields rather than crop area.

In South Africa it is also of great importance to revisit the use of the enterprise budget especially with regard to the economics of smallholders and new entrants to farming. It is amazing how little people know about the economics of smallholder agriculture and for that matter about agriculture in general in South Africa. Much of the talk about smallholder agriculture is value laden and statements are made without proper knowledge and understanding of the complexity of small-scale farming, the intricate nature of the decision-making process and the goals of the farmer. Enterprise budgets provide good insights into all of these aspects. So, for proper policy making and planning in South African agriculture, it is important that more studies should be done on enterprise budgets of all enterprises under different institutional environments in different parts of the country.

The fact that this instrument was so neglected is largely the result of the belief that the answers to research lie in richer, more complex models and secondly the failure to develop the insight that the farm is a unique entity - a production, consumption and social unit with distinctive features of a biological production process. The emphasis on modelling led to an abstraction from the social setting of the farm. This allowed the social anthropologists and sociologists to claim dominance of field level insight despite the limited policy relevance of their theory and reports. The respect for good field level data and the understanding of the farm as a social and production unit provide agricultural economists with a comparative advantage in this field and they should exploit it to reclaim their position as the authorities in this area. Revitalising the enterprise budget as policy tool could be a key step in this regard.

#### *Agricultural projects*

The second phase of the agricultural economics discipline was the project planning phase with projects ranging from agricultural research and extension to selected input use, reform of agricultural institutions, infrastructure development such as irrigation, to marketing. Public sector investment dominated the 1970s and the 1980s. Ministries, parastatals or semi-autonomous integrated rural development agencies invested in areas such as input and mechanisation subsidies, credit, irrigation, transport infrastructure, as well as institutional reform such as settlement or land reform. The dominant view at the time was that the private sector was too rudimentary, sluggish and/or socially undesirable and hence public initiatives were essential. In this phase agricultural economists played an important role in the planning of

these agricultural and rural projects and determining the economic merit of public sector projects by means of social cost-benefit analysis. Social cost-benefit analysis focused on price distortions, wrong market signals and the defects of the market while the defects in government were ignored or played down. Social cost-benefit analysis created illusions and distracted agricultural economists and others from the necessity of dealing with the macro-economic causes of distortion and government failures. Similar to many parts of the world, South Africa had its share of the project phase with many agricultural economists probably still remembering their role in projects planned and implemented by institutions such as BENSO, EOK, DBSA and various parastatals and government departments.

#### *Environmental economics*

The third and current phase of environmental economics is increasingly being applied in shaping rural policy intervention in developing economies. This is an area of work where agricultural economists still need to exploit their comparative advantage. Up to the late 1960s agricultural economists played a major role in the development of environmental economics as a discipline. This occurred predominantly in the USA and particularly in respect to the economics of natural resource use, for example land and forestry. Environmental economics has developed more rapidly and more visibly since the 1960s in terms of the influence it has had in the formulation of policy throughout all sectors of the economy. There have also been attempts to include values for environmental costs and benefits in development project appraisal and to lesser degree to incorporate environmental variables such as soil loss and water degradation in policy analysis. There is a lot of work to be done in this respect especially as a result of an increasing requirement to incorporate environmental impacts into more general policy analysis. This is clearly a new area of work where agricultural economists can and should take advantage of a long-standing comparative advantage.

#### *Macro-economic issues*

The fourth phase of the development of the discipline has been dominated by the response to the macro-economic crises of the 1980s - 1990s and the increase use of stabilisation and liberalisation policies in many developing countries. Macro-economic stabilisation has raised a number of issues that attracted the attention of researchers. These include the effects of changes in the real exchange rate; the effectiveness of public spending; the effects of increase in real interest rates on agricultural lending; and supply response

studies in the wake of changes in macro-economic variables and prices.

Liberalisation in domestic markets (deregulation of marketing and price controls) and international markets (the move from quantitative restrictions to tariffs) have provided a range of new research topics and placed increasing demands on agricultural economists. As a result of studies such as that by Krueger *et al.* (1988), the important effect of macro-economic policy on the agricultural sector has increasingly been realised. This aspect has meant a greater emphasis on macro-economics and trade theory in the training of agricultural economists - an aspect to which I will return later.

### **Agricultural trends in South Africa that will change the role and training of agricultural economists in the 21st century**

From the discussion above it is evident that the agricultural economics profession is today much richer in content and more diverse than in the 1930s. Agricultural economists nowadays are university researchers, instructors, private sector planners and strategic analysts; government researchers, analysts and advisers, managers and CEOs. Agricultural economists apply their skills to a wide range of topics including production, marketing, finance, consumer demand, community development, natural resources, trade and public policy. In the early years the profession was much more homogenous but it has evolved over time to this rich diversity. It is therefore important that the training of agricultural economists should take account of these changes and acknowledge the diversity of the profession.

In addition it is expected that the roles of agricultural economists in the food and fibre industry in South Africa will change as a result of a number of trends. There is also the likelihood that agricultural economists will be in much greater demand. Therefore there are not only more opportunities for agricultural economists, but also a greater respect and demand for agricultural economists and for the knowledge they have. These changing roles and demands for the skills of agricultural economists will naturally also have an impact on the way agricultural economists should be trained. The following are among the apparent changes and trends that could have an impact on the roles and therefore also on the skills of agricultural economists in the near future:

- Deregulation in the marketing of agricultural products
- The internationalisation of the agricultural industry, and the importance of competition
- New technology for production, processing and marketing

- Land reform and sustainable development of agriculture
- Increasing importance of environmental aspects in economic planning

The need for the expertise of agricultural economists within this changing, dynamic environment, will now be illustrated. From this one could possibly sense the skills newly trained agricultural economists should have to be adequately prepared for these challenges.

### *Deregulation in the marketing of agricultural products*

In the past, the State controlled prices, marketing channels and processes via the Marketing Act. Marketing channels have recently been liberalised and the marketing of agricultural commodities is now left to the initiative and entrepreneurship of the farmers, producer organisations and co-operatives. Consequently there is a much greater demand for agricultural economists to take part in decisions about the marketing of farmers' products. Decisions must be made as to what products to produce, where to produce them, when to produce them, how and in what form they should be produced, through whom to market them and at what price they should be marketed.

The importance of the agricultural economist's expertise is not only becoming clear to farmers but also to numerous businesses that process agricultural products and do their own marketing for their products. The latter have also discovered the value of agricultural economists in managing the purchase of agricultural products, and promoting the marketing of their own processed products. The abolition of marketing boards has led to unpredictability in the supply and prices of agricultural products, and this means that there are various new factors to be considered when purchasing or planning to purchase unprocessed products. The ability to do supply and demand analysis and price analysis has become increasingly important.

Another consequence of deregulation is the looming shortage in marketing information. Previously the marketing boards had a relatively good indication of supply and demand, prices and other important statistics which are crucial in policy making and in market analysis. Obtaining good and reliable data will become important and this could provide further opportunities for agricultural economists. In the next few years towards the new millennium a lot of work will have to be done to establish a reliable market information system for South Africa.

Deregulation has also made South Africa part of the international agricul-

tural world with its complex trading systems. One exciting development is the futures market, where commodity futures are traded. Farmers, processors, importers and exporters can hedge themselves against any unfavourable changes in prices and exchange rates. Other forms of market development have given rise to similar opportunities and challenges. Increasingly, agricultural economists are becoming involved in these kinds of activities in South Africa.

### *Internationalisation*

The trend toward more integrated world markets offers more potential for greater growth and presents an opportunity for many countries to raise their living standards. There is however the disadvantage that certain countries could be marginalised in the process.

Globalisation of the world economy amounts to the integration of economies throughout the world through trade, financial flows, the exchange of technology and information and the movement of people. The extent of the trend toward integration is clearly reflected in the rising importance of global trade and capital flows. Economic success in today's world is less a question of relative resource endowments or geography and more a question of the market's perception of the orientation and predictability of economic policy.

In this scenario farmers, agribusiness and financiers cannot achieve success without keeping up with international agricultural trends. It is also essential to stay informed of the developing markets, to identify their potential and make use of them. For example, the Indian market is growing quickly, and is already as big as those in Western Europe. What opportunities, problems and challenges does this pose for the South African food and fibre industry? Local prices, production and cultivation patterns are going to be determined in the future largely by international trends. The greater freedom in world trade will mean that it is important to stay competitive. Efficiency and productivity will be crucial. The agricultural economist must therefore assist people in the most economical use of production factors. Producer organisations, co-operatives and agribusiness are depending more and more on their agricultural economists to ensure that they are favourably placed concerning the changing international trends.

### *New technology*

The researchers of the world, including those working in South Africa, are constantly opening the doors to new opportunities. There are new crop

varieties that give higher yields, but may taste slightly different. Some are more stable than others. There are new options in processing, new methods and different end results. Trade methods are constantly changing; electronic trading is becoming more popular.

No farming operation, processor or trader can simply ignore such developments, nor can they rush in and take chances in implementing new, unproved formulas. The applicability of breakthroughs must be tested under the relevant circumstances, and sometimes the new technology needs adaptation. One has to consider the costs, the financing and the effects on income. Determining the expected economic returns of new technology, and its feasibility within the specific operation, is an interesting and challenging task for agricultural economists. Increasingly we will find that the Agricultural Research Council will have to justify research expenditure and in this regard agricultural economists could be valuable for this institution.

### *Land reform and sustainable development of agriculture*

A major challenge confronting the agricultural community is how to develop policies and strategies that will help previously disadvantaged farmers to enter the mainstream of the agricultural sector. Issues related to the implementation and monitoring of the land reform programme and to the identification of the needs and constraints of the new, emerging group of farmers on redistributed land are relevant here. The development of support programmes for credit, production input and marketing processes for these farmers will also need attention.

One of the traditional tasks of the agricultural economist is to provide farmers with economic and financial advice. Furthermore, agricultural economists guide the farmer as to which would be the most advantageous combination of the different production factors in his/her operation, so that the farmer can produce at the lowest possible cost. This will and should always be one of the most important tasks of agricultural economists. They have to know which product might hold the best advantages, and where and how it should be marketed. The expertise of agricultural economists will become more and more important in assisting farmers who acquired farm land under the land reform programme. They will also play an important role in feasibility studies of projects and programmes for farmers.

Another major challenge facing South Africa is the development of rural areas, many of which are seriously disadvantaged. Agricultural economists are well placed to meet these challenges and to work with governments

to develop agricultural policies to promote income growth in rural areas. Work on developing such strategies has many elements from promotion and market development to pricing policies and agricultural finance. There remain many problems related to agricultural development in low income areas (countries) for aspiring researchers to solve.

### **Increasing importance of environmental aspects in economic planning**

Awareness of and concerns about the environmental hazards and ecological imbalances caused by mankind's pursuit of economic growth and welfare have already reached effective heights in local as well as global economic, social, legal and political orders. As a consequence, many international conventions, declarations and protocols to conserve the natural resource base and protect the environment have been drafted and ratified by most countries. Extensive networks of individuals and institutions have also emerged at local, regional and global levels exerting tremendous pressure on governments and the private sector to adopt environmentally sound approaches to developing economic resources. Communities have also become relatively more aware of and sensitive to environmental risks and better organised to demand sustainable practices in exploiting their natural resource base. Moreover, various international incentive systems were put in place to reward conservation and penalise environmentally degrading strategies and policies. These have all had significant impacts on users and providers of knowledge and on analyses of environmental processes, impacts, policies and legislation worldwide. In response to these pressures, a huge demand has emerged for relevant knowledge and analytical capacity in integrated economic and environmental management and planning.

Agricultural economists are traditionally concerned with the economic application of our scarce resources, such as land and water. In the new century environmental concerns will in many respects be at the top of the agenda, creating more challenges and opportunities for agricultural economists.

#### *Summary*

In summary we see an increased role for and greater importance of the agricultural economist in the provinces to assist with policy analysis and implementation regarding agriculture and natural resource issues. In addition it is important that one of the most neglected tools of the agricultural economist, namely the enterprise budget, should be revitalised because it could assist in a better understanding of farming systems and the economics of farming - large or small scale. The establishment of a good database on farm sys-

tems and markets would be critical to ensure good policies and programmes which could secure the long-term growth of the agricultural sector. Here agricultural economists could play a major role.

### **Agricultural trends and challenges in Southern Africa**

The opportunities and challenges for agricultural economists in South Africa will not only be influenced by domestic issues. There are a number of issues in southern Africa that will also require our attention and will need to be included in research and training efforts.

The Southern African region is facing formidable challenges on issues such as poverty reduction, food security, employment creation, increased farm productivity, the sustainable use of natural resources, land reform and human capital development. Agriculture is and will continue to be the engine of overall economic development in southern Africa (Van Rooyen, 1997). Although this is true one could also argue that the effective and sustainable use of environmental resources (i.e. agriculture, ecotourism, conservation and forestry) will be the key to economic growth in the region.

It is well known that the performance of agriculture in the region (excluding South Africa) has been poor over the past decade. This rendered the agricultural sector unable to fulfil its national roles in food security, employment creation and foreign exchange earnings. It has been acknowledged that the poor performance of agriculture has been largely due to inappropriate macro and sectoral policies. There is therefore a need to improve policy making through better policy analysis. This can be achieved by building sustainable capacity in agricultural policy analysis and training. It is in this regard that our Department could make an important contribution.

I briefly highlight the most important issues that could shape the future work of agricultural economists and would shape our research agenda in the region.

#### *Food security, rural economic linkages and rural employment creation*

Food security at household, national and regional levels remains an important area of policy and strategy formulation in Africa. Poverty and unemployment are the main causes of hunger and malnutrition and as a result employment creation in rural areas is an important issue in formulating policy and strategy. Aspects relating to rural development and economic diversification would also be of key interest in this regard. Rural development will

in many ways remain an important issue in all the countries in the region.

#### *Interregional trade in agricultural commodities*

There are real prospects of increased regional trade as a result of the possible removal of tariff and non-tariff barriers. The development of spatial development initiatives such as the Maputo corridor and the resulting improved infrastructure could also influence regional trading patterns. Increased liberalisation could have large impacts on production patterns in the region. Policy formulation will therefore have to rely on research determining the comparative advantage of different commodities.

#### *Integrated environmental resource management*

Here cross-border issues of a different kind are among the issues that require the attention of policy makers, academics and researchers. It is especially the cross-border management of water resources which is of particular concern. There is growing awareness in southern Africa of the need for neighbouring countries to plan and manage common resources, particularly water in international rivers as well as migrating wildlife (the establishment of peace parks). In some instances, long-term requirements for water and energy (especially in South Africa) now require countries to plan and negotiate with other countries well beyond their boundaries.

#### *Technology development and transfer linkages*

There is still a strong belief that agriculture in the region will be largely transformed through technological change that leads to increased productivity. Greater attention should be paid to increased technological utilisation and also the technology needs of resource-poor farmers.

#### *Institutional reforms and decentralisation*

Rural institutions in the region lack the capacity to address the needs of smallholders. Technical change is the key to increased productivity but this requires effective co-ordination of key institutions such as research, extension, credit, marketing, input supply and land tenure and reform. Also relevant is the role of farmer interest groups and civil society. The challenges for agriculture in the region should also be debated in the context of the trend toward increased decentralisation by the devolution of power to provinces and districts.

## **Repositioning the Department of Agricultural Economics, Extension and Rural Development**

To remain relevant, academic departments have to respond to challenges and trends through adapting curricula to ensure that they produce students who are capable of transforming these challenges into opportunities. Having listed the issues and trends that could affect the role of agricultural economists in the future and in the region, it is now important to consider how the University of Pretoria, and more specifically the Department of Agricultural Economics, Extension and Rural Development should adapt its training and research programmes to take up the challenges that emerged from the above discussion.

It is no easy task to manage an academic department and change its focus to stay relevant. The reason for this probably lies in the following tongue-in-cheek definitions of academic departments:

“Chaotic collections of eccentric people held together by a common grievance about parking”

or

“A loose collection of prima donnas characterised by large egos”.

This task of repositioning a department could be simplified by removing constraints on members of the department; by opening and identifying new opportunities and by facilitating creativity. However, this requires an energetic and enthusiastic staff who will buy into the new vision which I discuss in the final section of the lecture.

The Department of Agricultural Economics and the Department of Agrarian Extension were in 1992 merged into one department, the Department of Agricultural Economics, Extension and Rural Development, as part of the rationalisation of the Faculty of Agriculture. The newly established Department has played, and still plays, a central role in the degree programmes offered by the Graduate School of Agriculture and Rural Development. The addition of Rural Development to the name of the department brought about a much broader and more multidisciplinary focus in the work of the Department. Agricultural economists and extensionists usually work in a multidisciplinary environment and as such this should not be a major adaptation. Extension officers or field officers come in touch with many of the other (non-agricultural) problems and constraints faced by rural communities. The

extension officer is therefore in many ways an interface with the community and could, if properly trained, have a positive effect on the well-being of these communities. A critical skill in this regard is to diagnose problems of communities (including farmers) correctly and to relate these problems to appropriate policy and programmes. It is at the programme and policy level where the agricultural economist can assist in designing programmes that would ensure the most efficient use of resources to improve the well-being of the community.

This is one of the many ways to show how agricultural economists and extensionists can work together in developing rural areas. I see the two study fields as being the two legs or cornerstones of the Department with a common goal: the socio-economic development of rural areas. Before discussing the field of agricultural economics in more detail, I will briefly highlight the factors that would require our Department's attention in the field of extension.

Agricultural extension has also developed through several phases (Botha and Stillwell, 1997): During the 1960s the focus was on interpersonal communication. The inability of good communication to solve all extension problems saw the onset of farming systems research and extension (FSR/E) in the 1970s. The management side of extension became the main focus of extension discussions during the 1980s with the Training and Visit system as an example. The extension debate in South Africa followed similar lines, to the current concern with the most effective way of delivering extension services. There is now the reconsideration of the role of the state and the private sector in agricultural extension. Extension is today at the crossroads and faces the real danger of being phased out. This is mainly the result of a total lack of delivery.

Agricultural extension is one of the major support services to farmers and especially to those farmers who have recently acquired land. It is accepted that the private sector has the resources and institutional network to fully service commercial agriculture, but the state and parastatals still have an important role to play in providing extension services. Redressing the public extension services is a major challenge and it is here, especially in terms of retraining, that this Department could play an important role. The inability of field workers to diagnose problems in rural communities remains a major problem and our training efforts should therefore include these aspects. Developing skills in PRA and RRA techniques could be valuable in this regard. The lack of knowledge about economic matters (basic farm management and marketing) among extension officers is also cause for

great concern. I would therefore encourage more economics to be included in the training of extension officers since much of the advice farmers need would be of an economic nature. This is something that Tomlinson also advocated in his 1939 address.

The extension service is important in terms of facilitation of technology development and transfer in agriculture (in a variety of ways - participatory, advisory, etc.) and assisting rural communities in solving other related problems and constraints. We should recognise that extension should be of a participative and facilitative nature, pursuing the principle of help towards self-help as far as individuals, groups and communities are concerned. I have not nearly touched on all the issues of importance but it is evident from the situation in South Africa that this Department could and should play an important role in bringing about a redesigned and effective extension service through training (including in-service training) and well-targeted research efforts.

### ***Training agricultural economists to take up the new challenges***

The agricultural economics discipline has remained primarily micro-focused and is therefore not much concerned with broader efficiency questions or macro-economics. Examples of these include the relative neglect of public spending and budgetary implications of public agricultural service infrastructure, marketing board deficits, and agricultural credit provision that was often more like a grant programme.

Clearly there are today more factors outside the agricultural sector that will have a much larger impact on the sector than factors within the agricultural sector. We think here especially of macro-economic factors such as interest rates, fiscal policy, exchange rates, labour policy and trade policy. Having accepted this, it is clear that agricultural economists will have to be exposed to more macro-economics in their training. It is for this reason that we have already included more courses offered by the Department of Economics as electives in our graduate programme. Graduate courses in macro-economics and international trade theory would be of particular value.

It is however still important that agricultural economists should have a thorough understanding of the agricultural disciplines. This is so, since I believe that an agricultural economist with "mud-between-the-toes" experience combined with a solid understanding of statistics, economics and the macro-economy, could be invaluable to any agricultural industry. It is therefore a pity that so few students are prepared to take on the 4-year

BSc(Agric) course and rather opt for the shorter BCom degree which has no agricultural courses such as plant production, soil science and animal production included in the curriculum. Both degrees provide students with good economics and financial management training up to final year level, although the BSc(Agric) degree gives students a stronger background in agricultural science.

Many agricultural economic departments in the USA are considering revising their undergraduate programmes in response to changing student and clientele needs. Some have changed or are considering the option of changing their name to agricultural and applied economics. From the discussion earlier we can expect that in South Africa there will also be a number of changes in employers' and in students' needs in terms of agricultural economics training to which we at the University of Pretoria have to adapt very quickly to stay ahead of the rest of the field.

This Department already offers three undergraduate degrees with agricultural economics as major: the BSc(Agric), BCom and BInstAgrar degrees. All these degree programmes include the same agricultural economics courses and there is not much to choose between the agricultural economics content of the different programmes. The difference lies more in the different course combinations. There is thus no way in which a student could specialise in a particular field of agricultural economics. The success of this so-called differentiation at undergraduate level is clearly illustrated by the case study of enrolment of agricultural economics undergraduate students at the University of Georgia (See Figure 2).

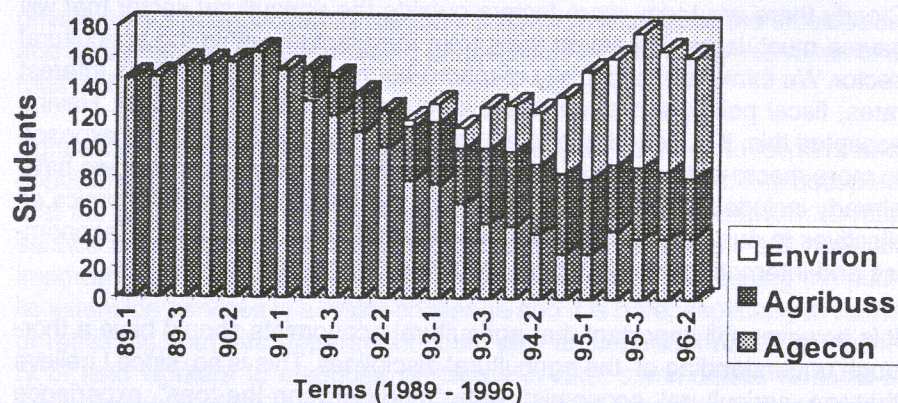


Figure 2: Undergraduate majors in agricultural and applied economics at the University of Georgia, 1988 - 1996 (Source: Broder and Bergstrom, 1996)

The experience of similar departments in other parts of the world plus the changing needs for and roles of agricultural economists makes it inevitable that we in this Department should consider following the same trend by identifying three focus areas for training and research with the idea of later developing them into separate degree programmes. These three areas are: Agribusiness, Environmental Economics and Management, and Agricultural Economics. I elaborate on the reasons for, and focus and content of the three focus areas in more detail below.

#### Agribusiness

As a result of agricultural market deregulation and increased internationalisation we would see more and more agribusiness firms being established which would demand more trained agricultural economists. We have alluded to this in some detail above. Developing a separate focus area of agribusiness may also have greater appeal to the potential employers of agricultural economists.

Students majoring in agribusiness could learn decision-making skills for agribusiness management, finance, marketing, sales, processing, manufacturing, transportation and international trade. The primary job market for students from such a degree programme would be agribusiness firms - including co-operatives, food processors and manufacturers, commodity traders, banks and other financial institutions. The development of a new study field of agricultural and rural finance would also be possible under this broad focus area. Most of the students who complete the existing degree programmes are employed by the employers listed above. But we believe that with some reorientation and redesigning of the curricula we could add much more value to our graduates and prepare them adequately for this growing market for agricultural economists.

Traditionally we expected that students with a degree in agricultural economics who had taken a management course or two during their graduate programme would be appropriate candidates for the agribusiness market. The relevance of such an approach can be questioned. On the other hand we know that too much emphasis on management sciences such as in MBA programmes would also not be the ideal. Agricultural economics departments have traditionally offered courses in farm management. These existing courses could easily be extended to successful agribusiness education programmes by understanding the clients' needs, having a long-term vision and continuing the links between teaching and research (Akridge *et al.*, 1994). We foresee, however, that by combining agricultural economics and management at the graduate level we would capture the best of both

disciplines. If individuals with such training could satisfy even a small portion of the total food industry demand for graduates, a substantial number of students would be attracted to agribusiness programmes. For a successful agribusiness programme it is important to pick a particular segment of the agribusiness sector since it is impossible to serve the entire sector.

In developing this new focus area one would rely on the existing management courses in the Faculty of Economics and Management Sciences and the School of Business Management. The agribusiness major could provide students with a stronger background in agricultural science and would therefore position students much better for employment in the food and fibre related industries.

#### *Environmental economics*

In response to a variety of environmental pressures discussed earlier, a huge demand has emerged for relevant knowledge and analytical capacity in integrated economic and environmental management and planning. However, supply is still lagging far behind the demand for these skills.

In developing countries in general and the southern Africa region in particular, lack of human resource capacity is a major constraint on achieving environmental goals. This is a serious handicap for the region since the economies of most countries and the well-being of the vast majority of people in the region are highly dependent on their natural resource base. Most government agencies and private companies in the southern African region have either recruited or are attempting to recruit staff with training in environmental management and impact assessment. Most of the professionals working as environmental officers in both private and public agencies come from an environmental sciences background with inadequate exposure to economic methods and tools. Also, managers, planners and policy makers dealing with natural resource and environmental management in those institutions suffer from a critical deficiency in the application of economic methods to environmental issues. While a few programmes at national and regional universities have recently been developed to provide training in environmental management, these programmes focus on the environmental sciences and engineering side and have no or an inadequate economics component.

The alternative of seeking training overseas is well known to be prohibitively expensive, let alone its risk of non-relevance to local and regional problems. This in addition to the fact that building national and regional capacities in training is another important developmental goal. A recent survey

conducted by the Environmental Economics Network of Eastern and Southern Africa (EENESA) showed that there are fewer than 20 individuals in the whole Eastern and Southern Africa region with relevant training in the environmental economics field. This is the status of capacity in this field in the face of a huge and ever increasing demand for such skills. It has been estimated that the total value of contracts in resource and environmental economics completed during the 1996 year in South Africa alone was in the range of R5 to 10 million. About 50% of those used expatriates. At least an equal amount has been spent on resource and environmental economics and policy work elsewhere in the region. Major research and policy organisations in South Africa, such as the Land and Agricultural Policy Centre (LAPC), CSIR and the Institute for Natural Resources (INR) have plans to expand their capacity in this field with serious difficulty in finding the right qualifications. The same applies for many other regional agencies. Most of these organisations are also urgently seeking graduate bursars whose training they can support and invest in, given the availability of a suitable programme in the region. Recent demand for this kind of training has been constantly rising as enrolment figures increase in the limited environmental economics courses available in the country, mainly at honours level. The numbers of graduates doing thesis research, either specialising in environmental economics or using economics to address environmental issues as a major component of the research project, have also been growing rapidly in recent years.

All the above indicates that there is a strong need for crucial expansions in capacity creation in the field of environmental and resource economics and policy analysis in the region. In response to this need we have recently embarked on a process to establish a Chair in Environmental Resource Economics and Policy with the long-term vision of contributing to strengthening and expanding existing programmes in the Faculty of Biological and Agricultural Sciences to contribute to meeting such demand. This will be achieved through combinations of various academic training modules and curricula based on a multidisciplinary approach.

The field of environmental economics will thus very soon be established as our second focus area with students majoring in environmental economics. I foresee that it is in this field that we will make a considerable impact in the region in terms of capacity building and research.

#### *Agricultural economics*

In the third focus area that I propose, training will be concentrated on the traditional agricultural economics courses to prepare students for postgradu-

ate training and careers in applied economics, resource management, policy analysis, economic forecasting and economic research. The work in this field should mainly be concerned with the application of economic principles to issues concerning food and fibre production, natural resource management, agricultural and rural development, agricultural and environmental policy, and international trade.

The current courses in production economic theory, agricultural policy, agricultural development, econometrics and research methodologies would form the basis of this focus area with a combination of courses in micro-economics, macro-economics and international trade theory completing the package. With increasing liberalisation and globalisation, studies such as that by Krueger *et al.* (1988), have shown the importance of policy influences emanating outside agriculture. There is therefore an urgent need to have greater emphasis on macro-economics and trade theory in the training of agricultural economists. Application of techniques such as the Policy Analysis Matrix (Monke and Pearson, 1989) provide a useful framework to assess protection levels and the comparative advantage of commodity systems in this era of policy change.

In this field and also in environmental economics, great emphasis will probably be placed on econometrics and a variety of mathematical programming techniques. We accept that these techniques and skills are needed for proper analytical work but the application of these techniques should be done with care. There are still many economists and policy makers who do not have faith in many of the tools agricultural economists use. So it is also important to teach students the policy-making process and the theory of public choice to illustrate how political and economic power can influence policy and to show why policy recommendations are not always accepted and implemented.

A new development in economic theory is New Institutional Economics. This term refers to the branch of economic theory that emphasises transaction costs and the interaction of imperfect information and property rights. In development economics where we deal with cases of market failure and incomplete markets, there is considerable room for such institutional analysis. The New Institutional Economics provide a useful analytical perspective on transaction costs and how they affect the behaviour of individual producers and households. In terms of policy formulation this would provide useful insights into the constraints and imperfections that could be solved by appropriate policy. Some of the elements of the New Institutional Economics have already found their way into some of our graduate courses, but it is

evident that we will have to develop this somewhat more comprehensively.

Our research agenda in this broad focus area would also need to include a number of issues on international trade. Our compliance with the WTO agreement will lead to an increasingly open economy. We will have to do research on the effects of this on our local industry. The increasing integration of the economies of southern Africa and negotiations on a trade protocol will require a lot of research work. South Africa's application to become a member of the CAIRNS group and the Lomé Convention plus the negotiations on a free trade agreement with the European Union are further evidence of the importance of this field for training and research.

There will naturally be considerable overlap between the different focus areas and this is how it should be. The only advantage of this categorisation is the ability to attract students in a more purposeful way and also to exploit our comparative advantage to the full and develop centres of excellence in each of the focus areas. From the description of the focus areas it emerged that we need to apply interdisciplinary and multidisciplinary approaches to training and research. Although it will take a number of years to develop the three focus areas into comprehensive undergraduate and graduate programmes, I consider it appropriate to focus our efforts on those areas where we have the expertise and where we will contribute substantially to the needs of the African continent in terms of research and training.

#### **Other challenges facing the Department of Agricultural Economics, Extension and Rural Development.**

There are also other factors that will continuously influence academic departments at tertiary institutions. These include the Draft White Paper on Higher Education and impending rationalisations as a result of changing funding structures. To stay ahead of the rest of the field in this environment, our academic Department should immediately ensure that we are cost-effective and are providing our services more economically. This is the only way we will be able to survive in the new environment of continuous cuts in funding. I do not want to say too much in this regard and would rather use the time available to indicate how our Department has performed in terms of the challenges posed by the new Vice-Chancellor and Principal in his vision for the University of Pretoria.

A key priority for the University of Pretoria is renewal and we hope our intentions in this regard are apparent from the discussion so far. Renewal has to take place in terms of the market-relatedness of degree programmes,

diversity of staff and students, relevance and internationalisation. The move to the three core focus areas of the work of the Department addresses the first factor and would in many ways ensure that students graduating from this Department would be in high demand in the food and fibre industry in South Africa and Africa.

#### Diversity

During the past five or six years the Department has seen changes in student numbers as well as in terms of the composition of students. Figure 3 provides an overview of the growth in student numbers since 1982. There was considerable growth at postgraduate level while undergraduate student numbers dropped slightly.

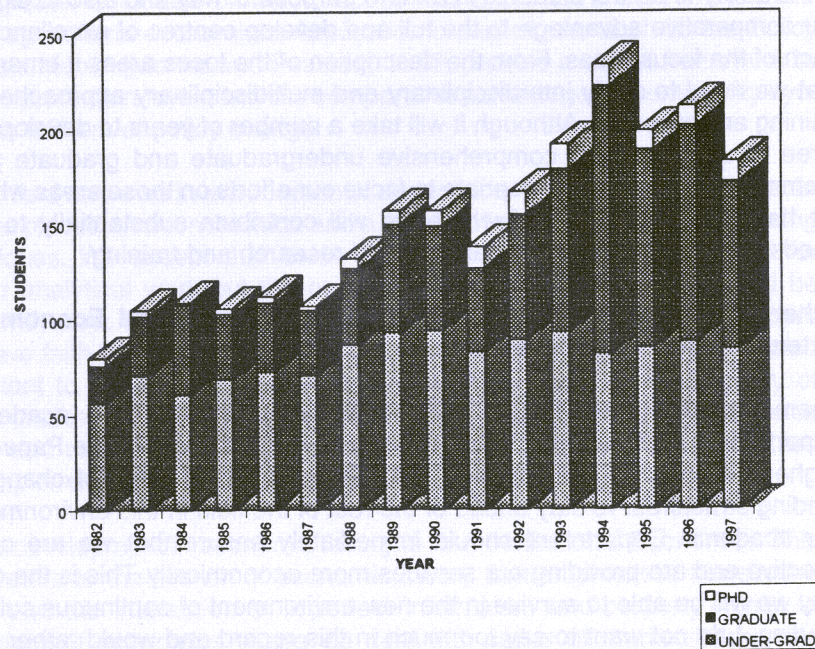


Figure 3: Student enrolment in agricultural economics at the University of Pretoria: 1982 - 1997.

From being a "lily-white" academic department only eight years ago, the racial composition of the students in the Department has changed considerably to reflect the South African population at large:

Undergraduate (84 students)	Whites	70%
	Blacks	30%
Honours and Master's (91 students)	Whites	26%
	Blacks	74%
PhD (11 students)	Whites	45%
	Blacks	55%

In addition, of the total of 102 graduates almost 20% come from other countries in Africa which adds an international dimension to the diversity of our student corps. Clearly we are already playing the role of an important institution of higher learning in agricultural economics and extension on the continent and we should pursue this further.

Diversity of staff in terms of race, gender and training is another issue that academic departments need to tackle seriously in terms of the objective of renewal. In terms of race composition we have recently made two appointments which moved the staff composition away from the typical all-white male scenario. We have not yet made any progress in terms of the gender balance in the academic staff and I hope that in the near future there will be opportunities to correct this. In terms of diversity of training and background we are doing pretty well with graduates from Stellenbosch, Purdue, Iowa State, Reading, East Anglia, Gent, the North and Penn State all being members of staff. With this information at hand the Vice-Chancellor and Principal could use our Department as a model of the process of renewal at the University of Pretoria!

#### Internationalisation

International co-operation includes a number of aspects, such as exchange agreements, recruitment of foreign students, collaborative research and research funding by international donors. This process of being acknowledged internationally as a centre of excellence requires a top-grade academic programme as well as relevant, high-quality research. It is for that reason that one cannot really isolate relevance from internationalisation.

The performance of the Department in terms of internationalisation is also most encouraging. Mainly as a result of earlier research work under the leadership of Jan Groenewald and Johan van Zyl the Department is regarded as one of the centres doing appropriate and applied research. This research came in handy especially in the post-1990 period as new policies for the transition of South Africa were developed. More pieces of good research work followed between 1991 and 1994 and as a result the Depart-

ment is still today the first point of call for many international visitors and prospective researchers on agricultural policy issues. Although we do still lack capacity in many fields of agricultural economics, we are internationally recognised as one of the departments doing good applied research in South Africa and nowadays also in southern Africa.

Several agreements for exchange programmes have been signed between our Faculty and other agricultural faculties and some of our students and staff have already made use of these opportunities. Collaborative research efforts with international experts are plentiful and this has further strengthened our research capacity and output. The recruitment of foreign students especially from Africa is another dimension of internationalisation which has been taking place. This avenue of recruiting graduate students, especially from African countries, could be pursued further.

Thus in terms of this challenge, our Department has already made some achievements and with our new staff composition and research programmes it is likely to improve even further.

### In conclusion

We see that the Department of Agricultural Economics, Extension and Rural Development at the University of Pretoria could play a key role in training agricultural economists for southern Africa and Africa. It is also our ability to research problem areas and issues in the agricultural sector that would be of importance to ensure our leading role on the continent.

In closing I present a vision for the Department of Agricultural Economics, Extension and Rural Development. This is in reality a summary of what is described in detail throughout the paper and reads as follows:

*To be the centre of excellence in southern Africa for training and research in agricultural economics and extension to serve the rural communities of South Africa and Africa in their plight to alleviate poverty and improve food security.*

I trust that with the new, young and energetic staff we have recruited, we will be able to accomplish this vision by following the guidelines I have spelled out in this lecture.

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