The situation confronting agricultural educators everywhere may be summed up in the phrase: ‘Adapt or Perish’. (Wallace 1997)

Change is a fact of life. When we look around us at our families and friends, at our towns and farms, our sources of information, and our choice of consumer goods we notice that very little remains static. Change is also a fact of life in the world of academia even if the pace is slow. We have reached a point in agricultural education where the demands for change from outside our institutions are numerous and strong and it is critical that decisions are made on how to respond. This conference provides the opportunity to examine what is happening in the world of agricultural education, gain a better understanding of problems, imperatives, solutions and, most importantly, create the resolve to return home with the courage and the determination to do something positive about the challenge of change.

Change and African Universities.

By international standards African Universities are very young, dating from the 1960s when the independence movement began to gain momentum. The African universities have achieved much in a short time but now with increased enrolment and declining budgets there is a serious risk of universities losing their influence on the higher education of Africa’s youth. Africa’s universities currently stand in crisis at a pivotal point in their development. The mandates given at independence- and ensuing higher education policies- now require reassessment as a result of changes in the world, in Africa, and in the universities themselves. (Saint, 1992). What are some of the main problems in African universities?

1. Enrollments are often greater than the capacity of universities to handle
2. Unsustainable patterns of expenditure for higher education
3. Decline in the quality of education
4. Declining relevance to national needs (Saint, 1992)
5. Exodus of teaching and research staff to areas of higher pay and better conditions
6. Too many universities in certain countries unsustainable with existing budgets
7. Disconnect with the employers of graduates from the universities

Change and Agricultural Education.

World wide, agriculture has had an amazing success record. Despite serious droughts which plague parts of Africa, Australia and the Americas; despite floods and storms; despite the ravages
of pests; and an exploding increase in population, the production of food has never been better. We have defeated the threat of mass starvation predicted by Malthus (1766 - 1834). Success has been assured by the scientists, teachers, and extension workers who discovered, transmitted and disseminated vital technological findings to the farming public. Yet, there is a constant pressure on the universities and other education and training institutions to adjust to the realities of change. As with so many aspects of development, agricultural education in Africa (and elsewhere) now faces rapid and often perplexing changes in the environments in which it exists. It faces a variety of challenges and dilemmas, but also of new opportunities and possibilities. (Oniango and Eicher 1999).

Problems with agricultural education.

1. Isolation of the agricultural university from other parts of the university system
2. Lack of communication with the employers of the graduates of the university, the market
3. Poor practical skills
4. Decreased funding as urban focus gathers strength
5. Weak connection with other parts of the agricultural education system – colleges, vocational schools, farmer training networks
6. High unemployment of graduates from the university, often due to lack of relevance of curriculum
7. Failure to attract the best quality students from secondary schools
8. Inbreeding. Teaching and research staff are frequently graduates of the same university or college thereby excluding the entry of new ideas from the wider world of academia and research.

Taken together these problems present a formidable barrier to effective education. Fortunately few universities have to deal with all at the same time. However, it is likely that if agricultural education systems do not produce employable graduates at all levels they risk of becoming irrelevant as educational institutions. This is happening already and can be seen in declining enrollments, lower quality of students/trainees at entry and, of course, the high level of unemployment amongst graduates especially from university level agricultural institutions. There is however another observation that suggests that alliances should not only be made with future employers of graduates but with other educational institutions. It is not uncommon to see private sector jobs in agriculture and agribusiness filled by graduates of other disciplines who are better skilled in the social aspects of rural development. The agricultural research system is a good example of a changed situation. Scientists now working in agricultural research come from a wide range of disciplines rather than from agricultural education as was traditional in the past (Falvey, Maguire, 1997). It is a common observation that, in the private sector, a failure of an institution to recognize market needs will cause it to lose customers, profits and indeed, may end in its closure. In the public sector things are different. “Public sector institutions are not subject to the kind of market forces that govern the life of a firm. This fact is particularly true of agricultural universities, most of which are public institutions. In the absence of conventional market pressures, what might serve to ensure that the university addresses important social needs innovatively and responsively? Or, put in a more crudely negative sense, how does the university avoid stagnating and becoming irrelevant?” (Hansen, 1990).
Major Change Influences on Agricultural Education in the New Century.

In most parts of Africa food security is still a critical issue and therefore food production will continue to be a major focus of universities and other agricultural education institutions for some time to come. The delivery of quality education and training is, as we have seen, a major challenge in view of decreased funding, higher student intakes, decreasing levels of funding, and loss of key experienced teaching and research staff. However, it is important to be conscious of other changes that impact on agricultural education and present further challenges to its relevance.

- The shift in focus from agriculture to rural development
- Globalization
- HIV-AIDS
- Biotechnology
- Urbanization
- Information Technology

Rural Development

One of the current challenges to agricultural education is how to meet the challenge of providing education and training for rural development rather than for agriculture alone. It is clear that the older curriculum that concentrated on production agriculture is no longer able to produce educated people who can deal with the wider problems of rural development.

How is Rural Development Defined?

The threat of global starvation that spurred the green revolution and established conventional high input-high output farming as the most effective way of getting acceptable yields has eased in many parts of the world. The focus of development has turned from agriculture to rural development recognizing that conventional farming was beginning to produce many undesirable side effects such as soil degradation, erosion, polluted water, and, with irrigation, salinization. The term rural development recognizes the linkages between agriculture, natural resources, human settlement, and biodiversity. It further recognizes that sustainable development requires the cooperation and inputs of other sectors such as infrastructure, education, health, and energy. It is now evident that the sustainable development of the rural areas will depend on non-farm employment in addition to agriculture.

In order to bring about significant change, reformers of agricultural education institutions or systems must appreciate the complexity of the environment in which a shift in focus from agriculture to rural development would take place. Within the rural development universe there are attractive and compelling activities which can be added to or incorporated into traditional agricultural education programs but many times these are selected not from a clear understanding of their place in that universe but for other reasons. Bawden (1998) offers a diagrammatic explanation of how the agricultural education and training (AET) system fits into the complex
rural development system and how both of these systems are influenced by the wider environment in which they exist.

First, agricultural education is viewed not from a single perspective such as higher, secondary, vocational or adult but as a system. The Agricultural Education and Training (AET) system can be viewed as being composed of four inter-related sub-systems (Figure 1).

The AET system is itself a sub-system of the higher order (agriculturally focussed) system (or bounded network) of rural development (Figure 2) which includes the clientele, organizations and institutions in both the private and public sectors, and both non-government (NGO) and community-based organizations (CBO).
The complexity of the term Rural Development can be appreciated when it is understood that each of the other sub-systems in the rural development system is also comprised of a complex set of interconnected elements. The clientele sub-system, for instance, can be seen to comprise seven inter connected sub-sub-systems (Figure 3).

The Public Sector sub-system meanwhile, has sub-sub-systems concerned with policy, infrastructure, research, development, and extension., while the Private Sector comprises financial institutions, input companies, marketing companies, manufacturing companies, the media, etc.

The whole Rural Development System meanwhile, with all these component sub-systems, itself operates within an environment of immense complexity which is characterized by a host of factors which can influence, and be influenced by, the rural development system (Figure 4).

![Figure 3: The Clientele sub-system of the natural resource component of the rural development system](image)

![Figure 4: The rural development system and aspects of the environment in which it must operate](image)
Globalization is a topic that is very much in the news. There is considerable confusion associated with globalization with both dire and favorable predictions applied to agriculture and to small farmers in particular. Governments need the advice of economists who can deal with agriculture and the macroeconomy in an integrated world for each country must understand the implications of WTO rules and regulations, make its case internationally, and formulate appropriate national policies. The agricultural universities are the logical place to house expertise on this topic, to provide education for undergraduate and post-graduate students, advise policymakers, and inform societies at large.

HIV/AIDS is a topic that is of particular importance to agriculture and rural development. The impact of the epidemic on rural populations is well known especially on the capacity of farming families to carry out essential operations. The consequences of AIDS for female members of farming populations is devastating and many families are dragged into poverty. The impact of the epidemic on the professional agricultural workforce is also severe and is causing the loss of experienced scientific and extension capacity. Agricultural educators need to analyze the challenges posed by this phenomenon and to make institutional changes to meet the replacement human resources needs and provide the education and training required by those left behind in the rural areas.

Biotechnology offers mankind the promise of improved and high producing crops and animals but is controversial for a number of reasons. There are those who are concerned that biotechnology in the form of genetically modified organisms (GMOs) can have serious consequences for man and for the flora and fauna of the world (see Box 1); and others who worry that a small number of global companies will hold the patents for the most important products of biotechnology and force farmers to pay dearly for seeds, improved animal strains and for certain inputs. These viewpoints have to be weighed against the scientific evidence for proponents of biotechnology believe that the only way to feed a growing world population is to use the products of biotechnological research.

Box 1: A Concerned Public

Critics assert that genetic engineering introduces into food genes that are not present naturally, cannot be introduced through conventional breeding and may have unknown health effects that should be investigated before the food is sold to the public . . . But there is a broad scientific consensus that the present generation of GM foods is safe. Even so, this does little to reassure consumers. Food frights such as “mad cow” disease and revelations of cancer-causing dioxin in food have sorely undermined their confidence in scientific pronouncements and regulatory authorities alike. The Economist, 1999

The agricultural universities must join with other scientists including human and animal nutritionists and with sociologists to provide decision-makers and the public at large with answers to the perplexing questions raised by this promising scientific advance.

Urbanization: all countries have experienced the migration of rural people to urban centers. The reasons are many and logical. Urban centers create more job opportunities, have easier access to services such as health and education, and to recreational facilities. It has always been the ambition of farming families to educate their children so that they can attain a better standard of
living away from the farm and from rural areas. This is an unstoppable tide but it does have implications for agricultural education. Do agricultural universities have the capacity to analyze the impact of rural to urban migration on the capacity of farming families to produce sufficient food for themselves and for the market? Have universities the capacity to devise off-farm employment possibilities for rural populations that decide to stay behind? Do agricultural universities seek technological and farming systems alternatives for either ageing farmers or for gender skewed farming populations? Are universities analyzing the impact of rural-urban migration on rural poverty?

**Information Technology:** A commonly used phrase these days is: we live in an information age. Companies and educational institutions commit large sums of money to knowledge management (KM), and the internet has revolutionized the speed, content and cost of sharing information. E-Commerce is a new term applied to the way in which companies and ordinary people buy and sell goods and services internationally on the internet from their offices and homes. The value of this type of commerce has grown from insignificant amounts to billions of dollars in just a few years and the growth is expected to continue. Universities need rapid and cheap access to the vast sources of information in education, science and technology if the quality of their programs is to be relevant in to-day’s world. Farmers increasingly have access to electronic information even in remote areas. It is hard to find a farm household in many countries where there is not a radio, a television and a VCR. Village internet terminals are appearing with access to market and weather information and it is obvious that even in the small-scale farming sector the flow of information will grow from the present trickle to a flood. What is the state of information technology in African agricultural universities? How readily can teachers and researchers access the world-wide web, how easily, reliably and cheaply can they use the telephone? How many programs or courses are enriched by materials or direct inputs from educational and scientific institutions outside the Province, the State, the Country? A description of the difficulties in tapping in to the information age from Malawi may apply elsewhere in Africa:

In this day and age, communication is a key to effective teaching, research, and administration, but the level of communications technology in Malawi is still lagging behind international standards. Coupled with this problem are the high cost rates for telephone and other related services. For example, telephone charges from the United States to Malawi can be as low as U.S.$0.50 per minute, yet calling the USA from Malawi can cost up to U.S.$3.00 per minute. This limits the acquisition of research data and other pertinent information for effective university teaching, hence retarding research and development in Malawi. This scenario is true also with other research and development equipment and services such as computers and the internet. (Kasomekera, 1999).

The change influences cited above, and there are others, pose a threat and a challenge to agricultural education institutions. Although the task of improving the basic conditions and quality of undergraduate degree programs is a daunting challenge in itself, the new influences cannot be ignored.

**Agricultural Education Systems.**

It is becoming increasingly difficult to view agricultural education from the perspective of the university or the diploma granting college or the farmer’s training center alone. We are accustomed to thinking about the university as the center of the education system and indeed we should, for African universities will be the primary source of human capital for agricultural research agencies as well as the source of future academic staff members. (Oniang’o and Eicher, 1999). However, the graduates of the university are influential in many ways in the staffing,
management, funding, and operation of the Colleges, training centers, research centers, and extension services suggesting that education and training is part of a system which serves the agricultural sector. Increasingly, the pressure is on for the system to serve not only agriculture but the needs of the broader rural sector. Many countries now use the term AET for the agricultural education and training system which stretches from adult rural education to the university. There has been an academic cultural problem with forming alliances with diploma granting colleges or institutes, a culture problem which continues to extension and adult education. There is now a realization that this segregation is detrimental to the development of agriculture. This is brought home to educators by the increasing influence of agribusiness.

The Demand for Technicians

Thirty years ago at the World Conference on Agricultural Education and Training the importance of technical level manpower was stressed. The observations made then are still relevant. “The people who receive intermediate training will be working essentially in the field, the laboratory, the workshop and in storage and processing plants, and community services, rather than in predominantly clerical duties. They must form the link between the findings of research and technology and their practical application in more efficient agricultural production. In many countries, rural development is seriously hampered by the shortage of adequately trained people at the intermediate level, but there are few developing countries which have solved satisfactorily the problem of producing adequate intermediate staff in both numbers and quality.” In many parts of the world agricultural sector entrepreneurs are not farmers. Many are businessmen and women who see profitability in farming or agribusiness. They need to buy the skills required to make these ventures work. Where can such skilled persons be found? Rarely in our system’s university level institutions and certainly not in the academic secondary education programs. The supply of technicians is from Polytechnics, Colleges or Institutes, which offer diploma (non degree) or certificate programs that produce a person with the theoretical and practical background and skills to enter an agribusiness situation with confidence and success. Another source of such personnel is the vocational agricultural education (VoAg) program of the classical USA type. Typically farmer’s sons and daughters entered these programs and added to their theoretical knowledge base, acquired skills and participated in the running of projects such as growing a crop or raising animals. These practical exercises, similar to those described at the University of Cape Coast, were closely supervised by teachers and managed by the student in a business like manner. The vocational agriculture programs produced a competent and confident person who could successfully enter the farming profession or obtain employment in agro-industry or other endeavors. Is it too much of a leap of imagination to see a direct link between university degree programs and research activities and the non-degree institutions granting diploma and certificate qualifications and adult non-formal education?

Meeting the Challenge of Change

Initiating change can be difficult for the most enthusiastic and committed university leader. There are many bureaucratic, political and societal barriers to change that can defeat even the most innovative and enthusiastic change agent. It is only fair to recognize that public sector agricultural education institutions are not always autonomous enough to make the bold and rational decisions required to effect improvements in the way they operate. (Hansen, 1990) notes three areas where many agricultural universities lack control: Enrollment: where admission policies are usually controlled by outside government agencies, which frequently encourage rapid increases in enrollments without ensuring funding increases to accommodate expanding numbers. This has led to situations where facilities and faculty support are inadequate and the quality of education has suffered, in some instances quite dramatically. Programming: in many cases, curriculum policy
is under the control of a central outside agency, which leaves the university or other education and training institutions little if any latitude or incentive for undertaking curriculum innovation. 

**Financing:** most universities have very little direction over the structure of their finances: the levels of student subsidies, fees, and faculty salaries are regulated by an outside agency. Budgetary flexibility is limited, and, normally, income earned by the university must be returned to the Government treasury.

Agents of change have to deal with the expectations of major stakeholders. Politicians typically view investments in agricultural education as a short-term proposition. Since their terms of office are limited to three or four years they desire and expect results in that time frame. Parents of students also have a short-term horizon limited to the length of the degree program, this horizon is shared by students. It is left to the administrators and faculty to take the long view and try to progressively build a sustainable institution that reflects quality and relevance to stakeholder needs. This has to be achieved while satisfying the expectations of those stakeholders with short-term horizons.

Does this mean that there is nothing agricultural educators in the public sector can do to bring about change? If we remain isolated within our systems we can achieve little. Only by looking outside, by understanding the dynamics of the newly defined more encompassing sector and by forming alliances with institutions and individuals who already have access or the means to accessing policy makers can we make a difference. However, this will not come easily. It will take courage, it will take arguments based on well-documented facts and, above all, it will take commitment to our profession which, despite its importance, is not always recognized for its vital role in the development of the rural sector. (Maguire, 1999)

**Successful African Examples of Institutional change**

It is heartening for change agents to review successful examples of change at African universities. In Ghana the University of Cape Coast has successfully launched a program whereby mid-career extension staff can bridge the artificial gap between the technically qualified and experienced person and the academically educated professional. The program was launched in 1993 with the assistance of a Japanese non-governmental organization, the Sasakawa Africa Association which had created the Sasakawa Africa Fund for Extension Education (SAFE). The program is aimed at extension staff who possess Diploma or Certificate qualifications, about eighty-five percent of extension field staff in Ghana. The program comprises two tiers: a basal four-year post-Certificate program and an upper tier, a two-year post-Diploma qualification. Both lead to a B.Sc. degree in Agricultural Extension. A unique feature of the SAFE program is the off-campus supervised enterprise projects (SEPs) which run for four to six months after the participant has had a period of training on campus. The SAFE program is supported by the Ministry of Food and Agriculture (MOFA), farmers, extension workers, and the University of Cape Coast. Sasakawa Africa Association and Winrock International provide a facilitating and brokering role in the development of the program. The SAFE program has been of particular benefit to the UCC by enhancing its visibility in the country and in forging and strengthening the university’s relationships with MOFA, farmers, extension staff, NGOs, and District Assemblies. The program has attracted the attention of national and international organizations and institutions because of its leadership in launching an innovative education program.

Of course the program is not without problems the most pressing being the need to provide funding for supervision of the field-based projects conducted by SAFE participants. At a time of decreasing support for agricultural education this poses a serious threat to sustainability of the program. There is still a need to convince administrators and academic staff that the SAFE
program offers substantial benefits to the university and that lessons from the program may be used to improve the design and implementation of new and existing programs in the institution as a whole. The availability of qualified and committed core staff is essential for the long-term sustainability of the program and with alternative employment offering better salary and benefit conditions retaining good staff poses a continuing problem.

**Lessons Learned**

Even though the program is relatively new some important lessons are emerging:

1. Partnerships are necessary to solve the complex task of training agricultural extension staff in Sub-Saharan Africa.

2. Failure of past efforts to establish sustainable and effective extension systems in SSA was largely due to organizations and agencies working alone and fragmenting the process of building capacity.

3. Partnerships between the SAFE program and a wide range of donor agencies, organizations and institutions will be needed to make the program sustainable. (Adjepong, 1999).

Another successful change initiative is illustrated in the case of Bunda College of Agriculture, Malawi. The College was established in 1966 by the Ministry of Agriculture using a grant from the United States. The first student intake numbered 35. In 1967 the College was incorporated into the University of Malawi.

The college has had dual lineage since 1967, conducting all administrative business with the Ministry of Education through the University Central Office, and executing all technical matters with the Ministry of Agriculture. The early main focus of Bunda College was to train agriculturalists who could meet the needs of small-scale farmers and to conduct research that could improve small-scale productivity. (Kasomekera, 1999). In the early 1970s the University of Malawi and the Malawi Government decided that Bunda College had to expand to a student population of 365 by 1980 to meet the high demand for agricultural technical personnel. The College set in motion a localization program that aimed to have 92 percent local staff in place or 32 out of a total staff of 36. This was considered a very important concept which preserved academic staff capacity. In 1999 the local staff stood at 98 percent of the total, two thirds of whom had doctoral degrees. The 1976 to 1981 expansion project changed Bunda College from a small college to a medium college by Southern African standards. It had attained the critical mass necessary to embark on local consolidation. Infrastructure improvement brought laboratories, lecture theatres and offices, and senior and support staff housing. Kasomekera, notes that at the end of this development phase, Bunda College had successfully redesigned its curriculum to train researchers, planners, and extension personnel at diploma and degree levels. Part-time masters and doctoral programs were offered to deserving candidates, and the college had embarked on various research projects in agriculture.

Between 1981 and 1990 no significant growth was recorded. The absorptive capacity of the market for Bunda graduates began to weaken and employment trends changed from the former 70 percent to government to 40 percent while 60 percent were employed by the private sector. This was a period of reflection at the College which sought a balance which would satisfy the demands of the new employers and attract donors to fund infrastructure development. This was a shift away from the traditional dependence on government for funds. The college decided to identify
its strengths and weaknesses through a series of consultative workshops and conferences were conducted in which alumni were invited to critique the curriculum and suggest improvements. These led to three areas of concern: (1) Bunda produced generalists that had to be retrained for specialized areas; (2) the Bunda graduate lacked management skills and was not able to perform in the private sector; and (3) graduates did not have the skills to run commercial agricultural enterprises. The outcome of this review was a new curriculum introduced in 1986 that allowed students to take common courses in the first two years and then specialize. By the time the first graduates from the new curriculum came on the market the college was gaining recognition not only in Malawi but in the whole Southern Africa region. Kasomekera notes that the transition from government-initiated to locally mobilized development is very critical because, in most cases the same leadership which had seen government initiate development has to accept the fact that government’s priorities have shifted.

Bunda College realized that the recipe for development would depend on a number of principles which included:

- Redefine the curriculum to meet prevailing government policy and the needs of the private sector;
- Carry out aggressive outreach activities to inform all potential funding agencies about the potentials of the institution and the major constraints preventing optimal operation;
- Build institutional confidence among staff so that they are able to articulate the vision and commitment of the institution in national and regional development;
- Conduct a thorough goal-setting exercise for all departments and faculties, and rank these goals at the departmental, faculty, and college level so that potential funding agencies can choose areas of assistance;
- Engage in continuous dialog with donors and government to keep up with their areas of interest and procedures for project preparation and presentation; and
- Institute a staff appraisal system that is objective, transparent, and consistent in order to reward high performers, but at the same time encourage below-average staff.

Bunda College, from the beginning, had a program of public relations beginning with an annual field day for local farmers, donor representatives and government officials. The cost of this was not sustainable and after trying a bi-annual event the field day was dropped. It was replaced by a Getting to Know Bunda activity which targeted selected potential donors and policymakers who were invited to spend a day at the college to examine the research and teaching activities. A new principal introduced a door-to-door approach to “sell” the idea of support for a Center for Agricultural Research and Development at the college. The principal also used his good political connections to make the college’s needs known. The door-to-door donor sensitization was systematically executed with well-articulated goals and objectives.

In 1992 a new principal, Zachary M. Kasomekera, requested all Heads of Departments to prepare ten-year plans, which indicated past achievements, existing underutilized human capacity, and major constraints. The plans clearly defined goals and objectives for each department, from which college-wide priorities were drawn up. The development of
in institutional goals and priorities was seen as a necessary condition for attracting donor funding.

The problem of obtaining funding for new programs was overcome in the case of the Master of Science in Animal Science by using German support and making the program a regional one. Its success led to a regional program in aquaculture which formed the basis of a Japanese aquaculture project. The college has been the venue for regional programs on tissue culture, agroforestry, and environmental policy. Most donors regard the regional approach as viable in terms of demand for human capacity and cost effectiveness.

A draft strategic plan has been drawn up for the college and states:

➢ The mission of Bunda College, as an educational institution of higher learning in agriculture and natural resources in Malawi, is to advance and promote knowledge, skills and self reliance for:

- Sustainable food production and utilization;
- Improving income, food security and nutrition of the rural and urban populations;
- Conservation and management of bio-diversity, natural resources and the environment; through the provision of information, teaching and training, research, outreach and consultancy in response to national and global needs;
- Looking to the future Bunda College sees a participatory approach to curriculum development and empowerment of graduating students to embark on self-employed agricultural business ventures with limited reliance on wage employment. This approach calls for re-engineering not only the curriculum but also the lecturers, who should place more emphasis on real-life agricultural problems that can be solved using alternative approaches;
- Bunda College suffers from common constraints. There is the pressure to enroll more students than can be effectively served and the danger of overcrowding and the erosion of educational standards; the college is subject to political pressures and to the rules and regulations of government relating to issues such as fees; teaching staff are not well paid and many are tempted to leave and take more lucrative posts elsewhere; and the availability of effective communications hinders teaching, research and administration;
- The experience of Bunda College offers valuable lessons to other colleges and universities especially in Southern Africa;
- The most powerful lesson is that it is necessary to clearly articulate institutional goals and objectives that can be used to solicit assistance from government and donors;
- Institutional capacity is a very important prerequisite to sustainable development and donor support. It is critical to impress upon government and donors that the institution can manage and administer resources. A disappointed government or
donor is a fatal liability to a young institution, and all efforts should be made to live up to the expectations of these funding sources;

- Leadership skills are a necessary ingredient to mobilizing institutional development. The best leadership recognizes the strengths and weakness of the institution and its personnel and is bale to delegate effectively. It is important to appoint local staff to leadership positions for they often have a clearer understanding of the potential of the institution; and

- To achieve development goals the institution must have the ability to identify government policies of the day relevant to the institution, and to identify prevailing donor areas of interest. Institutional development can only be supported if it is in line with current government policies and/or donor priorities;

- The Bunda College case is inspirational for those who work in universities or colleges and who see the need for change. The key ingredient in Bunda’s success is undoubtedly the quality of leadership that was seen in each of the principals between 1966 and 1999. Each brought to the institution his own brand of inspiration and continued the forward movement of the change initiative;

A Network for Change

Change agents can feel isolated when they begin the process of institutional reform especially when all members of the community are still to be convinced of the soundness of the change program or its chances for success. Change agents should not feel alone for there are a number of groups and entities seeking answers to the problems and challenges posed by the evolving nature of agricultural education. These bodies can be approached for answers to problems and for advice related to the lessons of change. A selection of these groups and entities are given below.

The Global Consortium of Higher Agricultural Education and Research founded in 1998 with the goal of fostering global cooperation for the improvement of higher education and research for agriculture as a prerequisite to solving the food security and environmental problems confronting our world. The consortium aims to serve institutions with programs in agriculture, veterinary medicine, and natural resource management, including the biological, physical and social sciences dimensions of these fields. The consortium founders designed it to be helpful to institutions worldwide that are working to make significant reforms in their systems of higher agricultural education.

The Standing Forum for Discussion on the Integration of Agricultural Education in the Americas sponsored by the Inter-American Institute for Cooperation on Agriculture (IICA) was established in 1999 with a conference at the Organization of American States (OAS) in Washington D.C. U.S.A. The purpose of the Forum is to help position agriculture and, in particular, agricultural and rural education and training, on the work agenda of political and financial entities and to support modernization efforts and facilitate integration among institutions and countries.

The Organization for Economic Cooperation and Development (OECD) through its Directorate for Food / Agriculture and Fisheries held a January 2000 Conference of Directors and Representatives of Agricultural Knowledge Systems (AKS) from 22 OECD countries. The AKS encompasses Agricultural Research, Extension, and Higher Education. The January 2000 Conference noted that most countries see exciting challenges for Agricultural Knowledge Systems (AKS) to contribute strongly to the newly developing societal interests that are wider
than traditional agriculture. Mechanisms to encourage, stimulate and reward both institutions and individuals to engage in innovative interactive research, teaching and development work in these new areas still need further development. Many countries, however, identify the limited contribution that AKS has made in recent years to public debate and policy formation as a major weakness that has to be overcome.

The Food and Agriculture Organization of the United Nations (FAO) has an ongoing program on agricultural and rural education and training particularly concerned with the need for reforms and well reasoned responses to the pressures of change.

The World Bank through the Agricultural Knowledge and Information Systems (AKIS) thematic group in the Rural Family has been working for a revival of interest in agricultural and rural education since 1998. AKIS sponsored an international workshop at the World Bank in late 1999 with the theme: Education for Agriculture and Rural Development: Identifying Strategies for Meeting Future Needs. The Workshop identified a number of Researchable Questions that needed to be answered if the donor community is to make a case for future investments in agricultural education systems.

A number of bilateral donors have been active in supporting innovative agricultural education projects over the past ten years and were identified by Willett (1998). The Kellogg Foundation has provided support to the US Land Grant Universities in positioning themselves for the future and, in parallel, has supported a process of reform in secondary agricultural education (vocational agriculture) programs.

Donors and Agricultural Education

For too long the focus of international donor agencies has been on elements of the AET system. The World Bank, in the twenty-six years between 1963 and 1989, supported agricultural education in sixty-seven of its 135 higher education projects. As a 1992 World Bank Review notes, agricultural colleges and universities were among the first education institutions to receive Bank assistance, and the Bank itself was among the earliest multilateral donors to support these institutions. Bank assistance was based upon the need to supply technicians to support science-based agriculture, which was to play such an important part in increasing food security and promoting economic development. Governments looked to these higher education institutions to produce the technical personnel, managers, teachers, researchers, and extension workers required to staff agricultural agencies. It is now clear that the emphasis of these investments was on an element of the system, the higher education element, but not on the system itself. Willett (1998) noted in his review of agricultural education support by the World Bank and other donors in the decade 1987-1997, that past investment tended to emphasize bricks and mortar, hardware and faculty overseas training to build AET programs focused on state-led support services for production agriculture. The review identified the need to shift the paradigm for AET toward a much broader, multi-disciplinary systems approach. New generation AET projects need to develop human capacity, not just for production agriculture, but for environmentally and socially sustainable development throughout the rural sector, engaging more diverse, rural sector-related systems through a multiple field of partners and stakeholders.

Partnerships

The review of the problems and additional challenges facing African agricultural education systems strongly indicates that no single entity can solve the problems of relevance, quality, and sustainability alone. Agricultural education institutions and systems will have to reach out to the broader education system and partner with science, economics, sociology, environment, engineering, education, health and business departments to design and offer education programs which will attract good quality students and make an impact on rural development. Partnerships
will also have to be forged with donors, NGOs, and the private sector for, as well as contributing in an intellectual way to education and training, these stakeholders are employers of the output from the system.

Finally

There are many experienced and well-meaning individuals, organizations and firms who can offer advice on how best to bring about change in African agricultural universities and agricultural education systems but, at the end of the day, it is the institutions themselves that must take the initiative. In doing so two important elements are necessary – vision and leadership. Bawden (1998) identifies weak leadership and inappropriate conceptual maps for the development process as a cause of crisis in AET systems and in the broader domain of agriculture and rural affairs. He indicates that in the past the agricultural education and training system (AET) emphasized providing skilled manpower for techno-scientific production agriculture to assure food security. Now the emerging focus is on developing and promulgating an environmentally sustainable, socially equitable, and ethically defensible agricultural development process that fosters the wellbeing of rural communities and of the biophysical and socio-cultural environments in which they live. To deal with this complex situation Bawden suggests that leaders of AET systems will need to learn how to envision plausible futures. He stresses that one vision of the future is not enough and that a number of scenarios should be considered. Magrath (1999) stresses the leadership element which was identified in the case of institutional change and growth at Bunda College of Agriculture. (see Box 2)

Box 2

Reform in any university anywhere in the world cannot occur unless there is a vision passionately believed in and furthered by leaders. If we want change or reform, it will not happen casually or simply by its bubbling up within a university. There may be ferment for change and a desire for adaptation. But change will not occur unless there are leaders willing to step up and step out and provide direction and articulate a vision that can unite men and women to work for needed change, building on the accomplishments of the university and its history, but pointing unequivocally to the future. Magrath, 1999

It is clear that the responsibility for initiating the change process rests with the faculty and administrators of agricultural education systems. Leadership is expected from the agricultural universities and time is running out before alternative sources of relevant education and training gain strength and credibility. The time to start the change process is now!
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