

Agricultural Education and Learning: Challenges, Opportunities and Experiences from Eastern and Southern Africa

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ABSTRACT

Despite significant research and institutional progress, addressing poverty and hunger remain major local, national and regional priority in Africa. Appropriate institutional capacity building strategies aimed at improving training, extension and research are necessary to support the role agricultural education plays in facilitating realization of the impact of agriculture on sustainable development. In sub-Saharan Africa (SSA), particular constraints to implementation of relevant agricultural education and learning (AEL) exist. Such constraints include policy mismatch, funding, management, quality assurance, incongruent agricultural training approaches, rapid population growth and other global change issues. The paper discusses the attendant challenges to AEL and opportunities that would make it work for African economies. The rationale, opportunities and cases of collaboration and networking for improved AEL are also presented with an Eastern, Central and Southern African perspective. Based on the background, rationale, challenges and opportunities of AEL provision the paper note that a working strategy is desirable to guide the development and provision of a nationally and regionally coordinated, effective, responsive and quality assured AEL that is accessible to all to include a unified vision by all AEL service providers through instilled institutional accountability, policy backing, and strengthening of framework and networks for the maintenance, coordination, implementation and review of regional AEL programmes and projects. Priority attention should be given to upgrading pedagogy and expanding the integration of ICT utility and ODL while maintaining emphasis on practical, field-oriented student training.

Key Words: Agricultural education and learning, partnerships, challenges, opportunities, Eastern, Central and Southern Africa

INTRODUCTION

In Africa, despite significant research and institutional progress, addressing poverty and hunger remain major local, national and regional priority. Strategies to achieve the Millennium Development Goals (MDGs) in Africa must focus on improving livelihoods and service delivery in rural areas and access to agricultural knowledge. The higher education institutions to train appropriate calibre of professionals and generate, package and disseminate relevant agricultural knowledge and technology effectively is important. Over the years agricultural education systems have trained experts in a variety of agricultural science and even generated technologies that can improve food security and address development goals but the impact is yet to be felt in sub-Saharan Africa (SSA). Appropriate institutional capacity building strategies aimed at improving training, extension and research are necessary to support the role agricultural education plays facilitating realization of the impact of agriculture on sustainable development. According to (Chakeredza *et al.*, 2008). The key to increasing impact of African agricultural education systems lies in institutional capacities to innovatively train and influence other facets of agricultural development (extension, research and policy). Appropriate curriculum and stakeholder engagement in

ways that address shortcomings of current agricultural education approaches is thus paramount.

In sub-Saharan Africa (SSA), particular constraints to implementation of relevant agricultural education and learning exist. Such constraints include policy mismatch, incongruent agricultural training approaches, rapid population growth and other global change issues. The re-direction and even re-structuring of the agricultural education in SSA countries demand changes in the focus of existing efforts. Education and social upbringing in sub-Saharan is primarily geared towards enabling the children exit the rural community. Education policies and institutions in many Africa countries have the also largely followed the same ideology philosophy. In attempting to bridge the gap between production activities of the communities (such as farming, livestock keeping, apiculture, fishing, forestry and horticulture), and the role of education in adding value to these activities recent national and regional agenda of the have promoted capacity building at individual and institutional level. The skills and approaches needed for poverty eradication and employment generation while addressing the environment, energy, and rural and urban development issues have evolved into multidimensional and multisectoral issues. Accordingly, they require agricultural education and learning policies, which create up-to-date and down-to-earth professionals, with complementary institutional approaches. Policies that promote capacity building efforts tailored separately for each sector are ineffective, given the mounting complexity and emergent challenges of socio-economic development. In addressing this important aspect of development, the paper discusses the attendant challenges to agricultural education and learning (AEL).

THE CHALLENGES

Policy Inclination in Agricultural Training

A major challenge to agricultural training has been a mindset issue. As much as parents' and students' mindset is valuing education as an exit strategy from the rural communities for qualifying to a white-collar job, government policies in Africa, for the most part, equate food security to food-self-sufficiency. They promote production for consumption neglecting the capacity needed for meeting market standards and marketing products for cash. Training programmes blindly follow the same focus. Many national policies in SSA give emphasis and support to mainly agricultural production. This has lead to capacity building policies in the region marginalizing value addition and marketing sectors that could have increased the importance of agricultural productivity. The contribution of AEL in Africa to food security is much below its potential. New capacity building focus for Africa needs to be enshrined at policy level and it should go hand in hand with the overall change of policy focus in the national socio-economic development. These policies must enhance complementarities and synergy between institutions and professions of production, value addition, marketing, infrastructure and rural institutional building

Training in agriculture has not remedied the fact that education, awareness creation and development attitudes has remained within the production sector alone leaving out the service and industry sectors (Oyewole and Lamptey, 2006). The lack of policy attention and strong policy backing, education in the value addition, marketing and service sectors has remained weak and unable to provide job opportunities for graduates of both middle level colleges and universities. More significantly, education policies have not promoted training and education in areas such as preservation, manufacturing, primary processing, quality grading, standardization, certification, branding, packaging and storage of farmers' produces even at

tertiary education level. Agricultural education policies are therefore needed to change strategies and back tailored generation and transfer of skills, awareness creation and sensitization roles both graduates in these core agricultural development paradigms..

Problems in Training

Tertiary agricultural education plays a particularly significant role in national development (Maguire, 2000) with a major focus on the production of public sector employees (Muir-Leresche and Scull-Carvalho, 2006). Over the past two decades, there has been a steady increase in tertiary agricultural institutions on the SSA continent. However concerns of “brain-drain” mount with an estimated 23,000 qualified academic professionals including many from the agricultural sector emigrate from Africa each year (BASIC, 2006). As a result there is poor staffing in tertiary agricultural institutions (Okori and Adipala, 2007).

The International Assessment of Agricultural Science and Technology for development (IAASTD) has found out that current education, training and extension structures are incompatible with innovative approaches to Agricultural Knowledge, Science and Technology (AKST). For SSA, the assessment recommends, among other opportunities, building and reforming AKST skill base (basic sciences, social, political and legal knowledge) of professionals to help support innovation capacities of rural communities and consumers. The origins of some of the challenges of agricultural education are divers in nature and range. They include, invariably, student/teacher ratios, exorbitant costs for non-teacher salaries (i.e., administrator salaries), high drop-out/failure rates, no-fee and scholarship policies, inadequate facilities and equipment, and the inability of governments to guarantee, as in the past, immediate employment to graduates. Other challenges include:

- An excess of supply over demand of trained personnel.
- High recurrent costs, especially in relation to the number of persons trained;
- Lack of relevance to the national rural development needs; and in some fields
- Low internal efficiency rates (i.e., low output of graduates in relation to student capacity due to high drop-out and failure rates);
- Low quality of education;

Additionally there has been an increasing relatively low level of funding allocated to education in agriculture. Furthermore, teaching methods and curricula are not being adjusted to the new requirements and demands for trained manpower in agriculture, especially in the private sector. Government employment of graduates is no longer assured due to the effect of reform agenda which also affect the ability of agricultural educational institutions to respond to trained manpower needs.

A critical need at the intermediate level of agricultural education is to raise the internal efficiency of the existing systems so that an increased output of students is obtained from the same facilities. At university-level agricultural education, there is a pressing need for institutions to strengthen links with rural society so as to play a full part in the development efforts of their region or community. Agricultural universities and colleges also need to have closer links with current national research in applied fields. At all levels, there is a need for a critical review of subject-matter content and a judicious replanning of courses to fit employment opportunities and to address the problems and issues of sustainable agricultural production and rural development. Priority attention should be given to upgrading teaching skills and methods with an emphasis on practical, field-oriented student training.

The Gender Question in Agricultural Education

According to the International Assessment of Agricultural Science and Technology for Development (IAASTD), there is also a gender gap in training of especially extension workers in Africa (Figure, 1).

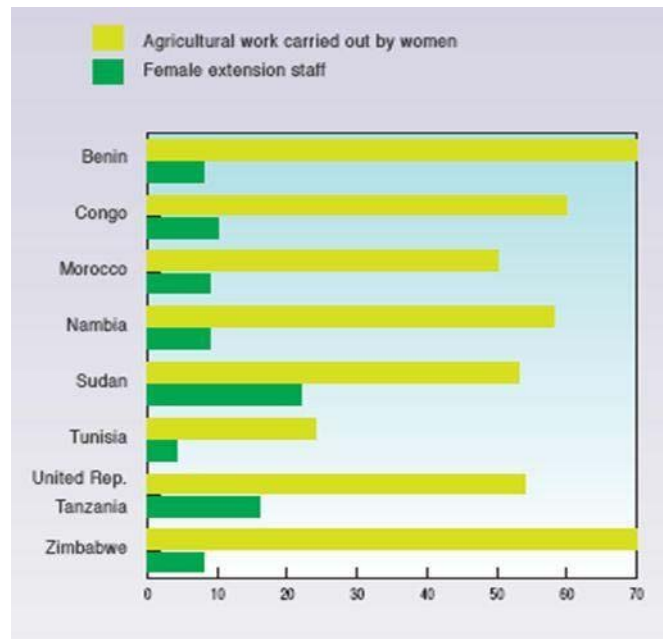


Figure 1: The percentage of agricultural work carried out by women compared with the percentage of women extension workers in selected African countries

Although women carry out much of the farming burden in Africa, they are poorly represented in agricultural education programmes. They form only 12-15% of the undergraduate enrolment (BASIC, 2006). African higher education institutions, Universities in particular, have been very keen to mainstream gender into their core functions of teaching, learning, research and administration systems (AAU, 2008). The introduction of gender courses into various faculties and departments. The efforts have, however, been ad hoc and based on the commitment of individual lecturers, deans, and vice-chancellors. Seldom has there been a concerted, well-synchronized policy and plan for gender mainstreaming in AEL institutions.

In response to a felt need to bridge persistent gender gaps in tertiary education institutions in Africa, the Working Group on Higher Education (WGHE) of the Association for the Development of Education in Africa (ADEA), in collaboration with the Association of African Universities (AAU), have developed a Toolkit for Mainstreaming Gender in Higher Education in Africa and commenced training workshops for AAU member institutions using the Kit. Focus is on staff recruitment, student welfare, curriculum development and the general institutional culture. Mainstreaming gender in AEL must focus on core functions order to ensure sound institutional governance, human rights and equitable development and use of the most highly skilled human capital, towards the acceleration of the Africa's socio-economic development.

The Role of Government

There is a considerable variation in the role played by governments the direct management of educational institutions from country to country. Nonetheless, agricultural training at tertiary institutions is heavily dependent on government. National policies dictate the objectives,

organizational structure and resources and also define the relationships between education, research and extension, the key essence of capacity building for agricultural development. Many countries therefore view agricultural education as an instrument for meeting national objectives.

Historically, agricultural education and training has been designed mainly to prepare officers for the administrative and technical services for rural and agricultural development, state farms and training centres. The situation is rapidly changing in almost all countries in sub-Saharan Africa owing to the redefinition of agriculture and the challenges in making agriculture serve the new development priorities. The changes in government role have been occasioned by the inherent rigidity in programmes and teaching methods, staff recruitment and mobility.

The decline in government support for agricultural education has affected operational budgets. Teaching resources, technical equipment and research and other outreach activities have often been cut back as national economic problems arise. The challenge lies in how agricultural education institutions may leverage resources through partnerships and income generating initiatives. There has been tight control of how middle level colleges do this but agricultural faculties which are part of comprehensive universities have conversely enjoyed more freedom regarding government policy and resource mobilization. Balancing the desire to meet government directives (or national needs) and the institution's own desire for national and international recognition, especially in the fields of research and educational excellence can be contradictory. This however determines the continued relevance of the institutions and quality of research and training programmes.

Impact of Agricultural Education: Issues and Opportunities

It is desirable to have a positive impact of agricultural education and training on agricultural and rural development. How agricultural education serves the development goals of our region will depend on curriculum content that is sufficiently geared towards locally important problems and whether it reflects the particular needs of the rural population. Agricultural education and training strategies need to consider the implications of rapid population growth and the consequent increasing food requirements while also integrating the recent emergent challenges namely food crisis, energy food security nexus and climate change adaptation. Agricultural training institutions should have educational, administrative and financial autonomy to allow them to conduct their teaching, research and extension responsibilities with the greatest flexibility and efficiency to address these dynamic challenges. The institutions should constantly:

- Re-evaluate their strategic objectives and not limit their activities to formal conventional agricultural education;
- Have flexible admission regulations that allow various types of students to be recruited including those joining through ODL; and
- Use resources leveraged through non-public sources for their own needs and for reinvestment in quality service delivery.

These constant rethinking of their roles will make the institutions address critical concerns regarding the relevance and impact of agricultural education on rural development. These challenges include (REF): inclusion of special categories such as small and landless farmers, women farmers and fisherfolk; involving future beneficiaries and users in defining agricultural education objectives and programmes; and maintain strong links between the agricultural institutions and their socio-economic and cultural environments.

There is need for agricultural education institutions to interact more closely with rural environments. This they can do by (REF): undertaking continual assessment of current and future relevance of their training, advocacy, outreach and research needs and opportunities; inclusive institutional governance; establishing a continuing education service; and participating more actively in rural poverty and environment enhancing research and extension activities.

Already, some universities in the region are adjusting their training objectives to make them more relevant to the current needs of agriculture and rural people. For example, they now are mainstreaming climate change adaptation, agricultural value addition, biotechnology, ICT, agricultural knowledge management and communication systems, and non-agricultural rural land use as well as urban agriculture.

Quality Assurance

The benchmarks that dictate the quality worldwide and must be the focus as the multiple dimensions of AEL include:

- Academic autonomy as an instrument for improved performance and competitiveness
- Explicit institutional mission and objectives of institutions and programmes
- Transparent and non-discriminatory access and recruitment policies, the possibility of a second chance and fair appeals policies
- Curricular quality
- Academic staff quality
- Permanent feedback from the students and responsiveness to their suggestions, proposals, and critique
- Flexible organization allowing credit transfer, interdisciplinary, studying within the framework of various programmes or institutions
- Quality of infrastructure and availability of adequate equipment
- Resource allocation with capacity of obtaining extra budgetary resources, motivating academic staff and investing in building and equipment
- Accountability with regard to the use of human and material resources and systematic auditing
- Feedback from stakeholders and possibility of adopting degree programmes to labour-market needs
- International scientific competitiveness
- Internal quality assurance mechanisms

In recognition of the economic and globalization challenges, there is need to develop and implement a range of strategies to support growth and increase international competitiveness of AEL in the region. There is need to create a community equipped to understand and participate in ongoing change. Education and training providers have a key role in equipping the community for this challenge. A regional approach to quality assurance is needed to address the critical factors affecting especially graduate training in agricultural education and research in the region specifically:

- Limited funding for graduate training by providing scholarships and training in research grant proposal writing
- Weak research infrastructure by marshalling resources for high quality training through shared programmes especially in emergent sciences and development paradigms
- Limited access to other knowledge centres by linking African universities to other global knowledge centres to benefit from advances in science and technology

- Weak national programmes by mobilising regional scientists to engage in research that generates regional public goods.

In partnership with its member universities, RUFORUM is implementing an EDULINK project to strengthen the capacity of Eastern, Central and Southern African universities to train high quality PhD graduates, by mounting short regional courses in critical cross-cutting areas to broaden analytical skills and development perspectives of graduate students. To enhance quality this action hopes to strengthen teaching and management skills of lecturers, university managers and policy makers. It will also support training in other areas not efficiently addressed by individual national universities. The project is in response to constraints occasioned by the need to: have in place harmonized Quality Assurance Mechanisms and credit transfer systems; marshal additional resources for training and research for example through partnerships with other knowledge centres; broaden the perspectives of the students and lecturers, and improve their competencies in teaching and research skills; and innovatively manage the programmes for efficiency, relevance, competitiveness and attractiveness.

Institutional Management

Many universities in Africa still lack management and leadership systems that promote responsive academic and research activities. In order to achieve the noble goal of universities, knowledge creation and development, they must be managed by persons of not only high academic standing but also people endowed with strong management and leadership skills that foster achievement of institutional objectives. To rise to the challenge, there is need to re-evaluate the universities' activities so as to meet the challenges of 21st Century society including contribution to alleviation of poverty and achievement of Millennium Development Goals (MDGs) through targeted research, training and outreach. Most university administrators in developing countries have failed to mould universities into suitable environments for innovation and creativity. The key to increasing impact of African universities lies in institutional capacities to respond to change through efficient and effective leadership and management. In Africa, it is a paradox that universities have played an inconspicuous role in the cultivation of proper institutional management (Magotha, 2004).

Although there is no doubt that the current training structures at higher education institutions in Africa have invariably served their respective nations, various global changes abound and there is a need for readjustments in order to fit into the new global system. The management styles at AEL institutions need to be adaptable to the change emanating from massive technological expansion and development. Poor management of the institutions is manifested in several forms: ineffective communication between the various levels of management and lecturers, students and other stakeholders; resources are poorly managed and misused, denying good services to students and staff; most heads of universities are never involved in quality assurance processes, either because they are not well equipped for that or they do not know that it is part of their responsibilities. Other researchers have found that, apart from funding and quality assurance, management is a prime problem facing AEL institutions in African countries.

Institutions must conform to some universally accepted norms, which may include good management practice in the delivery of AEL and service to society through technology development and distribution as well as policy. Therefore, managers of AEL institutions need to be trained in the requisite administrative skills that can make them more globally competitive. General management strategies and tips exist that can be used to make

universities more suitable places for learning and conducting research in agriculture. Good management practices in higher education institutions are those that offer:

- ◆ Leadership to promote teamwork, communication among people being led, and instil the idea that people can rely on each other in many different ways, i.e. cultivate a sense of participatory management;
- ◆ Source of inspiration and motivation for both staff and students. The ability to inspire staff has always been an essential tool of management;
- ◆ Safety net to safeguard lecturers' and students' interests;
- ◆ Protection by taking stand against issues that may interfere with the institution as a safe AEL environment.

OPPORTUNITIES IN NETWORKING AND REGIONAL COLLABORATION

The Rationale

What matters most for economic development in Africa is the capability of rural people to be efficient producers given their natural resource base. There is little doubt that economic and social development, and the benefits that accrue such as improved nutrition and health, require an educated populace. No country has become developed without well-educated people and a strong agricultural base that provides food security. Good educational systems will not solve all of the problems, but they are a prerequisite for sustained agricultural production and economic development. The mission of agricultural education in Africa in the 21st century is to work toward improved, relevant, and effective teaching, research, and extension. To contribute food security for all, education in agriculture must prepare a critical mass of dedicated, well-trained men and women who are committed to achieving socio-economic improvement for Africa (Diao, *et al.*, 2006).

The improvement of a country's human resource capacity for productivity is a pre-requisite for social and economic development. In the agricultural sector, both formal and non-formal education are essential for improving food security and rural employment and reducing poverty. Formal agricultural education is needed for the production of skilled manpower to serve the agricultural sector through extension, research, entrepreneurship and commerce. Non-formal agricultural education, often provided by both public and private extension services, is needed for training of farmers, farm families and workers and for capacity-building in a wide range of rural organizations and groups. To meet the challenges of agricultural production and food security facing Africa today and in the 21st century, countries must be willing to invest in their human capital for development. This is desirable at university level, middle-colleges level and secondary school level and below.

University education in agriculture in Africa is at a crossroads. Financial constraints are severe and the demand for higher quality education has never been greater. There is a need for greater educational relevance and higher quality graduates. There is a growing obligation to enrol more women and to produce students who are prepared to go on to positions of leadership. Some progress has been made. Education outside the continent, which has been seen as a way to fill the manpower gap, has often proved to be inappropriate to the unique development needs of African countries. Post-graduate training to provide high-level scientists and researchers is an essential part of quality improvement. It is also critical that institutions of higher education play a developmental role by establishing linkages with relevant private and public agricultural agencies and with farming communities.

At the intermediate level, student demand does not justify building new colleges and schools. Rather, the need is for competency-based education so students can acquire the skills, knowledge and attitudes that are being demanded by governments and private employers. It is a time for private and public partnerships that lead to curriculum revision and improved practical skills of graduates. The goal should be to produce students who can find jobs because they are well-trained and want to work in agriculture. It is at the intermediate level that most of Africa's field-level agricultural extension workers are prepared. It is increasingly clear that extension workers need better training in both technical agriculture and in the extension methods needed to disseminate production technologies to the thousands of small-scale farmers who need them.

In East Africa, at the secondary school level, there are several examples where agriculture is an examination subject and, along with other science subjects, is providing the foundation for secondary students who want to study agriculture at the tertiary level. At the primary or basic education level, the study of agriculture is severely limited. Many people do not transit beyond elementary school. If they are to study agriculture in a school setting, it will have to be at the elementary level. The farming population comes from rural youth and Africa's food security depends on those farmers. There is scope for partnership making a difference in addressing these challenges (Ayele and Wield, 2005).

Evolving Role of Universities

Universities are a basic information and education institution in nations all over the world. They are generators of knowledge (through research, analysis, information integration, and discussion); they store knowledge in their libraries; and they pass on knowledge and information through formal instruction, forums, non-formal education, publications and other media. They are also leading agencies for distance-learning initiatives. In Africa, it is a paradox that universities have played an inconspicuous role in the cultivation of content for the agriculture and rural development, especially in relation to poverty alleviation and community development (Bekunda, Okori and Kyamanywa, 2007; Roman and Colle, 2008). Their most significant areas of participation in capacity building have been in training at graduate and postgraduate levels. There has been limited use of open distance learning that broadens access to education. Few countries have used universities' productively in promoting agriculture and rural development beyond the tradition role of teaching. Capacity building tenets demand the research associated with making universities useful to nations must be relevant and demand-driven (Ayele and Weid, 2005). A review of Country Gateway projects, which emphasize country (or lower) level capacity for development, shows relatively little visibility of universities in the local capacity building for development and rural transformation. This suggests the need in the countries for a significant effort devoted to re-engineering teaching, research and extension to meet emerging capacity needs of rural communities.

Training programmes must meet current and future development capacity needs. For instance, following a training needs assessment done by the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) through its former Regional Information Network (RAIN) in collaboration with universities, RUFORUM and National Agricultural Research Systems (NARS), a regional postgraduate programme in Agricultural Information and Communication Management (AICM) has been developed and launched at Egerton University in Kenya, one of the 12-members universities of RUFORUM. The programme was designed to enhance the contribution of information and communication to improved and sustainable productivity, and to add value and

competitiveness to the regional universities. In order for universities to fulfil their obligation of training for rural development capacity, they need to:

- Conduct continual research on agriculture and rural development including community information needs.
- Conduct on-going capacity building studies at the regional and community levels, and interpret their results for regional and local policy formulation and action for establishment of capacity at the grassroots level.
- Conduct research on development issues related to community needs.
- Convert its research and “academic” knowledge into education, information, and training packages suitable for community, policy, extension and research use.
- Design and execute capacity building training programs for various community groups, especially on aspects of rural development including ICT and leadership.
- Experiment with various approaches to integrated agriculture and rural development
- Mobilize, interpret, integrate, and package information from external authoritative sources and tailor it to the needs of local populations
- Orient university management, students and faculty to the broad potential of rural development capacity enhancement
- Provide on-going monitoring and evaluation of individual and institutional capacity through, for instance, tracer studies and training needs assessment.
- Train a new generation of professionals in various sectors to use and support agriculture and rural development at various levels relevant to community development and poverty alleviation programs.
- Train students in the application of ICTs to development problems by: assigning them as student interns at community telecenters or farmer learning centres,

To transform AEL in Africa, there is need for the production of a new form of graduates. A summary from the SEMCIT seminar series, ANAFE and RUFORUM symposia (Adipala *et al*, 2007; ANAFE, 2008; Bekunda, Okori and Kyamanywa, 2007) show the following as key attributes of the new agriculture graduate endowed with:

- Social conscious and in touch with and committed to rural communities;
- Strong entrepreneurial skills and spirit, and capable of initiating new job opportunities;
- Value based and with high ethical standards including commitment to a new vision of agricultural production compatible with the natural environment and the conservation of biodiversity;
- Solid grounding in the scientific and technical principles that underlie practice;
- Innovative and confident to be creative and address real problems able to take advantage of new information technologies.
- Strong leadership, interpersonal and teambuilding skills and demonstrate strong communication skills, including effective use of international business languages and information technology.

Sherrard (2003) has advanced the prerequisite to achieving this transformation with need for significant changes in the student selection process, faculty, the plan of study, the organisation of the programme and in the nature of curricular and co-curricular activities.

Eastern, Central and Southern African Experiences

The Case of RUFORUM

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) which is a member-based organization of 22 universities in Eastern, Central and Southern Africa

aims to strengthen graduate student training and agricultural related research in the member universities. This is done by providing resources, mission and peer support, to generate knowledge, research products and human resources to support agricultural development in support of the Comprehensive African Agricultural Development Programme (CAADP). The support is provided via competitive grant system (CGS), where university staffs in Faculties of Agriculture and related disciplines develop research proposals targeting improving livelihoods of smallholder farmers. RUFORUM is involved in:

- Masters and doctoral programmes that are responsive to stakeholder needs and national/regional development goals.
- Shared research and training facilities and capacities that enhance economies of scope and scale.
- Mainstreaming operational capacity and approaches for innovative, quality and impact oriented Agricultural Research for Development (ARD) and management in Universities.
- Policy advocacy, lobbying, coordination and resource mobilization for improved training, research and outreach by Universities.

RUFORUM has partnered with a number of organizations including Technical Centre for Agricultural and Rural Cooperation (CTA), Southern African Development Cooperation (SADC), Federation of African Research Associations (FARA) and Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) as the lead service provider to coordinate strengthening institutional capacity in selected focal institutions in the region. The capacity building aimed at strengthening research management skills, research, teaching, proposal development and scientific skills of lecturers, postgraduate students, researchers and development practitioners. The arrangement thus offers opportunity for scaling these activities and benefits to universities with potential spillover effect to several universities and countries in SSA. Capacity building areas currently being pursued include, *inter alia*, quality assurance and university leadership and management, foresight planning for future relevance to inform training, research and outreach programmes and support for regional postgraduate programmes. Other initiatives have targeted staff retooling in specific areas such as proposal development, scientific writing and communication skills enhances as well as collaborative research management and networking using emerging web 2.0 applications.

The Case of SUCAPRI

A new home-grown model for strengthening professional capacity in agriculture to address the issue of ineffective and inefficient integration of agricultural functions is captured by the EDULINK funded project “Strengthening of University capacity for promoting, facilitating and teaching rural innovation processes-SUCAPRI”. The SUCAPRI model harnesses a combination of south-south and south-north strengths for building both institutional and individual professional capacity needed to promote agricultural and rural innovation holistically. The piloting phase consists of network of teaching and research staff in five (5) African Universities (Makerere University, Nairobi, Egerton, Kenyatta, and Jomo Kenyatta University of Agriculture and Technology), 3 national agricultural research organisations (the Kenya Agricultural Research Institute (KARI) in Kenya, International Centre for development oriented Research in Agriculture (ICRA) and the National Agricultural Research Organization (NARO) in Uganda, and the International Centre for development oriented Research in Agriculture (ICRA) in the Netherlands. The Commonwealth of Learning (COL) has more recently been strategically co-opted as a partner to bring along the strength of using ICT to enhance communication and partnership. The model is premised on the

hypothesis that active interaction and sharing of knowledge between these partners will enhance the integration of education, research and outreach functions and improve teaching practice in rural innovation processes necessary to prepare professionals with the competencies to participate in decentralized national agricultural research systems (NARS).

The project has activities aimed at;

- Building rapport with managerial and technical staff as well as non-university stakeholders;
- Establishing a learning platform for network dialogue on joint curricula, content, delivery methods, student support and research;
- Building capacity of network Universities by training trainers of core staff that will in turn train others and by sensitizing university management for the purpose of reviewing policies and institutional arrangements and with other institutions; and
- Facilitation of participation of multi-stakeholders from the national innovation systems (NIS) in learning cycles in reflection, planning , action, evaluation cycles of agricultural higher education with focus on needs assessment, priority setting for curricula reorientation, and programmes as well as proactively creating a learning enabling environment.

SCARDA

Strengthening Capacity for Research and Development in Africa (SCARDA) is a capacity building programme of the Forum for Agricultural Research in Africa (FARA), operationalised from sub regional level to continental level. In East and central Africa, The programme is being implemented as a project of ASARECA called SCARDA-ECA. SCARDA-ECA is one of the capacity strengthening initiatives of ASARECA. SCARDA-ECA is mainly framed by SCARDA Programme of *“strengthening the institutional and human capacity of African agricultural research and development systems to identify, generate and deliver research outputs that meet the needs of poor people.”* It also draws its agenda from the ASARECA Strategic Plan .

SCARDA has two components of strengthening (a) Competencies and capacity in agricultural research management, (b) Capacity for professional development in agricultural research and development.

SCARDA is be managed using a four -tier structure including; the FARA regional co-ordinator, ASARECA project co-ordinator, Lead Service Provider and Focal Institute focal points. In the ASARECA sub-region the Lead Service Provider is Regional Universities Forum for Capacity Building in Agriculture (RUFORUM).

SCARDA will have the following four outputs:

1. Agricultural research management systems and managerial competencies to conduct high quality research strengthened in ECA NARS;
2. The capacity of ECA NARS to undertake quality agricultural research for development sustainably strengthened;
3. Tertiary agricultural education and training institutions empowered to match capacity building offer to changing market demand;
4. SCARDA-ECA approach for capacity strengthening is documented, validated with and owned by key stakeholders.

Role of the CGIAR System

The Consultative Group on International Agricultural Research (CGIAR) system has supported agricultural education in Eastern and Southern Africa in many ways. The World Agroforestry Centre (ICRAF) and other members of the CGIAR have recognized the urgent need for building capacities for agricultural education and training. CGIAR centers have different functions in complementing national efforts in agricultural education and training. This ranges from being a provider of capacity building (countries with few scientists and weak institutions), to being a collaborator (countries with well-functioning institutions and many competent scientists). The CGIAR centers further perform the role of a catalyst, broker and bridge. They set trends, share knowledge; provide direction and influence science and practice in the national systems where they are present. Guided by a participatory and partnership paradigm, CGIAR centers are moving towards more collaboration rather than provision. Experience shows that there is indeed a role for multi-country or sub-regional provision of agricultural education and training. In order to achieve this, networks at the regional level need to be enhanced. Existing networks that have featured in this include ANAFE and RUFORUM targeting undergraduate and postgraduate training respectively.

In many countries national agriculture training institutions have poor infrastructure, unfavourable policies and weak institutional programmes or they lack the necessary human and financial resources. Even when these human resources are available, they may be young and inexperienced or difficult to retain due to a lack of incentives. Especially in sub-Saharan Africa, HIV/AIDS has aggravated the human resource problem in education institutions. Most national institutions active in agricultural and natural resource management research face serious problems in keeping up with international science and development. Hence the important demand addressed to the CGIAR centres and others to assist in strengthening their capacity to serve as agents of change. This is all the more necessary in view of changing biophysical, socio-cultural and policy environments, the rapid advances in science and technology and the increasing knowledge gap and digital divide.

International partners like CGIAR centres can help by organizing in-country training workshops, study visits to countries with similar conditions and problems and other experience-sharing activities to enable national stakeholders and specialists to acquire useful information and gain broader perspectives to deal with the issues of agriculture, poverty and environment issues. The impetus to agricultural training offered by such centres like the international livestock research institute (ILRI) and others are good cases.

ICT for Agricultural Education

ICT presents a historic opportunity for the development of rural Africa, specifically for the enhancement of the rural farm households which comprise more than two thirds of the region's population. African countries are at different stages with ICT policies, especially in relation to agricultural education. In general, ICT is still inadequate and unevenly distributed. National ICT policies either exist or are in process. They may include education in general, but rarely reach agriculture specifically (Zackman and Alluri, 2007). E-learning allows greater access to more students and farmers, more efficiently, with better information (Leary and Berge, 2005).

That a significant ICT potential exists in Eastern and Southern Africa is suggested by recent research data and informed opinion (Steinen, *et al.*, 2007). World over, the Internet has become the fastest growing means of information transmission. Growth of ICTs in Eastern

Africa has been remarkable with an extraordinary increase in absolute terms, although its size relative to total population is still quite small. However, it is important to note that there is an uneven geographical distribution of Internet access – a “digital divide” that separates African societies from the rest of the world and urban from rural farming communities. This imbalance reflects regional disparity in general economic development and level of education as well as application of ICT in EATL and promoting access to agricultural information.

There is scope in addressing the many challenges of ICT work for EATL that include availing convenient access to ICTs and insuring that the information and communication services are relevant, localized, understandable, affordable, and demand-driven (Ballantyne, 2002; Temu *et al.*, 2004). Provision of variety of public ICT facilities and linking them with mainstream EATL systems. Among the facilities include multi-purpose farmer knowledge centres (FKC), cybercafés, and information access points notably extension learning centres (ELC) – all of which make the access to agricultural information possible because of the more affordable cost associated with sharing.

Expansion of Open and Distance Learning (ODL)

ICT’s role in especially actualizing expansion of ODL is well recognised, but rarely with emphasis on agriculture (Zachmann and Alluri, 2008). They note that, the tertiary sector seems to be most advanced with the implementation of ICT. According to a number of studies, traditional formal education cannot meet the human resource need. To satisfy the demand, the potential of distance education, ODL is clear, and most countries have already recognized their value. In general, existing ODL is mostly dual-mode, print based, and with little or no use of ICT. However, developments are encouraging, and a wide potential is available for the implementation through collaborators for ICT-based ODL such as Tech-MODE (Zachmann and Alluri, 2008).

The Commonwealth of Learning (COL) has, with partner local institutions, done a lot to help chart the way forward for ODL application in agricultural education and learning. Examples include the case of Tech-Mode and its collaboration with collaboration with the In-Service Training Trust (ISTT) and the Directorate of Distance Education (DDE) at the University of Zambia to develop a distance-learning program for agricultural education in Southern Africa. The goal of the latter initiative is to contribute to sustainable improvement of food security and alleviation of poverty, while protecting resources and environment, through access to knowledge by distance learning.

CONCLUSION AND OUTLOOK

The provision of AEL in Eastern and Southern Africa is faced with many challenges. Research indicates that there have always been inadequate links between agricultural education and training institutions and relevant higher education stakeholder who provide strategic information about employment and entrepreneurial opportunities in the agricultural sector. The training has disadvantaged, especially women, owing to various barriers, including affordability, admission requirements, physical distance from training centres, literacy and numeracy, language of instruction and scant resources. Agriculture has a negative image as a career choice in the eyes of the youth. It is seen as the “work” of the poor and the elderly and not as something that can be profitable. A large number of learners who have diplomas and degrees in agriculture are, for a variety of reasons, unable to find jobs. There is poor access of AEL by emerging farmers and new entrants into the agriculture sector. Other challenges include shortage of critical skills involving all round integrated

training in traditional agriculture disciplines like Veterinary Science, Agricultural Economics, Agricultural Engineering and Agricultural Development.

Based on the background, rationale, challenges and opportunities of AEL provision presented in this paper a working strategy is desirable to guide the development and provision of a nationally and regionally coordinated, effective, responsive and quality assured AEL that is accessible to all. There is also a need to have a unified vision by all AEL service providers through instilled institutional accountability, policy backing, and strengthening of framework and networks for the maintenance, coordination, implementation and review of regional AEL programmes and projects. Agricultural universities and colleges must have closer links with current national research in applied fields and other partners such as the CGIAR centres. At all levels, there is a need for a critical review of subject-matter content and a judicious replanning of courses to fit emerging development challenges, employment opportunities and to address the problems and issues of sustainable agricultural production and rural development. Priority attention should be given to upgrading pedagogy and expanding the integration of ICT utility and ODL while maintaining emphasis on practical, field-oriented student training.

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