

## **Harnessing the capacity of African Universities to foster rural transformation in Africa**

Adipala, E.<sup>1</sup> & Osiru, M.<sup>1</sup>

<sup>1</sup>Regional Universities Forum for Capacity Building in Agriculture, Makerere University,  
P. O. Box 7062, Kampala, Uganda

**Corresponding author:** e.adipala@ruforum.org

### **Abstract**

The rural African farmer characterizes agriculture in Sub-Saharan Africa. Their yields and productivity remain low and significantly below the global averages for key staple crops including cereal. Due to reliance on rainfall and inability to make use of limited market opportunities, small-holders are unprepared to face emerging challenges such as those related to climatic changes, the energy crises and globalization with its effects on food markets. Universities have the potential to play an important role in improving the plight of the African rural dweller. This paper summarises key issues facing African agriculture in Eastern, Central and southern Africa and highlights the strategy of the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) in supporting the strengthening of African universities to produce locally relevant knowledge and high quality graduates to foster rural transformation. African universities are mandated to train the workforce of the next generation and can stimulate the private sector, improve implementation of programmes, empower local institutions and increase small holder productivity by training entrepreneurs and job creators, scientists, agricultural advisors, and Africa's future leaders. Universities also have the potential to impact smallholder production by implementing well-grounded and prioritised action research and making available productivity enhancing packages. Improving the quality of higher education will require increased support from local sources for postgraduate training and research.

**Key words:** Agricultural development, Postgraduate training, value chains, participatory action research, curriculum development

### **Résumé**

L'agriculteur rural africain symbolise l'agriculture en Afrique sub-saharienne. Leurs rendements et leurs productivités restent faibles et nettement inférieurs aux moyennes mondiales pour les principaux aliments de base, y compris les céréales. En raison de la dépendance de la pluviométrie et de l'impossibilité

d'utiliser les opportunités limitées des marchés, les petits exploitants ne sont pas préparés à faire face aux nouveaux défis, tels que ceux liés aux changements climatiques, aux crises énergétiques et à la mondialisation avec ses effets sur les marchés alimentaires. Les universités ont les possibilités de jouer un rôle important dans l'amélioration de la situation de l'habitant rural africain. Ce document résume les principaux enjeux de l'agriculture africaine au niveau de l'Afrique de l'Est, du centrale et australe, et met en évidence la stratégie du Forum régional des universités pour le renforcement des capacités en agriculture (RUFORUM) en soutenant le renforcement des universités africaines à produire des connaissances pertinentes au niveau local et les diplômés de haute qualité pour favoriser la transformation du monde rural. Les universités africaines ont pour mandat de former le personnel de la prochaine génération et peuvent stimuler le secteur privé, améliorer la mise en œuvre des programmes, habiliter les institutions locales et accroître la productivité des petits exploitants par la formation des entrepreneurs et créateurs d'emplois, des scientifiques, des conseillers agricoles, et les futurs dirigeants de l'Afrique. Les universités ont également la possibilité d'influer sur la production des petits exploitants en mettant en œuvre la recherche-action bien fondée et prioritaire, et mettre en ordre une productivité disponible et attractive. L'amélioration de la qualité de l'enseignement supérieur demandera un soutien accru aux sources locales de formation post universitaire et de la recherche.

Mots clés: développement agricole, la formation post universitaire, les chaînes de valeur, la recherche-action participative, programmes de développement

## **Background**

Africa's population, characterized by a population with more than 40% less than 15 years and with life expectancies below 50 years of age, surpassed the one billion mark in 2011 and continues to grow. In spite of progress in national economic growth (many countries maintained average growth of over 5% real GDP growths over the last decade), Africa remains the only continent where food production is failing to keep pace with population growth. As a result, hunger remains rampant for a significant proportion of Africans, whose livelihoods depend primarily on agriculture for employment. There is an urgent need to improve agricultural productivity in Africa to ensure that Africa is able to feed her growing populations. The recognition of Africa's precarious situation by African leaders and development partners is an important step, highlighted by

## **Literature Summary**

the growing intent by bilateral and multilateral partners to support agricultural development in general and related capacity building efforts in particular. More needs to be done and more urgently in order to change Africa's trajectory. Agricultural development needs to remain a central focus of any initiative that hopes to curtail poverty in Sub-Saharan Africa (SSA).

Sustainable Agricultural development will require that Africa is able to find local solutions to the complex challenges and problems that are currently limiting and plaguing the continents' agriculture (World Bank, 2011). Since 2007, the situation has been further complicated by the food and financial crises and also the climate change phenomena, including trans-boundary animal diseases. Innovations are required to support African farmers who still rely directly on rainfall for most of their production related activities. Innovations will improve the efficiency of production, enhance productivity and improve farmer incomes in light of current challenges. Innovations required include improved plant and animals varieties that are adapted to length of growing periods and specific environments, resistance to important pests and diseases, practical soil fertility enhancing packages and practices that enhance the capacity of farmers to link to markets, improve incomes and reduce poverty. The weak state of African institutions today necessitates that a human resource development strategy must be at the heart of any sustainable agricultural development strategy. Further, demographics in Africa highlight the importance of strategies that will harness the capacities of the youth and unleash their potential towards sustainable development in Africa.

Universities have the mandate for undertaking research, training and outreach and as such are positioned to play a central role in development. The World Bank Development Report (2008) stressed the importance of strengthening the Tertiary Education Sector and expressed doubt that any nation would be able to make signification progress in agricultural development without a strong Tertiary Agricultural Education (TAE) sector. The report emphasises:

1. The crucial role of knowledge as a major driver of economic development;
2. The appearance of new providers of tertiary education in a "borderless education" mode;

## **The Role of Universities and Challenges**

3. The transformation of modes of delivery and organizational patterns in tertiary education, resulting from the information and communication revolution; and,
4. The rise of market forces in tertiary education and emergence of a global market for advanced human capital.

African Universities have an important role to play in building Africa's capacity, by preparing the next generation of Africa's leaders, entrepreneurs and agricultural advisors. Strengthening the capacity of universities to do their core business of research, training and outreach is a practical and sustainable approach towards strengthening the ability of the wider national agricultural system and to ensure efficient and effective operation of national institutions, improve implementation of development programmes, growth of the private sector and the expected subsequent reduction in poverty. The focus on universities is timely: universities are burgeoning with student populations and hundreds are being established annually across the continent. Universities have mandate for teaching, research and extension and are often staffed with a significant pool of trained experts, many at Masters and PhD level.

Universities in the region are however confronted by a number of challenges as they focus on the important role of responding to national development challenges. These include: Pressure to expand access to higher education in spite of declining funding sources; degree programmes that are not sufficiently relevant to the labour market; inflexible teaching methods to accommodate a diverse student body and changing demands; compromised quality of education and a demoralized University community. Other issues include the low staff-student ratios and poor incentive systems for staff, and overall poor infrastructure (and design) that limit the capacity to teach in experiential learning approaches.

The University graduate programmes in the region are also not sufficiently responsive to policy and dynamic societal needs. The Faculties of Agriculture and Natural Resources are severely constrained by human, financial and material resource capacity to adequately carry out this task. For example, the number of qualified and skilled personnel available for undertaking research and training is very low (RUFORUM, 2006). Currently, there is approximately one professor to 500-1000 undergraduate students, as opposed to a desirable ratio of 1:100, and most

**Enhancing University  
contribution to  
development**

universities graduate fewer than 10 PhDs per year. The HIV/AIDS pandemic and brain drain further exacerbate the situation.

Universities will need to be more active in the broader innovation system, playing key roles in strengthening partnerships and collaboration with other institutions such as NARIs, NGOs, farmers, governments and most importantly the private sector. They will need to improve the quality and calibre of graduates being produced if Africa is to meet her challenges. The heterogeneous nature of the farming systems across the continent requires that graduates are skilled in the science of experimentation. In addition, universities will also have to mobilise the required resources to ensure that they are able to undertake research, training and outreach of relevant standard and nature.

As part of its mission, RUFORUM<sup>1</sup> is keen to support African Universities to improve their integration in the agricultural sector. RUFORUM focuses on three overall streams in order to respond to the above challenges: 1) Focus on capacity building for the agricultural sector through graduate training at Masters and PhD levels; 2) focus on promoting innovation and integration within universities to support training and research that is in line with the emergent rural development strategy of 'Integrated Agricultural Research for Development' (IAR4D) in support of the Comprehensive African Agricultural Development Programme (CAADP) and, 3) focus on building, rationalizing and sharing regional capacities and resources for agricultural training and research as a major value-added at regional level. RUFORUM pursues these aims through seven Strategic goals:

1. Support training of a critical mass of high quality Masters and PhD graduates, who are responsive to stakeholder needs and national/regional development goals;
2. Increase the participation and voice of women in agricultural research, production and marketing;
3. Improve the adaptive capacities of universities to produce high quality and innovative training, research and outreach

---

<sup>1</sup> RUFORUM, a network of 29 universities in Eastern, Central and Southern Africa, is an African owned network organisation responding to African development challenges and particularly towards overcoming the challenges of engaging African universities with development processes. RUFORUM serves its member universities by helping them contribute to the productivity of small-holder farmers through strengthening (quality and quantity) human resource capacity and subsequently agricultural research for development. More information on RUFORUM can be obtained at [www.ruforum.org](http://www.ruforum.org)

activities that can contribute to policy and development practice;

4. Increase the use of technology to support effective, decentralized learning and the sharing of knowledge;
5. Develop collaborative research and training facilities that achieve economies of scope and scale;
6. Mainstream new approaches within university teaching and research that emphasizes quality, innovation and impact across the agriculture sector's full value chain; and,
7. Create a dynamic regional platform for policy advocacy, coordination, and resource mobilization by universities

RUFORUM focuses on enhancing the quality of postgraduate research and training at African universities through use of a multi-pronged approach. At its core is the Competitive Grants System (CGS),<sup>2</sup> comprising a number of different competitively awarded grant programmes including: 1) the Graduate Research Grants (GRG), 2) the Community Action Research Programme (CARP), and 3) the Field Attachment Programme Awards (FAPA) for students to engage with prospective employers and clients of their research after handing in their theses.

The CGS emphasizes linking faculty and students with rural communities, promoting inter-disciplinary research and encouraging multi-agency research teams to create impact across the region. The CGS gives universities opportunities to encourage participatory research by faculty and students working in partnerships with the farmers and other agencies involved in research and development. Through these grants, RUFORUM hopes to contribute to university outreach and to its potential as an impartial national and regional platform for all stakeholders to engage in the value chain. A National Forum is established in each country to bring together the various actors and to provide an avenue for effective feedback between stakeholders, establishing priorities and links. These National Forums are used as a mechanism for articulating and conveying information from national levels to the RUFORUM Secretariat and Board.

The GRGs provide a maximum of US\$60,000 in support to member university faculty in for research and student tuition involving at least two MSc students. Since 2004, over 150 grants

---

<sup>2</sup> The CGS is supported primarily through the Bill and Melinda Gates Foundation (BMGF), in addition to other funding windows such as the Rockefeller Foundation among others

have been provided to universities in ECSA resulting in outputs of strong science relevant to the needs of rural farmers.

The Community Action Research Programme was initiated in 2009 and was designed to build on the output of the GRG grants. CARPS (maximum US\$300,000 for three years) support at least 3 MSc and one Phd Students and are designed to provide opportunity to university staff for prolonged engagement with communities building on research outputs of GRG grants. The CARPs focus on specific value chains and community action research as well as ensuring that lessons and experiences from the field are fed back into the university through curriculum and other modes. In addition, RUFORUM commissions specific research that responds to emerging issues and concerns on the continent. Previous commissioned research has included work on climate change, gender, ICTs and building capacity in specific niche areas along the strategic orientation of specific member universities.

Apart from the CGS, RUFORUM works with the member universities to implement demand driven graduate training programmes, some of which are run jointly by member universities (Regional Programmes). At present, seven regional programmes in the areas of Agricultural Information and Communications Management, Agricultural Rural Innovation studies, Agricultural Resource Economics, Aquaculture and Fisheries Science, Dry land Resource Management, Plant Breeding and Biotechnology, Research Methods and Soil and Water Management are operational. The regional programmes benefit from an MOU between RUFORUM member universities that ensure payment of local fees and enhance mobility of staff and students and universities provide capacity building for the newer universities in the network and ensure economics of scope and scale. The Research methods programme has trained biometrics experts for many of the universities and staff are now back at their home universities providing research methods supports to the universities and national research systems. The research methods programme will ensure increased capacity for characterisation of agro-ecosystems including integration of land use and environmental topics (including biodiversity, bioenergy, carbon sequestration, etc.)

Over 85 PhD students were registered in the first cohorts of the regional programmes. Of these 51% are university staff,

34% are employees of National Agricultural Research Institutes (NARIs) and Government Ministries, and 15% are from private sector. Of all students (both PhD and MSc), over 40% are females. RUFORUM stresses the need for an expanded enrolment of women, commensurate with their predominant role in the sector.

To support the programme quality RUFORUM provides specific re-tooling/ skills enhancement course for universities staff and also opportunity for networking and professional community building. The Field Attachment Programme Award (FAPA) is a small grant (\$2000) to enable students that are completing their MSc studies to spend further time, up to three months, in the field in the period when their thesis have been submitted and they are awaiting graduation. The grant provides opportunity for communication of research with communities and also allows the student to interact with potential employers during the attachment. RUFORUM has also focused on putting in place and supporting of the operations of National Forums<sup>3</sup>. Focus has also been placed on strengthening information communication and technology skills and capacities across the network to enhance research quality for example through better access to research publications, and strengthening networking capacity. Monitoring and evaluation is similarly a core focus of the network. M&E plays two major functions: first to enhance the ability of the Secretariat to monitor and learn from its activities and ensure delivery of outputs, and secondly, to enhance learning both by the Secretariat but also across the network, particularly by individual universities in order to upgrade their training programmes (curriculum, pedagogy, experiential learning approaches etc) and increasingly contribute to national development goals.

### **The RUFORUM 2012 Biennial Conference**

The RUFORUM programmes are designed to ensure well-mentored graduates with real world experience who can be matched with the evolving public and private sector employment niches of the Eastern, Central, and Southern Africa agricultural R&D sector and beyond. A key thrust in this regard is to benefit from the immense RUFORUM network, which is now made

---

<sup>3</sup> Seven National Forums are currently operational in Tanzania, Kenya, Malawi, Mozambique, Uganda, Zimbabwe, Zambia. National Forums are designed to provide a platform for stakeholders to articulate demands on university services, advocate for change, and provide feedback on the utility of RUFORUM's activities. The Forums typically are composed of member universities, representatives of farmer organizations, policy makers, members of the private sector, and members of the national agricultural research and extension system. More information on the National Forums can be accessed at [www.ruforum.org](http://www.ruforum.org)

up of over 30,000 faculty across the region. This provides immense opportunity for leveraging collective action across the 29 member universities in 17 countries of ECESA. The RUFORUM Biennial Conferences were established to 1) provide opportunity for graduate students to present their ongoing research activities; 2) allow university faculty obtain feedback from stakeholders on the research being undertaken; and, 3) provide an opportunity for young scientists to network with senior scientists and other stakeholders across the region. The 2012 Biennial Conference under the theme “Partnerships and Networking for Strengthening Agricultural Innovation and Higher Education In Africa” will address issues within five thematic areas of:

1. Collective/Coordinated Action for Agricultural Innovation
2. Enabling Environment for Agricultural Development
3. Assessing Impact
4. The Future of African Agriculture
5. Agricultural Tertiary Education and Training

The meeting hopes to achieve 1) shared vision towards the role and importance of research for the development of Africa’s agricultural sector; 2) shared understanding of the research gaps and challenges facing Africa; 3) increased social benefits to target communities arising from university research; 4) strengthened communication skills among young scientists and, 5) greater visibility and appreciation of the role played by universities in Africa development agenda.

### **Acknowledgement**

RUFORUM Secretariat thanks universities and various partners including National Agricultural Research Institutes, Farmers Organisations, National Extension Institutes, development partners and other partners.

### **References**

- Lele, U., Pretty, J., Terry, E. and Trigo, E. 2010. “Transforming Agricultural Research for Development.” Report prepared for the Global Conference on Agricultural Research for Development, Montpellier, France, March 28–31. Rome, Italy: Global Forum on Agricultural Research.
- Patel, B.K. and Woomer, P. 2000. Strengthening Agricultural Education in Africa: The approach of the Forum on Agricultural Resource Husbandry. *Journal of Sustainable Agriculture* 16:53-74.
- RUFORUM, 2006. The RUFORUM 10 Year Strategic Plan. ‘Fostering innovativeness and adaptive capacity of

*Adipala, E. & Osiru, M.*

universities to develop and sustain high quality in training, impact-oriented research and collaboration'. Regional Universities Forum for Capacity Building in Agriculture, Kampala, Uganda.

World Bank, 2011. Agriculture and Development. A brief review of literature. Policy Research Working Paper #5553. World Bank, Washington DC.