



Regional Universities Forum for Capacity Building in Agriculture



skill and competence

reshaping

Africa's future



What is RUFORUM?

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) is an international non-governmental organization consisting of a consortium of 25 member universities from 15 Eastern, Central and Southern African countries¹. RUFORUM is the only body of its kind, with a mandate to promote tertiary education in a wide range of disciplines associated with agriculture through the region's universities and associated networking systems.

RUFORUM was specifically created to reverse the negative agricultural growth trap that Africa had fallen into (In fact, Africa is the only continent where the agricultural sector posts a negative growth rate!). It has significantly contributed to reinvigorating Africa's vast potential for expanded and

broad-based agricultural transformation. Productive and sustainable smallholder agriculture is widely recognized as the key to poverty eradication and hunger in Africa. Recognizing this, RUFORUM sponsors agriculture students for high-quality postgraduate programs linked to identified priority development issues in the region. It further continually enhances and upgrades member university facilities and supports staff skill improvement in participating institutions.

RUFORUM has several unique features that enable it to guide innovation relevant to African farmers and to inform national and regional development practice and policy. It is wholly owned and managed by Africans. Its agenda is based on the stated priorities of continental policy frameworks and the

RUFORUM's Objectives

- Create a critical mass of PhD and MSc graduates who can respond to the spectrum of national needs from small-scale farmer to development and poverty-alleviation strategies
- Develop collaborative academic centers of excellence for research and training that yield economies of scale
- Boost the participation of women in agricultural research, production and marketing
- Upgrade universities' ability to conduct quality and innovative training, research and outreach activities
- Generate effective, decentralized learning and widely shared knowledge through the introduction of cutting-edge information and communications technology
- Introduce new teaching and research methods that amplify quality, innovation and impact along the length of the agricultural sector's value chain
- Create a dynamic regional platform from which to advocate for policy change and fund-raise for university training and research programs

1. Eduardo Mondlane University (Mozambique); Egerton University, Jomo Kenyatta University of Agriculture and Technology, Moi University, Kenyatta University, Nairobi University (Kenya); Gulu University, Kyambogo University, Uganda Martyrs University, Makerere University (Uganda); Haramaya University, Mekelle University (Ethiopia); Kordofan University, Gezira University (Sudan); National University (Burundi); National University (Rwanda); Sokoine University (Tanzania); Université Catholique de Bukavu (DR Congo); University of Botswana; University of Lesotho; University of Malawi; University of Swaziland; University of Zambia; University of Zimbabwe, Africa University (Zimbabwe)

national poverty-reduction strategies of its member states. [These include regional and continental initiatives such as the Comprehensive Africa Agriculture Development Programme (CAADP) of the New Partnership for Africa's Development (NEPAD)]. RUFORUM recognizes the important role that universities must play in promoting the welfare of small-scale farmers and in the economic development of countries throughout Africa's sub-Saharan region. Its research paradigm puts farmers and their problems at the forefront, ensuring that its grantees conduct relevant, development-oriented research.

RUFORUM's faculty have the resources to train PhD and MSc graduates and equip them with the wide range of skills required to conduct quality research that is relevant and current. Students graduating from these institutions are well prepared for careers both nationally and regionally because the coursework balances theoretical and practical components and is grounded in national agricultural policies and local agro-ecologies, institutions and farming systems. By conducting research under local conditions, students acquire the skills to select technologies and policy interventions that fit local conditions (both social and ecological) and adapt them if necessary.

Background

RUFORUM's genesis can be traced to a 1992 initiative of The Rockefeller Foundation. Motivated by the need to capitalize on the evident expertise of the faculty at African universities, the Foundation established

a new program—the Forum on Agricultural Resource Husbandry (FORUM). Its purpose was to enable and facilitate the active participation of university professionals in priority development activities and to build quality training opportunities for African graduate students at local universities. The program relied on careful mentoring and peer support, and provided grants for MSc training in Kenya, Malawi, Mozambique, Uganda and Zimbabwe, with a \$14.5 million investment over 12 years.

The African response was extremely encouraging and, in 2003, the Foundation agreed to transform its program into a wholly African-owned and led institution. RUFORUM was established the following year with a three-year start-up grant of \$3.55 million from The Rockefeller Foundation. RUFORUM was hosted by the prestigious Makerere University in Uganda, where the Secretariat continues to remain today.

In August 2005, a meeting of Ministers for Education and officials from Eastern, Central and Southern Africa endorsed RUFORUM and reaffirmed their commitment to higher education training and agricultural research in African universities. In 2007, The Common Market for Eastern and Southern Africa (COMESA) Ministers of Agriculture confirmed RUFORUM as their platform for overseeing postgraduate training and networks of specialization in its 19 member countries. That same month, participants at the first RUFORUM Annual General Meeting approved the Ten-Year Strategic Plan (2006–2015) and the Five-Year Business Plan (2006–2010).

Five students can be trained in Africa for the same cost as one student trained abroad

RUFORUM musters political support for agriculture through its association with the Africa Union; manages regional capacity building programs for the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the Forum for Agricultural Research in Africa (FARA); and collaborates with the Association of African Universities (AAU). RUFORUM's plans were given considerable momentum by a 2009 grant from the Bill and Melinda Gates Foundation to engage African universities in supporting agricultural development in Eastern and Southern Africa.

What RUFORUM does

RUFORUM is a powerful indigenous African initiative to create the much-needed capacity for agricultural transformation in sub-Saharan Africa. To this end, RUFORUM raises funds for competitive grants for PhD and MSc programs, which are designed in collaboration with member universities, partner universities and scientific organizations. RUFORUM has a strong focus on value for money and on ensuring high quality in all its programs. Through a tough peer review process, RUFORUM ensures that the degree curricula enable grantees (who are university faculty) and their students to pursue careers based on national priorities while being cognizant of contemporary challenges such as climate change and environmental degradation. The program also provides opportunities for professional growth to its alumni and senior faculty so that scientists can revive university-based public research.

RUFORUM's graduates are the yardstick by which it measures its success. To date, all past graduates are employed and contribute to national and regional development—

some contributing to government policy, others to private agro-industry. Still others are involved in outreach programs such as participating in farmers' extension services or working with NGOs and regional development initiatives such as the Millennium Villages in Kenya and Uganda.

However, the majority of students eventually either return to their universities as faculty to train yet more scientists or join other institutions to engage in internationally competitive research. Others have joined the Consultative Group on International Agricultural Research (CGIAR).

RUFORUM's *raison d'être*

Agriculture is the backbone of African economies. It is the single most important sector for raising the standard of living of the continent's millions. It generates one-third of the GDP in Africa south of the Sahara and absorbs two-thirds of the labor force. According to the *World Development Report of 2008*, growth in agriculture is four times more effective than industrial growth in providing an exit from poverty.

However, a crisis is brewing. Food supplies are under pressure from global warming,



A SUCCESS STORY IN UGANDA



Farmer in his field of a Makerere University-released cowpea variety

The cowpea is a staple food crop of significant importance to rural communities in semi-arid eastern and northern Uganda. Its value lies in its high protein content and ability to withstand drought, but it has been neglected by the Uganda National Research System. RUFORUM persuaded Makerere University to support interface between its MSc students and project leaders and the personnel in local district extension systems. This was one way to bridge the gap between research and application. Makerere's faculty also enlisted the support of international partners such as the International Institute for Tropical Agriculture and its Integrated Pest Management/Collaborative Research Support Program. The project introduced new high-yielding, pest- and disease-resistant varieties to farmers and a scheme for continuous farmer education on commodity value chains. At the same time, it strengthened the practical skills and know-how of faculty and students. Trained farmer groups were the entry points for these development activities.

Today, rural farmers sit on the RUFORUM National Forums, voicing their demands for research and extension and galvanizing farmers, especially women, to articulate their demands. The initiative produced 26 MSc graduates with sound field and teamwork experience and a better understanding of farmer's problems. Currently, they occupy various challenging positions: faculty (3), research (6), NGOs (6), extension (3), parliament (1), government parastatals (4) and private sector (3). Similar projects have been initiated at Kenya's Moi University, Malawi's Bunda College of Agriculture (University of Malawi) and the University of Zimbabwe.

FROM POVERTY TO SELF-SUFFICIENCY IN ZIMBABWE

Under the auspices of RUFORUM and The Rockefeller Foundation, the University of Zimbabwe conducted a 10-year experiment to introduce and popularize the cultivation of soybean, a nutritious legume with good commercial potential that also enhances soil fertility. The university linked with NGOs and the private sector to refine and scale up the process. The competitive grants program enabled faculty and students to interact extensively with the farmers. What began as a small \$80,000 worth project, involving one faculty member and two MSc students working in Chiyinka village, is today a countrywide program helping smallholder farmers seeking livelihoods in a very difficult economy. As a result, twenty MSc students have been trained. The farmers have been empowered. Their livelihoods have improved and rural communities are participating more actively in the economy. The initiative has been so successful that the University of Zimbabwe is now coordinating the Zimbabwe Grain Legume and Oil Program that links research, training and outreach in a way that emulates the U.S. Land Grant University system. It has contributed to relevant research addressing real problems and provided faculty and students with a much deeper understanding of smallholder farmers and what is needed for sustainable rural development. The MSc graduates are now employed as faculty (4), with banks (4), as government research and extension officers (5), and in private research organizations and seed companies (7).

climate change and competition from bio-fuels. In the not too distant future, land and water will be as precious as metals, as our population continues its inexorable growth. Farmers must husband their resources carefully not only for the present, but also for future generations. This calls for significantly greater investment in the human and institutional resources that underpin successful agricultural research and productivity.

Many countries in Africa face a dearth of skilled agricultural specialists. Hiring-freezes and an overall neglect of agriculture in the past decades means that many of the most experienced African scientists are reaching retirement age. RUFORUM provides a 'fast track' mechanism for transferring skills to a new generation of specialists. The neglect of agriculture has resulted in myriad problems that have undermined the capacity of agricultural faculties. Budgets have been squeezed, while student numbers increased. Both training and research have been compromised. Curricula do not reflect contemporary challenges, which dilute the quality and relevance of graduate work, and undermine students' enthusiasm for studying agriculture. Overall standards have declined to the point where many institutions of learning no longer deliver quality agricultural education. This has resulted in students opting for other disciplines. Tertiary agricultural education has fallen into the doldrums.

The outcome is that in Eastern, Central and Southern Africa—in fact, all of sub-Saharan Africa—a whole generation of scientists has been lost to apathy and inertia. Today, two



RUFORUM students do practical field research, as with these farmers in Western Kenya

out of three agricultural research scientists in the region's national research systems are approaching retirement. In five years' time, there will be no senior scientists left in some research institutions!

Women on fast track

It is RUFORUM's policy to promote women empowerment so that they can advance their academic careers in parallel to those of their male colleagues. By supporting women in postgraduate education and job placements, RUFORUM has contributed considerably to increasing the number of African women professionals in agricultural research and development. During the first five years of RUFORUM's operations, 30%

RUFORUM provides a 'fast track' mechanism for transferring skills to a new generation of specialists



Women attending a RUFORUM/FARA-organized side event on women in agricultural research at the recently concluded FARA General Assembly in Ouagadougou, Burkina Faso

of its PhD students and 24% of its MSc students were women. The proportion of women continues to increase and is targeted to reach at least 40% by 2013.

Young women are generally not encouraged to focus on science—particularly biology and agricultural science—in primary and secondary school with the result that African female participation rates in the agricultural sciences at universities are usually less than half those in other disciplines. RUFORUM encourages women to pursue higher degrees by offering nurturing grants. Applicants are mentored to strengthen their scientific knowledge so that they can resubmit their proposals in subsequent rounds of competitive grants.

RUFORUM is the regional hub for the International Foundation for Science, which promotes the research of promising women and young scientists. It also collaborates with AWARD, a two-year fellowship for fast-tracking the careers of African women scientists and professionals.

Information and communication technologies

The RUFORUM web portal (www.ruforum.org) features user-friendly Web 2.0 tools to develop a dynamic system that is a pathway to contemporary information pertinent to all RUFORUM's various partners and stakeholders. Web-based information generation and digitalized information dis-

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semination are the key ingredients in this process. RUFORUM also uses learning platforms to document and share best-practice cases for replication. RUFORUM funds Web 2.0 training for its grantees through modules written up on its web-based platform. RUFORUM universities plan to digitalize all coursework offered in programmes that target a regional audience by 2014.

Governance

The RUFORUM governance structure is designed to promote ownership among the member universities while at the same time ensuring international standards of quality and practice. There are seven governance bodies with distinct responsibilities that are interlinked and feed into each other. The Regional Secretariat acts as their management and service-delivery unit.

The Annual General Assembly

- RUFORUM member universities and other stakeholders

Oversight of RUFORUM mission and programs; and approval of annual work plan, budget, external auditor's report

The Board of Trustees

- Vice Chancellors of member universities
- Representatives from national and regional research organizations
- NGOs and the private sector

Policy, financial and legal oversight; guidelines for grant eligibility; long-term funding

strategies; and commissioning performance evaluation

The International Advisory Panel

- Eminent experts of international standing drawn from Africa and elsewhere
- International oversight and quality assurance; forging international partnerships; and policy counsel to the Board and Secretariat

The Technical Committee

- Representatives from participating faculties
- Representatives from stakeholders outside the University system
- Equal gender representation

Setting and monitoring research and training policies and programs; approval of research proposals; and oversight of matters concerning students and curricula

Regional Research and Thematic Groups

- Subject specialists from the academic and quality assurance boards of the regional MSc and PhD programs
- Subject specialists from international organizations

Supplementary technical support for the Secretariat and the Technical Committee

Deans Committee

- Deans of participating faculties of agriculture and related sciences

Advisory body to the Secretariat and Technical Committee, particularly on the progress of individual universities

RUFORUM has seven governance bodies with distinct responsibilities that are interlinked and feed into each other

RUFORUM National Chapters

- Representatives from member universities
- Technical Committee members
- Members of farmers' organizations
- Policy makers
- Representatives from the private sector
- Representatives from the national research and extension systems

Each chapter is chaired by an eminent person drawn from outside the university system. Its secretariat is based in a member university.

The Secretariat

RUFORUM runs a lean and efficient secretariat led by the Executive Secretary (ES) as the chief executive. Appointed by the Board of Trustees, the ES heads an experienced team of 12 technical staff and 3 support staff. The Secretariat is responsible for program design and implementation, monitoring and evaluation (M&E), quality assurance, overseeing regional training programs, documentation, information dissemination, advocacy and brokering partnerships within the RUFORUM network and with other organizations. It monitors and evaluates its activities, disseminates emerging lessons and advocates for innovation and policy reform based on its research and M&E findings. It is audited by an international firm of auditors.

RUFORUM Networks

RUFORUM believes that the more knowledge is shared, the greater the potential for affecting change. That is why it values the creation of alliances and partnerships. RUFORUM is able to draw on the experience and expertise of an extensive network of more than 15,000 faculty and scientists

and more than 500 alumni. Its implementation of collaboration between universities has seen significant improvements in the region's tertiary education system.

RUFORUM enjoys strong partnerships with CGIAR, COMESA, the Alliance for a Green Revolution in Africa (AGRA), FARA, the Association of African Universities (AAU), ASARECA, the Southern Africa Development Community (SADC), the Inter-University Council of East Africa (IUCEA) and the African Network for Strengthening Agricultural and Forestry Education (ANAFE), and the International Foundation for Science. It also enjoys partnerships with the Technical Centre for Agricultural and Rural Cooperation (CTA), the International Research Development Centre (IDRC), the Rockefeller Foundation, and the Danish Development Research Network, among several others. These links serve to mobilize resources as well as provide regional platforms for sharing experiences and knowledge.

RUFORUM has reciprocal ties with universities in Europe and the United States that enhance the reach and quality of its programs. The Association of Public and Land-Grant Universities is a U.S. non-profit association of more than 200 public research universities, land-grant institutions, and state university systems. The European Alliance on Agricultural Knowledge for Development (Agri-NATURA), another partner is a European network of agricultural universities and scientific organizations that supports the agricultural faculties of emerging universities. Other partners include the Association of African Agricultural Professionals in the Diaspora (AAAPD), International Centre for development oriented Research in Agriculture (ICRA), Swedish University

of Agricultural Sciences, the University of Honhenheim, University of Greenwich, and the Wageningen University and Research Centre.

RUFORUM calls on international expertise to help develop and deliver course components. Some of the universities and research organizations that have contributed to postgraduate programs are Costa Rica's Earth University, the University of Reading, the World Agroforestry Centre, the International Livestock Research Institute (ILRI), the International Center for Tropical Agriculture (CIAT) Bioversity International, the African Highland Initiative, and the Natural Resources Institute at the University of Greenwich.

Postgraduate Programs

RUFORUM offers a range of peer-reviewed competitive grants programs. They are designed to create a pool of mid-career pro-

fessionals who will champion development from the national to the community level. RUFORUM has introduced a time-efficient framework for its postgraduate programs, ensuring value for money. It accelerates the process of supplementing the shrinking population of research scientists in national research institutions. It also enables students to return to their positions of employment without penalty.

RUFORUM is currently training more than 85 PhD students and more than 200 MSc students through its regional programs. It has created centers of excellence at various member universities to cater to the needs of the region. These centers build academic experience and expertise in the relevant disciplines of each postgraduate program on one campus but draw expertise from and serve the entire eastern, central and southern Africa region. This critical mass of specialization serves to strengthen the quality

Miss Lydia Mhoro(R) and Mr Juvenal Anthony Munishi (L) collaborate in the laboratory during the Soil fertility management course at Sokoine University of Agriculture.



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of coursework and research supervision offered. It also provides an economy of scale. Students from countries throughout the region study together, providing the foundation for future regional networking. RUFORUM is developing a flexible common grading system for member universities that is based on grade-point averages to allow the transfer of credits from one RUFORUM university to another.

The two-year MSc programs cover one year of coursework and one year of field research, including thesis defense. The three-year PhD programs comprise one year of coursework and two years of field research. PhD students must have published at least two articles in peer-reviewed journals before graduation. Teaching methods and curricula reflect contemporary challenges. RUFORUM universities deliver education and training that cuts across conventional boundaries, encouraging interaction with other disciplines and engagement with an array of development issues.

Many MSc graduates go on to do a PhD program. The high-caliber scientists turned out by the PhD and M.Sc. programs often return to their institutions to train yet more professionals. These include scientists for the national research institutions and other research and extension bodies.

RUFORUM offers training courses to post-graduates in skills such as leadership, management, proposal and scientific writing, and the delivery of lectures. This equips students to undertake multiple tasks, including funding-raising, conducting research and learning dissemination.

RUFORUM offers post-doctoral fellowships to allow new PhD graduates to fortify their skills. In addition, RUFORUM facilitates:

- Staff exchanges and attachments to regional and global knowledge centers
- Courses to upgrade technical and personal competency skills
- Student attachments to field-oriented research
- Internship that strengthens the connection between faculties and farmers and allows students to advance thesis research

Postgraduate research addresses five broad thematic areas that are revised every 3–4 years

- Innovation and knowledge-generation for communities
- Greater productivity and sustainable natural resource management
- Risk analysis and coping strategies to accommodate the effects of climate change and associated crop-animal-human health epidemics
- Examining the potential of indigenous vegetables for nutrition and food security
- Developing the leadership and management skills of university managers, lecturers and students

Regional Programs

PhD Program in Dryland Resource Management

- University of Nairobi, Kabete, Kenya

PhD Program in Plant Breeding and Biotechnology

- Makerere University, Kampala, Uganda

PhD Program in Aquaculture and Fisheries Science

- Bunda College, University of Malawi, Lilongwe, Malawi

PhD Program in Agricultural and Resource Economics

- Bunda College, University of Malawi, Lilongwe, Malawi

PhD Program in Agricultural and Rural Innovation Systems

- A joint regional training program offered by Makerere University, Kampala, Uganda; Sokoine University of Agriculture, Morogoro, Tanzania and Egerton University, Nyoro, Kenya

PhD Program in Food Science and Nutrition

- Jomo Kenyatta University of Agriculture and Technology (JKUAT), Nairobi, Kenya

PhD Program in Soil and Water Management

- Sokoine University of Agriculture, Morogoro, Tanzania

MSc Program in Research Methodology

- Jomo Kenyatta University of Agriculture and Technology (JKUAT), Nairobi, Kenya

MSc in Plant Breeding and Seed Systems

- Makerere University, Kampala, Uganda
- University of Zambia, Lusaka, Zambia

M.Sc. in Agricultural Information and Communication Management

- Egerton University, Kenya and Haramaya University, Ethiopia

RUFORUM Member Universities

- Africa University, Zimbabwe
- Eduardo Mondlane University, Mozambique
- Egerton University, Kenya
- Gulu University, Uganda
- Haramaya University, Ethiopia
- Jomo Kenyatta University of Agriculture and Technology, Kenya

- Kenyatta University, Kenya
- Kordofan University, Sudan
- Kyambogo University, Uganda
- Makerere University, Uganda
- Mekelle University, Ethiopia
- Moi University, Kenya
- National University of Burundi, Burundi
- National University of Rwanda, Rwanda
- Sokoine University of Agriculture, Tanzania
- Uganda Martyrs University, Uganda
- Université Catholique de Bukavu, DR Congo
- University of Botswana, Botswana
- University of Gezira, Sudan
- University of Lesotho, Lesotho
- University of Malawi, Malawi
- University of Nairobi, Kenya
- University of Swaziland, Swaziland
- University of Zambia, Zambia
- University of Zimbabwe, Zimbabwe

Funding

RUFORUM receives funding support from various sources including:

- National Governments
- Bill & Melinda Gates Foundation
- European Union (EU)
- Department of International Development (DFID)
- International Development Research Centre (IDRC)
- The Rockefeller Foundation (RF)
- World Bank

The high-caliber scientists turned out by the PhD and MSc programs often return to their institutions to train yet more professionals



Participants at a RUFORUM Strategic Planning Meeting at the Rockefeller Bellagio Center in Italy, 12–16 April, 2010

Front Left to right: Leif Chritofferson (Independent Consultant, Norway); Emmanuel Kaunda (University Representative, Southern Africa); Kaarli Sundsmo (USAid, East Africa); Judith Francis (CTA); Katherine Namuddu (Rockefeller Foundation, Africa); Rukudzo Murapa (Ex-Vice Chancellor); Ann Sorenson (DDRN, EFARD); Kay Muir Leresche (Chair, RUFORUM, Technical Committee); Ann Conroy (Independent Consultant, Malawi); Joyce Mook (Ex-Associate Vice President, RF, currently, Independent Consultant, USA)

Back left to right: Moses Osiru (RUFORUM); Malcolm Blackie (Independent Consultant, UK); Howard Elliot (Canada); Fanuel Tagwira (VC, Africa University); George de Hooijer (Netherlands); Khalid Bomba (Gates Foundation); Adipala Ekwamu (RUFORUM); Patrick Okori (Representing Universities, Eastern Africa) and Washington Ochola (RUFORUM).



RUFORUM is an African success story. It is often emulated as a model for building African human and institutional capacity in agricultural and rural development. RUFORUM focuses on providing high quality advanced training opportunities for African students to study and work in Africa. During the first five years of its operation, the consortium sponsored more than 300 PhD and MSc students. The aim is to train at least 150 PhDs and 800 MScs by 2013. RUFORUM's university faculties are routinely consulted by governments on agricultural policy and national development plans. Hundreds of research scientists trained through RUFORUM programs are today working in government, academia and with communities, employing the latest advances in science and technology to establish sound and sustainable agricultural practices. During 2009–2010, RUFORUM has supported training of over 100 MSc and 80 PhD students.



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