

Regional Universities Forum for Capacity Building in Agriculture Secretariat Quarterly Report

1st April-30th June 2022

Summary

This report highlights key achievements and progress made during the period 1st April-30th June 2022 (the final quarter of the Financial Year 2021/2022, the final year of implementing the [operational plan-2018-2022](#) of RUFORUM [Vision 2030](#)). The Operational Plan is designed around four (4) flagship programmes underpinned by activities to support regional collective action and learning to give stimulus to achieving the RUFORUM vision for *vibrant transformative universities catalysing inclusive agricultural development to feed and create prosperity for Africa*.

Below are the highlights of progress made across the flagships in the quarter:

1. RUFORUM in collaboration with the Inter-University Council for East Africa completed the assessment for universities from Mozambique and Malawi to participate in the Eastern and Southern Africa Higher Education Centers of Excellence Additional Financing Project (ACE II AF) financed by the World Bank. The four universities selected include University of Eduardo Mondlane (Mozambique); and, Lilongwe University of Agriculture and Natural Resources, Mzuzu University and University of Malawi in Malawi. These universities have capacity for research and training in agriculture, have potential to meet the needs of highly-skilled personnel and knowledge transfer for the agri-food sector, have capability to build networks among institutions to promote regional collaboration, and foster partnerships with other institutions including industries;
2. Students and Alumni supported by RUFORUM continued to demonstrate increased commitment to change by giving-back to communities and spurring entrepreneurship development amongst fellow youths and at the community level. They demonstrated agriculture as a rewarding venture both economically and intellectually;
3. Smallholder farmers engaged in collaborative research with Technical Vocational Education and Training (TVET) institutions and university teams under the Community Action Research Program continued to adopt project outputs resulting into enhanced nutrition, productivity and consequently increased incomes;
4. RUFORUM continued to support students to develop innovations under the Entrepreneurship Challenge Programme. Students have developed innovations that have catalyzed employment at the community level and improved their living standards as well; and,
5. RUFORUM continued to advocate for blended learning across Member Universities through enhancing information and communications technology (ICT) infrastructural capacity for online learning.

INTRODUCTION:

The narrative below expounds the achievements made during the period 1st April-30th June 2022, the final quarter of the financial year 2021/2022. The report is arranged by Flagship Programmes of the RUFORUM [Vision 2030](#)

Flagship programme: TAGDev-Transforming African Agricultural Universities for Africa's Growth and Development

a) Student recruitment to complete graduate studies in agricultural sciences in Gulu University, Uganda and Egerton University, Kenya

Through the TAGDev Programme implemented with support from the Mastercard Foundation, a cumulative total of 120 students (51 female, 69 male) at doctorate (4), masters (104) and undergraduate (12) levels have completed studies. In the pipeline are 417 (207 male, 210 female) students still undertaking studies in several universities across the continent (Fig. 1). Given the focus of the programme on inculcating entrepreneurship and giving-back ethos unto the students, lives of several disadvantaged peoples in communities have been transformed (See [story](#) of Nafula Marveen)

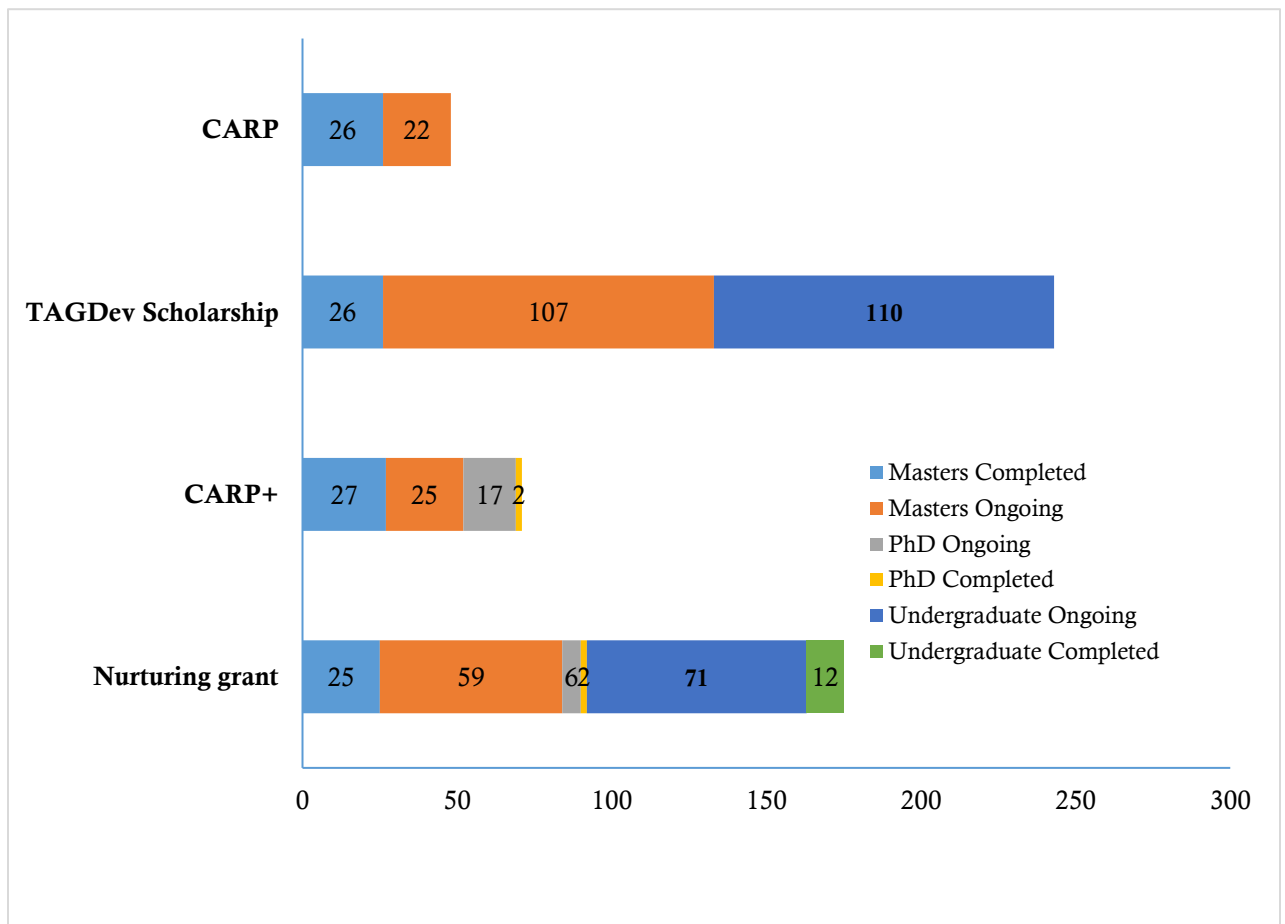


Figure 1: Completed and ongoing students supported under the TAGDev Programme

Further, as part of giving-back, a group of students at Egerton University initiated a project, [4-Pillar Give Back](#), to improve the state of agripreneurship and promote social responsibility in the vegetable value chain in Nakuru village, Kenya. The students contributed part of their stipend towards a food secure and transformative community, and thereby promoting research with the farming communities and providing a smooth pathway for knowledge dissemination (Fig. 2).



Figure 2: Community initiatives by Members of the 4-Pillar Give Back

b) Community engagement to strengthen commodity value chains for smallholder farmers

Research teams implementing the 16 Community Action Research Programs in 14 universities in Africa continued to develop innovative solutions to local communities' challenges. These included promoting the consumption of wild vegetables with ready-to-cook sauce from baobab leaf powder; and, maize-baobab mix flour for cooked dough preparation to local communities and food industries in Benin; in Botswana, farmers have started safflower businesses focusing on safflower vegetables, safflower animal feed, and processed and packaged petals (Fig. 3), while in South Africa, women are now able to produce and market wool products.

Technical Vocational Education and Training (TVET) institutions have been engaged in collaborative research with universities, for instance, in Botswana, Kgatleng Brigades TVET staff and students have been engaged in the development of a Safflower planter with support from Botswana University of Agriculture and Natural Resources, while under the Baobab project at University of Abomey Calavi, Lycée Agricole Mèdji de Sékou (LAMS) and Lycée Technique Agricole de Natitingou (LTA-Natitingou) TVET institutions have been able to establish own plantations and are currently incorporating baobab leaves production as vegetables.

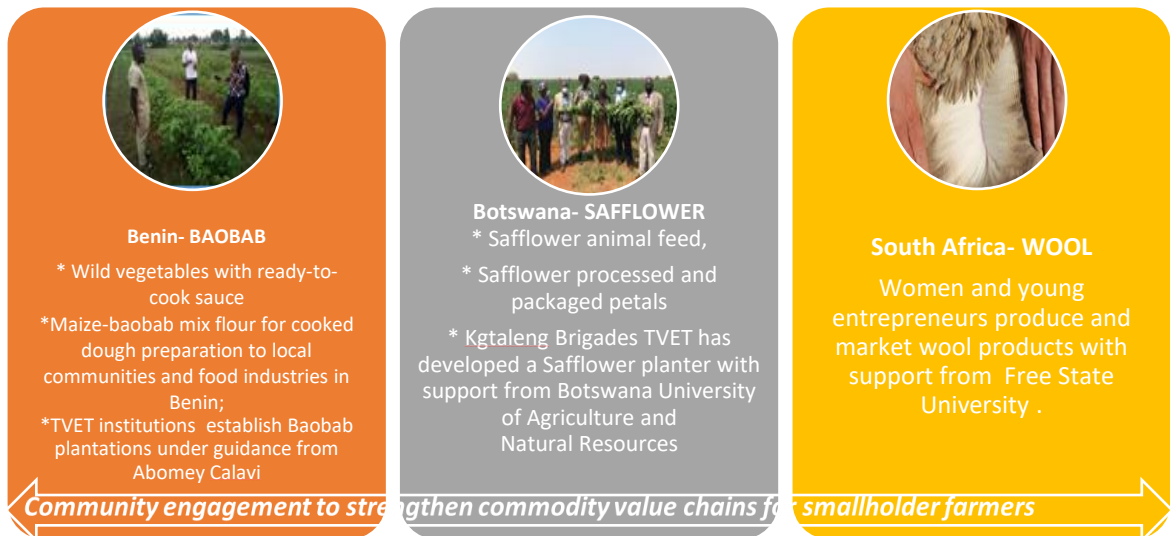


Figure 3: Innovations developed under community action research

c) Development, scaling-up and documentation of commercialisable innovations emerging from agribusiness incubation centers for greater impact

Under the RUFORUM Entrepreneurship Challenge programme, students continued to demonstrate their entrepreneurial acumen through developing agribusiness innovations. The [Kivu Agro Business](#) at University of Bukavu in the Democratic Republic of Congo (Fig. 4), manufactured egg incubators based on locally available materials (recycled wood), and powered by electricity and solar energy. The incorporation of solar energy increased the hatching rate from 78% to 92-97% due to the constant power supply.



Figure 4: Solar installation and repair and maintenance of incubation machines at Kivu Agro Business

Through the African Development Bank (AfDB)-supported incubation hub under the Sharing innovations and experiences from Korea for Higher Education Transformation in Africa (SIKET) project, [incubates](#) implementing entrepreneurship at Mbarara University of Science and Technology established enterprises that manufactured affordable and accessible innovations including high quality skin care and other products using modern technologies while conserving the environment (Fig. 5). The enterprises expanded the students' social networks and created employment opportunities for community members as suppliers of raw materials.



Figure 5: Skin Care Products manufactured by the incubatee

d) Field attachment to communities and mentorship for supported students

Under the Innovation Products to Market Field Attachment Program Award (IPM-FAPA), students at the Catholic University of Bukavu founded [Volaille d'Or](#), an agricultural venture engaged in processing poultry into a diversity of products (Fig. 6). The company has been able to penetrate the market and established several branches as well as a company website. This has created employment opportunities for the youth.



Figure 6: Products generated under Volaille d'Or agricultural company

Further, [Efarmu Company \(www.efarmu.com\)](http://www.efarmu.com) (Figure 7), managed and owned by students, developed the Efarmu mobile app-a livestock record keeping system that enables farmers to accurately record daily farm activities and track livestock performance up to maturity. The system has the ability to visualize these records into real-time weekly, monthly and yearly reports and analytics. This will go a long way in enabling smallholder farmers to access genuine farm inputs and monitor farm productivity.

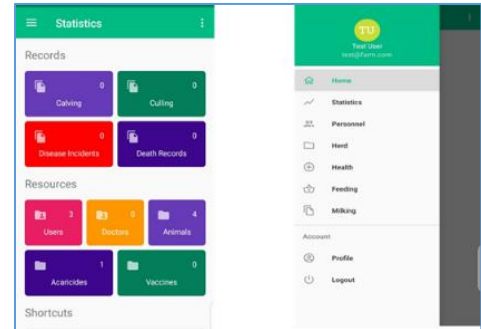


Figure 7: Efarmu mobile application

e) Operationalizing the RUFORUM Alumni Network

RUFORUM Alumni have been fundamental in enhancing the entrepreneurship aspirations of other youth through peer-to-peer support in entrepreneurship proposal development, thus fostering a spirit of team work rather than competition ([See story of Dora Momanyi](#)) (Fig. 8).

“I foresee an alumni network where an entrepreneur in Kenya (like my business iPoP Africa) is able to trade in individual countries with other RUFORUM young entrepreneurs using their brand name easing the difficulties of inter-country trade; a model and vision Kajunju suggested during the Triennial conference in Benin”, Dora Momanyi RUFORUM Young African Entrepreneur Competition (RUYAEC) awardee 2020.



Figure 8: Dorah Momanyi receiving RUYAEC Award



Products developed by iPoP Africa

f) Documentation of emerging lessons from supported students

To enable member universities synthesize emerging lessons and best practices, RUFORUM Secretariat disseminated information, knowledge and innovations emerging from the network through the RUFORUM blog. Some of the storylines included:

- i. [I run a beeswax business in my home town](#)
- ii. [My grandmother inspired me to establish a business enterprise in herbal medicine](#)
- iii. [Unlocking the pig and poultry growth potential with essential oils from aromatic plants](#)
- iv. [Transforming the lives of smallholder pig farmers through capacity building using an experiential learning approach in the Volta Region, Ghana](#)
- v. [My experience and support to TAGDev Sponsored Students on Scholarship for the Next Generation of Scientists at Ndejje University](#)

Emerging lessons and issues

Collaborations are key in enhancing co-creation and quick uptake of innovations emerging out of research projects and thus need to be nurtured and strengthened right from project inception.

Flagship programme: RANCH: Regional Anchor Universities for Higher Agricultural Education

- a) **Identification of African universities to serve as Centers of excellence for leadership in strategic thematic areas, promote regional specialization and collective action among participating universities in areas that address specific common regional development challenges**

Under the African Higher Education Centers of Excellence Special Financing for Higher Agricultural Education in Africa (ACE II AF) project supported by the World Bank, four universities were competitively assessed and selected as Centers of Excellence. These universities including University of Eduardo Mondlane in Mozambique, Lilongwe University of Agriculture and Natural Resources, Mzuzu University and University of Malawi will build capacity for research and training in agriculture to meet the needs of highly-skilled personnel and knowledge transfer for the agri-food sector. Selection was in collaboration with the Inter University Council for East Africa, the Regional Facilitating Unit for ACE II AF.

Emerging lessons and issues

Smooth implementation of the RANCH Flagship programme requires continuous documentation and clarification of the Anchor University concept as well as further profiling Universities in the RUFORUM network and the potential for regional programming.

Flagship programme: CREATE-Cultivating Research and Teaching Excellence

- a) ***Academic Staff Development (ASD) through the Graduate Teaching Assistantship (GTA) program***

During the quarter, eight additional Graduate Teaching Assistants completed their studies, bringing to total 40 GTAs (9 female, 31 male) that have completed studies to-date. To fast-track progress of the 172 continuing GTAs, the Secretariat organized monthly meetings resulting into iterations on key academic and social issues affecting progress. The GTA fellows shared respective experience stories including;

1. [My PhD Journey: Reflections and Lessons Learnt by Shakanye Ndjaji Serge](#)
2. [My GTA Experience: Dr Linda Chinenyenwa Familusi](#)

- b) ***Regional Academic Mobility for academic and administrative Staff in Africa***

Under the Intra Africa Academic Mobility Scheme of the European Union, RUFORUM as an associate partner to the Partnership for Training Scientist in Crop Improvement for Food Security in Africa (SCIFSA) project issued a [call](#) for short term academic mobility to train professionals in crop improvement and horticulture to achieve sustainable food security in Africa. The call focuses on 24 Masters (6 credit seeking, 18 degree-seeking) and 12 Doctorates (4 credit seeking, 8 degree-seeking) for training in the thematic areas of Plant Breeding & Seed Systems, Biotechnology, Seed Science & Technology, Agronomy & Vegetable Crop Production, Pesticides & Plant Protection, and Plant & Microbial Technology. Participating universities include Makerere University, University of Cairo, University of Cheikh Anta Diop of Dakar, University of Eldoret and University of Ghana Legon.

c) Supporting women participation in science and technology-related training and research activities in all institutions benefiting from RUFORUM schemes

Over the period 2018-2022, RUFORUM has strived to increase the participation of female students in higher education at all levels, and has cumulatively supported the training of 2889 students at Masters (2173 students) and PhD (716 students) levels, of whom 45.8% are females. As indicated in Figure 9 below, the upward trend in the proportions of female-supported students has been attributed to mentorship and affirmative action in the award of grants and scholarships.

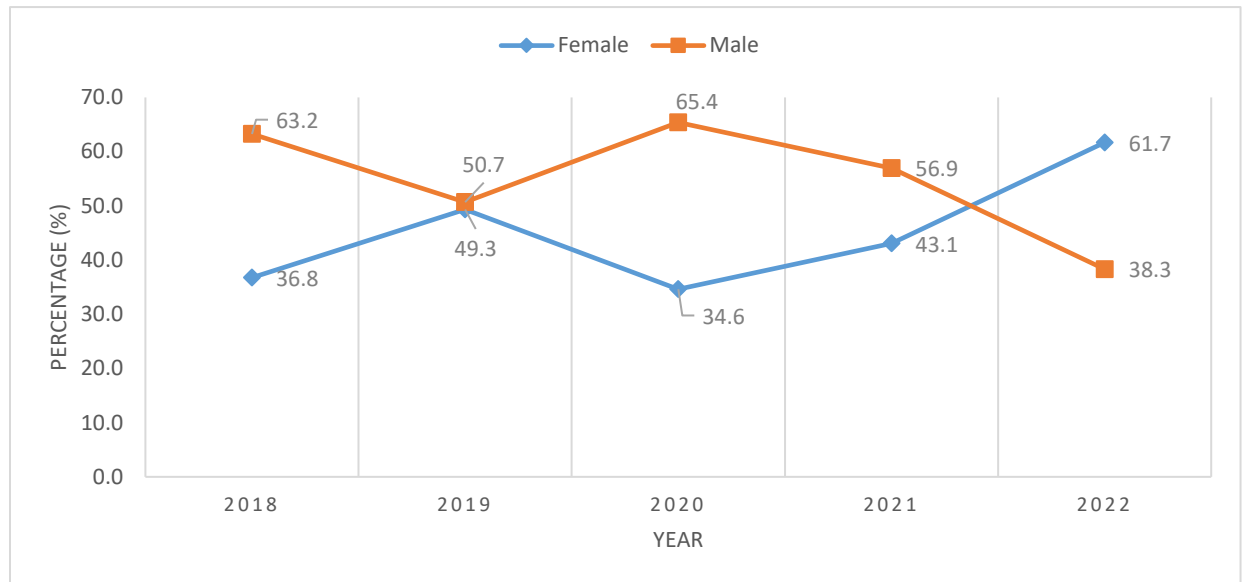


Figure 9: Variation in gender proportions of postgraduate students recruited over the period 2018-2022

d) Provide opportunities for Doctoral training to increase the pool of science, technology and innovation (ST&I) leaders in Africa

As part of escalating doctoral research on the continent, 11 additional PhD students were recruited with support from RUFORUM Graduate Teaching Assistantship programme, bringing to total 720 PhD students supported to-date, with 396 (258 male, 138 female) still undertaking studies in several universities across the continent.

e) *Support post graduate training and research for small and fragile States*

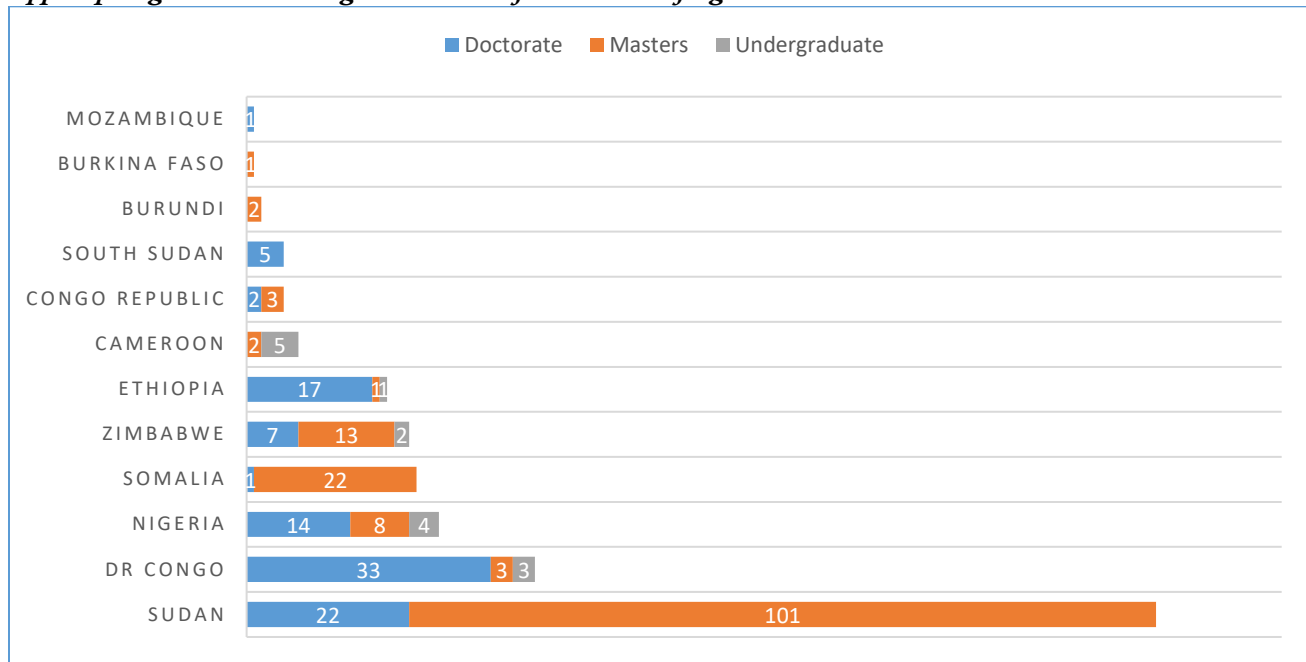


Figure 10: Number of Continuing students from several fragile and conflict affected States (all programmes)

f) *Support students share research findings, obtain mentorship support and skills enhancement*

The Secretariat has provided a platform for sharing research outputs through the [RUFORUM institutional repository](#). Some of the doctoral research publications include:

1. [Preferred Attributes for Sustainable Wetland Management in Mpologoma Catchment, Uganda: A Discrete Choice Experiment.](#)
2. [Gender differences in traditional pig farmers' socio-demographics, awareness, and attitudes toward reproductive biotechnology in Zambia.](#)
3. [Farmers' Participatory Plant Selection of Lablab \(*Lablab purpureus*\) In Tanzania.](#)
4. [Inhomogeneous Poisson Point Process for Species Distribution Modeling: Relative performance of methods accounting for sampling bias and imperfect detection.](#)
5. [Training needs assessment of smallholder farmers in rice post-harvest value addition technologies in the Southern Region of Sierra Leone.](#)
6. [Pumpkin and watermelon production constraints and management practices in Uganda](#)
7. [Parallelism of Test Items: Estimating the Means \(\$\mu\$ \), Variances \(\$\sigma^2\$ \) and Covariances \(\$C\sigma^2\$ \) of Alternate Test Forms](#)
8. [Quantification of Aloin in *Aloe barbadensis* Miller Leaf Gel and Latex from Selected Regions of Kenya](#)

Further, under the RUFORUM-Global Research Alliance on Agricultural Greenhouse Gas emission partnership, students were supported to share research findings at the 8th International Greenhouse Gas and Animal Agriculture Conference (GGAA), held 5 – 10 June 2022 in Orlando, Florida, USA through online conferencing. The conference focused on measures of mitigation, measurement and modeling of agricultural greenhouses gases.

g) Support RUFORUM Post- Doctoral Fellows undertake thematic research to strengthen agri-food systems, inclusivity and environmental sustainability

During the quarter, RUFORUM published papers on outcomes emerging from the research undertaken by the Postdoctoral Fellows. As a result of engagement in the Fellowship programme, the Fellows secured opportunity for career progression, resource mobilization and practical experience through research and mentoring young and upcoming scientists. See [Story](#) of Dr. Emmanuel Masabo, University of Rwanda.

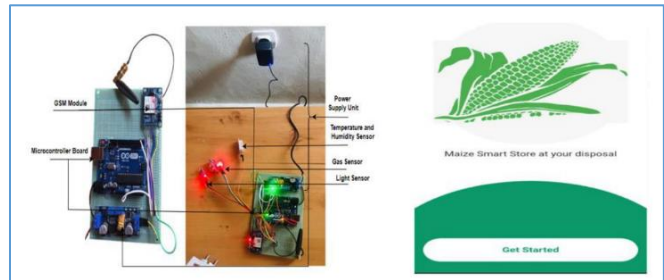


Fig. 11 Preliminary smart maize storage and monitoring prototype developed by one of the Postdoc Fellows

Some of the articles published include:

1. [Analysis of adaptation diversity to climate variability and change among pastoral communities in north-eastern Uganda \(Egeru et al., 2022\)](#)
2. [RUFORUM Postdoctoral Fellowship: Dr. Agaba Rolland's Experience](#)
3. [Post Doc Fellowship experience at University of Rwanda: Dr Emmanuel Masabo](#)
4. [My Personal Experience as a Post-Doc Fellow at the Lilongwe University of Agriculture and Natural Resources in Malawi by Dr Ruth Magreta](#)
5. [Laboratory screening of cowpea \(*Vigna unguiculata*\) genotypes against pulse beetle, *Callosobruchus maculatus* \(F.\) \(Siyunda et al., 2022\)](#)
6. [Screening for resistance to cowpea aphids \(*Aphis craccivora* Koch.\) in mutation derived and cultivated cowpea \(*Vigna unguiculata* L. Walp.\) genotypes. \(Siyunda et al., 2022\)](#)
7. [Factors determining intensity of camel adoption in semi-arid north-eastern Uganda \(Asiimwe et al., 2022\)](#)
8. [Soil carbon and nitrogen stocks in traditionally managed rangeland biomes in Karamoja sub-region, Uganda \(Challenge et al., 2022\)](#)

h) Support thematic research to strengthen agri-food systems, inclusivity and environmental sustainability

Under the RUFORUM-Global Research Alliance partnership, three students from Evangelical University in Africa completed their studies. Students enrolled under the program were supported through online coordination and planning meetings to ensure smooth progression with studies. Research on Greenhouse gases will amongst several outputs generate animal feeding models to support rational pasture use and management by smallholders.



Figure 12: Student preparing forage for laboratory analysis

i) Artificial Intelligence hub activities with WASCAL and AKADEMIYA supported by International Development Research Centre (IDRC)

RUFORUM in partnership with West African Science Service Centre on Climate Change and Adapted Land Use (WASCAL) and AKADEMIYA2063 issued a [call](#) for proposals focusing on responsible Artificial Intelligence and Climate Change. Eight grants each worth USD 60000 will

be awarded for this initiative which is part of the Artificial Intelligence for Development Africa Programme, funded by Canada’s International Development Research Centre (IDRC) and the Swedish International Development Agency (SIDA).

Emerging lessons and issues

Establishment of an inventory of possible organizations targeting support towards the education of females as well as establishing modalities for collaboration will escalate the training of female scientists across the Continent.

Flagship programme: K-HUB-Knowledge hub for university networking, partnership and advocacy

a) Develop, host, maintain and integrate the RUFORUM online and offline ICT platforms to facilitate and enhance systematic access to information

The regional e-learning platform is now fully developed, hosted and maintenance of the platform is ongoing. The platform is now accessible through this link: <https://elearning.ruforum.org/>. This platform will facilitate online teaching and learning across the RUFORUM network by providing open access to staff and students across Africa.

The website for the 18th RUFORUM Annual General Meeting 2022 to be hosted in Harare Zimbabwe, 12th -16th December is now active <http://www.ruforum.org/AGM2022>). The Government of Zimbabwe together with RUFORUM Member Universities in Zimbabwe are hosting the AGM.

b) Dialogues on emerging global issues and other thematic dialogues of Communities of Practice/Interest for collective action with specific focus groups for a needs-oriented network

RUFORUM Secretariat has been active in promoting online engagement amongst universities and partners. Thus, during the quarter, RUFORUM facilitated online zoom meetings focusing on resource mobilization and capacity building for staff and students across the RUFORUM network. Amongst the engagements, the [Digital Agriculture in Africa](#) webinar focused on progress of African Universities towards embracing digital agriculture to support agri-food systems transformation. The webinar recommended the need to increase digital literacy, provision of operational incentives to information and communication entities, establishment of cyber hubs, and promoting innovations geared towards reducing the digital divide. Figure 13 below indicates the distribution of participants in the various webinars held.

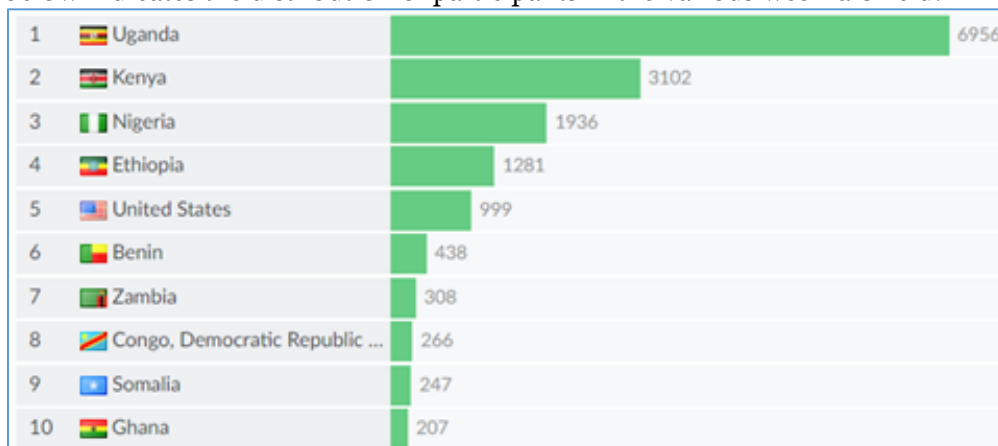


Figure 13: Top countries participating in RUFORUM organised online meetings and trainings

c) Facilitating universities to innovatively use ICTs to improve teaching and learning

RUFORUM Secretariat continued to facilitate improvement of teaching and learning across the network through building the capacity of 25 (17 male, 8 females) course designers and instructors from Uganda, Kenya and Cameroon in online content development, online content delivery and pedagogy. Further, in collaboration with the Arab Bank for Economic Development in Africa (BADEA), the Secretariat assessed ICT infrastructure readiness and established that universities are at different levels of implementing online learning.

d) Strengthen knowledge use through development and dissemination of knowledge products and services, providing easy-to-access on-time information and using specific feedback mechanisms to gauge client satisfaction.

The Secretariat continued to provide opportunities for wider sharing and dissemination of knowledge products that solve core development challenges through publications of the [RUFORUM Weekly digest](#); [Thought pieces](#); [media monitoring reports](#); [press releases](#); and, the RUFORUM [blog](#) as well as publications in mainstream media including [Pie news](#) and [Sci Dev Net](#).

Emerging lessons and issues

Practical delivery of science, technology, engineering and mathematics (STEM) courses continues to be a challenge for Member Universities. Establishment of RUFORUM Regional Virtual Laboratories will go a long way in enhancing practical delivery of STEM curricula within the RUFORUM Network

Flagship programme: PROGRAM SUPPORT – Technical, administrative and logistical support

a) Support University research teams successfully submit at least 10 proposals to support university-level activities

RUFORUM is part of the consortium led by STEINBEIS 2I GMBH that won the award to implement the “*Potentials of Agroecological practices in East Africa with focus on circular water-energy-nutrient systems*” (PrAEctiCe) project worth EUR 6,985,277 from the European Union. The PrAEctiCe decision support tool will help in assessment of environmental and socioeconomic impacts, with a particular focus on impacts on climate change mitigation and adaptation as well as financial viability. Other members of the consortium include Makerere University; Ministry of Agriculture Livestock and Fisheries (Kenya); Maseno University (Kenya); and, Uganda Martyrs University, amongst several others.

b) Plans to get a permanent home for the RUFORUM Secretariat

The BRIDGIN Foundation US\$ 500 million grant to the Government of Uganda to establish four High Tech Higher Education Centres in three universities includes US\$ 65 million for construction of the Headquarters of the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM). This will include construction of multipurpose offices building, a Hotel, a Conference Centre, High Tech Laboratory facility, and a Visiting scholars facility. This is in line with the commitment Uganda Government made in 2003 in its bid to host the RUFORUM Headquarters where the Government pledged to establish the Secretariat in Uganda and to provide the necessary protocol support.

c) Public Policy Cycles for Family Farming Training Program for State and Non-State Actors in Zambia

Under partnership with the Food and Agriculture Organization (FAO-Rome and FAO-Zambia), RUFORUM conducted a workshop for developing capacities for enabling policy environment to support family farmers enhance their food and nutrition security (see Fig. 14). The workshop conducted in collaboration with the University of Zambia (UNZA) focused on Public Policy Cycles for Family Farming and involved a Training Program for State and Non-State Actors in Zambia.



Fig 14: Public policy for family farmers training participants

Plans for the next quarter

1. Plan for the 18th RUFORUM Annual General Meeting to be held 12-16 December 2022 in Harare, Zimbabwe
2. Undertake Outcome Evaluation of the First Operation Plan (2018-2022) of the RUFORUM Vision 2030 Strategy
3. Engagement with partners and other actors in discussing thematic issues affecting agricultural, higher education, science, technology and innovation development in Africa and globally.