

RUFORUM MONTHLY

CREATING CHANGE THROUGH DEMAND DRIVEN RESEARCH -A FOCUS ON THE RUFORUM GRANTING SYSTEM-

RUFORUM's Competitive Grant System encompasses several distinct grant programs. All are designed to further RUFORUM's mission to strengthen the capacities of universities' agriculture faculties to enhance the effectiveness of graduates and produce relevant research for smallholders. As part of the Bill and Melinda Gates Foundation (BMGF) support, RUFORUM CGS commissioned a number of Graduate Research Grants (GRG) to Agricultural and related Sciences faculty members in 17 of its member universities. The support from the BMGF was used to enhance the quality of research undertaken in faculties of agriculture through a competitive, peer reviewed process and support for post-graduate students to obtain their degree and gain field experience through the selected projects. The projects have supported universities to improve their training, research and outreach efforts thereby contributing to improved well being of smallholder farmers and rural communities. We are pleased to share with you some of the impact stories from our GRG below:

Project Title: Tomato Curl Stunt Virus management strategies for all year round tomato production in Mozambique- Principal Investigator: Prof. Luisa Santos

The research on Tomato Curly Stunt Virus was linked to a felt farmer need /problem. First and foremost farmers were involved in the research setting priorities regarding this disease and their emphasis was on the need for disease resistant varieties. The Tomato Curly Stunt Virus outbreak started more than five years ago in South of Mozambique in an area where tomato is an important cash crop and a very significant source of income especially for smallholder farmers. In this particular project, farmers participated in 2 on-farm trails (2 farmers' associations in Moamba and Chokwe districts) involving the testing of different variety resistance to this virus. Although only 2 on-farm trials were established, they served as demonstration plots for all the 284 farmers from the two farmer associations. Also 69 farmers were involved in a survey aimed at estimating the geographic distribution of this virus in the country.



Figure 1: Tomato ready for commercialization – Survey, Cabo Delgado Balama district :



Figure 2: Farmers' family - during the survey

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- **RUFORUM Monthly** provides information on activities of the Regional Universities Forum for Capacity Building in Agriculture.
- This **Monthly Brief** is available on the last week of every month ■

ANNOUNCEMENTS

The RUFORUM Annual General Meeting 18-20 September, 2013 Kigali, Rwanda

11th African Crop Science Society Conference. 14-17 October, 2013 Entebbe Uganda

ICT for Agriculture: International Conference. 4-8 November 2013 Kigali, Rwanda

Monitoring and Evaluation training / Refresher workshop Nairobi, Kenya: 10 - 12th, September, 2013

More information on RUFORUM activities can be accessed on the RUFORUM BLOG at <http://ruforum.org/a/ruforumblog/>

For more information about the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), Contact: The **Newsletter Editor**, RUFORUM Secretariat, Plot 151 Garden Hill, Makerere University Main Campus, P.O. Box 7062, Kampala, Uganda. Fax: +256 414 534153; Tel: +256 414 535939; E-mail: secretariat@ruforum.org; or visit the RUFORUM Website at www.ruforum.org.



TOMATO CURL STUNT VIRUS MANAGEMENT STRATEGIES FOR ALL YEAR ROUND TOMATO PRODUCTION IN MOZAMBIQUE

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This particular project is part of and complements national efforts to develop tomato varieties that have resistance to the Curl Stunt Virus. Linkages have also been established with Mozambique Agrarian Research Institute (IIAM), TOMATECH (Israel), Witwatersrand (South Africa) and AVRDC (Taiwan) to ensure achievement and sustenance of the project outputs and outcomes. Working with a multitude of stakeholders enabled the GRG research team to access resources to overcome budgetary constraints that arose due to resultant high research costs. The available budget for this project was not enough to carry on with all student research activities prompting Prof. Ecole, an IIAM researcher and project collaborator to apply for additional funds from his Institution the IIAM. The provision of funds by IIAM not only guaranteed that the students obtained the needed resources to complete their research but also to the Institution became fully involved in solving this nationwide problem. Furthermore the students studying this project are both junior researchers at IIAM and working in the vegetables research program therefore guaranteeing that they will apply their skills right after completion of their research. The two students have studied under this project are Beatriz Nhaulaho (Female) and Bento Filipe (Male).

TOMATECH (Israel), Witwatersrand University (South Africa) and AVRDC (Taiwan) have been partners with both UEM and IIAM on similar research in the past and also continued to collaborate through this project by providing seeds of promising varieties for testing, helping with molecular testing and sharing methodologies and research results. Furthermore another MSc student, a staff member of Biotech Center of UEM, enrolled at Witwatersrand University under a different project grant, but established linkages with the two RUFORUM sponsored students and exposed them to various

molecular techniques and shared new identified primers to improve detection and identification of virus.

A key lesson for the research team was that in order to establish and keep the linkages "alive" and functional it was important to share information and research results, coordinate planning of activities through joint meetings and pooling of resources. Secondly through the interactions with partner organizations, students got a chance to present their research plans and results at meetings where all the three project supervisors and other students were participating therefore further enriching their research work.

To date two promising varieties have already been identified and this is a basis for uptake and up-scaling. The fact that IIAM got additional funding for doing research regarding this problem guarantees that research will be taken beyond this project. One of the outputs of this project is information on the distribution of this disease in the country that was previously unavailable. For the first time, it will be possible to define priorities and where to focus efforts in terms of dissemination and uptake. The identification of promising varieties will impact on further research priorities and also on new varieties release approvals in the future. It will also impact on the development of new recommendations for farmers and dissemination of pest and disease management strategies that are more efficient and sustainable. The identification of molecular markers is a step towards and will allow the development of more efficient and fast diagnostics tools.

Among the results of the project are: Resistant and well adapted varieties identified, Period of high white fly infestation identified, Molecular markers identified, All regions affected by ToCSV identified and two students successfully complete MSc.

Prospects of Aquaculture as a Rural Development Intervention in Eastern Uganda: Principal Investigator Associate Professor Theodora Shuwu Hyuha



Field work in Mbale subregion- Aquatish survey with students and Fisheries Officer Mbale District

The overall objective of this study was to establish the socioeconomics of aquaculture production in Mbale sub-region

with a view to highlighting its potential in rural development with specific objectives were: 1) To Determine competitiveness of aquaculture enterprises in existing farming system, 2) To assess the effect of aquaculture production on rural community's incomes , 3) To investigate the effect of aquaculture production on the environment

Most Significant Change of the grant to individual career/profession

a) The grant enabled me to attend professional meetings where I was able to link up with other professionals and to form new and useful net works. At the same time my students and other co researchers were able to share results through written extended abstracts with the following titles: The effect of fish

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PROSPECTS OF AQUACULTURE AS A RURAL DEVELOPMENT INTERVENTION IN EASTERN UGANDA

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farming systems on water quality and community livelihood in Mbale: a Socioeconomic and biophysical assessment. Economic Analysis of fish farming in Mbale Sub region in Uganda. These extended results were shared at RUFORUM Biannual meetings.

- b) The grant also enabled me to work in a multidisciplinary manner and gained professionally for I was able to work with the biological scientists namely Dr Anne Akol and Associate Professor Fred Muyodi of Department of Zoology

Benefits of the grant to current Institution

The research team was able to share our vision/ dream of what we wanted to achieve in the project through the presentations at both the College of Agriculture and the College of Science. The members of the staff participated fully by giving us their input on the research methodologies as well as in sharpening of research problem focus.

Benefit of research outcomes to the communities, Government bodies, CBOs, NGOs (local & international) and farmers

A workshop was held to disseminate results in a study area on October 19th 2012 at Crown Suite in Mbale. The workshop was attended by various stakeholders including farmers, extension officers, and district Leaders. An outcome of the workshop was the group pledge by the District Officers to take up the recommendations of the research. The fish farmers also pledged to form a fish cooperative group as a way dealing with constraints such access to markets, quality seeds and feeds.

By the end of the project, 120 farmers were trained on record and book keeping. The student survey results indicated that many fish farmers do not keep records of their enterprises and consequently they could not tell whether they are making profits or not from the fish sale. We therefore realized that the first step to take towards making fish farming profitable is to teach them record keeping.

We envisage writing up policy briefs which we will share with the policy makers. We are also in the process of extracting papers from the thesis. At least three papers are envisaged to be published in internally and professionally recognized journals. The published papers will cause a wide impact both locally and internationally

Broadening of PI research scope and knowledge

Before this project, I knew very little about aquaculture enterprises, but through interaction with the professionals in conferences, seminars and workshops and field work I have been able to be enlightened. I can now write up other projects in the same area by following the knowledge gap identified. With the experience and exposure gained, I am in position to link up with other institutions and organization and to bid for bigger grants than the current one.

Whereabouts of the students

Halasi Gidongo is employed by Sironko District local Government as District Production Officer

Mildred Rhoda Nabbika is employed by Mpigi District Local Government as Fisheries Officer

Undertaking the Gender dimensions of the impact of climate change on agriculture and adaptation among small holder farmers in Uganda: Prof. Margaret Najjingo Mangheni

The objectives of the grant were to:

- 1) Carry out a study to determine the gender dimensions of the impact of climate change on agriculture and small holder farmers' knowledge, innovations and adaptations to climate variability/change.
- 2) To develop human capacity in agriculture and climate change.

Project outputs include: 2 MSc theses, 2 graduates with Master of Science in Agricultural Extension Education and Master in Agribusiness Management, Journal articles, 2 policy briefs.

Most Significant Change of the grant to individual career/profession

This was my first grant in the area of climate change and agriculture. It has increased my interest and competence in this area. I have since obtained 2 other grants focusing on climate change research. I am a



A granary in a homestead in Gweri Sub county, Soroti District, Uganda

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UNDERTAKING THE GENDER DIMENSIONS OF THE IMPACT OF CLIMATE CHANGE ON AGRICULTURE AND ADAPTATION AMONG SMALL HOLDER FARMERS IN UGANDA

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co-PI on a research project under the Rockefeller Foundation funded project number 2009CL1323 (25,000 \$), and PI on a project implemented by the Natural Resources Institute of the University of Greenwich (13,000 pounds).

The following two journal papers from this grant will contribute to my promotion to full professor:

Kisauzi, T; Mangheni, M.N.; Sseguya, H.; and Bashaasha, B. (2012). Gender dimensions of farmers' perceptions and knowledge on climate change in Teso sub-region, Eastern Uganda. *African Crop Science Journal*, Vol 20(2), 275-286.

Nabikolo, D.; Bashaasha, B.; Mangheni, M.N.; and Majaliwa, G.M. (2012). Determinants of climate change adaptation among male and female headed households in Eastern Uganda. *African Crop Science Journal*, Vol 20(2), 475-484.

Benefits of the grant to current Institution

The findings have been incorporated into the new MSc Programme in climate change studies which is being developed by the College of Agricultural and Environmental Sciences

Benefit of research outcomes to the communities, Government bodies, CBOs, NGOs (local & international) and farmers

- Research findings provide empirical justification for incorporating gender into agricultural services through targeting women.
- They will be used by local governments to deliver gender sensitive services to farmers, and by government to review policies such as the National Adaptation Plan of Action (NAPA) and the Agricultural Development Strategy and investment Plan (DSIP).
- A dissemination workshop was held at district level to share the findings and identify areas of application.
- The two policy briefs developed will be posted on the websites of RUFORUM and College of Agricultural and Environmental Sciences. They will also be shared in other relevant fora.

Broadening of PI research scope and knowledge

The project has enhanced my experience in establishing linkages with institutions outside the university. I have since established linkages with researchers at the University of Reading, UK; University of East Anglia, UK; Paris school of Economics, France; Natural Resources Institute, University of Greenwich, UK.

Whereabouts of the three students

Titus Kisauzi and Diane Nabikolo are involved in short term contracts/consultancy.

Evaluation of changes in top soil organic matter, soil fertility and environmental quality under different cropping systems and geomorphological setting in Southern Highlands of Tanzania: Principal Investigator-Dr. Amuri Nyambili-la

Objective of the grant was to conduct research and build capacity on evaluation of the effect of soil fertility on the nutritive value of selected crops in Mbeya Region, Tanzania.

The expected outputs were: Identification of nutrient levels in soils and their reflection to crop mineral nutritive value, soil characterization information and preliminary package of nutrients in fertilizers to be used to ameliorate the deficiencies, two MSc students (a female and a male student) trained in the soil fertility-crop quality concepts, two publishable manuscripts submitted to peer-reviewed journals.

Most Significant Change of the grant to individual career/profession

GRG RUFORUM grant was my first grant after obtaining my PhD. Managing this grant built this my experience in postgraduate supervision and project management and later prepared me for co-supervision of 4 PhD students; a significant achievement attained only three years after completion of my PhD.

Participation in this grant enabled me to win two other grants, one on sustainable land management and indigenous knowledge funded by the Centre for Development and Environment (CDE) - Eastern and



Project team with village leaders at Mwalazi village, Mbeya Rural.

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EVALUATION OF CHANGES IN TOP SOIL ORGANIC MATTER, SOIL FERTILITY AND ENVIRONMENTAL QUALITY UNDER DIFFERENT CROPPING SYSTEMS AND GEOMORPHOLOGICAL SETTING IN SOUTHERN HIGHLANDS OF TANZANIA

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Southern Africa Partnership Programme – (ESAPP). The CDE-ESAPP amounting to USD 34,202 is on soil fertility and human nutrition whereas the Innovative Agricultural Research Initiative (iAGRI) grant amounting to USD 100,000 is on collaborative research.

The second grant is a new grant and a continuation of the GRG project, which got funded because of improved project proposal writing skills acquired through the GRG and because through the GRG we identified areas for further research such as exploring inter-connectedness of soil fertility and human nutrition. This GRG research produced 4 manuscripts, including one paper presented at the 3rd RUFORUM Biennial Conference. The other manuscripts have been submitted to scientific journal.

Benefits of the grant to current Institution

The grant increased the number of MSc. students trained in MSc. Soil Science, which have low number of enrollment partly because its research is relatively expensive and time consuming.

This project also enabled the University (SUA) to obtain a qualified female staff member (a former student) who is now employed in the department of Soil Science. In so doing, the University was able to take a step ahead towards achieving its gender mainstreaming plans of increasing female academic staff. Obtaining female candidate in soil science for academic and research position is still a challenge in Tanzania, as most female student shy away from studying natural sciences especially Soil Science.

Benefit of research outcomes to the communities, Government bodies, CBOs, NGOs (local & international) and farmers

The research findings were communicated to the district agricultural research development office, and village extension service. These preliminary findings will enable the

district and village to choose type of fertilizers to be recommended to enhance food production. These are fertilizers containing Zn and Ca, in addition to the normally used N and P fertilizers.

At international level, the research findings will be communicated through publication and presentation to scientific conferences. During the research implementation only representative farmers and village leaders were directly engaged (about 15 farmers) during field work. However, the findings will benefit many farmers in the study area through village extension services.

Broadening of PI research scope and knowledge

The knowledge and experience gained through GRG project, enabled me, as a PI, and the research team members to establish new linkage with researchers in Ohio State University through iAGRI for collaborative research and further to extend and advance the research in soil fertility and human nutrition.

Another linkage that is related to experience from the capacity building component of GRG grant is the one established with the Norwegian University of Life Sciences (UMB) through NORAGRIC, University of Zambia, Bunda College of Agricultural sciences, and Eduardo Mondlane University, which led to the development of a proposal for capacity building in soil science. Although the funding is not secured yet the collaboration has been established.

Whereabouts of the three students

Ms. Lydia Moro and Mr. Juvenal Anthony Munishi have since graduated are currently employed in the Department of Soil Science. One student was previously working in a private sugar cane company, while the other was working in district extension service. Because of high demand for qualified postgraduate students in soil science related field in the academia and research, the students managed to secure employment.

Promoting macropropagation technology to improve small scale farmer' s access to high quality planting banana seedlings with high market demand: Lead Investigator -Dr. Maina Mwangi

Banana production in Kenya is done largely by small holders who are faced with low productivity resulting from pests and diseases outbreaks, costly planting material among other factors. The use of naturally regenerated suckers for planting has considerably slowed down banana production. Efforts to introduce tissue culture have not achieved the desired results due to the high cost of TC seedlings. Macro-propagation is a new technology that can be used to propagate healthy high quality banana seedlings at significantly reduced costs and thus has high potential to improve availability and affordability of seedlings. This project was carried out to investigate the possibility of introducing and increasing adoption of macro-propagation technology to enhance banana production in Central and Eastern Kenya to research on banana macro-propagation, a third student working on passion fruit was partially supported through this

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PROMOTING MACROPROPAGATION TECHNOLOGY TO IMPROVE SMALL SCALE FARMER'S ACCESS TO HIGH QUALITY PLANTING BANANA SEEDLINGS WITH HIGH MARKET DEMAND

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grant due to interest expressed by the farmers we collaborated with.

Most Significant Change of the grant to individual career/profession

I won this grant soon after joining Kenyatta University – at that time the Agriculture post graduate training program was new and had no students. This GRG grant was critical to take off of postgraduate programs as it supported 3 of the initial 4 students that enrolled for an MSc degree in the department.

The grant Training MSc. students will count towards my promotion (it is a core criterion). Further, while in the process of implementing this grant I was appointed to the position of Director, Grant Writing and Management for the entire university.

This grant has enabled linkages to other scientists, institutions (especially KARI and Ministry of Agriculture) and farming communities and through these linkages I have won a new grant worth 90,000USD from the World Bank funded Fruits value chain project in Kenya (KAPAP); USD 23500 funding by National Council for Science and Technology on greenhouse tomato diseases; USD 2500 by NCST for passion fruit awarded to one of the MSc students.

Benefits of the grant to current Institution

As said above, the grant supported the first MSc students in the department. These have acted as a core that attracts others to join. Further, the grant enabled establishment of a banana and passion fruit orchard that the MSc students used for research and these were also used for learning by undergraduate students. We are trying to maintain these and some basic research items acquired that have improved teaching and research.

Benefit of research outcomes to the communities, Government bodies, CBOs, NGOs (local & international) and farmers

We forged strong linkages with diverse stakeholders right from the start by holding consultative workshops with farmers, extension officials of the ministry, NGO actors and some private sector persons.

Our research six sites were hosted by farmers clustered in groups of 15 - 25 per group, we worked directly with about 300 farmers who learnt what the project was about and some were left practicing. By participating in open/field days and exhibitions we exposed our work to another at least 1500 farmers.

At the end of the project we had another workshop to disseminate our findings. We have taken opportunities availa-

ble to attend and present our work in conferences and seminars locally and abroad, thus publicizing our results. Even after the end of the project we have maintained contact with the farmers and still go to train on various aspects.

Broadening of PI research scope and knowledge

Interaction with other scientists and institutions has enabled us to reflect on what we do. I now better understand the capacities and competencies that are to be found in different individuals and institutions. I appreciate more the essence and place of complimentary roles of different stakeholders in empowering farmers to work their way from poverty to prosperity.

Whereabouts of the three students

Three female students have been trained and they have progressed as follows:

- Njeri Njau: completed thesis and graduated in 2012. She has been engaged recently to teach at Maasai Mara University as she tries to get an opportunity for PhD scholarship. Was an AWARD mentoring programme beneficiary in 2012.
- Caroline Wangungu: She has already defended thesis; was working as a Research assistant in one of the successor projects under work she did on passion fruit research.
- Martha Rhoda Kasyoka: had a delay in completing thesis due to a maternity break. She is teaching at Mount Kenya University.

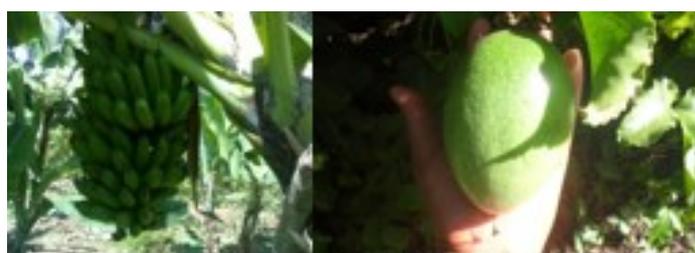


Photo: A healthy passion fruit in one of the plantations in the study sites