RUFORUM Capacity Building in Agriculture

RUFORUM Celebrating 10 years as a Network and 22 years supporting Agricultural Higher Education

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Celebrating RUFORUM@10

RUFORUM Small Competitive Grants; GRGs – Graduate Research Grants

Prof. Adipala Ekwamu,
Executive Secretary - RUFORUM

A universally common feature of the post-independence economies of Africa was the near absence of well qualified and experienced professionals in almost all fields – health, education, policy, and agriculture. In many important disciplines, severe deficits of professionals remain today. Many African universities are crowded, poorly resourced, and often unable, even with the best of staff, to provide the quality of education that Africa needs. Professions, such as agricultural research, where local conditions can be demanding and the rewards (in the absence of adequate facilities and support) are poor, are unable to attract the most talented Africans they need.

Consider the situation which faces the newly trained professional in agriculture returning with a fresh doctorate from a top international university. That person will typically enter an empty laboratory. Transport to the field – to collect samples or data, to meet with farmers and suppliers, and to allow students to undertake field trips – will be limited and of poor reliability. The overcrowded undergraduate programme imposes a challenging teaching load; the demands of university administration further erode the available time for effective field research. There are two common outcomes – either professors simply repeat the experiments that they learned as part of their overseas study or they give up research, take on consulting assignments to supplement their (usually modest) incomes, and neglect their teaching duties. Students become disillusioned and few are attracted to further studies. The skills gap in the vital agricultural industries remains unfilled.

RUFORUM has taken on this challenge directly through a well-tested small grant scheme, the Graduate Research Grant (GRG). The GRG provides an accessible and attractive mechanism for an enterprising

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academic to obtain the funds to put several graduate students into the field. Providing that professor with graduate students kills several birds with one stone. First, the young graduate students bring new life into the department – they have the time and the energy to seek out different ways of doing things; to explore the latest literature; to spend time in the field with farmers and other key stakeholders. Second, the university is now creating new knowledge and becoming integrated fully into the national development initiative – as opposed to being perceived as a factory for standard first degree holders. Third, the professors, and their students, become part of a regional and international science network which provides attractive career prospects. The RUFORUM University is now a development institute, actively engaged in the practice of poverty alleviation, and in addressing the national and continental setting of priorities to solve food insecurity, agricultural stagnation, and to create broad-based development.

The mechanism to drive this change is remarkable in its simplicity. Under its GRG scheme RUFORUM issues a call for proposals from African academics. The proposal will include at least two graduate students, plus the costs of doing the field work. The proposal, and the budget (which is limited to $65000 over two years and includes tuition, student stipend and research costs) is first scrutinised by a committee within the university. After passing this test, it is externally reviewed and then considered for funding by the RUFORUM Technical Committee (made up of senior African academics who give up their time for this purpose). There is ongoing monitoring and mentoring to enhance field, improve soft and technical skills, and to ensure steady throughput. This builds quality control at the heart of the programme. The motivation of almost all participating professors has meant that the number of proposals failing to meet RUFORUM standards is trivial.

Putting an African graduate student into the field in Africa cannot be cheap – field sites are remote; transport expensive and logistics are challenging. But, used skilfully, the resources provided under the GRG leave each participating department better off, at the end of the study, in terms of equipment and staff experience, than at the start. Thus incrementally, participating departments become the modern scientific facilities that Africa needs, with experienced staff in place running ongoing, relevant, and externally validated research programmes (which feed the teaching and learning at the institute). Steadily, Africans (both professors and students) gain confidence and the knowledge to compete in the international science arena. When these small grants are combined with other elements of the RUFORUM programme – innovative professional meetings; regional training opportunities – a real change can be found in the way that African professors of agriculture are doing business. These small grants have proved a powerful tool in bringing practical benefits to the poor and disadvantaged in rural areas as well as upgrading the skills and capacities of university staff and their students.

So much for the background. Two anecdotes from RUFORUM experience illustrate both the direct, and

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the spill over effects of this simple mechanism. George Kanyama-Phiri, from Malawi, returned from training in the US in the late 1980s. He had a sound scientific base in pasture science and legumes. The pastures and legumes he had worked on in the US were very different from those in Malawi, where planted pastures rarely exist, and most legumes are grown for home consumption as a secondary crop by women. But he knew about agroforestry and believed this was the avenue he should follow to increase the use of legumes (for nutrition, for soil improvement, and for income diversification) by Malawi's poor. The research area he chose was one of the poorest in the country – the steep and densely populated slopes of Zomba mountain in the south of the country. The first encounters with farmers were unpromising – a village elder walked out of a sensitisation meeting grumbling that trees were fine for university professors, he wanted fertiliser. George was not discouraged. The women of the villages did not walk out; they wanted to listen and to learn. Soon he had a solid set of trials established. The Rockefeller Foundation Board (who was then funding the programme) made a visit to Malawi in1998 and George's trials were the highlight of their trip. They had known Malawi was poor; when they saw women cultivating tiny scraps of soil between the boulders on the mountain slopes, they realised just how poor most people in Malawi were. Through his graduate students, George was doing pioneering on-farm research in the emerging discipline of agroforestry which fed directly into national policy addressing poverty reduction.

But he did not forget the grumble of the village elder – "Trees are fine for professors; I want fertiliser". George was now a well-known and respected African scientist, and, as a spill over from his RUFORUM research, he was approached by researchers from Michigan State University. Fertiliser in Malawi is more expensive than almost anywhere else in Africa, and Malawians are amongst the poorest people on the continent. Agricultural science cannot do much to solve the logistical expenses (poor roads, inefficient ports, long supply chains) that drive up the cost of fertiliser. But it can address the issue of efficiency with which fertiliser is used. Using his knowledge of acceptable legumes to Malawi farmers, he teamed up with the Michigan State scientists to explore the role of legumes in improving the efficiency of fertiliser use under farmer conditions. Through a skilful combination of agronomy, plant spacing, and intercropping, George and his colleagues were able to develop an enhanced legume intercropping system that allowed a small farmer to grow more maize, use less fertiliser, and make substantially more profit on the same piece of land than growing maize with standard fertiliser practice. These results were so stunning that they were published in the prestigious Proceedings of the National Academy of Science in the United States. By the end of the trial period, he had some 5000 farmers adopting the 'doubled up' legume system.

The other anecdote, with due modesty, is my own. I returned from Ohio State University to a Uganda devastated by war. I had the skills and the knowledge but getting to the field was impossible without outside support. I was asked by a desperate extension officer in Bukedea, eastern Uganda, for help. The area had been a major cotton-producing area in the 1960s, but with civil unrest, farmers had given up cotton and

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returned to subsistence crops of maize, cassava and cowpeas. They were barely able to feed themselves. After talking to the farmers, the evident entry point to addressing their problems was improving cowpea production. Cowpea is indigenous to Africa and an important source of protein for resource-poor farmers in semi-arid areas. But local cowpeas are vulnerable to the aphid borne mosaic virus. I had access to materials which could be developed as disease free. Working with a women's group in the area, I was able to test and validate a resistant variety that was acceptable in terms of taste and other features to the farmers, and that was also resistant to critical local pests and diseases.

The women's group that was created locally to work with me, P'kwii (Popular Knowledge Women's Initiative) is thriving today, with a membership of 2,500 women and men spread over three districts. My initial contact, and now leader of this group, Norah Ebukalin, represents farmers and women as a member of RUFORUM's Uganda national forum. The graduate students who worked on the project with me are all in senior research and development positions in Uganda. One of them, Richard Edema, went also for PhD training at Ohio State University, and since returning to Makerere University, has trained over 50 MSc level Plant Breeders who are working across Africa. P'kwii has internalised and built on their contact with university researchers to create a symbiotic mix of science and indigenous knowledge. They have a learning centre that showcases indigenous technologies and the innovations that have been adapted from RUFORUM-sponsored research. P'kwii has gone into food processing, making sunflower oil that is sold on to wholesalers. A third of the profits goes into the cooperative members' pockets. Another third is set aside for maintenance while the final third is committed to expansion. The cooperative has purchased a grinder to make cassava flour, which will be used by a major local food manufacturer in biscuit making.

The two stories typify the impact of the grant system and RUFORUM on the agricultural landscape in eastern, central and southern Africa. The impact is not only at community level but industry too. Take the case of research by a young MSc student, Robert Kawuki, who was able to identify and develop two rust resistant soybean varieties (NAMSOY1 and MAKSOY1), that today form the basis of the oil and feed industry in several countries in Africa.

The 'small grant system' has indeed provided opportunity for university researchers to address smallholder farmer needs, while at the same time giving an opportunity for training the next generation of agricultural scientists for Africa. Yes, it is a small grant, but with big impact! The Small Grants, or GRGs, thus form the core of RUFORUM *modus operandi.*

This is our fifth issue in a series of articles we are releasing as part of our 10 year anniversary. Download by clicking on the following issues to access the previous issues; RUFORUM Network: Changing Pedagogical Paradigms, Priorities, and Practice (fourth issue), Briefing note on the 4th biennial conference (third issue), RUFORUM's Developmental Roots (second issue) and RUFORUM@10 (first issue).

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