

**Building Research Capacity: The case of Burundi**Inamahoro, M.<sup>1</sup><sup>1</sup>Institut des Sciences Agronomiques du Burundi (ISABU), B.P 795 Bujumbura, Burundi**Corresponding author:** inamicheline@gmail.com

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**Abstract**

This manuscript narrates the contribution of the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) to strengthening research capacity of the National Agriculture Research Institute (ISABU). Burundi is among the three countries which were prioritised as the focal countries in the implementation of SCARDA project (Strengthening Capacity for Agricultural Research for Development in Africa) via RUFORUM. This training has been done in collaboration with Burundi government and other stakeholders such as the Forum for Agricultural Research in Africa (FARA) and Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA). Five students, male and female were identified by ISABU and RUFORUM and trained at different universities in East Africa. They were involved in other special courses to enhance their leadership skills, communication and technology packaging. RUFORUM also improved their social networking via conferences and joint students retreats with students from other countries. Despite small challenges, the training at MSc level has been well done, and the students have completed their studies and are serving research under ISABU. One of them, the author, has this year started PhD study at Stellenbosch University in South Africa, and a new MSc student enrolled at Jomo Kenyatta University of Agriculture and Technology.

Key words: ISABU, Research Capacity, RUFORUM, SCARDA

**Résumé**

Cet article relate la contribution du Forum régional des universités pour le renforcement des capacités en agriculture (RUFORUM) pour renforcer la capacité de recherche de l'Institut des Sciences Agronomiques du Burundi en sigle ISABU. Le Burundi est parmi les trois pays qui ont eu la priorité d'être pays focaux dans la mise en œuvre de projet SCARDA (Renforcement des capacités pour la recherche agricole pour le développement en Afrique) par l'intermédiaire du réseau RUFORUM. Cette formation a été faite en collaboration avec le Gouvernement Burundi et d'autres parties prenantes telles que le Forum pour la recherche agricole en Afrique (FARA), et l'Association pour le renforcement de la recherche agricole en Afrique centrale (ASARECA) et orientale. Cinq chercheurs, hommes et femmes identifiés par ISABU et RUFORUM ont été formés dans différentes universités de la région. Ils ont aussi participé dans d'autres séances importantes visant à améliorer la communication et technique d'emballer une information. RUFORUM a également amélioré leur réseau social de communication en facilitant ces étudiants de participer dans des conférences et des retraites. Malgré quelques difficultés, la formation en maîtrise s'est bien déroulée, les lauréats

sont au travail de l'Institut. Une d'eux, l'auteur de cet article vient juste de commencer cette année sa formation doctorales a l'Université de Stellenbosh en Afrique du Sud, et un nouveau étudiant vient d'être enrôler a l'Université de Jomo Kenyatta & Technology au Kenya.

Mots clés: capacité de recherche, ISABU, RUFORUM, SCARDA

## Background

Burundi is a small landlocked nation in the East and Central Africa region (ECA). It is largely francophone, but now it has joined the East African Community (EAC), hence competence in English is important. Its neighbours are the Democratic Republic of Congo (DRC), Rwanda and Tanzania. It is heavily reliant on agriculture with over 90% of the national population reliant on agriculture.

It is well understood that education and information are key drivers in the transformation of agriculture. A recent scoping study across the region showed that Burundi had a serious need for urgent human capacity building in agriculture. Steps have been taken to address these issues.

The National Agriculture Research Institute (ISABU) within the Ministry of Agriculture and Livestock (MINAGRIE) was created in 1962. Its mandate is to generate new technologies and to release improved material to the population through its four main thematic areas: crops, livestock, farming systems, and rural socioeconomics. Although ISABU has tried to run a staff development programme, funding has been problematic and consistent capacity development has suffered. Because there was no postgraduate training in agriculture science at University of Burundi, researchers had to find themselves scholarships for further degree studies, many of them in universities in Belgium or France, and occasionally in the USA and Sweden. This has proved a major barrier to entry into higher education; a problem even more difficult for female graduates where culture regards family activities to be more important for young women than academic successes. Very often scholarships will be focused on those with several years of field experience and thus are most accessible to those in the 30-40 year age group. Yet this age period coincides with the reproductive life period for many female graduates. They have established themselves in their career with a decent



track record, and leaving their partners to study for several years abroad is a difficult personal decision. ISABU consequently has struggled to put together the well trained scientific teams required to meet national needs for technology development and transfer.

In response to the evident capacity gap in agricultural research in Burundi, SCARDA- ECA (an ASARECA project) provided five MSc scholarships for ISABU scientists. The training was implemented by RUFORUM as a two year project running from 2008 to 2010. Each scholarship provided for a year of course work, followed by a second year of field research. The students were sent to universities in the region. Fulgence Niyongabo and Micheline Inamahoro studied plant breeding and seeds systems at Makerere University in Uganda. At Sokoine University in Tanzania, Gloriose Habonayo studied Crop Science while Cyrille Mbonihankuye studied Horticulture. Nepomuscene Ntukamazina studied social research methodology at Jomo Kenyatta University of Agriculture and Technology in Kenya. Female and male researchers got equal opportunity to the scholarship programme.

There were additional spill overs from these student placements. They met, learned from, and developed networks with other RUFORUM students from Rwanda, Sudan, South Sudan and DR Congo supported by SCARDA and AGRA, and students from countries they were studying in). They gained competence in English, and participated in different conferences with RUFORUM support. This gave them the opportunity to present their research results, and to meet and learn from other scientists and students in their disciplines. They also participated in leadership training and management of research programmes.

All five students completed their studies on time and have taken up their duties at ISABU - apart from one who was subsequently selected for PhD studies at Stellenbosch University. The ISABU training is continuing with a young woman scientist, Ms Immaculée Abingoye Mayugi, from ISABU being admitted to Jomo Kenyatta University of Agriculture and Technology in Kenya. She has a scholarship from RUFORUM for study in the MSc in Research Methods programme, a programme for students from different countries in the eastern, central and southern Africa region. Now, about the five SCARDA trained graduates:

### **1. Mr Fulgence Niyongabo (MSc. Plant Breeding & Seed Systems)**

Mr Fulgence Niyongabo is a Burundian national; he is married. He graduated with an MSc from the College of Agricultural and Environmental Sciences at Makerere University in 2012. His MSc study was funded by SCARDA-ASARECA through RUFORUM.

After his MSc training, he was redeployed in ISABU and appointed as a team leader in the rice research programme where he is coordinating all rice research activities. This includes collaborative research with CGIAR centres such as IRRI and AfricaRice, and international agencies such as CRS, IFAD and Guangxi Academy of Agricultural Sciences (Peoples' Republic of China).



His main duties include implementation of various technology transfer and training programmes on rice cultivation techniques for the farming communities. Fulgence can be contacted at: Tel: +257 71 288108; Email: fulgeniyo@yahoo.com

## 2. Ms Gloriose Habonayo (MSc. in Crop science)

Ms Gloriose Habonayo is Burundian and married. She holds an MSc from Sokoine University of Agriculture awarded in 2011. Her MSc study was funded by RUFORUM-SCARDA. After her MSc training, she returned to Burundi and joined her job of researcher in Burundi National Research Institute (ISABU), Soil Fertility Component. Her main duties include soil fertility management, capacity building of different partners and proposal development for outside funding. Her collaborative programmes include the implementation of many projects such as ECABREN on Beans, ASARECA on Livestock and crop integration, FAO/TAMP Kagera. She set several trials to determine best methods of fertilisation to improve soil fertility and crop production. She is conducting research in nutrient management techniques for soil conservation and restoration. She has developed technologies for improving organic manure production through composting.

She has trained farmers and extension staff on soil fertility management, nutrient cycling and improved organic manure production. As part of this process, she undertakes participatory research with farmers to improve soil fertility and crop production. Ms Gloriose can be contacted at: Tel: +257 79 985887; Email: habonayoglo@yahoo.fr



## 3. Mr Cyrille Mbonihankuye (MSc. Crop Science)

Mr Cyrille Mbonihankuye is a Burundian national and married. He is a Horticulture Scientist with an MSc in Crop Science (Horticulture) from Sokoine University of Agriculture (SUA) awarded in 2010. His MSc study was funded by RUFORUM-SCARDA.

After his MSc study he was redeployed in ISABU as Researcher in the Department of Crop and Animal Production, Horticulture Program. He is currently conducting research on many vegetable crops including indigenous vegetables.

He has already conducted research on the evaluation of the effectiveness of plant extracts as biopesticides (using hot pepper varieties) applied singly as insecticides on different varieties of



cowpea. He was involved in a crop-livestock integration project and a project on indigenous vegetables, both projects were funded by ASARECA. He is currently involved in a new project on Agriculture and Environnement also funded by ASARECA. Mr Mbonihankuye Cyrille is also involved in seed production of African indigenous vegetables (amaranthus and African eggplant). Mr Cyrille can be contacted at: Tel. +257 79 974960; Email: mbonicyrille@yahoo.fr

#### **4. Mr Ntukamazina Nepomuscene ( MSc. in Research Methods)**

Mr. Ntukamazina Nepomuscene is Burundian working for ISABU. After his bachelor's degree in Agriculture obtained in 2006 at University of Burundi, he is now holds two MSc degrees; one in natural resource and landscape management obtained in 2008 at University of Burundi and another in Research Methods obtained in 2011 at Jomo Kenyatta University of Agriculture and Technology under SCARDA-RUFORUM scholarship.

After his MSc studies in Research Methods, Ntukamazina Nepomuscene was appointed as head of the Statistics and Informatics Unit at ISABU. He is mainly involved in supporting researchers in developing competitive projects, research protocols, questionnaires and data collection tools, data management, data analysis and scientific reporting.



Ntukamazina Nepomuscene has also experience in bean breeding. From 2007 to 2013, he worked on the Bean Research Component at ISABU. With this experience in bean breeding, Ntukamazina Nepomuscene has coordinated, as Co-Principal Investigator, the implementation in Burundi of a regional project funded by ASARECA titled "Utilization of Bean Innovations for Food Security and Improved Livelihoods in Eastern and Central Africa". While ISABU was celebrating its fiftieth anniversary in July 2012, Ntukamazina Nepomuscene was awarded a certificate of Excellence in recognition of the commendable work he has done for ISABU and Burundi at large. Recently, Ntukamazina Nepomuscene was promoted to assist the Director General of ISABU in coordinating the Research Component of a co-funded Belgium – Burundi program "PAIOSA" that supports ISABU and other institutions to implement Research Director Plan vision 2010-2020 Mr Nepomuscene can be contacted on: Tel: +257 79956688, Email: ndabanepo@gmail.com

#### **5. Ms. Micheline Inamahoro (MSc Plant Breeding & Seed Systems)**

Ms Micheline Inamahoro is Burundian and married. She graduated with MSc in Plant Breeding and Seed Systems from Makerere University in 2010 under RUFORUM and SCARDA-ECA (an ASARECA project) support. Her MSc research was also facilitated by IITA Uganda where she set up her experiments on bananas. While she was doing her MSc studies, she gave birth. Her stay with a baby in Uganda was facilitated by RUFORUM as well as her colleagues from Kenya on the same programme.

After her MSc training, she was redeployed in ISABU in January 2011. She rejoined the Potato program (where she has been working from 2006 till now), as researcher and head of tissue culture laboratory. She was appointed to be in charge of upstream potato breeder seeds production for the national potato value chain. Ms Micheline Inamahoro is also member of ISABU team in charge of capacity building planning. She was also involved in various research activities such as Yambean evaluation in Burundi (CIP Project), Crop-livestock integration project (an ASARECA Project), etc. Ms Micheline Inamahoro was also a national coordinator for a one year ASARECA project, which was developed to enhance harmonization of seeds standards in five pilot countries, in the ASARECA region.



In January 2014, Ms Micheline Inamahoro started her PhD studies at Stellenbosch University. She is supported by *Intra-ACP Academic Mobility Programme*– Sharing Capacity to Build Capacity for Quality Graduate Training in Agriculture in African Universities (SHARE) and South African Apple and Pear Producers Association (SAAPPA/SASPA) where she is looking at physiological dynamics of dormancy in apple buds. Ms Micheline can be contacted on: Tel: +27 744178605, Email: 18291015@sun.ac.za , inamicheline@yahoo.fr, inamicheline@gmail.com , Skype: inamahoro.micheline



### Final comments

The agricultural sector in Burundi was brutally destabilized by the socio-political crisis following the departure of the colonial power, Belgium. The result has been widespread hunger and stagnation of the agricultural sector. The country has had little capacity to address the problems of agriculture in Burundi due to the absence of advanced training for researchers. This is evidenced by poor agriculture research output through production/ processing/ storage/ distribution; and agricultural project/program design, development and management.

ISABU will depend on building adequate teams of highly qualified researchers to meet its mandate of conducting high-quality research. Such teams can then bring in resources through bidding for competitive grants in the region or internationally. Due to efforts made by RUFORUM and ASARECA, in research capacity building with a long-term training of a number of researchers, Burundi's agricultural research capacity levels have showed recently a slight positive trend at the MSc level and, hopefully in the longer term also at PhD level. These efforts by the two regional agencies have enabled students to study at English medium universities. Although this was a challenge to Burundian students due to their background education in the alternative languages (French), they passed all academic requirements, and

met their deadlines as well as students with an English language background. Importantly, those women who participated in higher education with pregnancies or babies also succeeded in meeting all academic requirements.

It has been established that this postgraduate training in the region has facilitated the students to return home for short periods with cost relatively affordable to visit their families. This kind of training opportunity in the region can make life easy for women to proceed to advanced degrees and facilitate them to be in touch with their families occasionally for some situations like attending to their children at home, etc. The age limit to undertake MSc and PhD level for most scholarship, has been also a barrier for a number of researchers to progress on high education. This needs to be flexible to increase the pool of high educated scientists, especially women in science.

The need for national postgraduate training in agricultural research has been identified. RUFORUM is currently working with the University of Burundi, ISABU and other partners in in ECA and Europe to develop three MSc programmes to be launched at University of Burundi in 2015. The re-building of research capacity will play a key role in helping Burundi to increase production and providing opportunities for rural populations to improve their income and livelihoods. This in turn will show the way to greater food security and the reduction of poverty in the country.

### **Acknowledgement**

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