SASHA
Sweetpotato Action for Security and Health in Africa

Borlaug Fellowships Benefit Up and Coming SASHA Sweetpotato Researchers

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During the past two years, three early career researchers from International Potato Center (CIP) affiliated with the Sweetpotato Action for Security and Health in Africa (SASHA) project have benefited from the CGIAR Borlaug Fellowship Program. The three, Kwame Ogero, Mihiretu Cherinet and Daniel Mbogo share their experiences in this brief.

What is the program?

Today agricultural research faces complex issues which require innovative approaches to conduct research that leads to agricultural practice and policy adoption. The United States Department of Agriculture (USDA) is committed to building stronger research collaborations between USDA's agencies, Consultative Group of International Agricultural Research (CGIAR), and U.S. Land-Grant Universities (LGU) in order to enhance agricultural productivity, increase participation in the international trade market, and build a food secure globe. The CGIAR Borlaug fellowship Program is a prestigious program that honors Norman E. Borlaug, the American agronomist, humanitarian, and Nobel laureate who is known as the "father of the Green Revolution." This is a four-month research exchange where the CGIAR scientist is paired with a LGU and spends some of his/her research time (usually 8-12 weeks) on a specific research project at that LGU with a designated mentor. In addition, that mentor is supported to visit the researchers home institution (Fig. 1). Learn more at: https://www.fas.usda.gov/programs/borlaug-fellowship-program.

Kwame Ogero assessing the quality of sweetpotato vines in a decentralized vine multiplier's field in Geita, Tanzania with his mentors, Chris Clark (farthest right) and Arthur Villordon (2nd from right), during the follow-up visit (Credit D. Mlay)

CIP INTERNATIONAL POTATO CENTER
A CGIAR RESEARCH CENTER

LSU AgCenter
Research · Extension · Teaching

USDA

CGIAR RESEARCH PROGRAM ON Roots, Tubers and Bananas

Partners

- Louisiana State University's Agricultural Center (LSU AgCenter)
- South Dakota State University (SDSU)

Borlaug Fellow **Kwame Ogero,** Kenyan agronomist

I am an agronomist currently involved in efforts geared towards developing sustainable seed systems for sweetpotato in Tanzania. My research focuses on developing crop-specific models and decision support systems for understanding and managing seed degeneration. Through the Borlaug Fellowship I assessed the role of sweetpotato foundation seed programs in maintaining the integrity of commercial seed stock by providing virus-tested (VT) foundation seed to commercial producers. This enabled me to gain key skills in sweetpotato virus diagnostics, root imaging, mineral nutrition in disease suppression and the role of stakeholder networks in sustainability of clean seed systems. In addition, I expanded my professional network through interacting with over 20 scientists involved in plant pathology, entomology and sweetpotato seed systems. I was hosted by the Louisiana State University's Agricultural Center (LSU AgCenter) from January 19–March 22, 2018 under the mentorship of Prof. Christopher Clark assisted by Prof. Arthur Villordon. The mentors conducted a follow-up visit in Tanzania and Rwanda on May 10 – 17, 2018 where they interacted with sweetpotato researchers, traders and seed multipliers. Knowledge gained through the Fellowship will contribute towards establishing sustainable mechanisms for production and delivery of clean sweetpotato seed. A better seed system will increase farmer access to quality planting material therefore reducing yield losses and contributing to improved food security and livelihoods.

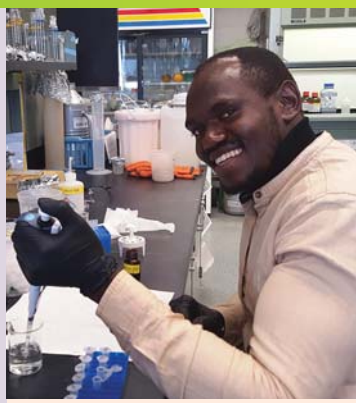

Fig. 1 Kwame Ogero extracting DNA from sweetpotato root samples. Department of Plant Pathology and Crop Physiology, LSU AgCenter, Baton Rouge, LA (Credit C. DeRobertis)

Borlaug Fellow **Mihiretu Cherinet,** Ethiopian agronomist

Fig. 2 Mihiretu Cherinet working in the lab during his Borlaug Fellowship at the Sweet Potato Research Station, LSU AgCenter, Chase, LA (Credit A. Villordon)

I am research associate conducting research in the areas of sweetpotato seed systems and production agronomy in Ethiopia. I applied for the fellowship because I wanted to improve my skills by conducting research on specific problems for sweetpotato; creating linkages with professors and gaining exposure and experience with US academic and research systems. For the Borlaug Fellowship, I was placed at the LSU AgCenter's Sweetpotato Research Station to work under the mentorship of Professor Arthur Villordon. My experiments focused on generating scientific evidence on factors affecting physiology of roots stored using the Triple S (Storing in Sand and Sprouting) method. The study generated phenotypic, genotypic and molecular data on sweetpotato sprouting. While collecting data, I developed skills in root phenotyping, sprouting, ribonucleic acid (RNA) isolation, complementary DNA (cDNA) synthesis and polymerase chain reaction (PCR). I advanced my laboratory skills in developing and grouping African sweetpotato varieties based on their sprouting capacity. The study conducted under the Borlaug Fellowship Program has developed new knowledge by generating variety specific sprout information, identifying the genetic basis of sprouting in sweetpotato and describing the sprout response of sweetpotato varieties at reference temperature points. This new knowledge is a very important tool for grouping genotypes and standardizing root-based methods, along with vine-based conservation and multiplication of sweetpotato planting both in SSA and in the United States.

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Daniel Mbogo, Kenyan Food Scientist

I am a Research Associate with the Food and Nutritional Evaluation Laboratory (FANEL) at BecA-ILRI hub in Nairobi, Kenya. The Borlaug Fellowship offered me an opportunity to work with Dr. Srinivas Janaswamy of the Department of Dairy and Food Science, South Dakota State University (SDSU), whose research group focuses on developing functional foods from biopolymers such as carbohydrates. I utilized in vitro techniques to assess the bio-accessibility and bioavailability of β-carotene and starch digestibility in OFSP puree-wheat composite breads. I was keen to gain skills on in vitro methods and caco2 cell culture techniques and bring them to FANEL to strengthen the capacity to generate evidence on nutritional benefits of biofortified crops, including OFSP, and the innovative products developed from them in SSA. The Fellowship enabled me to build networks and linkages with faculty members of SDSU with whom FANEL can collaborate in future research work on food science, agro-processing and nutrition focusing on biofortified roots, tubers and banana.

Fig. 3 Mbogo, front, and Dr Janaswamy test the starch digestibility of sweet potato-enriched bread. South Dakota State University (Credit C. Delfanian)