

Borlaug LEAP- Past Fellows Directory (Spring 2011)

Armand Doumtsop

Country:
Cameroon

University:
University of Yaounde, Cameroon

Department & Degree:
Entomology, PhD

US Mentor institution:
University of Massachusetts, Amherst

CGIAR Mentor Institution:
International Institute of Tropical Agriculture (IITA)

Research:
Population Genetics of the Scale Insect *Stictococcus vayssierei* and Implications for the Development of Host-plant Resistance for Major Cassava Pests in Central Africa

Email:
a.doumtsop@cgiar.org

{No Bio}



Benard Yada

Country:
Uganda

University:
North Carolina State University

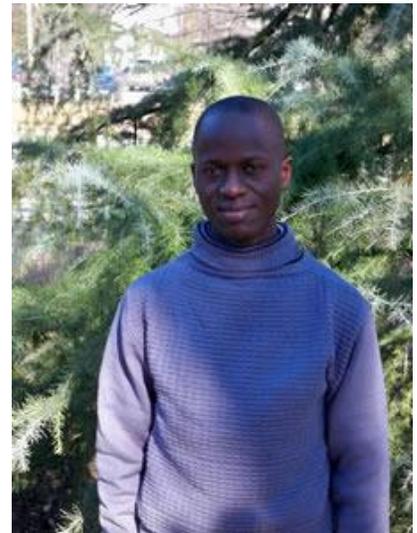
Department & Degree:
Plant Breeding and Genetics, PhD

US Mentor institution:
North Carolina State University

CGIAR Mentor Institution:
International Potato Center (CIP)

Research:
Development of SSR and SNP Markers for QTL Analysis of Disease and Pest Resistance in Sweetpotato

Email:
yadabenard21@gmail.com



Benard Yada, a native of Uganda, was awarded a Borlaug LEAP Fellowship in 2011. In July 2008, Dr. Yada began working as a Sweetpotato Breeder-Geneticist in the Sweetpotato Program at Uganda's National Crops Resources Research Institute (NaCRRI). He took a study leave to pursue a PhD in Plant Breeding and Genetics at North Carolina State University. His thesis research developed molecular markers for pest and disease resistance in sweetpotato. Dr. Yada believes the future of sweetpotato improvement lies in the robust application of biotechnology and genomic tools.

The fellowship provided Dr. Yada with research support to enhance the development of the sweetpotato genetic linkage map for use in quantitative trait loci (QTL) analysis of sweetpotato virus disease and weevil resistance. During his fellowship, Dr. Yada traveled to Lima, Peru to work with Dr. Wolfgang Grüneberg at the International Potato Center (CIP). The fellowship also allowed Dr. Yada to undergo training in sweetpotato genomics, germplasm conservation and field breeding. At North Carolina State University, Dr. Yada was mentored by Dr. Craig Yencho, a professor in the Horticulture department. In June 2014, Dr. Yada completed his PhD and returned to NaCRRI in Uganda where he currently works as a Plant Breeder-Geneticist for their Root Crops program.

Gerardine Mukeshimana

Country:

Rwanda

University:

Michigan State University

Department & Degree:

Plant Breeding, Genetics and Biotechnology, PhD

US Mentor institution:

Michigan State University

CGIAR Mentor Institution:

International Center for Tropical Agriculture (CIAT)

Research:

Dissecting the genetic complexity of drought tolerance mechanisms in common bean (*Phaseolus vulgaris* L.).

Websites:

[Field Notes from MSU President](#)



Borlaug LEAP Fellow Gerardine Mukeshimana began her Borlaug LEAP fellowship in November 2011 under the mentorship of Dr. James Kelly, professor of Plant, Soil, and Microbial Sciences, Michigan State University and Dr. Stephen Beebe, leader of the bean program at the International Center for Tropical Agriculture (CIAT). Mukeshimana's research was integrated with a project of the Dry Grain Pulses Collaborative Research Support Program. The Borlaug LEAP fellowship enabled her to spend three months at the International Center for Tropical Agriculture (CIAT-Colombia), a CGIAR center, conducting field research on beans under the mentorship

of Dr. Beebe. The fellowship strengthened her doctoral research by including field trials in Colombia and Rwanda, broadened her exposure to drought selection techniques, and expanded her international network.

Dr. Mukeshimana completed her doctoral program in plant breeding and genetics at Michigan State University in 2013. After achieving her PhD, Mukeshimana joined the research team at BecA Hub, the Biosciences eastern and central Africa facilities located at the International Livestock Research Institute (ILRI) campus in Nairobi, Kenya. On July 24, 2014, Dr. Mukeshimana was appointed by President Paul Kagame of Rwanda as the new Minister of Agriculture and Animal Resources in Rwanda.

USAID has played a major role in Dr. Mukeshimana's professional development through her involvement in several USAID sponsored institutional capacity strengthening and training programs. In 2001, Gerardine Mukeshimana first enrolled in a Master of Science program at Michigan State University (MSU) under USAID's PEARL (Partnership for Enhancing Agriculture in Rwanda through Linkages) project. After a stint back in Rwanda serving as a lecturer in the Faculty of Agriculture of the National University of Rwanda and Coordinator for the World Bank's Rural Sector Support Project, she returned to MSU in 2008 to pursue a PhD degree with financial support through USAID's Dry Grain Pulses CRSP (currently branded as the Feed the Future Innovation Lab for Collaborative Research in Grain Legumes; Legume Innovation Lab). In 2011, she received her Borlaug LEAP Fellowship.

Ms. Mukeshimana's doctoral thesis research focused on "Dissecting the genetic complexity of drought tolerance mechanisms in common bean (*Phaseolus vulgaris* L.)." Common bean is an important food and nutritional security crop in Rwanda which has the highest per capita consumption of bean of any country in the world. In addition to addressing an important constraint of drought to bean productivity in Rwanda, Dr. Mukeshimana acquired knowledge and skills in molecular genetics during her graduate program that will be important for the future growth and competitiveness of Rwanda's agriculture sectors. Two scientific papers were published in 2014 in *Crop Science* (*Quantitative trait loci associated with drought tolerance in common bean*) and the *Journal of the American Society of Horticulture Science*, giving evidence of the significance of her research findings.

In 2012, the Board of International Food and Agriculture Development (BIFAD) recognized Gerardine Mukeshimana's achievements by awarding her the prestigious 2012 BIFAD Student Award for Scientific Excellence in a United States Agency for International Development Collaborative Research Support Program. The recognition was based on her contributions to Rwanda's bean breeding program including the identification of genes for drought tolerance and the development of a fast and cost-effective method for screening for drought tolerance mechanisms.

Haimanote Bayabil

Country:
Ethiopia

University:
Cornell University

Department & Degree:
Environmental and Biological Engineering, PhD

US Mentor institution:
Cornell University

CGIAR Mentor Institution:
International Water Management Institute (IWMI)

Research:
Enhancing Rainfall Productivity on Degraded Soils in Northern Ethiopian Highlands using Biochar and Deep Rooted Biofuel Crops.

Email:
hkb24@cornell.edu



The Green Revolution and its positive effect on agricultural systems has always inspired Dr. Haimanote Bayabil. He believes that improved technologies in agriculture not only increase the viability of food production but also save lives. He understands that leadership is not about giving orders, but about listening to stakeholders, modeling exemplary behavior, and motivating others. His motivation for studying agricultural sciences was threefold: to be better exposed to current advances in science and technologies, and their implementation towards solving water scarcity and associated low crop productivity problems; to strengthen his research and computational skills towards conducting sound and feasible research projects intended to promote efficient utilization of rain water; and to broaden his knowledge in the theoretical concepts and practical aspects of the social, economical and ecological factors involved in multidisciplinary management of agricultural and natural resources.

Dr. Bayabil received his Borlaug LEAP Fellowship in 2011. His PhD research was investigating the potential of biochar, charcoal, and biofuel crops to improve runoff-erosion and greenhouse gas from degraded soils in the Ethiopian highlands. His fellowship supported multilevel research and mentoring by Dr. Tammo Steenhuis, Cornell University and Dr. Charlotte MacAllster at the International Water Management Institute (IWMI) and he completed his doctorate in Biological and Environmental Engineering in 2015.

Dr. Bayabil is currently working as a Post-doctoral researcher at Prairie View A&M University in Texas. He plans to return to Ethiopia in the future to use his knowledge and experience to train young scientists in science-based problem solving research with the aim of improving productivity of smallholder agricultural systems.

Jeremiah Okeyo

Country:
Kenya

University:
University of Wyoming

Department & Degree:
Soil Science, PhD

US Mentor institution:
University of Wyoming

CGIAR Mentor Institution:
International Center for Tropical Agriculture (CIAT)

Research:
Assessment of the Effect of Conservation Agriculture Practices on Soil Quality Under Smallholder Conditions in Western Kenya

Email:
jokeyo@uwyo.edu

Former Borlaug LEAP fellow Dr. Jeremiah Okeyo joined the fellowship as a PhD candidate at the University of Wyoming, where he was pursuing a doctorate in Soil Science. His doctoral research focused on conservation agriculture practices and how they influence soil quality and crop productivity under smallholder farmer conditions in East Africa.

Prior to his PhD studies, Dr. Okeyo worked as a research officer with the Tropical Soil Biology and Fertility (TSBF) Institute of CIAT in Nairobi, under its pan-African network, AfNet. They work to promote innovative technologies and information dissemination among researchers, smallholder farmers, and other stakeholders in Africa. Dr. Okeyo completed his Borlaug LEAP Fellowship in the Fall of 2012, after having been mentored by Dr. Jay Norton of the University of Wyoming and Dr. Saidou Koala of the International Center for Tropical Agriculture (CIAT). A Kenyan national, Dr. Okeyo grew up in a rural farming community. He envisions promoting sustainable farming practices among smallholder farmers in Sub-Saharan Africa and looks forward to returning to his native Kenya to teach and conduct research as a way to use the knowledge he learned to give back to his country. Dr. Okeyo completed his PhD in Soil Sciences in 2014 and is currently a Lecturer at Embu College in Kenya.



Mary Njenga

Country:
Kenya

University:
University of Nairobi, Kenya

Department & Degree:
Environmental Science, PhD

US Mentor institution:



Michigan State University

CGIAR Mentor Institution:

World Agroforestry Centre

Research:

Evaluating Fuel Briquette Technologies Using Sawdust and Charcoal Dust from Selected Agroforestry Tree Species for Environmental, Socio-economic and Food Security Implications in Kenya

Websites:

[Cheaper, Safer Cooking with Biomass Briquettes](#)

[Purpose: A film by Mary Njenga](#)

[Researchgate link: Publications by Dr. Mary Njenga](#)

Email:

m.njenga@cgiar.org

Dr. Mary Njenga is a post-doctoral fellow in bio-energy at World Agroforestry Centre (ICRAF) Nairobi, Kenya. She earned a PhD in Management of Agroecosystems and Environment from the University of Nairobi, Kenya where she studied fuel briquette technologies and their implications on greenhouse gases and livelihoods in Kenya. Dr. Njenga's doctoral work was also affiliated with World Agroforestry Centre (ICRAF), Swedish University of Agricultural Sciences (SLU) and Michigan State University (MSU). Her PhD was supported by the Borlaug LEAP fellowship, African Women in Agricultural Research and Development (AWARD), Agropolis fellowship-IDRC, and ICRAF. Njenga used her Borlaug LEAP fellowship to evaluate fuel briquette technologies for environmental, social-economic and food security implications in Kenya. She worked with her US mentor, Dr. John Kerr, Michigan State University on the economic cost-benefit analysis of the technology. Her CGIAR mentor Dr. Ramni Jamnadass, ICRAF, provided guidance on the bio-energy aspects of the project.

For close to a decade now Dr. Mary Njenga has been working with community groups in developing charcoal fuel briquettes, a local innovation that provides a less expensive, cleaner source of cooking energy.

Fuel briquettes are a concept proven local innovation that can provide a cheaper and cleaner source of cooking energy. They consist of organic residues mixed with soil, paper or animal dung as binders. The energy carrier and the binder are mixed with water and this slurry is compacted manually into solid mass and dried in the sun and they are used like charcoal or firewood. Briquettes made from charcoal dust (80%) and soil (20%) burn more regularly and for 4 hours compared to 2.5 hours for pure charcoal, resulting in energy savings. Dr. Njenga's research showed that the cost of cooking a traditional meal with biomass briquettes is 3 Kenya Shillings (US\$0.04) or nine times cheaper than cooking that same meal with charcoal (26 KSH or US\$0.30) and 15 times cheaper than cooking with kerosene (45 KSH or US\$0.60). Her research also showed that the briquettes lower household air concentration of carbon monoxide (CO) and fine particulate matter (PM_{2.5}) to 1/3 and 1/9, of what is emitted by lump charcoal. PM_{2.5} from charcoal briquettes meet WHO standards. The innovation also creates employment, generates income through sales, and institutionally strengthens communities through working together in groups and pooling savings.

Scaling-up fuel briquettes has the potential to improve women's and households' health and well-being and reduce pressure on the environment. Women and youth groups are already

making briquettes in Kenya but are faced with the challenges of lack of investing capital and space to scale-up their production, low quality product and poor market penetration due to low awareness on the multiple benefits to buyers.

Ricardo Marcos de Jesus Maria

Country:

Mozambique

University:

University of Nebraska-Lincoln

Department & Degree:

Agronomy and Horticulture, PhD

US Mentor institution:

University of Nebraska - Lincoln

CGIAR Mentor Institution:

International Center for Research in Agroforestry (ICRAF)

Research:

Nitrogen Use Efficiency and Profitability for Maize and Sorghum Production in Central Mozambique.

Email:

s-rmaria1@unl.edu



{No Bio}

Borlaug LEAP- Past Fellows Directory (Fall 2011)

Barbara Zawedde

Country:

Uganda

University:

Michigan State University

Department & Degree:

Plant Breeding, Genetics and Biotechnology, PhD

US Mentor institution:

Michigan State University

CGIAR Mentor Institution:

International Potato Center (CIP)

Research:

Environmental Risk Assessment and Risk Communication for Introduction of Genetically Modified Sweetpotato in Uganda.

Email:

zawedde@msu.edu



2011 Borlaug LEAP fellow Dr. Barbara Zawedde is currently the Senior Knowledge Management and Biosafety Officer of the National Agricultural Research Organization (NARO) of Uganda. and coordinates activities for Uganda Biosciences Information Center (UBIC), a NARO knowledge and information sharing hub for a biotechnology and biosafety. She also teaches Biosafety, Biopolicy and Bioethics, and Science Communication to university students. She completed her PhD in Plant Breeding, Genetics and Biotechnology with a doctoral specialization in Environmental Science and Policy at Michigan State University in June 2013. Her PhD dissertation was entitled, Environmental risk assessment and risk communication for introduction of genetically engineered sweet potato in Uganda. Dr. Zawedde showed that with effective risk assessment and risk communication, certain products of advanced technologies, such as modern biotechnology, can be integrated into existing agricultural systems to increase productivity for resource-poor farmers without causing any unique risks to the environment.

Dr. Zawedde began her Borlaug LEAP Fellowship in the fall of 2011 and was mentored by Professors Rebecca Grumet, James Hancock and Harris Craig of Michigan State University, and Dr. Marc Ghislain of the International Potato Center (CIP).

Dr. Zawedde is glad to be contributing to: putting in place appropriate policies, capacity building for biosafety compliance, and science communication to promote adoption of relevant and efficient tools for agricultural advancement in Uganda, and Africa in general.
