

Borlaug LEAP- Past Fellows Directory (Spring 2014)

Adanech Yared Jillo

Country:

Ethiopia

University:

Addis Ababa University, Ethiopia

Department & Degree:

Water Resources Engineering and Management, PhD Candidate

US Mentor institution:

University of Illinois, Urbana-Champaign

CGIAR Mentor Institution:

International Water Management Institute (IWMI)

Research:

The Impacts of Water Infrastructure Developments and Climate Changes on the Eco-hydrology of the Omo-Gibe River Basin, Ethiopia

Email:

adanaechyared@yahoo.com



Adanech Yared Jillo is a respected scientist and analyst in her field, but she is also particularly proud to be a woman professional in water resource management. She became a Borlaug LEAP Fellow in the Spring of 2014, and used that opportunity to increase her skills as a researcher in order to pass on her knowledge and experiences on to other women who are interested in becoming part of Ethiopia's science and technology sector.

Her CGIAR mentor, Dr. Alemseged Tamiru, specializes in watershed management and irrigation and he assisted her in creating models and impact assessments of water infrastructure developments. She benefited from hands-on training in simple programming languages, statistical modeling, and software packages on hydrological methods while at the University of Illinois, Urbana-Champaign. She also worked under the supervision of Dr. Murugesu Sivapalan, a professor in both the Civil and Environmental Engineering and the Geography and Geographic Information Departments.

Ms. Jillo wishes to unravel the hydrological variability of the Omo-Gibe River Basin, and study the impacts of water infrastructure development and climate change on the eco-hydrology of the basin, and is incredibly grateful for the support that the Borlaug Leap fellowship gave her. The Omo-Gibe River Basin is Ethiopia's second largest river system, and accounts for 14% of Ethiopia's annual runoff, second only to the Blue Nile River. The Omo-Gibe is one of the most significant water resources in Ethiopia and, as a result, reliable runoff information is hugely important for sustainable management of Ethiopia's water resources. Unfortunately, current runoff information is limited, but Ms. Jillo is focusing her attention on increasing the data available through her research. Her objective is to investigate and determine hydrological variability of the basin, as well as the impacts of water infrastructure development and climate changes on the hydrologic and eco-hydrologic systems of the Omo-Gibe Basin. The vision she has for her country is one where Ethiopia is the breadbasket of Africa, and capable of feeding its

citizens as well as others who may be struggling to obtain food security. She intends to complete her PhD in Water Resources Engineering and Management in 2016.

Allan Bomuhangi

Country:

Uganda

University:

Makerere University, Uganda

Department & Degree:

Environment and Natural Resources Management, PhD Candidate

US Mentor institution:

Pennsylvania State University

CGIAR Mentor Institution:

International Food Policy Research Institute (IFPRI)

Research:

Mapping the Linkages Between Women's Participation in Decision Making and Adaptation to Climate Change Hazards in the Mount Elgon Region

Email:

bomuhangi@forest.mak.ac.ug



Allan Bomuhangi became a Borlaug LEAP Fellow in the Spring of 2014. He is pursuing a PhD in Environment and Natural Resources Management from Makerere University. His research deals with mapping the linkages between women's participation in decision-making and adaptation to climate change hazards in the Mount Elgon region of Uganda. His research objectives include: comparing local peoples understanding of climate change events and their associated hazards in Kapchorwa and Manafwa with scientific climate data, assessing the effects of the "top" ranked climate change hazards (in terms of severity) on the communities with specific emphasis on the gender, examining women's involvement in the decision making process to adapt to climate change hazards within and outside the household, and assessing the suitability of the climate change related policies in lieu of promoting gendered adaptation to climate change.

Bomuhangi was mentored by Dr. Michael Jacobson of Penn State University, and Dr. Ruth Meinzen-Dick of the International Food Policy Research Institute (IFPRI). Bomuhangi's fellowship supported research data collection activities in Uganda and data analysis and he spent approximately six months in the United States working directly with his mentors.

Mr. Bomuhangi is interested in how to address climate change from a gendered perspective. He indicates that while there is a wealth of literature that studies the linkages between gender and other sectors such as the environment, forestry, energy, water, conflicts, and disasters, there is little existing research considering the linkages between climate change and gender. Mr. Bomuhangi believes that the effects of climate change hazards on rural livelihoods may not be different, but how to deal with the hazards have a gender dimension. His study hopes to contribute to narrowing this knowledge gap by providing an understanding of the gender

disaggregate effects of some identified climate change hazards, coping strategies, and how adaptive capacity can be strengthened and supported at household and community levels. This research is particularly important if policy and practice is to respond appropriately to people's needs in specific contexts. He expects to complete his PhD in Environmental and Natural Resource Management in January 2016.

Bernice Ngina Waweru

Country:

Kenya

University:

University of Eldoret, Kenya

Department & Degree:

Plant Breeding and Biotechnology, MSc

US Mentor institution:

University of Minnesota

CGIAR Mentor Institution:

International Maize and Wheat Improvement Center (CIMMYT)

Research:

An Implementation of Nested-Association Mapping for Stem Rust Resistance Genes in Bred Wheat

Email:

wawerungina@yahoo.com



Bernice Ngina Waweru joined the Borlaug LEAP fellowship in Spring 2014 while researching stem rust resistance genes in bred wheat. She explains that wheat (*Triticum Sp.*) is among the most important staples in the world, providing high levels of protein, fiber, starch, and important trace minerals such as zinc and magnesium among others. Kenya is a net importer of wheat, producing only about a third of its total wheat demand, which has been steadily on the rise. The majority of the wheat farmers in Kenya and other African countries are smallholder farmers, who cannot afford use of expensive fungicides to control rust diseases. The best control strategy is the use of resistant varieties, achieved by introgression of identified and effective resistance genes into adopted wheat varieties. Resistant populations were developed in collaboration with her CGIAR mentor Dr. Sridhar Bhavani of CIMMYT, to study resistance to stem rust and to explore for other resistance genes/QTL.

Bernice envisions enhancing the release of superior varieties of wheat through use of technologies like marker-assisted selection, which circumvents breeding cycles, and often leads to reduced costs when effectively implemented. She used her Borlaug LEAP Fellowship to help create successful networks and partnerships with other scientists, and help broaden her scope of knowledge and necessary skills to do future collaborative agricultural research. Her mentors Dr. Anderson of the University of Minnesota, and Dr. Bhavani, currently based at CIMMYT, are both experienced researchers and plant breeders who helped oversee Ms. Waweru's data collection, analysis, and the synthesis of her findings.

Bernice completed her MSc in Plant Breeding and Biotechnology in 2015 and is currently back in Kenya working at KALRO-Njoro as a research scientist. She is working on the Delivering Genetic Gains in Wheat Project, funded in part by the Bill and Melinda Gates Foundation and partners with CIMMYT and Cornell University. The project aims to mitigate the threat caused by climate change and develop heat tolerant rust resistant wheat varieties with adaptation to a wide range of environments.

Brad K. Hounkpati

Country:

Togo

University:

University of Georgia

Department & Degree:

Entomology, PhD Candidate

US Mentor institution:

University of Georgia

CGIAR Mentor Institution:

International Crops Research Institute for Semi-Arid Tropics (ICRISAT)

Research:

Systematic Studies of West African Ladybeetles (Coccinellidae)

Websites:

[Grain de Sel Togo Inc.](#)

[BSBIZTOGO, Inc.](#)

Email:

khoun75@uga.edu



Kwevitoukou (Brad) Hounkpati was the first Borlaug LEAP Fellow to hail from Togo. A Fulbright Scholar and PhD Student in the University of Georgia Entomology Department, Hounkpati is conducting systematic study of the West Africa Coccinellidae (WAC), or West Africa Ladybeetles. There is little known about the WAC and their potential for bio-control programs in Africa. Using predatory ladybeetles as pest control agents as well as the rearing of WAC could generate income, and contribute significantly to improved food security, household livelihoods, and reduced chemical inputs.

His Borlaug LEAP fellowship allowed him to record more than 100 species of WAC and meet with farmers, agricultural extension service officers as well as university and government officials. His research will help produce taxonomic tools including identification keys, field guides, and catalogues of WAC that can be used in bio-control of insect pests. Hounkpati was mentored by Dr. Joseph McHugh at University of Georgia and Dr. Malick Niago Ba at International Crops Research Institute for Semi-Arid Tropics (ICRISAT) in Niger. He expects to receive his PhD in Entomology in December 2016.

Dawit Kebede Zenebe

Country:
Ethiopia

University:
University of Wisconsin, Madison

Department & Degree:
Agriculture and Applied Economics, PhD Candidate

US Mentor institution:
University of Wisconsin, Madison

CGIAR Mentor Institution:
International Food Policy Research Institute (IFPRI)

Research:
Trade Liberalization and Employment in Agro-processing Industries in Ethiopia

Email:
zenebe@wisc.edu



Dawit Kebede Zenebe became a Borlaug LEAP fellow in the Spring of 2014. He used the fellowship to provide support for producing empirical evidence for his research on several important policy questions. He firmly believes that policies which reduce poverty in Ethiopia should also help increase productivity in the agricultural sector and expand off-farm employment. Dawit is investigating whether there will be expansion of employment or if liberalization will lead to de-industrialization.

His research studies the impact of two policy measures that seem to work in opposite directions in terms of influencing employment in agro-processing industries. Trade liberalization measures tend to contract employment in the import competing agro-processing industry; however, there are incentive schemes that promote investment and expansion of the same industry. Dawit has a vision for agriculture-led growth in Ethiopia; where conditions are created that improve the productivity of farmers through expansion of technology adoption and extension services.

Dawit believes in ending the isolation of farming communities by building infrastructures to integrate them into markets. He explains that expanding opportunities for off-farm employment is crucial to help bolster the agriculture sector and its produce inputs, creating more demand for products. His University of Wisconsin-Madison mentor and advisor, Dr. Jeremy Foltz, was well placed to guide Kebede's research in the agricultural and economic aspects of investment and technological changes that result from trade. By working with Dr. Antoine Bouet at IFPRI, Dawit gained a broader perspective of international trade and agro-processing issues in the world, and the theory and practice of trade. He expects to receive his PhD In Agricultural and Applied Economics in 2017.

Elohor Mercy Diebiru

Country:
Nigeria

University:
University of Ghana

Department & Degree:
Plant Breeding and Genetics, PhD Candidate

US Mentor institution:
Cornell University

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

Research:
Floral Induction of Cassava and its Consequences in the Rapid Breeding Cycle of Cassava

Email:
elomercy@yahoo.com



Elohor Mercy Diebiru became a Borlaug LEAP Fellow in the Spring of 2014 for her research on the mechanisms by which cassava plants could be induced flower earlier, with greater flower production, and with better seed set. This process is threefold and began by sampling and extracting tissues of plants grafted in the field environment of Nigeria. She then brought those samples to Cornell University to analyze the carbohydrate, hormone, and FT transcript levels. The second step involved spraying hormone solutions on foliage of the cassava plants at 3, 4, and 5 weeks after planting. The final step is Photoperiodism, or the changing of the length of day and night. Long days are known to promote flowering in cassava, therefore genotypes were planted in a greenhouse with supplemental artificial lighting that supplied dim light conditions in order to extend the day length to 16 hours of light and 8 hours of dark. This research will hopefully shed light on how to encourage earlier flowering, thereby improving the production of cassava for farmers.

Ms. Diebiru's vision for her country is to assist in making agriculture a productive contributor to economic vitality and food security, so that it will attract more investment and as many talented young people to the profession as possible. She hopes her work will bring reforms that add new vitality to agriculture, will be both comprehensive and well packaged in order to address all aspects of agricultural problems, and will add better options for people who grow crops, so that they have the opportunity to lead better livelihoods. Her mentors Dr. Setter of Cornell University and Dr. Kulakow of International Institute of Tropical Agriculture (IITA) are both accomplished scientists in plant breeding, and the involvement helped her gain a better understanding of how to use new tools for crop improvement. Ms. Diebiru expects to complete her PhD in Plant Breeding and Genetics in early 2016.

Ifeoma Irohibe

Country:

Nigeria

University:

University of Nigeria, Nsukka

Department & Degree:

Agricultural Extension Communication, MSc

US Mentor institution:

Michigan State University

CGIAR Mentor Institution:

International Food Policy Research Institute (IFPRI)

Research:

Gender Resilience and Livelihood Strategies to Food Insecurity and Climate Change Impacts on Agricultural Production in the Niger Delta Region of Nigeria

Email:

ifeoma.irohibe@unn.edu.ng



Ifeoma Irohibe is an accomplished academic and skilled researcher, who began as a Borlaug LEAP Fellow in the Spring of 2014. She dreams of a vibrant Nigeria where every person has access to sufficient food, which will help sustain healthy and productive lives. She believes the Borlaug LEAP Fellowship provided her with new inspirations, ideas, and experiences that will help reinvigorate her research on food security and climate change in Nigeria. Dr.

Murari Suvedi, her mentor at Michigan State University, is an expert in agriculture, environment, and natural resource programs, and he worked with her to build her capacity to understand sustainable livelihood strategies that have minimal negative effects on the environment.

Ifeoma also worked with Dr. Suresh Babu at the International Food Policy Research Institute (IFPRI). Dr. Babu worked with Ifeoma to give her hands-on experience in conjunction with her research.

Ifeoma wished to explore the following with her research: ascertain gender differences in their perceptions of climate change; determine gender differences in perceptions of the effects of climate change on food security; analyze gender differences in livelihood strategies to climate change impacts and food insecurity; compare different livelihood strategies across genders in order to achieve a given level of resilience to climate change and food insecurity; ascertain gender differences in adaptation strategies to climate change impacts; determine factors of influencing the effectiveness of livelihood strategies for building resilience to climate change and food insecurity; and discuss policy implications for climate change and food security in Nigeria.

Ifeoma sees climate change as a global concern because of its multifaceted impacts on the environment, livelihoods, and food security. It particularly affects those in countries (like her home country of Nigeria) that largely depend on rain fed farming, and those that are highly dependent on agriculture. She has identified communities on the Niger Delta to be the people who are the most at risk and vulnerable to climate change, and believes that though men and women are expected to feel different impacts from climate change, women may be more vulnerable to its impacts. Ifeoma affirms that a gender perspective of local level climate change resilience and livelihood strategy assessments is overwhelmingly important, especially in order

to inform policy formulation and program development that wishes to anticipate future needs. She received her master's degree in Agricultural Extension Communication in 2015 and has recently begun her PhD studies in the same field at the University of Nigeria, Nsukka, where she is a part of the Environment and Natural Resources Group.

Juliana Nnoko Mewanu

Country:
Cameroon

University:
Iowa State University

Department & Degree:
Sociology and Sustainable Agriculture, PhD Candidate

US Mentor institution:
Iowa State University

CGIAR Mentor Institution:
International Food Policy Research Institute (IFPRI)

Research:
Who is not at the Table: Land Deal Negotiation Process in Southwestern Cameroon

Email:
jnnoko@iastate.edu



Juliana Nnoko-Mewanu is an experienced leader with a history of demonstrated commitment to her community. She is the co-founder of an all girls primary school, which focused on the development of skills in Science, Technology, Mathematics and Engineering, an NGO called Educational Solutions, and has worked on several International Chamber of Commerce (ICC) national committees. She was accepted as a Borlaug LEAP fellow in the Spring of 2014 to support her research examining the conditions under which communities in Cameroon have access to adequate information and institutional capabilities to effectively negotiate terms in land transactions or refuse land deals. Her mentor, Dr. Robert Mazur, of Iowa State University, is a leading authority on sustainable livelihoods strategies and is the founding Director of the Center for Sustainable Rural Livelihoods at Iowa State. Dr. Nnoko-Mewanu's CGIAR mentor, Dr. Ruth Meinzen-Dick of IFPRI, has expertise in local social-relational dynamics involving agricultural transactions and collective property rights, and she helped guide Dr. Nnoko-Mewanu's analysis of this issue.

Dr. Nnoko-Mewanu's research continues to combine qualitative and quantitative methods in order to yield important insights regarding social relations at the community level given village capabilities, access to institutions, and existence of a good working relationship among local institutions, private business sectors and governments. Her research objectives are to evaluate the effect of village level factors (access to authority, information, social capital, and financial capital) on negotiations of land deals, and to examine how support for or opposition to land transactions reflects discursive responses of local influences rather than substantive dimensions of land deals, in order to understand reaction patterns to land deals.

She hopes her research will contribute to policies on collective tenure rights in Cameroon, and strengthen local inclusion in negotiations of commercial land deals. Her research may also enhance the capacity of local communities to define and communicate their priorities during negotiations of commercial land contracts that are legally binding and consistent with local needs. This would ensure continued access and availability of food and cash crops within an affected area. Dr. Nnoko-Mewanu successfully defended her PhD in Sociology and Sustainable Agriculture in December of 2015 and graduated from Iowa State in August 2016 and is currently working for Human Rights Watch in Cameroon as a researcher on the connection between women and land in sub-Saharan Africa.

Rabson Mulenga

Country:

Zambia

University:

University of Nairobi, Kenya

Department & Degree:

Crop Protection, MSc

US Mentor institution:

Texas A&M University, AgriLife Research and Extension Center

CGIAR Mentor Institution:

International Institute of Tropical Agriculture (IITA)

Research:

Characterization and Molecular Detection of Cassava Mosaic Begomoviruses in Zambia

Email:

rabson2012@gmail.com



After completing his Bachelor's degree in Biological and Chemical Sciences, Rabson Mulenga began working in 2005 as a Research Officer at the Zambian Agricultural Research Institute (ZARI), in the Plant Protection and Quarantine Division. Due to his compelling research and strong leadership skills displayed throughout his professional and academic careers, he was accepted in the Spring of 2014 as a Borlaug LEAP Fellow.

As a part of the fellowship, Mr. Mulenga worked with two mentors. Both of Mr. Mulenga's mentors are accomplished scientists and academics. Dr. James Legg of the International Institute of Tropical Agriculture (IITA) has vast experience working with cassava viruses and aspects of Cassava Mosaic Begomovirus (CMB) whitefly vector interactions, and Dr. Olufemi Alabi of Texas A&M University, AgriLife Research and Extension Center is known as the first scientist to develop a multiplex PCR assay for the simultaneous detection of CMBs in cassava. Each mentor was committed to providing the necessary guidance to Mr. Mulenga as he studied what he hopes will eventually become the production of virus free planting materials for Zambian cassava farmers.

With support from the Borlaug LEAP Fellowship, Mr. Mulenga believed that the knowledge and experience gained through his proposed research will contribute to the attainment of a national

vision of improved food security at the household level. This will hopefully be achieved through the development of reliable and robust disease diagnostic tools that can be used in early and cost effective diagnoses of CBMs in planting materials. In the future, he hopes to halt the spread of diseases and outbreaks through planting materials being supplied to farmers. Mr. Rabson completed his Master's in Crop Protection in August 2015.

Winfred Baptist Mbungu

Country:

Tanzania

University:

Virginia Tech University

Department & Degree:

Biological Systems Engineering – Land and Water Resources Engineer

US Mentor institution:

Virginia Tech University

CGIAR Mentor Institution:

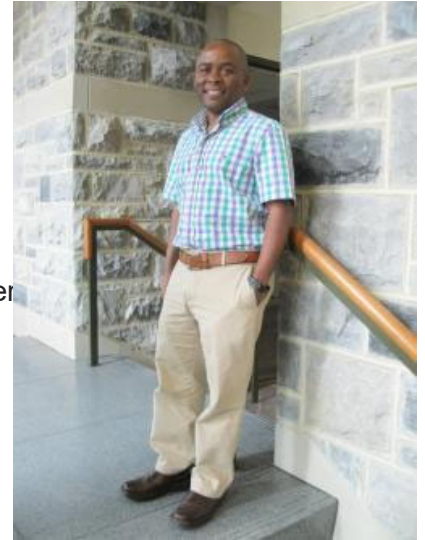
International Water Management Institute (IWMI)

Research:

Impacts of Land Use and Climate on Hydrology and Sediment Yield of the Upper Ruvu Watershed in Tanzania

Email:

Winfred@vt.edu



Winfred Mbungu understands that watershed management is a challenging problem in developing countries, including his home country of Tanzania. There are increasing demands for resources, and the vulnerability of natural resources is accelerated by land use, groundcover changes, and climate changes. He is working on researching watershed management by providing tools for evaluating the effects of land use and climate scenarios based on water balance, water availability, erosion and landscape degradation, and agricultural production. The availability of this information will help resource managers effectively develop plans, be able to manage resources for sustainable environment, and increase agricultural production thereby ensuring food security. In support of his research, Mr. Mbungu was awarded a Borlaug LEAP fellowship in the Spring of 2014. Dr. Conrad Heatwole of Virginia Tech University and Dr. Tracy Baker of the International Water Management Institute (IWMI), supervised his work and gave him greater insight into his methodology and .

Mr. Mbungu used a modeling approach to quantify the impacts of land use, groundcover, and climate change on water and sediment yield at the watershed scale. His research is organized around five specific objectives. The first involved designing and implementing a hydro-meteorological network using paired research watershed to characterize flows and sediment loads from the upstream watersheds. The second objective is to investigate spatial and temporal variability of hydro-meteorological variables and human induced activities and their impacts on water resources. The third step is to characterize and assess spatial and temporal changes in land use, cover, and land degradation in the study area and develop land use and cover scenarios. The fourth objective is to develop climate change scenarios for the study area

and assess impacts of climate change on hydrology. The final step is to develop and evaluate spatially descriptive hydrology and sediment transport watershed models that will reflect surface and groundwater interaction and responsive to land use and climate variation in the watershed. Mr. Mbungu plans to complete his PhD in Land and Water Resources Engineering in 2016.

Yonas Girma Abebe

Country:

Ethiopia

University:

Addis Ababa University, Ethiopia

Department & Degree:

Water Resources Engineering and Management, PhD Candidate

US Mentor institution:

Montclair State University

CGIAR Mentor Institution:

International Water Management Institute (IWMI)

Research:

Impact of Climate and Land Use/Cover Changes on the Hydrology of Lake Hawassa Watershed (Central Ethiopian Rift): Toward Sustainable Water Resource Management

Email:

yonas.girma@uconn.edu



Yonas Girma Abebe has had a passion for engineering science and biology since high school, and strongly believes that education challenges people to change their environment for the better. He has witnessed the first hand results of proper irrigation doubling the productivity of local farmers with nothing but their existing resources and simple water management techniques. Because agriculture is the greatest water consumer in the country, he believes that increasing demand for water by municipal, industrial, and power generation plants, in addition to the ecological and agricultural needs, calls for prudent utilization of our already dwindling water resources. His overarching desire is to study this valuable resource because it is vital for sustainable resource management.

Mr. Girma became a Borlaug LEAP Fellow in the Spring of 2014 while conducting research on Lake Hawassa, a closed fresh water lake that acts as the main water source for hundreds of thousands of people. His main objective was to identify the impacts of land use and cover (LULC) on the Lake Hawassa catchment by developing a quantitative tool that can adequately simulate surface and ground water resources, and characterize and estimate hydrologic fluxes for water resource management applications under change. Montclair State University in New Jersey and the International Water Management Institute (IWMI) provided the opportunity for Mr. Girma to accumulate valuable knowledge and skills during his time as a Borlaug LEAP fellow. He intends to transfer those skills and knowledge back to his home institution, and, eventually, to the people of Ethiopia. Both Dr. Clement Alo of Montclair State University, and Dr. Tracy Baker of IWMI have had years of experience in hydrologic modeling and ensured

that Abebe's research received the highest quality of support and supervision. Mr. Girma plans to complete his PhD Water Resources Engineering and Management by the end of 2015.

Borlaug LEAP- Past Fellows Directory (Fall 2014)

Abdullahi Abdulkareem

Country:
Nigeria

University:
Ahmadu Bello University, Nigeria

Department & Degree:
Crop Protection, MSc Candidate

US Mentor institution:
Mississippi State University

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

Research:
Occurrence, Distribution, and Characterization of *Xanthomonas axonopodis* pv. *Dieffenbachiae*, the causal agent of bacterial leaf blight of cocoyam in North Western Nigeria

Email:
aabdullahi2015@gmail.com



In his youth, Abdullahi Abdulkareem admired great scientists like Louis Pasteur and Isaac Newton. Learning about their achievements and contributions to the world inspired him to become a scientist who would also make a positive impact on the lives of people around the globe. Naturally, his interest was initially focused on medicine and public health, but during his undergraduate years at Ahmadu Bello University in Nigeria he realized there was a significant need for more scientists to be engaged in the agricultural sector. He graduated with a Bachelors of Science in Agriculture with First Class Honors in 2009 and was offered a position as an Assistant Lecturer in 2011.

In Fall 2014, Mr. Abdulkareem was accepted into the Borlaug LEAP Fellowship in support of his Master's research on the Occurrence, Distribution, and Characterization of *Xanthomonas axonopodis* pv. *dieffenbachiae*—the causal agent of bacterial leaf blight for cocoyam in North Western Africa. Cocoyam is one of the most commonly consumed foods and a crop of major economic importance in Nigeria. Mr. Abdulkareem will be working with Dr. Shien Lu of Mississippi State University, a specialist in plant bacteriology and experienced in molecular characterization and sequencing, and Dr. Ranajit Bandyopadhyay at the International Institute of Tropical Agriculture (IITA), an established scientist who has worked as a plant pathologist for several decades.

Blessing Odogwu Nwokocha

Country:

Nigeria

University:

Makerere University, Uganda

Department & Degree:

Plant Breeding and Biotechnology, PhD Candidate

US Mentor institution:

Michigan State University

CGIAR Mentor Institution:

International Center for Tropical Agriculture (CIAT)

Research:

Resistance to Rust (*Uromyces appendiculatus* (Pers.Pers.) Unger.] in Common Bean (*Phaseolus vulgaris*) in Uganda

Email:

blessing.odogwu@uniport.edu.ng



Blessing Odogwu Nwokocha is passionate about discovering new ways to address the threat rust disease poses to food security in Africa. Though originally from Nigeria, Blessing made the decision to pursue her education at Makerere University in Uganda—one of the premier universities for plant breeding in the region. A common remedy for rust diseases are fungicide treatments, and while relatively effective, Blessing understands that such approaches are often expensive and leave smallholder farmers with few alternatives for dealing with infected crops. Instead, she thinks breeding rust resistant varieties is the most practical and sustainable solution for smaller and more vulnerable farms. Blessing has worked as an Assistant Lecturer at the University of Port Harcourt in Nigeria since 2007, and was a Fellow with the African Women in Agricultural and Research Development (AWARD).

Blessing was awarded a Borlaug LEAP Fellowship in the fall of 2014 for her research titled: Resistance to Rust (*Uromyces Appendiculatus* (Pers.Pers.)Unger.) in Common Bean (*Phaseolus vulgaris*) in Uganda. The common bean, which has been a major food security crop and source for income to Ugandans for over 40 decades, has been experiencing decreasing yields in recent years. These losses are attributed to abiotic and biotic disease factors that Blessing aims to quantify and characterize in hopes of identifying sources of resistance. Her mentors, Dr. James Kelly of Michigan State University, and Dr. Clare Mukankusi of the International Centre for Tropical Agriculture (CIAT), are both experienced plant breeders who will assist her with her experiments, analysis, and the evaluation of rust disease in the common bean. Dr. Kelly is a distinguished professor of Michigan State University with over a hundred publications on dry bean and common bean characterization and breeding. Dr. Mukankusi has been a plant breeder with CIAT for 5 years and has published several articles and papers concerning common bean, as well as published a book on common bean improvement in 2011.

Chewe Nkonde

Country:
Zambia

University:
Michigan State University

Department & Degree:
Community Sustainability, Development and Policy, PhD Candidate

US Mentor institution:
Michigan State University

CGIAR Mentor Institution:
International Food Policy Research Institute (IFPRI)

Research:
Land Use Dynamics and Agricultural Mechanization in the Context of Rising Large Landholders: Implications for Agricultural Development in Zambia

Email:
chewenkonde@gmail.com



Chewe Nkonde's passion for agricultural science and food security was ignited during his undergraduate training at the University of Zambia. As a Soil Science major, he was exposed to laboratory work and field experiments for the first time, and became committed to raising the level of agricultural scientific research in Zambia. He currently on sabbatical from his position as a Lecturer at the University of Zambia and is working as a Graduate Research Assistant in the Department of Food and Resource Economics at Michigan State University. Mr. Nkonde believes that certain countries in Africa are experiencing a rise in large farms over the more traditional smallholder farms. There is a lot of communal land shared between small farmers, but large farms are becoming more common. While they do have the potential to improve knowledge and promote innovation in the agricultural sector, as well as increasing overall production, they will most certainly have an impact on the smallholder farmers. He is interested in seeing what impact (if any) the larger agricultural complexes of Zambia will make on the smallholder farms and if there is anyway to mitigate potential negative effects.

Mr. Nkonde became a Borlaug LEAP Fellow in the Fall of 2014 based on his research titled: "Land Use Dynamics and Agricultural Mechanization in the Context of Rising Large Landholders: Implications for Agricultural Development in Zambia." He has become increasingly frustrated with the farming issues and the land distribution practices emerging around the world, since he learned about them after attending a conference. This is also where he met his US mentor, Dr. Thomas Jayne, of Michigan State University. Following a short conversation, it became clear that he and Dr. Jayne had several overlapping interests, which has evolved into his current research on land distribution and the rise of emerging farming states in countries like Zambia. Dr. Jayne has mentored dozens of young African professionals in the past and has played a major role in building Michigan State's partnerships with African research institutes. Mr. Nkonde also worked with Dr. Frank Place, currently at the International Food Policy and Research Institute (IFPRI). Dr. Place is a research scientist who has worked at the University of Wisconsin, as well as the World Bank, on issues relating to land tenure. Both mentors lent their insights and expertise to Mr. Nkonde's qualitative research, data collection, and analysis. Mr. Nkonde expects to complete his research and earn his degree by the end of 2015.

Chinyere Florence Anagbogu

Country:
Nigeria

University:
University of Ibadan, Nigeria

Department & Degree:
Plant Genetics, PhD Candidate

US Mentor institution:
University of California, Davis

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

Research:
Exploring the Chemical Diversity of *Coffea canephora* in Nigeria for Genomics Quality Improvement

Email:
flora2na@yahoo.com

Chinyere Florence Anagbogu hopes to address the issue of food security in Nigeria from multiple angles, and her approach begins with coffee. Due to changes in climate and new agricultural priorities made by the Nigerian government, coffee is becoming a very important crop in her country. Ms. Anagbogu would like to develop a better quality coffee crop in order to help Nigeria become more competitive within the international coffee market. By improving coffee quality, new markets may be created, and the living standard of rural coffee farmers can be improved. According to Ms. Anagbogu, nearly 2.25 billion cups of coffee are consumed worldwide everyday, so quality coffee with unique taste profiles is in high demand. She hopes making Nigeria a new coffee export hotspot will have a variety of impacts on the lives of smallholder farmers, and the broader Nigerian economy. Ms. Anagbogu presently works as a Research Officer at the Cocoa Research Institute of Nigeria, carrying out the evaluation of coffee quality in Nigeria.

Ms. Anagbogu was accepted as a Borlaug LEAP Fellow in the Fall of 2014 in support of her research titled: Exploring the Chemical Diversity of *coffea canephora* in Nigeria for Genomics Quality Improvement. She is currently at the University of California, Davis and is working with her US mentor Dr. Diane Beckles. Dr. Beckles heads a lab at UC Davis that aims to develop a better understanding of the synthesis, degradation and inter-conversion of starch and sugars in plants. She will be assisting Ms. Anagbogu with DNA synthesis as well as gene expression analysis and sequencing throughout her stay. Dr. Ranjana Bhattacharjee, currently at the International Institute of Tropical Agriculture (IITA), will also be working with Ms. Anagbogu to isolate DNA, help her to prepare samples, analyze data, and develop her dissertation. Dr. Bhattacharjee is a Molecular Geneticist with a specialization in molecular breeding, and will be overseeing Ms. Anagbogu's RNA and DNA isolation and sample preparation. Ms. Anagbogu's goal is to complete her degree by the end of 2015.



Elias Balimponya

Country:

Tanzania

University:

The Ohio State University

Department & Degree:

Horticulture and Crop Science, MSc Candidate

US Mentor institution:

The Ohio State University

CGIAR Mentor Institution:

International Rice Research Institute (IRRI)

Research:

Application of Genomic Selection and Association Mapping to Breeding for Resistance to Rice Blast and Bacterial Blight of Rice (*Oryza sativa* L.) in East Africa

Email:

balimponya.1@buckeyemail.osu.edu

Elias Balimponya is studying how to breed disease-resistant rice in the Department of Horticulture and Crop Sciences at Ohio State University. He believes rice is the second most important crop in Tanzania, based on the rate at which white rice is consumed and produced, and based on its nutritional value. There are currently several constraints facing rice production in Tanzania—particularly pests, diseases, and the growth of rice varieties that are not adapted to the Tanzanian environment, so Mr. Balimponya feels that working on breeding rice that is resistant to diseases like blast and bacterial blight could have significant positive impacts on communities in Tanzania. He feels that if improvements can be made to the resilience and nutrition of rice, it would improve not only the economic value of local rice, but also the general health of the Tanzanian public. Before pursuing his degree, Mr. Balimponya worked as a Production Supervisor at Amboni Plantations Ltd.

Mr. Balimponya was accepted as a Borlaug LEAP Fellow in the Fall of 2014 for his research on genomic selection and association mapping to breeding for resistance to rice blast and bacterial blight of rice. His US Mentor is Dr. Clay Sneller of The Ohio State University, an experienced geneticist who has worked on wheat breeding, plant stress molecular biology, and genomics since 1991, and is well versed in genomic association methods and the plant breeding process. Mr. Balimponya will also spend a month working with Dr. Bo Zhou, a plant pathologist at the International Rice Research Institute (IRRI). Dr. Zhou will be assisting Mr. Balimponya with additional training in different software and technologies used in the genomic selection and association analysis process.



Francis Kemeze

Country:
Cameroon

University:
University of Ghana

Department & Degree:
Applied Agricultural Economics and Policy, PhD Candidate

US Mentor institution:
The Ohio State University

CGIAR Mentor Institution:
International Water Management Institute (IWMI)

Research:
Better Use of Weather Index Insurance in Managing Climate Variability in Climate Change for Smallholder Farmers in Ghana

Email:
kefrhy@gmail.com



Francis Kemeze is concerned with how rapid urbanization and population growth is going to affect the world's food security over the next 50 years. His vision is to transform agriculture in order to feed the growing global population, and thereby provide a basis for economic growth and poverty reduction. As climate change and climate variability make that task more difficult, achieving agricultural development goals through climate mitigation and adaptation strategies will become necessary. In response to how extreme weather patterns can impact a nation's agriculture and the livelihoods of smallholder farmers, Mr. Kemeze's main research objective is to investigate the usefulness of Weather Index Insurance as a tool for managing credit risk, stimulating adoption of improved technology, and assuring smallholder farmer income in Ghana. He believes his study has the capacity to enhance food security by improving agricultural technology transfer, mitigating the risk confronting small-scale farmers who are reluctant to adopt potentially profitable new technologies, and providing financial mechanisms to allow credit constrained farmers to adopt improved technology.

In the Fall of 2014, Mr. Kemeze was awarded a Borlaug LEAP fellowship for his research titled: Using Weather Index Insurance to Manage Climate Variability and Promote Adaptation to Climate Change among Smallholder Farmers in Ghana. His mentors were Dr. Mario Miranda of the Ohio State University, and Dr. Pamela Katic of the International Water Management Institute (IWMI). Dr. Miranda has been with the Agricultural, Environmental and Development Economics department of Ohio State University since 1988. During that time, he has extensively researched computational modeling of stochastic and dynamic economic systems with applications to agricultural risk management and insurance in developing countries. Dr. Katic has published several technical papers in various economic, hydrological and labor journals relating to water management in West Africa. Both mentors will be offering the benefits their experience and insights as agricultural economists to Mr. Kemeze's research.

Jemima Adepehin

Country:

Nigeria

University:

Federal University of Technology, Akure, Nigeria

Department & Degree:

Food Science and Technology, PhD Candidate

US Mentor institution:

University of California, Davis

CGIAR Mentor Institution:

International Crops Research Institute for Semi-Arid Tropics (ICRISAT)

Research:

Sourdough Fermentation of Three Nigerian Cereals Supplemented with Soybean Flour for Breadmaking

Email:

joadepehin@gmail.com



Jemima Adepehin has a vision for agricultural research and development in Nigeria to become a versatile sector that sparks the nation's economy, and directly impacts the lives of citizens by meeting demands for food. She dreams of a Nigeria where everyone is fed and foods are locally sourced, instead of relying on costly imports that disturb and weaken internal markets. By making Nigerian agricultural markets more competitive, she hopes to help Nigeria overcome its dependency on petroleum exports and turn agriculture into a major foreign export. Jemima presently works as a Program Officer for the Upline Research Foundation, facilitating development programs and engaging in development projects targeted toward farmers. In addition, she recently completed a fellowship with the African Women in Agricultural Research and Development (AWARD).

Jemima's research contributes directly to her dreams of a more economically viable and independent Nigeria. Since her time as an undergraduate student at the Federal University of Technology in Akure, she has been studying the use of different flour supplements as a means of making bread. Her current topic is, "sourdough fermentation of three Nigerian cereals supplemented with soybean flour for bread-making" based on the fact that soy is a popular crop in Nigeria and it may provide better support for farmers than wheat, as much of the wheat in Nigeria is imported. Jemima will be working on collecting and analyzing data with Dr. Odeny Damaris of the International Crops Research Institute of Semi-Arid Tropics (ICRISAT), who is a specialist in biotechnology, and a 2010 Fellow of the African Women in Agricultural Research and Development (AWARD). Jemima is currently at the University of California, Davis, executing her experiments with Dr. Glenn Young of the Plant Pathology Department. He heads a team of researchers studying food-borne diseases and bacterial pathogens through plant genetics and molecular biology at the University. She expects to complete her degree in December 2015.

Silvano Ocheya

Country:

Kenya

University:

Texas A&M University, AgriLife Research and Extension Center

Department & Degree:

Plant Breeding, PhD Candidate

US Mentor institution:

Texas A&M University, AgriLife Research and Extension Center

CGIAR Mentor Institution:

International Maize and Wheat Improvement Center (CIMMYT)

Research:

Identification of Single Nucleotide Polymorphic Markers Linked to Drought Tolerance QTL in Texas Wheat and Introgression of the QTL into Spring Wheat Adapted to Africa

Email:

sassanga@neo.tamu.edu



Silvano Ocheya is interested researching how to develop resilient crop varieties that can withstand stresses in nature, particularly drought. He has always felt connected to this kind of research because he grew up in a small village in Kenya, and lived with other farmers who helped develop his passion for quality agricultural work. He believes his research is important because Kenya has been facing more frequent and extensive periods of drought. Common solutions such as irrigation are not typically utilized option due to water scarcity concerns. These issues make breeding drought resistant plants necessary for farmers to maintain their yields and remain competitive with the public demand for food. He believes that maintaining or even raising the yields of farmers through breeding drought resistant crops will help improve the nation's financial situation as well as the individual livelihoods of smallholder farmers. Prior to his Ph.D studies, Mr. Ocheya worked as a Research Officer at the Kenya Agricultural Research Institute (KARI) and a Research Associate at CIMMYT.

Mr. Ocheya was awarded a Borlaug LEAP Fellowship in the fall of 2014 for his research titled: Identification of Single Nucleotide Polymorphic Markers Linked to Drought Tolerance QTL in Texas Wheat and Introgression of the QTL into Spring Wheat adapted to Africa. He has a very good relationship with both of his mentors and indicates that they have been working collaboratively even before his Borlaug LEAP award. His US mentor, Dr. Shuyu Liu of the University of Texas A&M, is a geneticist who is assisting him with QTL mapping and drought tolerance. His CGIAR mentor, Dr. Sridhar Bhavani of CIMMYT, is a plant pathologist and biologist, who will be advising Mr. Ocheya in biotics, as well as how to breed resistance to things like stem rust. Dr. Shuyu Liu has over a decade of agricultural research experience with expertise in molecular mapping of genes/QTL associated with important traits of crops, identification, validation and application of molecular markers linked to traits of interest, molecular cloning of genes linked to important traits, and marker-assisted breeding to develop germplasm lines and cultivars in Small Grains and Common Bean. Dr. Bhavani works in close collaboration with KARI scientists on large-scale trials screening wheat lines for resistance to Ug99, the new and virulent strain of stem rust that emerged in Uganda in 1999.

Sylvester Addy

Country:
Ghana

University:
University of Ghana

Department & Degree:
Plant Breeding, PhD Candidate

US Mentor institution:
Michigan State University

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

Research:
Genetic studies on cooking time for improved nutritional composition and increased utilization of cowpea

Email:
vestera2000@yahoo.com

Sylvester Addy has always been an individual with many questions. His love for sciences comes from its innate ability to discover answers to “why” and “how” things happen. He was inspired to become involved in questions concerning food security during his first degree at the University of Ghana, where he studied in the Crop Sciences Department, and sought to find new solutions for obtaining sustainable food security in his country. Mr. Addy has worked for the Crops Research Institute in Ghana since 2008, starting as a co-investigator on food security projects and growing to become the Head of Division and Director of the Crops Research Institute in Kumasi, Ghana in 2011.

Sylvester Addy became a Borlaug LEAP Fellow in the fall of 2014 for his research on reducing the cook time of cowpeas. Currently, the production of cowpeas in Ghana is stagnating, and Mr. Addy believes part of that may be related to a drop off in consumption because of their long cooking time. Cowpeas are an important crop because of their high nutritional value and protein content. Mr. Addy thinks developing nutrient rich (low phytate) cowpea varieties with reduced cooking time will increase the amount of households that consume cowpeas, have the additional benefits of creating more demand for cowpea farmers, and thereby incentivize cowpea production. Mr. Addy is working with Dr. Karen Cichy at Michigan State University, a research geneticist with expertise in dry bean genetics, who will be offering support to his research in phytates as well as assist with PCR analysis. Dr. Boukar at International Institute of Tropical Agriculture (IITA) has been a plant breeder for over a decade, and will offer his knowledge and experience in cowpea breeding strategies to Mr. Addy’s research.



Tamrat Degefa

Country:
Ethiopia

University:
Addis Ababa University, Ethiopia

Department & Degree:
Veterinary Obstetrics and Gynecology, PhD Candidate

US Mentor institution:
Iowa State University

CGIAR Mentor Institution:
International Livestock Research Institute (ILRI)

Research:
Characterization of Ovarian Follicular Dynamics, Superovulatory Response, and Quality of In Vivo Derived Embryos from Unimproved Boran and Boran X Friesian Cattle in Ethiopia.

Email:
risaa2008@gmail.com



Tamrat Degefa specializes in gynecology and veterinary medicine, specifically where it concerns dairy research. The purpose of his research is to support animal breeders by researching embryonic transferring as a viable breeding technology in Ethiopia. He is particularly interested in improving the reproductive performance of Boran cattle by characterizing their ovarian dynamics. Mr. Degefa believes his research will be immensely helpful to cattle breeders in Ethiopia due to the nation's large quantity of livestock, but relatively low labor productivity. He believes his breeding strategies between Boran and other exotic cattle may increase the milk productivity from 4-6 liters to 8. He hopes to affect livestock productivity and bring some positive changes to the urban small-scale dairy farmers of Ethiopia. Mr. Degefa works as a researcher with the Ethiopian Institute of Agricultural Research in Debre Zeit since 1999, focusing on dairy cattle improvement and reproductive management.

Mr. Degefa is in personal contact with both of his mentors. He began working with Dr. Curtis Youngs, his US Mentor from Iowa State, in 2013 while developing the biotech aspects of his Boran cattle breeding research. Dr. Youngs has been publishing research on embryo transfers in livestock since 2001. Mr. Degefa's CGIAR mentor, Dr. Azage Tegegne of the International Livestock Research Institute (ILRI), is known to be a premier scientist on Boran research, and will act as an essential source of knowledge as Mr. Degefa proceeds with his experiment. Dr. Tegegne has over 20 years of experience in university teaching, research, extension and development activities, with a specialization in animal reproduction. He expects to complete his PhD in Veterinary Obstetrics and Gynecology in 2016.
