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2023 FELLOWS MASTERCARD FOUNDATION – EARTH UNIVERSITY FELLOWSHIP PROGRAM

Yamikani Funsani

Country: Malawi

Track: Agricultural Employment

Position: Junior Advisor

Host company/organization: GIZ Malawi

About position: Yamikani provides technical advice to young women and youths to promote good agricultural practices to enhance production. He also supports them to establish cooperatives to facilitate collective marketing of farm products and access to inputs.



Bio: Yamikani completed a graduation Project called “Assessment of Heavy Metal Contamination in Costa Rican Soils and Validation of Analytical Method Using Inductively Coupled Plasma (ICP)”.

“I chose this project because during my internship I worked with an agricultural lab that was analyzing different soils in Malawi, and I also have a plan to do my masters in the same field hence I found it flexible to work with the project as it was familiar and attracted my interest.”

Yamikani did his internship in Malawi, at Farming and Engineering Services Agrilab, an organization that sells agricultural equipment and offers agricultural services and consultation. *“I chose this internship because I could go home and get familiar with the industrial work environment in Malawi. I also wanted to make connections that may help me in future for job opportunities. I now have a better understanding of how everything works in the real world. I learned to use many advanced instruments for soil analysis. The experience was quite phenomenal.”*

At EARTH, Yamikani led professional work experience with first- and second-year students working with agricultural services, specifically in the entomology scenario. *“As a manager or leader, I realized how important it is to have patience, understanding, and ability to convince them that the work we do is for our mutual benefit. It was a challenge that left me with many lessons and improved my interpersonal skills.”*

He is confident that EARTH taught him to work hard. *“The most precious thing that EARTH University taught me was that without discipline no one can prosper in any environment.... when you work hard, this can push you further to prosperity, and I will use that for the rest of my life in any professional aspect.”*

As a Fellow for the Mastercard Foundation – EARTH University Fellowship Program, Yamikani is gaining professional experience at GIZ in Malawi on a program called More Income and Employment in Rural Areas (MEIRA). He works as a Junior Advisor focused at giving technical advice to different agribusiness start-ups supported by the MEIRA program.

Yamikani was sponsored courtsey of the W. K. Kellogg Foundation. In his words, he mentions:



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“I would like to extend my gratitude for the unique scholarship opportunity that the Kellogg Foundation gave me to study in Costa Rica. While I was at EARTH, I participated in a variety of programs that prepared me to be an agent of change. I am confident that these programs are of great use to my country.”

Eric Murwanashyaka

Country: Rwanda

Track: Agricultural Innovation through Science and Research

Position: Teaching & Research Assistant

Host company/organization: Rwanda Institute of Conservation Agriculture (RICA)

About position: In his dual role as a teaching and research assistant, Eric is responsible for conducting field labs for first- and second-year students at RICA as well as providing technical support for soil sample collection and analysis in RICA’s Agricultural fields and neighboring communities.



Bio: For his graduation, Eric conducted a graduation Project called “Comparing Walkley-Black and Dumas Methods for Quantification of Soil Organic Carbon in Costa Rican Soils.”

In 2021, he completed a 15-week professional internship in Canada at McGill University’s agriculture and natural resources department. His internship focused on learning more about the role of soil microbiology to increase soil fertility and reduction of greenhouse emissions from the atmosphere. *“The internship helped me understand microorganisms for soil health and agriculture production. I gained experience in research to continue my graduation project. Besides his research work, Eric also volunteered with a local community organization that supports underprivileged people to access quality and nutritious foods to address food security and malnutrition challenges in the area. “Through this experience I was able to learn to work with culturally diverse people and how they valued the entire production system, including management of food waste.”*

As part of his fourth-year work experience, Eric worked in the Academic Farm with the fertigation unit where he created a system that minimizes fertilizer waste in the fields of crops like plantain, maize, watermelon, and sugar cane. It worked well by improving productivity at reduced farm costs. He also trained first- and second-year students about this irrigation technology, and further helped to replicate the model with farmers in a local community through their cooperative. *“Through these experiences, I learnt how to apply leadership and effective communication skills that have proven to be relevant in my day-to-day work with stallholder farmers in the Eastern Rwanda.”*

For his Fellowship with the Mastercard Foundation – EARTH University Fellowship Program, Eric is working at RICA focusing on soils microbiology research. He is also a teaching and research assistant, responsible for conducting field labs for first- and second-year students as well as providing technical support for soil sample collection and analysis in RICA’s Agricultural fields and neighboring communities.



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To his donors, the W.K Kellogg Foundation, he wants to say “*Thank you for what you did financing my education and for helping so many others around the world. You are making the world a better place. I hope to replicate what you have given me to others so as to help them reach their goals.*”

Stella Esenam Ruber

Country: Ghana

Track: **Agricultural** Innovation through science and research.

Position: Research Assistant

Host company/organization: International Institute of Tropical Agriculture (IITA)

About position: Stella provides technical assistance to Plant Protection and Regulatory Services Directorate (PPRSD) of MoFA designing data collection tools for pests of various crop value chains. She is also involved in undertaking evaluation of *beauveria bassiana* fungus on cabbage as well as facilitating the importation of beneficial organisms for selected value chains.



Bio: For her graduation project, Stella worked on “Elaboration of an Integrated Pest Management (IPM) Manual for some Important Food Crops in Ghana.” The project involved developing an IPM manual for important pests to maize, groundnut, and rice. The manual contains descriptions of each pest, its life cycle, and its damage, as well as different control methods that can be used by farmers in rural communities in Ghana to reduce the pest population.

Stella completed her third-year internship at the University of Florida under the Department of Entomology and Nematology on a collaborative project in the Fruit and Vegetable Laboratory. Her research focused on pesticides, integrated pest management, and insect pest identification. She also evaluated the effect of the southern red mite on the production of southern highbush blueberries and conducted lab experiments to control its population. “*It was an interesting moment for me as it was the first time I got to do such a project,*” she reflects. “*I challenged myself and the results were great. I learned new things, achieved the goal, and I also made new connections.*” Overall, the internship helped Stella develop new skills and knowledge on IPM.

For her 4th year University professional work experience, Stella worked with vanilla farmers to learn about vanilla production and to share her experiences about different approaches to control common pests affecting the crop. With the farmers, she was able to create videos of compost preparations, organic insecticides, and natural fertilizers to make this information readily and digitally accessible.

After graduation from EARTH, Stella was accepted into the Mastercard Foundation – EARTH University Fellowship Program as a member of the third cohort. She was placed to work as Research Assistant at (IITA)-Ghana under the Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) value chains project. Her roles involve providing technical assistance to Plant Protection and Regulatory Services Directorate (PPRSD) of the Ministry of Food and Agriculture of Ghana (MoFA) and the Center for Agriculture and Bioscience International (CABI) in designing data collection tools for pests of various crop value chains. She is also involved in evaluating *beauveria bassiana* fungus on cabbage in periurban areas of Accra. Further, Stella provides liaison support to PPRSD of MoFA and CABI in facilitating the importation of beneficial organisms



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for selected value chains as well as securing EPA clearance through co-testing of new bio-control products for selected pests.

Stella is appreciative to Mastercard Foundation for the scholarship and the opportunities that the Foundation has extended to her. *“I feel so happy and so excited to be part of this because I wouldn’t be here if Mastercard Foundation wasn’t in the picture to support my education,”* she says. *“It’s been an amazing journey.”*

Salome Henerico Samson

Country: Tanzania

Track: Agricultural Employment

Position: Intern

Host company/organization: International Institute of Tropical Agriculture (IITA) - Tanzania

About position: Salome is working with the communications team at IITA Dar es Salam to translate and disseminate researcher-led scientific results and innovation to smallholder farmers in Tanzania. She is also working IITA scientists to develop training manuals about good agricultural practices.

Salome’s graduation project focused on “The influence of networking on the adoption of farming technologies among cashew nut farmers in Southern Tanzania.” The goal of the project was to determine whether expanding networking opportunities for smallholder farmers has an influence on their adoption of various technologies, the variety of cashew produced, and other socioeconomic variables.



Bio: In her third year of study at EARTH, Salome completed a 15-weeks internship at Baak Pluimvee, a farm in the Netherlands that houses 40,000 chickens and specializes in egg production. Her academic goals during this experience included learning about chicken husbandry and management. Salome also had her own personal goals: she wanted to gain knowledge about the country itself, broaden her network, and discover different cultures. *“I was curious to learn more about the culture there, and poultry farming, which is one of my favorite parts of animal production,”* she says. *“Everything went smoothly because I gained a lot of intellectual and social knowledge from my experience.”* From this internship, she felt prepared for what she wants to do in the future and learnt how to be more patient and work with people from different cultural and backgrounds.

For her 4th year’s student work experience, Salome was a team leader of first- and second-year students at EARTH University’s botanical garden. Through this experience, she gained a lot of knowledge about cultivating plants, plant production, and bee production, while also improving her confidence in teaching and interacting with other students. Some of the skills that Salome acquired from EARTH University include cultural tolerance, and work ethic.

Upon graduation, Salome was selected as one of the Mastercard Foundation – EARTH University Fellows for the 2023 cohort and is currently hosted at IITA-Tanzania where she’s working with various scientists to translate and disseminate researcher-led findings to stallholder farmers in rural communities of Tanzania.

Above all, Salome wants to thank Mastercard Foundation for the profound impact it has had on her life. *“Honestly, I am very grateful for the opportunity ... The fact that there are people out there*



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taking care of me without even knowing me gave me courage to move on every day,” she says. Salome is beyond excited to share the experiences, skills, and connections she has gained over the years with those around her. “I want to keep up the good work Mastercard Foundation is doing. I’ll be doing my best to change my community, Tanzania, and maybe the world someday.”

Mohamed Sugule Jama

Country: Somaliland

Track: Agricultural Entrepreneurship

Position: Entrepreneur

Host company/organization: Harhub



About position: Mohamed’s Agridesert company that promotes sustainable dry land farming practices among communities in Somaliland through trainings, trading, and adoption of the sustainable agricultural practices on farmer-led demonstration sites in two different regions. The company is also involved in seed commercialization and provision of technical assistance on animal feed production and trade in other agricultural inputs.

Bio: Following graduation from EARTH, Mohamed is excited to apply what he has learned from his graduation project, *Study of Water Potential of Plants under Different Production Environments*, in the future. His project revolved around studying water potential and water management. To determine the relationship between soil humidity and the biological processes happening within plant leaves, Mohamed measured water potential, root health, humidity, rainfall, sunlight, and other factors. For Mohamed, this experience was more than just a graduation Project. The scientific knowledge he gained in plant pathology is of great use in his home country. *“Somaliland is a semi-arid region,”* he says. *“Water is always something that is an issue. We should know how to manage water as a natural resource, by understanding the amount and the timing of water application to plants as well as studying other factors that could contribute to water uptake.”*

For his internship, Mohamed worked at an organization called Somali Marketing and Agribusiness Promotion (SMAP) in Banaadir. There, he helped promote the exportation of Somalian commodities for an international market. Mohamed helped SMAP consult smallholder farmers to produce high-quality products and find new markets for banana exportation. *“We always talked about the social and the financial aspects, and about sustainability,”* he says. *“I learned about the better management of farms and things anyone who wants to start a farm needs to consider.”*

Upon returning to Somaliland, Mohamed established his agribusiness company called Agridesert that promotes sustainable dry land farming practices among rural communities in two different regions (Burco and Arabsiyo) of Somaliland. Using a demonstration farm approach, Agridesert focuses on training farmers in activities that enhance quality vegetable production such as tomatoes, onion, green leaves. The company is also involved in commercial seed production and trading of high quality, cost-effective agricultural inputs. *“To respond to the Sustainable Development Goals and the National Development Plan II, our main concern and priority is to produce safe and healthy nutritious products that would contribute towards improving food and nutrition security.”*



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Mohamed wants to thank Mastercard Foundation for the many opportunities they have given him. *“I’m grateful to them and I will work on making this world a better place to live in for all,”* he says. *“As I always say: they taught us to help people. We are working to be in a better position to help communities.”*

Naomi Kfu Fiemyah

Country: Cameroon

Track: Agricultural Innovation through science and research

Position: Research Assistant

Host company/organization: International Institute of Tropical Agriculture (IITA) – Cameroon

About position: Data collection, analysis, technical report writing, and participation in the organization of stakeholders’ consultative meetings on the Central and Eastern Africa through transdisciplinary Agroecological Living Labs (CANALLS) project.



Bio: Naomi completed her studies at EARTH University in 2021. Her graduation project “Evaluation of Conventional Tillage and No Tillage for the cultivation of Pasture, *Megathyrus maximus*” aimed at evaluating how soil preparation practices such as tillage affect pasture growth and soil properties. *“I chose this project because it deals with two areas of agriculture that I am passionate about - plant and soil sciences.”*

During her internship at Alabama A&M University, Naomi interned in the University’s soil microbial biochemistry laboratory. The laboratory carried out studies on soil and its interactions with microorganisms. Naomi most enjoyed carrying out research projects that granted her the exposure to novel tools, techniques, and methods for conducting soil analyses, and monitoring how microorganisms contribute to soil health. This experience is proving to be relevant to her Fellowship at IITA. She believes that, *“If there’s no soil, there’s no production...It’s the basis of agriculture to me. Learning about the soil and seeing how it functions is very important.”*

For her professional experience at EARTH, Naomi worked on the animal production farm, where she gained technical knowledge and tools about animal husbandry. She also obtained significant growth in her communication skills with farmers and her peers. *“It was a great learning process thus far,”* she says. *“There was lots of work put into it: teamwork, hands-on work, laboratory work, and coordinating the agriculture and livestock farm.”*

After graduation, Naomi was selected as a Fellow in the third cohort of the Mastercard Foundation – EARTH University Fellowship Program. She is currently having her Fellowship experience at IITA-Cameroon where she’s working as research assistant on the Central and Eastern Africa through transdisciplinary Agroecological Living Labs (CANALLS) project. Her role majorly involves gathering secondary data from peer reviewed journals about different agroecological zones and soil profiles in Cameroon, Burundi, Rwanda and the Democratic Republic of Congo to support the establishment of field trials in the cocoa, coffee and cassava farming systems.

Naomi wants to express her thanks to Mastercard Foundation for making all these experiences, accomplishments, and dreams possible. *“I really appreciate this opportunity that was given to me,”* she says. *“It enabled me to grow professionally and also personally...It will forever have an impact in my life.”*



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Nancy Musa

Country: Zimbabwe

Track: Agricultural Employment

Position: Graduate intern/ Research student

Host company/organization: International Livestock Research Institute (ILRI)



About position: Nancy is working on the development of alternative businesses related to commercial production of animal feeds among smallholder farmers under the Livestock Production Systems project (LiPS). She is also part of the team involved in conducting field research to determine product viability and acceptability of the alternative feeds, and establishment of farmer cooperatives through which farmers can market their farm products.

Bio: One of Nancy's most important experiences here at EARTH is her graduation project, titled *Designing a Business Model Based on Biogas Production: An Alternative Technical Solution to Rural Community Development*. For her research, Nancy evaluated the efficiency of cow dung and pig waste to produce quality biogas. She designed a bio digester that can be adopted in rural communities of Zimbabwe, with a goal of contributing towards the achievement of the nation's sustainable development goals of clean and affordable energy, economic growth, and climate change mitigation. *"I am someone who is passionate about community development,"* she says. *"I'm trying to take everything that I've learned from my four-year journey here at EARTH University to see how best it can be useful to bring change back home. The graduation project has an element of community development, innovation, science, and research, and highlights the EARTH curriculum where we are taught to be well-rounded engineers."*

Nancy interned at Farai the Farmer, a progressive organization in Zimbabwe focused on the production and sales of horticultural crops such as cauliflower, broccoli, and sweet potatoes. *"I selected this internship because I am passionate about agribusiness, and I would like to be an expert in business development, especially in value chain and value addition."* Her day-to-day activities included researching how to expand Farai's business, developing sustainable methods of integrated pest management, farm work, and administrative responsibilities. The internship enabled her to gain more practical knowledge in business startups and development, sustainable agricultural practices, and business administration. *"I was very motivated,"* says Nancy. *"To contextualize what I've been learning these past years was quite helpful for me to go forward and do what I have to do."* This internship was what inspired the idea of her graduation project.

Some of Nancy's favorite memories at EARTH University include the Spanish Program and her stay with her Costa Rican family, her home away from home. She feels that she has learned the true meaning of diversity in her time here. *"Having to collaborate and work as a team with people raised differently from me was quite an experience. That taught me quite a lot, really exposed me and made me transform,"* she says. In other ways, EARTH has molded her to become a knowledgeable leader and a problem solver. She has grown as a student of the sciences, gained an entrepreneurial know-how, and learned to apply sustainability socially, economically, and environmentally. *"I learned that if you are passionate about something you can really achieve it. EARTH has the capacity to accommodate students like me, to deliver skills and motivate in many ways. It's one of those special things I can remember and really value about EARTH."*



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After returning home, Nancy applied for the Mastercard Foundation – EARTH University Fellowship Program and was successfully accepted in the 2023 cohort. She is working at ILRI under the Livestock Production Systems project (LiPS). The project aims at enhancing livestock production and animal health with key emphasis on improvement of animal genetics, quality of fodder, and farmers' adaptation to climate change. Under this project, Nancy's core roles include development of alternative businesses among stallholder livestock farmers that are related to commercial production of animal feed; conducting field research related to determining product viability and acceptability of the alternative feeds, and establishment of farmer cooperatives through which farmers market their farm products and access credit for farm insurance.

Nancy believes that education has empowered her to think and act differently to better serve her community and country. For this, she wants to extend her thanks to Mastercard Foundation: *"My heart is overwhelmed by this life-changing opportunity which was given to a young girl to see her dream turn into a reality,"* she says. *"The most important thing is that I have been supplied with all that I needed and just needed to focus on school without having to think of how to pay for the resources. I am very grateful...I look forward to passing on the favor."*

Grace Aguti

Country: Uganda

Track: Agricultural Innovation through science and research.

Position: Research assistant

Host company/organization: International Institute of Tropical Agriculture (IITA)-Uganda



About position: Grace is working with other scientists to understand the diversity of beneficial microbes colonizing banana varieties grown in different agro-ecologies and the effect of the environment on microbial diversity.

Bio: Upon her 2020 graduation, Grace received a Distinguished Student Award to recognize her demonstrated academic excellence and adherence to EARTH values. There have been many moments in this 4-year journey that have made Grace happy. *"My four years at the University have been some of the most enriching life experiences. Here you meet the whole world in one place. I have shared with people from all around the world and this has made me a better person."* Grace feels she has grown intellectually and is now able to see the world differently. *"This journey has given me knowledge to identify and give solutions to problems. I have obtained experiential learning and sharpened my skills in a new environment while maximizing my impact through self-assessment and reflection in-the-field experiences."*

Grace is passionate about agricultural biotechnology and rural development. Her curiosity for plant biotechnology that started at EARTH led her to do a fifteen-week long research internship at Stellenbosch University in South Africa where she gained practical experience in conducting biotechnological research. At Stellenbosch, Grace was introduced to protein analysis and DNA electrophoresis techniques, as well as protein expression in *E. Coli*. This granted her an invaluable experience that further enhanced her passion for plant biotechnology research. *"I increased my ability to analyze and solve biological problems, consider scientific theories and critical analysis of research literature"*.



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Upon graduation from EARTH in 2020, Grace enrolled to the American University of Beirut (AUB) in Lebanon to pursue a Masters in plant science where she worked as a graduate teaching and research assistant on various projects, including the molecular responses of grapevine rootstocks to water deficiency to identify the potential regulatory mechanisms coordinating drought response, evaluation of the postharvest physiochemical properties of various Lebanese grape varieties with an aim to determine the effect of geographical elevations and agricultural practices on the physicochemical properties. Grace also conducted research on a Comparative Study of the Farming Systems in Uganda, Kenya, and Tanzania which aimed at identifying small-scale farmers' farming system gaps to enhance productivity by recommending sustainable farming practices to fill identified gaps in the production chain.

She recently graduated and returned to Uganda to work at the International Institute of Tropical Agriculture (IITA) under the Mastercard Foundation – EARTH University Fellowship Program. Her role as a Research Assistant, at IITA, involves working with scientists to understand the diversity of beneficial microbes colonizing banana varieties grown in different agro-ecologies and the effect of the environment on microbial diversity. She is collecting samples from on-farm trials of banana hybrids, targeting 5 genotypes including 4 hybrids and 1 land race as a control for molecular lab analysis and sequencing. Additionally, Grace is performing bioinformatic analysis and identifying microbial groups that can be targeted as bio stimulants or biofertilizers.

To Mastercard Foundation, Grace would like to say, *“Thank you for the scholarship and the Fellowship opportunities. They have played a critical role in preparing me as a young African female scientist.”*