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FEED THE FUTURE INNOVATION LAB FOR LEGUME SYSTEMS RESEARCH

November 2022



The Feed the Future Innovation Lab for Legume Systems Research fosters dynamic, profitable, and environmentally sustainable approaches that contribute to resilience, productivity, and better nutrition and economic opportunities. The lab is managed by Michigan State University.

From the Management Office

Legume Lab Project Supported Students Visit and Study at U.S. Universities

As part of institutional capacity-building efforts, the Feed the Future Innovation Lab for Legume Systems Research projects support international students to visit and study at U.S. universities.

Maria Mazala, a student from Zambia was awarded a scholarship



from the NDSU collaborative project, *Genetic Improvement of Dry Beans for Bruchid Resistance for Southern Africa*. She is currently pursuing her master's degree in plant sciences at North Dakota State University (NDSU). Her advisor is Dr. Juan Osorno, NDSU professor and PI for the project.

Maria's research focuses on evaluating the agronomic performance of newly developed bruchid-resistant lines and contributing to the development of bruchid-resistant bean varieties through the identification and validation of molecular markers that can be used to select bruchid-resistance genes.

In 2021, Maria also received the John H. Longwell Jr. Memorial scholarship from the plant Science department. The award is given to an NDSU graduate student involved in the genetic improvement of agronomic crops (plant breeding).

Maria holds a bachelor's degree in plant science from the University of Zambia (UNZA). Prior to being enrolled at NDSU as a student, she was a research assistant for Dr. Kelvin Kamfwa at the UNZA Dry Bean Breeding program.

Becoming a plant breeder and traveling internationally has always been her dream. She is extremely grateful to have received the scholarship to study at NDSU. The opportunity has helped her to solidify her confidence to become the best version of herself. Her current research interests include plant breeding, molecular genetics, and statistics.

Mr. Junior Bruno Papa Mbar Ndiaye is a Native of Senegal, pursuing an MS degree in Sustainable Management of Horticultural Agroecosystems at the department of Animal Biology at Cheikh Anta Diop University, Dakar, Senegal. He has a BS degree in Agricultural Sciences – Crop Breeding and Genetics from the Agricultural and Rural Training High Institute, of the University of Thies, Senegal.

As research technician at the National Agricultural Research Center in Bambey, Junior had worked on different projects evaluating best management practices for upland rice production in the southern Peanut Basin agro-ecological zone of Senegal.

Junior is one of the scholarship beneficiaries funded by the Legume Systems Innovation Lab. His research is focused on developing appropriate calibrating equations to predict nutritional quality of dual-purpose cowpea varieties using Near Infrared Spectroscopy (NIRS). The field research component of his MS studies were conducted at the Senegalese

Agricultural Research Institute, at the National Center of Agricultural Research in Bambey, Senegal (over the 2021 growing season).



Currently, at the Kansas State University Agricultural Research Center- Hays (from April through December 30, 2022) he is getting hands on training sample processing and utilizing NIRS for forage quality analysis.

"With the help of my supervisors (Dr. Obour and Dr. Keith Harmony at Kansas State University), I have successfully established calibration equations that can be used predict forage nutritive value of dual-purpose cowpea samples brought from Senegal," shares Junior.

"I am currently writing my thesis and have gained significant experience in dryland cropping systems and soil management research with the direct involvement in ongoing my research activities in Dr. Obour' s Soil Management lab. The analytical and research skills gained over the 9-month exchange program at Kansas State University have provided me with a considerable skill set in forage analysis using NIR and soil management expertise that will serve me well when I return to my home country."

Adefemi Oluwadamilola Olubunmi is a fourth-year Ph.D. student researcher in Agricultural Economics at the University of Ilorin, Nigeria, now at Michigan State University (MSU) as a Visiting Scholar.

As a researcher he is interested in research to build empirically based policy recommendations and implementation. Having carried out a



number of research projects over the years, he is able to meticulously manage, monitor, and evaluate projects. He describes himself as a great communicator, a self-starter, and a lover of people who is motivated by challenging situations.

He is working with MSU Professor Michael Olabisi as his advisor and Principal Lead Researcher on the Feed the Future Innovation Lab for Legume Systems Research project, *Mobile and Smartphone Technology Impacts on Rural Communities: A project work under Promoting Trade Integration*

in Regional Legume Markets with Mobile Technology. When not buried in research work, he loves video games, exploring, and learning new things.

Ashafa Salisu Sambo is a third-year Ph.D. student of Agricultural Economics at the Department of Agricultural Economics and Extension/Center for Dryland Agriculture, Bayero University, Kano, Nigeria. His areas of research include agricultural financing, rural-urban migration, food security, agricultural value chains, and farmers' well-being.



As a Visiting Scholar at Michigan State University he is supported by the Feed the Future Innovation Lab for Legume Systems Research.

He is working with professor Michael Olabisi. Ashafa will be working on a titled, *Profit Margins in Grain Value Chains: Evidence from KasuwaGo Survey Respondents.* KasuwaGo is a mobile app that connects grain farmers and traders.

Ashafa enjoys reading, watching documentaries, and playing table tennis in his spare time.

GLOBAL VIRTUAL CONVENING 2022

Over 100 global legume researchers and stakeholders attended the two-day public forum virtual event in March which featured Legume Systems Innovation Lab project research updates.

Each month we will highlight a recorded presentation from one of these research projects.

This month we feature the project, **"Promoting Trade Integration in Regional Legume Markets with Mobile Technology."** The project is led by Dr. Michael Olabisi, Michigan State University and works in Niger and Nigeria.

Click on the image below to view the presentation on YouTube.



In the Field

Dual-Purpose Cowpea Varieties Provide Farmers a Win-Win in the Senegal Peanut Basin



Senegal farmer, Badara Diouf poses in his dual-purpose cowpea field trial.



Research project technicians taking agronomic data in Mr. Ousmane Mbacke's Baby trial within his 30 ha cowpea farm.

Smallholder farmers in the Senegal peanut basin have been introduced to newer and improved dual-purpose cowpea varieties that offer both increased grain and fodder yield as well as fodder quality. These varieties can provide a win-win in the agropastoral farming systems across the peanut basin in Senegal.

Researchers from Kansas State University in collaboration with their counterparts at Senegalese Agricultural Research Institute (ISRA) recently demonstrated two dual-purpose cowpea varieties at several farmer field days. Farmers in attendance were so interested in trying the improved dual-purpose varieties, that several picked a handful of seeds from the fields to plant next year in their fields. The research project, *Sustainable Intensification of Dual-Purpose Cowpea Varieties for Enhanced Food and Fodder in Senegal* is a part of the Feed the Future Innovation Lab for Legume Systems Research managed by Michigan State University.

The dual-purpose cowpea varieties Leona and Thieye have stay-green property at maturity that increases fodder quality, an important trait for the region. In addition, the dual-purpose varieties are providing dual benefits as fodder yield averaged 255 kilograms per hectare (kg/ha) and grain yield averaged 256 kg/ha higher for the dual-purpose varieties as compared to the locally preferred variety Yacine. Priced at \$2.50 per kilogram, farmers are receiving \$640 per hectare more in income from grain yield gains alone.

Mr. Badara Diouf is a farmer in the village of Darou Salem, Senegal. Mr. Diouf participated in the on-farm trial in the 2021 growing season and choose to continue planting the dual-purpose cowpea varieties Leona and Thieye on his farm in 2022.

“The new cowpea varieties that were given to me last year perform better than ones we usually plant, they mature early too. For example, last year, with these new varieties [Leona and Thieye], I had greater grain yield, used some of it for food, shared some of it with neighbors and family, and had some seeds for this year planting,” says Badara of his experience with the dual-purpose varieties.

Mr. Ousmane Mbacke is a farmer and a Muslim community leader in Darou Mousty, Senegal. He participated in the on-farm trial in 2021. He was so pleased with results of the 2021 trial that he planted 30 hectares of his land to dual-purpose cowpea varieties in the 2022 growing season.

“So far, results we are getting from this variety trial and the genotype by management study on my farm are amazing. We have also seen the varieties produce greater fodder amounts in addition to increase grain yield. We would like to see these varieties disseminated throughout the region and to other cowpea farmers in Senegal,” explains Ousmane.

In the News

Articles

[Dry bean research returns good worldwide economic value](#) by Karen Hertsgaard, North Dakota State University

Peer Reviewed Publication

Beye, A.; Diakhate, P.B.; Diouf, O.; Faye, A.; Obour, A.K.; Stewart, Z.P.; Assefa, Y.; Min, D.; Prasad, [P.V.V. Socio-Economic Constraints of Adopting New Cowpea Varieties in Three Agro-Ecological Zones in the Senegalese Peanut Basin](#). Sustainability 2022, 14, 14550.

Featured Legume of the Month

Adzuki Bean



Adzuki beans are a small reddish brown bean that is nutty in flavor and somewhat sweet. It is often used in Asian cuisine, and is particularly popular in Japanese recipes.

The bean is very high in dietary fiber, potassium, and a good source of protein. Other nutrients include iron, vitamin B6, magnesium, and calcium. Adzuki beans contain no cholesterol making them a heart healthy choice.

Cooking with Adzuki Beans...

Zenzai - Sweet Adzuki Soup

Zenzai soup is a sweet Japanese dessert. This recipe from [Pulses.org](#) includes a total of four ingredients including the adzuki beans, sugar, salt and rice cakes. It is served warm and a favorite on chilly evenings.

The adzuki beans are cleaned, boiled, mixed with the sugar and a pinch of salt, and topped with rice cakes.



[Get recipe here](#)

For More Information on the Feed the Future Innovation Lab for Legume Systems Research

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