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FEED THE FUTURE INNOVATION LAB FOR LEGUME SYSTEMS RESEARCH

October 2023



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

Innovation Lab supports 65 students in degree granting programs

The Feed the Future Innovation Lab managed by Michigan State University supported a total of 65 students in legume research related educational degrees at numerous higher-learning institutions globally during the first five-year phase of the program.

“This accomplishment shows the commitment of the Legume Systems Innovation Lab to build individual capacity for resilient development,” shares John Medendorp, deputy director of the program. “In order for developing countries to shift the needle, investments in people are one of the strongest influencers we as programs can provide.”

Barry Pittendrigh, Legume Systems Innovation Lab Director notes, “it’s a model that U.S. land grant universities can lend to our partner countries. A model based on understanding the issues within a community and finding applicable solutions to solve those issues. By investing in the next generation of legume researchers, we are building resilience with these educated problem solvers to

understand, react to, and withstand shocks and issues within their communities.”

Maria Mazala from Zambia is one of the 37 women awarded a scholarship through the Legume Systems Innovation Lab. She recently received her master’s degree in plant sciences at North Dakota State University. “This program has helped me solidify my confidence to become the best version of me. I am extremely grateful.”

Supported through the project, *Genetic Improvement of Dry Beans for Bruchid Resistance for Southern Africa*, her advisor, and project principal investigator Dr. Juan Osorno has been pleased with Maria’s dedication to her field and Zambia. Three other students are also supported by the project and are studying at collaborating institution, the University of Zambia.

“To describe Maria and the other students I would have to say they are passionate, dedicated, and aim for excellence. I commend my colleague, Dr. Kelvin Kamfwa from the University of Zambia for recruiting really good students (and) selecting the right people for this project. We have four amazing women who are working with us. These students are going to go back (to their home countries) and make real impact into the regions.”



Maria Mazala with Dr. Juan Osorno and Dr. Kelvin Kamfwa in the greenhouse at the University of Zambia.

Although the students working with Dr. Osorno and Dr. Kamfwa are involved in bean breeding, legume research is no longer just about the farm. Economics and policy also play an integral role.

“Almost half of these students pursued degrees in Agricultural Economics and related fields like land use, planning, and management, local economic and community development, or nutrition. These fields really dive deep into the how and why of social and community issues which are critical for sustained

growth,” adds David DeYoung, Legume Systems Innovation Lab program manager.

In the Field

Educational animations released to aid Nepal lentil farmers

Nepalese lentil farmers now have access to 15 educational animations in multiple languages designed to increase crop production and livelihoods. The animations were created by Scientific Animations Without Borders (SAWBO) through funding support from the Feed the Future Innovation Lab for Legume Systems Research.

The training and educational materials are a part of the Legume Systems Innovation Lab project, *Transforming the lentil sector in Nepal*. A website has been created at <https://nepal.sawbo-animations.org/> and the animations can also be viewed on YouTube and through numerous download formats including .3gp for smartphone, .3gplite for cellphone, .mov for broadcast, .mp4 for computer, and .mp4lite for social media platforms like WhatsApp.

The animations focus on good agricultural practices for lentil including new variety adoption, best practices for row planting, weed management, disease and pest management, rice-lentil relay cropping best practices, and post-harvest loss using hermetically sealing bags and locally sourced containers. In addition, a series of six animations detail the creation and management of savings groups. An animation has also been created which details how lentil stakeholders can work together to create multi-stakeholder platforms to strengthen their value chain for greater profit for all.

Each animation has been translated into a minimum of 10 local Nepalese languages and dialects to reach even the most remote farmers. The 10 languages include Bajjika, Bhojpuri, English with Nepalese accent, Gurung, Maithili, Nepali, Newari, Rajbanshi, Tamang, and Tharu.



A scene from the SAWBO animation, "[Harvesting Your Lentil Crop.](#)"

Lentil is an important crop in Nepal for nutrition, soil health, and as both a staple and export commodity. However, crop yields have become stagnant with the low productivity attributed mainly to stressed environmental conditions and agronomic practices. Lentil produced domestically competes with imports as large legume processors prefer imported lentil due to cost and uniformity. Lentils occupy 60% of the total grain legume area and production in Nepal, making the country the sixth largest producer and fifth largest exporter of lentils. Given that lentil demand has expanded 6.2% over the past ten years, it is estimated that Nepal's revenue from lentil export could double or even triple if relevant actions are taken to boost cultivated area, productivity, and market integration.

Nepal lentil is among the most nutrient dense in the world however many of these nutritionally rich varieties do not possess the stress and disease tolerant traits for higher yield potentials. Research indicates that the average age of commercialized lentil varieties is 27 years and that 85% of small holder farmers use seed that is decades old. One goal of the project is to identify varieties that are stress resistant, nutritionally biofortified, high yielding, and consumer preferred and provide strategies for farmer variety adoption.

A closer look into the Nepal lentil seed and market systems will also identify bottlenecks and weak points from seed/variety availability from the producer level all the way through to legume market and export. A special focus will be made on the varietal nutritional panels and potential advantage for nutrition fortified varieties.

Funding for the lentil project is provided by the USAID Nepal Mission.

In the News

Peer-Reviewed Publications

Bello-Bravo, J., Medendorp, J., Lutomia, A., Reeves, N., Sal, V., Tamo, M., & Pittendrigh, B. (September 2022). "[Dramatically increased accessibility and decreased cost-per-person impacts are needed for scaling IPM in Africa](#)". *Current Opinion in Insect Science*, 54(2022), Amsterdam available at <https://doi.org/10.1016/j.cois.2022.100971>

Partners in the Press

"[How 650 new bean varieties could help feed people across Africa](#)" The Pan-African Bean Research Alliance (PABRA) has developed hundreds of new bean varieties to produce better yields and help future-proof them against climate change.

Featured Legume of the Month

BLACK BEANS



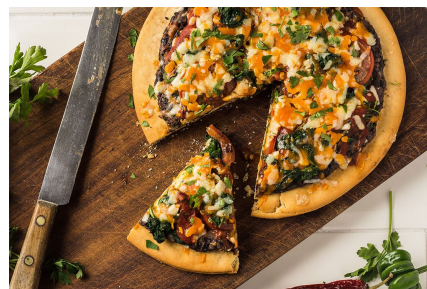
Looking for an inexpensive and satisfying way to add protein to your diet? Try black beans.

According to the USDA one cup of black beans provides 15 grams of fiber with less than one gram of fat. This one cup serving of black beans is just 227 calories and is also a great source of iron, providing 20 percent of your recommended daily value.

Cooking with Black Beans...

Black Bean Salsa, and Spinach Pizza

Try this vegetarian and heart healthy pizza from [Pulses.org](https://pulses.org)! It's quick when using a prepared store-bought crust (we think a whole wheat crust would be a good choice) and canned black beans.



Just crisp the thin crust in the oven, top with a mixture of mashed black beans, hot sauce, onion, cumin, chili powder, and garlic. Spoon salsa over the bean mixture and sprinkle on tomatoes, spinach, and cheese. Bake until crust is lightly brown. Wow, let's eat!

Get recipe here

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

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Feed the Future Innovation Lab for Legume Systems Research | Michigan State University,
Justin S. Morrill Hall, 446 West Circle Dr. Room 321, East Lansing, MI 48824

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