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## FEED THE FUTURE INNOVATION LAB FOR LEGUME SYSTEMS RESEARCH

July 2024



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 Systems Innovation Lab looks to improve livelihoods and food security in Honduras and Guatemala**

The Feed the Future Innovation Lab for Legume Systems Research is in collaboration with the University of Puerto Rico (UPR) and USDA Agricultural Research Service Tropical Agriculture Research Station (USDA-ARS TARS) with the goal of improving common bean production in Honduras and

Guatemala. Greater and more stable common bean yields will improve smallholder farmer incomes, reduce poverty of rural families, and enhance food security throughout the region.

The project titled, *“Release and dissemination of promising common bean cultivars to improve food security in Honduras and Guatemala”* is led by Dr. Ermita Hernandez Heredia at UPR.

Bean farmers in Honduras and Guatemala face disease threats, invasive pests, high temperatures, and drought conditions. The project will address these issues through the release of disease and pest resistant and climate-resilient common bean varieties. Specifically, the project will support the formal release of SEF 70 (‘Rojo Fortificado’) in Honduras, a small red bean, and of SMN 97 (ICTA Tuhual), a small black bean, in Guatemala. Both lines exhibit key disease resistance traits and abiotic stress tolerance, prevalent in the region and are bio-fortified with higher iron and zinc concentrations in the seed to improve human nutrition.

The project will also conduct on-farm testing of the bruchid (pest) and multiple virus resistant small red bean line PR1743-44 in Honduras. Losses to bruchids can exceed 50% for beans stored longer than 3 months (Tigist, 2020). Results from natural infestation studies conducted in Puerto Rico found that the resistant lines had minimal damage at 90 days after harvest whereas seed susceptible varieties were severely damaged.

In Honduras the project is partnering with the Seed and Grain Production Unit of Zamorano University (ZU). ZU has produced and distributed certified seed for over 50 years and participates in governmental programs to distribute seeds and fertilizers to thousands of farmers each year. The Institute of Agricultural Science and Technology (ICTA) is the project partner in Guatemala. ICTA is responsible for generating and promoting the use of science and technology in the Guatemalan agricultural sector. ICTA has successfully released over 30 bean varieties in Guatemala. ZU and ICTA are involved in participatory plant breeding and in training farmers in improving their capacity in seed production and storage. Both institutions also function as key producers and distributors of seed in each country.

Another serious threat for bean farmers is the Asian bean flower thrip *Megalurothrips usitatus* Bagnall (Thysanoptera: Thripidae), is an invasive pest that has recently caused significant yield losses in beans in Guatemala and Honduras and other countries in Central America and the Caribbean. During the first year, the project will work to screen bean germplasm for resistance to this important pest. The goal will be to quickly determine if resistance exists in this diverse *Phaseolus* material and if response is consistent across environments. In addition, research on control strategies will be initiated.

The project will implement multistakeholder integration as the primary focus. Linking farmers with industry and government stakeholders to drive innovation for impact and scaling.

This activity is a commissioned project under the Legume Systems Innovation Lab. The Lab expects to award several competitively funded projects on legume systems in East, West, and Southern Africa and Central America in the coming months and is currently in review of received concept notes during the recent call for submissions.

The Legume Systems Innovation Lab is based at Michigan State University and is funded by USAID under Feed the Future, the U.S. government's global hunger and food security initiative. For more information about the Legume Systems Innovation Lab visit <https://www.canr.msu.edu/legumelab/> and to learn more about Feed the Future visit <https://www.feedthefuture.gov/>.

## *In the Field*

## Project Final Reports

*The Legume Systems Innovation Lab awarded competitive and commissioned project grants to support research activity during the first five years of the lab. These projects, now concluded, have submitted final technical reports which we will feature in our monthly newsletter. This month we feature a project that aimed to test how a market pull for demanded varieties through multi-stakeholder platforms (MSP) or without MSP context can stimulate farmers' interest and purchase of certified bean seed. The project worked in Malawi.*



## Transforming seed systems to respond to bean variety demand through multi-stakeholder platforms in Malawi

*Led by Dr. Jean Claude Rubyogo, Alliance of Bioversity International and CIAT*

Seed production and supply systems experience value chain coordination challenges. Lack of value chain coordination from the market demand for grain influences demand for certified, basic, and breeder seed, and ultimately investing to increase quantities and quality of seed supplied and the number of farmers accessing seed. The project tested the hypothesis that market pull for demanded varieties through multi-stakeholder platforms (MSP) facilitated linkages can stimulate farmers' interest and purchase of certified bean seed.

The study examined the role of MSPs in increasing investments in certified seed supply, whether seed value chains integrated into private sector-led MSPs increase quantities of certified seed purchased by men, women, and youth farmers, and whether using the MSP-based participatory variety testing approaches increases awareness and accelerates the uptake of new market-demanded varieties.

Click the link below to read the project achievements and complete final technical report.

Read the full report

## *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 AND CHOCOLATE ORANGE ENERGY BALLS**

This recipe found on the [Beans Is How website](#) combines black beans with rolled oats, cocoa, orange juice to create a tasty energy snack.

A bit of vanilla, orange zest, and a natural sweetener like honey or maple syrup, and dark chocolate chips make this a sweet and tasty treat.

Ingredients are combined in a food processor, shaped into balls, and chilled in the fridge or freezer. Give them a try this weekend!



[Get the Recipe](#)

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