

# **Feed the Future Innovation Lab for Collaborative Research on Grain Legumes (Legume Innovation Lab)**

## **FY 2016 WORKPLAN**

### **Project Code and Title:**

SO4.1 Impact Assessment of Dry Grain Pulses CRSP investments in research, institutional capacity building and technology dissemination for improved program effectiveness

### **Lead U.S. Principal Investigator (PI) and affiliated Lead U.S. University:**

Mywish Maredia, Professor, Agricultural, Food and Resource Economics (AFRE), Michigan State University

### **Host Country and U.S. Co-PIs and Institutions:**

Eric Crawford (Co-PI), Agricultural, Food and Resource Economics, Michigan State University

US and HC PIs/collaborators of other Legume Innovation Lab Projects

## **I. Project Problem Statement and Justification:**

Impact assessment is essential for evaluating publicly-funded research programs and planning future research. Organizations that implement these programs should be accountable for showing results, demonstrating impacts, and assessing the cost-effectiveness of their implementation strategies. It is therefore essential to document outputs, outcomes and impacts of public investments in research for development (R4D) activities. Anecdotal data and qualitative information are important in communicating impact to policymakers and the public, but must be augmented with empirical data, and sound and rigorous analysis.

The proposed research contributes towards evidence-based rigorous ex ante and ex post assessments of outputs, outcomes and impacts with the goal of assisting the Legume Innovation Lab program and its Management Office (MO) to achieve two important goals--accountability and learning. Greater accountability (and strategic validation) is a prerequisite for continued financial support from USAID and better learning is crucial for improving the effectiveness of development projects and ensuring that the lessons from experience – both positive and negative – are heeded. Integrating this culture of ‘impact assessment’ in publicly funded programs such as the Legume Innovation Lab and generating knowledge outputs will ultimately help increase the overall impact of such investments.

## **II. Planned Project Activities for the Workplan Period**

### **Objective 1:**

Provide technical leadership in the design, collection and analysis of data for strategic input and impact evaluation

#### **Collaborators:**

Juan Osorno (NDSU), Julio Martinez (ICTA), and Byron Reyes (CIAT)  
Nicole Mason, Michigan State University

## Approaches and Methods:

In FY 2016, we plan to focus on two activities under this objective.

**1a. Analysis of baseline study in Guatemala:** After consulting with the PIs of other Legume Innovation Lab Projects, several opportunities were identified for baseline assessments, including the “**socio-economic baseline study on the constraints and opportunities for research to contribute to increased productivity of climbing beans in Guatemala.**” This is a joint activity with the SO1.A1 project team under their objective ‘*Genetic improvement of climbing black beans for the highlands of Central America.*’ The data collection from more than 500 farm households from five FTF Departments in Guatemala representing the highland bean growing regions has been completed in FY 15, and data cleaning and organization is currently underway. In FY 16, this project plans to complete the data analysis and generating publications for wider dissemination. This will be a joint activity with the SO1.A1 team (Juan Osorno (NDSU), Julio Martinez (ICTA)), and Byron Reyes (CIAT). The analysis will focus on the current status of the climbing bean/maize intercropping production system (i.e., the *milpa* system) in the highlands of Guatemala. Data concerning cultivated area, production practices, production problems/constraints, seed quality and culinary preferences along with the socio-demographic characteristics of farm households will be analyzed using descriptive and econometric techniques to help establish priorities for the climbing bean breeding program.

**1b. Analysis of existing data for strategic insights to guide impactful research on legume based farming systems:** The movement towards sustainable intensification as promoted by many donor funded projects, including USAID’s FTF programs in some countries, is based on the premise that integrating legumes in crop rotation and as intercropped with cereals can have much needed soil fertility and nutrition benefits to farmers adopting these practices. There is, however, little empirical evidence documenting these claims and examining the determinants of (or constraints to) the adoption of these legume based ‘sustainable intensification’ practices. As part of FY 17 workplan, this project plans to initiate rigorous panel data analyses to provide strategic insights on following questions:

- a. What are the factors driving the adoption of legume based intensification technology (or parts of it) and its impacts on productivity, nutrition, and incomes?
- b. Do policy interventions such as seed subsidies affect long-term adoption of legume crops and improved technologies by farmers?

Existing panel datasets from LSMS-ISA surveys in Tanzania, Uganda and/or Malawi will be used to address these questions. In addition, the forthcoming Zambia RALS (Rural Agricultural Livelihood Survey) panel data (collected in 2012 and 2015) will be also explored as another potential data source (esp. for research question 1), if a follow-up anthropometrics survey will be supported by USAID/Zambia as part of the 2015 RALS round. In the case of Malawi, the LSMS-ISA data can be used to explore how subsidies not just for maize inputs but also for legume seed (which started being included in the Malawi FISP input packs a few years ago) affect long-term adoption and incomes, and not only adoption in the year of the subsidy but in subsequent years.

The PI will collaborate with Nicole Mason from MSU AFRE Department on this activity. She has experience working in East and Southern Africa, and expertise in conducting panel data analysis using rigorous econometric methods.

**Objective 2:** Conduct ex ante and ex post impact assessments

**Collaborators:**

Robert Shupp and Nicole Mason, Department of Agricultural, Food and Resource Economics (MSU), Byron Reyes and J.C. Rubyogo, CIAT, Susan Nchimbi-Msolla, Paul Kusolwa and Fulgence Mishili, SUA, Tanzania, and researchers from SOI.A2, SOI.A3 and SOI.A4 teams

**Approaches and Methods:**

In FY 16, following research studies and activities will be conducted under this objective.

**2a. Sustainability of legume seed system constraints and opportunities to guide policies and programs:** Two studies were initiated in FY 15 under this broad theme and the plan is to continue/extend this work in FY 16 as described here.

- i. *Willingness of small holder farmers to pay for quality seed:* This will be a continuation of the study initiated in FY 15 in Tanzania to assess farmers' willingness to pay for quality seed over grain. This research is being done in collaboration with the bean research team at SUA and CIAT (i.e., Dr. J. C. Rubyogo and Byron Reyes). The methodology/ approach to address this research question consists of first conducting field experiments in farmers' fields to demonstrate the value of planting different types of seeds of the same vs. grain saved from previous harvest (representing different years of recycled seed) or purchased from the market, and then conducting bidding experimental auctions (BEA) to test farmers' willingness to pay for different types of seeds (i.e., certified seed, quality declared seed and recycled seed). Due to delays in finding a suitable mechanism to channel the funds to cover the cost of the field work in Tanzania, all the field experiments did not take place in the long rainy season as planned. In one of the districts, the experiments were planted in July and the BEA will be conducted in the end of September-early October. Field experiments in one other district will be planted around that time before the start of the short-rains. The BEA for this second set of experiments will be conducted in December. Data collected from Auction participants, and the results of the field experiments and auctions will be analyzed and report generated in the first half of 2016.

The reason for selecting Tanzania for this study is because it is one of the few countries in the ESA region that produces and recognizes quality declared seed (QDS), and it will be interesting to compare the performance of QDS vs. certified seed and then assess farmers' willingness to pay for these two types of seed, which have different cost of production associated with them. Depending on the results of this study and interest from other legume innovation lab country collaborators, the plan is to extend this to other countries with a focus on conducting field experiments to do cost-benefit comparison under farmer conditions of planting different generations of recycled (farmer saved) seed, QDS and certified seed. Tentative candidates for these experiments are Zambia (for beans) and Burkina faso (for cowpeas).

- ii. Case study on community based seed system: In FY 15, in response to a request from the Management Office, this project initiated a case study of a farmer association in Burkina Faso called *Association Song Koaadba* (ASK), which was established more than 20 years ago with the goal of promoting food self-sufficiency and food security in rural farming communities. It currently has 7000 members spread over a large part of the country, including the provinces of Oubritenga, Kourweogo , Kouritenga, Ganzourgou, Sanmatenga, Passore and Sissili. The purpose of this case study is to: a) Document the cowpea seed production and distribution model used by ASK; b) Collect and analyze data / information to: understand the economics of community based smallholder seed production, and identify strengths and weaknesses of the model used by ASK; and, c) Derive principles of sustainability underlying the model used by ASK for broader applicability within Burkina Faso and other countries. Data collection based on qualitative and quantitative surveys/interviews has been completed, and analysis and report writing will be completed by the end of this year. To better understand the strengths and weaknesses of the community based seed system such as ASK (that produces QDS), it is also important to understand the formal seed system and the economics (i.e., costs/benefits) of producing certified seed, which is the only officially recognized ‘seed’ by the regulatory system in Burkina Faso. Data collection towards this component will be initiated in FY 16.

**2b. Impact study in Haiti:** There is a strong interest from the SO4.A4 project team to do an impact study in Haiti, which will also serve as an opportunity to collect data/information about the problems farmers are facing, which can be used by the SO4.A4 team to target bean research to address these problems. We plan to collaborate with SO4.A4 project team to conduct an impact assessment study focused in areas where the Bean Technology Dissemination (BTD) project had disseminated improved bean varieties, for example, the Lower Central Plateau and the Cul-de-Sac Valley of Haiti. The challenge in doing an ex post impact study is to identify a credible counterfactual group to be able to attribute the impacts to bean research. The BTD project records will be used to guide in the sampling strategy, and to find comparison groups that can be used to assess the impact of the adoption of outputs of bean research and the BTD project activities. Funds approved for the 2015 HC capacity building proposal submitted by Haiti collaborators will be used to support the field work for this study. The plan is to do the data collection in March-April 2016. The proposed activities in FY 16 include:

- a. Conceptualizing and developing an impact assessment design, data collection instruments, sampling plan, and survey implementation plan.
- b. Conducting training in collaboration with the National Agricultural Statistics Service of Haiti to train enumerators and supervisors on the survey methodology, IRB guidelines, data collection instruments, interview techniques, use of GPS.
- c. Developing the data entry tool and training the data entry staff
- d. Implementing the farm household survey. The plan is to implement the survey in the following 5 Departments in areas where the BTD project and NSS have disseminated improved bean varieties—Artibonite, South, Grand Anse, Central Plateau, and Northeast. The plan is to randomly select about 400 beneficiary farmers and 300 non-beneficiary farmers that share similar characteristics as the beneficiary farmers, and establish a counterfactual using the Propensity Score Matching statistical technique.

- e. Data entry and data checking using a statistical program
- f. Data analysis and report writing

Proposed activities d and e will be led by the National Agricultural Statistics Service with technical support and guidance from this project team. All other activities will be a joint collaboration between SO4.1 and the host country partners.

**Objective 3:** *Build institutional capacity and develop human resources in the area of impact assessment research*

**Collaborators:** NARS and CIAT partners

This project will address the objective of institutional capacity building and human resource development through the following activities planned in FY 16:

- a. Research activities under objectives 1 and 2 will involve host country PIs/collaborators in the planning and conduct of field data collection as much as possible. During the data analysis phase, HC collaborators will be given opportunities to visit MSU and get some hands-on training by working jointly with US PIs and collaborators with the goal of generating scholarly outputs.
- b. Activities planned under this project will involve graduate students in the planning and conduct of field research and write-up of research results. These students will be recruited from within the Department of Agricultural, Food and Resource Economics at MSU (see the details on trainees in the Training section).

### **III. Contribution of Project to USAID Feed the Future Performance Indicators:**

See the attached excel file

### **IV. Outputs:**

Specific outputs to result from this project by the end of FY 16 include:

- a. Completion of two Impact Briefs
- b. Completion of two manuscript for publication in academic journals and/or presentations at professional meetings

### **V. Engagement of USAID Field Mission(s)**

No specific plans for engagement of USAID Field Mission(s) are envisioned in FY 16. Project activities in host countries will mainly involve data collection, accessing secondary data, and information gathering through stakeholder interviews. Data collection will be done in collaboration with HC partners in countries where Legume Innovation Lab is already engaged and where activities are occurring in concurrence with USAID country or field missions.

### **VI. Partnering and Networking Activities:**

All the activities occurring in specific countries through field research will involve collaboration with host country institutions and partners. Host country institutions will not only be involved in the planning and design of data collection efforts, conducting surveys, data entry and report

writing, but also in the dissemination of results to broader audience and stakeholder groups. Opportunities will be sought to present papers based on this project's research results in national and international policy and professional forums.

Results emanating from this impact assessment research project will be published in the form of Impact Briefs and will be posted on the Legume Innovation Lab website. They will be also shared with appropriate USAID mission offices through the Legume Innovation Lab Management Office and host country partners.

### **VII. Leveraged Resources:**

The Department of Agricultural, Food and Resource Economics at MSU has awarded a Graduate student recruitment fellowship to Ms. Christine Sauer for Fall 2015 under the mentorship of M. Maredia. This project will use this fellowship opportunity to fund this student to contribute towards data analysis planned under Objective 1 (activity 1b).

In addition, the project PIs will be actively engaged in identifying opportunities to partner with other international impact assessment and Grain Legume research programs/projects and seek for opportunities to leverage resources to achieve common research goals.

### **VIII. Timeline for Achievement of Milestones of Technical Progress:**

See the attached excel file

### **Appendix 1: Workplan for Training and Capacity Strengthening (FY 2016)**

#### **Degree Training:**

First and Other Given Names: Christine

Last Name: Sauer

Citizenship: USA

Gender: Female

Training Institution: Michigan State University

Supervising CRSP PI: Mywish Maredia

Degree Program for training: M.S..

Program Areas or Discipline: Agricultural Economics

If enrolled at a US university, will Trainee be a "Participant Trainee" as defined by USAID? No

Host Country Institution to Benefit from Training: None

Thesis Title/Research Area: the student will assist in panel data analysis of existing datasets

Start Date: Fall 2015

Projected Completion Date: Fall 2017

Training status (Active, completed, pending, discontinued or delayed): Pending

Type of CRSP Support (full, partial or indirect) for training activity: Partial

#### **Short-term Training:**

Name of training program: Survey design and implementation training in Haiti

Type of training: Short-term training (classroom and field testing)

Description of training activity: A 3-4 days training of HC collaborators, enumerators,

supervisors and data entry staff will take place in Haiti to provide an understanding of the questionnaire, the methodology and survey design, and the interview techniques for doing impact assessment studies.

Location: Haiti

Duration: up to 4 days

When will it occur? March-April 2016

Participants/Beneficiaries of Training Activity

Anticipated numbers of Beneficiaries (male and female): 10 male 5 female

PI/Collaborator responsible for this training activity: M. Maredia

Approximate budget allocation from USAID funds for training: \$17,697

List other funding sources that will be sought (if any): None

Training justification: This training activity will help build the local capacity to track, monitor and evaluate the adoption and impact of agricultural technologies, such as improved bean varieties, agronomic practices, inputs, etc.

**Equipment** (costing >\$5,000): **None**