


**Feed the Future Innovation Lab for Collaborative Research on Grain Legumes**

**PROJECT TECHNICAL DESCRIPTION**

**COVER PAGE**

<b>Code and Title of Legume Innovation Lab Project:</b> SO4.1 Impact Assessment of Dry Grain Pulses CRSP investments in research, institutional capacity building and technology dissemination for improved program effectiveness		
<b>Name, institutional affiliation and contact information of Lead U.S. Principal Investigator and University:</b> Mywish Maredia, Assoc. Professor, Agricultural, Food and Resource Economics, Michigan State University, Justin S. Morrill Hall of Agriculture, 446 W. Circle Drive, Room 89 , East Lansing, MI 48824, Phone: 517-353-6602; Fax 517-432-1073, Email: <a href="mailto:maredia@msu.edu">maredia@msu.edu</a>		
<b>Name(s) and institutional affiliation of all Host Country (HC) and U.S. Co-PIs:</b> Eric Crawford, Agricultural, Food and Resource Economics, Michigan State University		
<b>Project Period:</b>	<b>Total Funding for 4.5 year Project</b>	<b>Total non-federal cost share commitment by U.S. institution(s)</b>
April 1, 2013 – September 29, 2017	\$900,000	--
<b>HCs where project activities will be implemented:</b>	<b>HC institutions to be sub-contracted (abbreviated names):</b>	<b>Percent of total project funding budgeted for each HC institution to be subcontracted</b>
Potentially all the HCs where Legume Innovation Lab project activities will take place	(none identified at this time)	--
<b>Authorized Lead U.S. University Representative:</b>		
<p>Name- Craig O'Neill                  Title- Sponsored Programs Manager                  Mailing Address- 426 Auditorium Rd, Room 2; East Lansing, MI 48824                  Email Address- <a href="mailto:team3@osp.msu.edu">team3@osp.msu.edu</a>                  Phone Number- 517-884-4275</p>		
Signature: <u></u> Date: <u>7-8-13</u>		

## SUMMARY PAGE

<b>Code and Title of Legume Innovation Lab Project:</b> SO4.1 Impact Assessment of Dry Grain Pulses CRSP investments in research, institutional capacity building and technology dissemination for improved program effectiveness	
<b>Name and Institutional Affiliation of the U.S. Lead Principal Investigator:</b> Mywish Maredia, Agricultural, Food and Resource Economics, Michigan State University	
<b>Abstract (Limit: 1800 characters including spaces—about 200-250 words):</b> Building on the momentum and experience gained over the last three years, this project proposes to contribute towards evidence-based rigorous ex ante and ex post assessments of outputs, outcomes and impacts of research 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 will ultimately help increase the overall impact of such investments. The project team proposes to: a) review each research project to be funded by the Legume Innovation Lab at the outset and on an ongoing basis with the aim of defining impact pathways for project outputs, and advising the MO and the project team on ways to integrate data collection and impact evaluation strategies as part of the project design; and b) provide technical leadership in the design, analysis and collection of baseline and end line data to conduct ex ante (i.e., potential) and ex post (i.e., realized) impact assessment of the Legume Innovation Lab’s investments in research, institutional capacity building and technology dissemination in Africa, Latin America and the U.S.	
<b>Summary Checklist (select as many as appropriate)</b>	
	Project involves the use of proprietary transgenes or the generation of genetically modified organisms (GMOs)
X	Project involves human subjects and requires approval
	Project involves animal use and requires approval
	Project involves the use of agricultural pesticides and requires a Pesticide Evaluation and Safe Use Action Plan
	Project involves M.S. or Ph.D. degree training of HC personnel at a U.S. university (How many?) _____

## A. **Technical Approach**

### 1. 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.

Building on the momentum and experience gained over the last three years, the proposed research will contribute 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 will ultimately help increase the overall impact of such investments.

### 2. Objectives

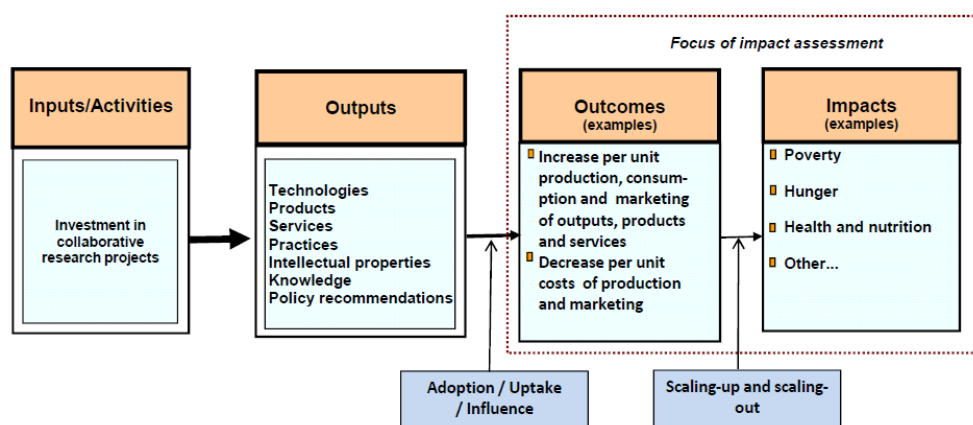
1. Conduct impact pathway analysis, provide advisory role to the MO, and be responsible for technical leadership in the design, collection and analysis of data for strategic input and impact evaluation
2. Conduct ex ante (i.e., potential) and ex post (i.e., realized) impact assessment of the Legume Innovation Lab’s investments in research, institutional capacity building and technology dissemination in Africa, Latin America and the U.S.
3. Build institutional capacity and develop human resources in the area of impact assessment research

### 3. Approaches and Methods

***Objective 1: Conduct impact pathway analysis, provide advisory role to the MO, and be responsible for technical leadership in the design, collection and analysis of data for strategic input and impact evaluation***

The work program of this project is based on a simplified impact pathway model that conceptualizes how investments affect developmental outcomes and impacts (Figure 1). This model also introduces the concept of ‘impact assessment,’ which is defined as ‘the systematic analysis of the significant or lasting changes—positive or negative, intended or not – in people’s lives brought about by a given action or series of actions in relation to a counterfactual.’

Figure 1. A generalized impact pathway of R&D activities funded by the Legume Innovation Lab



Arrows in the impact chain indicate the direction of influence and its thickness indicates level/degree of influence on an effect

**Definitions:**

**Inputs:** The financial, human, and material resources used for the research intervention.

**Outputs:** Include changes resulting from the research which are relevant to the achievement of outcomes; manifested in technologies, products, capital goods, services, practices, knowledge, policies and information.

**Outcome:** The likely or achieved short-term and medium-term effects of an intervention's outputs at the beneficiary level (farmers, individuals, consumers).

**Impacts:** Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.

The research inputs from the ongoing and new proposed activities are conceptualized to generate outputs in the form of technologies and practices, goods and services, intellectual properties and policies that are relevant to bringing about changes in the use of farm- and community-level resources and assets (i.e., land, labor, capital, entrepreneurship) to increase per unit production or marketing of outputs, products and services, or decreased risks and per unit costs at the farm household level (referred in Figure 1 as project outcomes). The realization of projected outcomes requires adoption/uptake of research outputs at the end-user level (farmers, processors, consumers). Impacts on developmental goals (such as poverty reduction, environmental sustainability, food security, health, etc.) are realized when the outcomes are sufficiently scaled up and scaled out to a large number of beneficiaries.

As a first objective, this project will focus on reviewing Legume Innovation Lab research projects at the outset and on an ongoing basis with the aim of

- a. Defining impact pathways for project outputs
- b. Advising the MO and the project team on ways to integrate data collection and impact evaluation strategies as part of the Innovation Lab project design; and providing technical leadership in the design, collection and analysis of baseline and end line data for strategic input and impact assessment

The methods/approaches to achieve this objective are as follow:

**1a. Defining Impact Pathways for project outputs:** The impact pathway analysis conducted in the first phase was viewed positively by the MO and the PIs of the respective research team. To maximize its utility, we plan to conduct such analysis for all the projects at the outset during the proposal and workplan development phase. The goal

is to integrate impact pathway planning in all subcontracted Innovation Lab projects to help foster an impact culture in the Legume Innovation Lab community. The impact pathway analysis will be based on the information provided by individual project team and will capture the project's projected outputs, outcomes and impact. The impact pathway analysis will give a synopsis of the types of outputs to be generated by different research projects by the end of FY 2017, potential scale or impacts envisioned by the research team over the next 4.5 years, impact pathway and indicators along that pathway to achieve developmental outcomes (in the form of impacts at the beneficiary/adopter level).

As a follow-up to the impact pathway analysis and as part of an ongoing review (and M&E) of research portfolio, the Impact Assessment research team will help identify research outputs, outcomes and impacts for reporting purpose. Noteworthy achievements and outcomes will be recommended for publication as "Impact Research Briefs" to be posted on the Legume Innovation Lab web site.

**1b. Technical leadership in the design, collection and analysis of baseline and end line data for strategic input and impact assessment:** Legume Innovation Lab's investments in "research for development" fall across the wide spectrum of activities ranging from basic/fundamental research to applied/adaptive research to technology transfer. Since resources to conduct research are scarce, many Innovation Lab projects undertake pilot scale initiatives and programs designed to test science-based interventions in a developing country setting with the aim of identifying the most effective strategies/models which can then be scaled up to achieve developmental impacts. For a research project to be successful in achieving this goal requires some forethought on the design of field activities and a strategy for collecting appropriate baseline and follow-up data or making use of available data. The purpose of such strategizing is to make sure that at the end of an intervention/activity, opportunity to assess the cause-effect relationship between a research project and indicators of outcomes/impact is not lost. As part of this project, the PIs will work with other research project PIs to assess the feasibility of integrating data collection and impact evaluation strategies as part of their Legume Innovation Lab project design. It is likely that not all research projects will be amenable to integration of "impact evaluation" research as part of the project design because of the basic/fundamental nature of the research. It is also likely that such integration would require substantial resources which may not be available to the project team. Thus, one of the main tasks for this project PIs would be to review the workplans and have a discussion with project PIs to assess the following:

- i. Existing data sets that can inform about the baseline and help in the analysis of impact attribution
- ii. Possibility of collecting relevant data using project budgets or supplemental resources
- iii. Possibility of collaborating with the Impact Assessment project team in writing joint proposals to leverage resources from other sources.

The outcome of these assessments and discussion will be an action plan with concrete suggestions on research design, plan for utilizing/analyzing existing data or new data collection plan, and plan for leveraging resources to facilitate the inclusion and integration of impact evaluation research in Legume Innovation Lab projects.

For specific research project components and pilot sites where it makes sense to collect baseline data and follow-up monitoring and impact evaluation data, and for which

adequate resources are available, the Impact Assessment team will provide technical leadership in the form of human resources and professional expertise in data collection (i.e., sample design, impact evaluation design, designing data collection instruments, training enumerators, data entry templates, etc.) and analysis. This will be a joint activity with the relevant research team and rely on the logistical support from the host country partners. Resources for data collection will need to be budgeted by the relevant research project team and/or leveraged through supplemental Legume Innovation Lab and/or other funding opportunities.

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

Under this objective, this project plans to: 1) assess the realized (ex post) impact of the Legume Innovation Lab (and the predecessor CRSP program's) investment in technologies/outputs where there is evidence of adoption, and 2) enhance future impacts by engaging in innovative and evidence-based research that will serve as an input in making strategic research priority decisions by the Legume Innovation Lab program, and in developing strategies for technology dissemination for maximum impact.

The following list of candidate research foci provides examples of types of research studies and activities that will be undertaken under this objective. **Actual (number and type of) studies to be implemented over the next 4.5 years will be determined jointly with the Management Office by taking into consideration the needs and analytical demand from USAID, and will be contingent upon availability of resources, data, and interest from stakeholders.**

- a. Assessment of the impact of research on biocontrol IPM strategy in Burkina Faso. The baseline data for this research project has been collected in 2012. The plan will be to do a follow-up survey 3-4 years after the deployment of the biocontrol agents and evaluate the impact in the field.
- b. Assessment of the contribution of CRSP (and Legume Innovation Lab) research in advancing the frontiers of science, technology and knowledge. Methods to be explored include citation index analysis and the analysis of pedigree data on released varieties to assess the contribution of cutting edge research tools and methods (i.e. molecular markers) in technologies available to farmers in the US and developing countries. Collaboration with impact assessment researchers from other Innovation Lab will be sought on research themes or methodological approaches common across USAID funded research programs.
- c. The impact of research investment in crop improvement research is dependent upon the availability (supply) and affordability (demand) of seeds of improved varieties. Assessment of factors that contribute to the success and sustainability of seed systems for grain legumes in different socio-economic and agricultural systems contexts is therefore an important area of research to enhance the impact of research by the Legume Innovation Lab. This project will explore field research opportunities to address such questions as: a) willingness of small holder farmers to pay for quality seed over grain; b) factors important for the sustainability of seed systems; c) alternative models that incorporate sustainability factors (community based seed systems, role of private sectors with vested interest in functionality of seed system, etc.).

- d. Systematic analysis of existing datasets in FTF and Legume Innovation Lab focus countries to develop profiles of potential research clients and beneficiaries, and to understand the constraints and potential impact of the adoption of new technologies by grain legume growers. Data such as LSMS household and integrated agriculture surveys, agricultural censuses, Demographic and Health Surveys (DHS), and other nationally representative surveys (such as TIA in Mozambique or panel surveys in Kenya and Zambia by FSG), will be explored to see if they can provide information that can help understand:
  - a. The role of grain pulses in farmer's livelihood and food security strategies
  - b. Dietary decision making by rural and urban women and men and the potential role of pulses in diversifying and enhancing dietary nutritional quality.
  - c. What factors influence the adoption of productivity enhancing technologies in grain legumes by resource poor small holder farmers?
  - d. Why haven't small holder bean farmers adopted productivity enhancing technologies?
  - e. What factors influence a farmer's willingness to invest in inputs that are proven to enhance productivity?
  - f. Why haven't outcomes of grain legume research contributed to productivity gains such as in other commodities?
  - g. What might the Legume Innovation Lab be doing to increase adoption and impact from investments in research?

Opportunities to link up with other planned survey and data collection efforts within the Legume Innovation Lab (i.e., projects lead by KSU and ISU) will be also sought to address some of these research questions.

If there is enough interest in these types of questions by other international partners, this project will explore the possibility of collaborating with them in collecting new and periodic data in a few sentinel sites across countries with the aim of gaining a better understanding of the role and contribution of pulses towards household income, and in meeting the food and nutritional security goal, and in monitoring the 'pulse' of the potential research clientele groups and communities in some key legume producing and consuming countries.

#### 4. Collaboration with Host Country Institutions

As noted below, all the activities occurring in specific countries through field research will involve collaboration with host country institutions and partners. Host country institutions will be involved in the planning and design of data collection efforts, conducting surveys, data entry, report writing, and dissemination of results of collaborative efforts.

#### 5. Coordination with other International Grain Legume Research Programs/Projects

The project PIs will be actively engaged in identifying opportunities to partner and coordinate activities with other international impact assessment and Grain Legume research programs/projects. These will include:

- CGIAR Research Program on Grain Legumes (CRP 3.5) and PABRA: Over the next year, PABRA (in collaboration with CIAT and NARS partners) is planning to implement bean adoption surveys in many East and Southern African countries. This

project will try to coordinate with CIAT/PABRA team to leverage this opportunity to design these surveys such that they can serve as ‘baseline’ assessment for future evaluations of grain legume research efforts in FTF focused countries.

- CGIAR’s Standing Panel on Impact Assessment (SPIA): The CGIAR Consortium has recently received a multi-donor commitment to fund a program to be managed by SPIA called “Strengthening Impact Assessment in the CGIAR” (SIAC). Michigan State University serves as a leader entity for implementing two objectives related to testing new methods/approaches for tracking technology adoption and documenting the outcomes of CGIAR research. Mywish Maredia is one of the Lead PIs of the SIAC project activities to be implemented by MSU. The PI will use this platform to seek opportunity to collaborate with appropriate partners in collecting information and adoption data that will offer mutual benefits to the Legume Innovation Lab and CGIAR centers in the area of documenting adoption and impacts of grain legume research in regions/countries where SIAC project activities intersect with the Legume Innovation Lab focus countries.
- Country or region-specific Associate awards or special projects on themes/topics aligned with the Legume Innovation Lab and where opportunities to integrate data collection and impact evaluation exists (e.g., the recent Associate Award by the Guatemala mission, and the proposed Gates funded project on IPM of cowpea crop in West Africa involving Legume Innovation Lab researchers)
- Other MSU-based research projects such as the Food Security Group (FSG) in the Agricultural Food and Resource Economics (AFRE) Department: The recently funded FSG project by the Gates Foundation called “Guiding Investments in Sustainable Agricultural Intensification in Africa (GISAIA),” offers another opportunity (which will be pursued) to address common research objectives related to the role of grain legumes in agricultural intensification in Africa.
- Exploring funding opportunities in response to RFAs in the area of impact assessment research. For example, the International Initiative for Impact Evaluation (3ie) routinely issues RFPs to promote research in the area of impact evaluation of development interventions in developing countries. In the next round, opportunities will be sought to leverage funding from this organization to conduct ‘impact evaluation’ of a legume based project in partnership with host country PIs and collaborators to promote objective 2 of this project.

## 6. Outputs

Specific outputs to result from this project by the end of 4.5 years (September 30, 2017) include:

- a. Completion of at least 2 theses or dissertation papers on impact assessment research – one in FY 14 and the other in FY 16.
- b. At least 6 Impact Briefs which can be more widely disseminated to convey the impact stories of USAID’s investments in Legume Innovation Lab (and its predecessor Dry Grain Pulses CRSP) – two in FY 14, two in FY 16 and two in FY 17.
- c. At least 5 manuscripts for publication in academic journals and presentations at professional meetings – one each in FY 13 and FY 14, one in FY 15 and two in FY 17.

## 7. Strategy for Institutional Capacity Building



Although this project does not include a host-country partner as in other Legume Innovation Lab projects, it does address the objective of institutional capacity building and human resource development through following methods:

- a. Short-term training: Conduct educational sessions at project planning meetings and/or Global PI meetings to build capacity across the Legume Innovation Lab in developing and using impact pathways, theories of change, and collecting/reporting on performance indicators data. Such impact assessment training workshops or seminars will help the Legume Innovation Lab researchers (both from the US and HC) get familiarized with the operational aspect of impact assessment and help inculcate the culture of impact evaluation.
- b. Field activities under objective 1b and 2 will involve host country PIs/collaborators in the planning and conduct of field activities as much as possible.
- c. Activities under objective 1a and 1b will be conducted in close collaboration with the U.S. and HC PIs from CRSP projects. The discussion and exchange of information envisaged in these activities will hopefully increase awareness and influence the outlook of CRSP scientists towards impact assessment research and its importance. This may contribute to enhancing the impact culture within the host country partner organizations.
- d. The 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. Efforts will be made to provide this opportunity to students from developing countries as much as possible.

## **B. Alignment with USAID Feed the Future Goals and Strategic Research Objectives**

1. *Alignment-* Feed the Future embraces the current best practices in monitoring and impact evaluation promoted at USAID. This project is well aligned with the following best practice guidelines and evaluation policy of USAID (source: USAID Evaluation Policy, January 2011). According to this policy, evaluations should be:
  - **Integrated into design of projects:** USAID's renewed focus on evaluation focuses on achieving measurable results. According to this policy, when a project that will be subject to evaluation is initiated, baseline data, including variables that correspond to key outcomes and impacts, should be collected using high-quality methods and analyzed to establish a reference point. Data collection from the same units of observation as in baseline should be replicated toward the conclusion of implementation to assess changes.
  - **Unbiased in measurement and reporting:** Evaluations of USAID projects should be undertaken so that they are not subject to the perception or reality of biased measurement or reporting due to conflict of interest or other factors. Whereas most evaluations are expected to be external, funding may be dedicated within a project design for implementing partners to engage in evaluative work for their own institutional learning or accountability purposes.
  - **Based on the best methods:** Evaluations should use methods that generate the highest quality and most credible evidence that corresponds to the questions being asked, taking into consideration time, budget and other practical considerations.

- **Oriented toward reinforcing local capacity:** The conduct of evaluations should be consistent with institutional aims of capacity building and respectful engagement with all partners.
- **Transparent:** Findings from evaluations should be shared as widely as possible, with a commitment to full and active disclosure.

This project adheres to these USAID evaluation policy guidelines as embraced by the Feed the Future initiative.

2. *Gender Equity*- This project is designed to assess how the technologies and knowledge generated by the Legume Innovation Lab (and its predecessor CRSP) benefits women farmers, entrepreneurs and consumers. Thus, where applicable, ‘gender equity’ will be one of the metrics to be used in evaluating the impact of Legume Innovation Lab research.
3. *USAID Mission Engagement*- 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. Results emanating from this impact assessment research project (e.g., in the form of Impact Briefs) will be shared with appropriate USAID mission offices through the Legume Innovation Lab Management Office and host country partners.

### C. **Impact Pathway Plan**

The impact pathway plan is outlined in the excel template as a separate attachment.