

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



**REQUEST FOR PRE-PROPOSALS
REVISED Sept. 10, 2013**

*Improving the Nutrition of the Poor, Especially Young Children and
Women, through Grain Legume Consumption*

Important Dates:

- Date of RFP issuance- September 3, 2013
- Deadline for receipt of pre-proposals- September 30, 2013
- Full Proposals Requested- October 22, 2013
- Deadline for Full Proposal Submission- December 23, 2013

This Request for Pre-Proposals (RFP) is issued by Michigan State University, the Management Entity of the Feed the Future Food Innovation Lab for Collaborative Research on Grain Legumes (Legume Innovation Lab), The Legume Innovation Lab is supported by the U.S. Agency for International Development under award no. EDH-A-00-07-00005-00. The program Management Office is located in JS Morrill Hall of Agriculture, 446 W. Circle Dr., Room 321, Michigan State University, East Lansing, MI 48824-1039, USA. Website: <http://www.legumelab.msu.edu/> Email: <legumelab@anr.msu.edu> or widders@msu.edu



Introduction

The Feed the Future Innovation Lab for Collaborative Research on Grain Legumes (“Legume Innovation Lab”) invites pre-proposals for collaborative research and capacity building projects on *Improving the Nutrition of the Poor, Especially Young Children and Women, through Grain Legume Consumption*.

The Legume Innovation Lab program, previously branded the Dry Grain Pulses Collaborative Research Support Program (CRSP), received a four and a half year extension from the Bureau of Food Security, USAID, Washington, for the period April 1, 2013 to September 29, 2017. The technical vision for the new phase is defined by four strategic objectives which are aligned USAID priorities as found in the Feed the Future Global Research Strategy

(http://www.feedthefuture.gov/sites/default/files/resource/files/FTF_research_strategy.pdf).

This Request for Pre-Proposals responds to needs under Strategic Objective 3 of the Legume Innovation Lab: *To improve the nutritional quality of diets and to enhance the nutritional and health status of the poor, especially women and young children.*

Based on peer review of pre-proposals received, the Legume Innovation Lab will invite the submission of two or three full proposals. The goal is to award one or two 45-month (January 1, 2014 – September 29, 2017) projects with a cumulative commitment of up to \$3,000,000 in funding.

Technical Focal Area for Pre-Proposals

Pre-Proposals being solicited under this RFP should address Strategic Objective 3 of improving the nutritional status of young children and women through enhanced grain legume consumption and improved dietary nutritional quality. Successful pre-proposals will put forward an innovative collaborative research and capacity building plan which results in the generation of new knowledge that informs nutritional policy and interventions, ultimately contributing to a reduction in indicators of under-nutrition in USAID priority countries.

Strategic Objective 3 is based on the premise that edible grain legumes (e.g., common bean, cowpea, pigeonpea, chickpea) are nutrient-dense staple foods that increase the nutritional value of diets by providing a compliment to the starch (i.e., maize, sorghum, rice, cassava, potato, etc.). The nutritional value of the grain legumes is attributable both to their high nutrient composition (quality protein, complex carbohydrates, fiber, essential minerals, fatty acids, vitamins, etc.) and their constitutive properties in promoting a healthy gut microbiome with reduced inflammation and improved absorption of nutrients.

The Legume Innovation Lab has adopted a dual strategy to address undernutrition of young children and women in developing countries; (1) to increase productivity of edible legumes so as to enhance grain availability and affordability to the poor, and (2) to increase knowledge of the nutritional value and role of grain legumes in diets. The belief is that a better understanding of the value of grain legumes in diets to the nutritional status of young children can inform nutritional policy as well as the conceptualization and design of appropriate and effective interventions (i.e., educational programs, fortification, food aid, etc.) by both the public and private sector institutions to reduce under-nutrition among the poor.

The US Government’s Feed the Future strategy seeks to improve the plight of more than 200 million children worldwide under the age of five who suffer from chronic or acute malnutrition. Under-nutrition during the early formative “first 1000 days” has long-term consequences. Stunted growth, impaired cognitive development, and weakened immune systems limit the potential of children to develop and lead

productive and healthy lives. Undernourished women of childbearing age are also a priority population to USAID because of the high risks to unfavorable pregnancy outcomes including the birth of low-weight children.

Despite the fact that grain legume crops are grown widely throughout Africa, Asia, and Latin America, especially by smallholder farmers for household food security, consumption of legumes by infants and children is low. A study of bean consumption in five African countries indicated that only 30 to 40 percent of infants (six to 23 months) consume legume-based foods. Although access to grain legumes by the poor plays a role, dietitians contend that lack of knowledge of the nutritional importance of grain legumes in the diets of young children influences food selection and dietary decisions by household food providers.

A growing body of scientific literature suggests that environmental enteropathy resulting from poor sanitary conditions in developing countries accompanied by diets of low nutritional value might be jointly contributing to the high incidences of undernutrition of young children (Korpe, PS and Petri, WA, 2012; Dewey, KG and Adu-Afarwuah, S, 2008). Changes in the balance of gut microbial flora accompanied by reductions in intestinal mucosal integrity can adversely affect nutrient absorption and immunological function as the intestine is the first line of defense against pathogens and allergens. Since food intake and improved nutrition can promote mucosal repair independent of the effect of the nutrition status of children (Sullivan 2002), research is needed to better understand the determinants of child nutrition including the influence of dietary composition on gut health and function.

The purpose of this RFP is therefore to generate knowledge on the potential role of regular grain legume consumption on microbiome health, nutrient absorption from dietary components and ultimately on the nutritional and health status of young children and women of childbearing age living in poverty in developing countries.

Potential areas for inquiry by proposed research projects might include (but not limited to):

- Can regular grain legume consumption reduce the incidence of environmental enteropathy and contribute to healthy intestinal absorptive and immunologic functions? Can nutritional dietary interventions involving grain-legume foods improve gut microbiome stability, reduce intestinal inflammation, improve intestinal nutrient absorption, and reduce the incidence of under-nutrition of young children and women of child of bearing age in developing country contexts? What is the mechanism(s) by which grain legumes influence gut health and function? Can regular consumption of edible grain legumes reduce biomarkers for environmental enteropathy in young children living in impoverished and poor sanitary conditions?
- What is the true value of grain legumes in diets in contributing to the nutritional status and health of infants and young children, including gut health and function, leading ultimately to improvements in anthropometric indicators? What are the constituents and/or properties of grain legumes that are important in promoting good nutrition and health of young children? Are there substantive differences among edible grain legume species and market classes with regard to important constituents and properties that influence their nutritional value in diets?
- What locally available foods are complementary to grain legumes (bean, cowpeas) and might constitute a nutritious diet for the poor in developing countries in SubSaharan Africa and Latin America? What is the basis for this complementarity? Does the method of household food preparation by the poor influence the nutritional and health value of beans to be consumed? Do

edible grain legumes interact with other foods in diets and influence their nutritional value and role in gut microbiome health?

Geographical Focus of Project

Successful pre-proposals submitted by U.S. universities will identify and engage a cohort of institutional partners with demonstrated capacity in human nutrition and health research in FTF priority countries and in the U.S. Recommended focus countries for collaboration and field nutritional research under this RFP based upon high incidences of under-nutrition include:

- Guatemala- 58.6 % stunting among indigenous populations (3rd highest in world)
- Ghana- 28% stunting among children under 5; 14% are underweight
- Ethiopia- 44% stunting among children under 5
- Uganda- 38% stunting among children under 5
- Mozambique- 44% stunting among children under 5
- Tanzania- 42% stunting among children under 5; 16% are underweight

Project Funding

The Legume Innovation Lab is planning to obligate up to \$3,000,000 for one or two 45-month awards (January 1, 2013 – September 29, 2017) under this Technical Area. Funding proposed in the budget must be justified based up the envisioned research and training activity expenses both in the host country and the U.S.

Important information about the RFP process

Eligibility

The Legume Innovation Lab, funded by the Bureau of Food Security, USAID, is authorized under Title XII of the Foreign Assistance Act of 1961 (as amended). U.S. colleges/universities (as defined under Section 296-d) are therefore invited to submit pre-proposals as Lead institutions for a project involving a consortium of collaborating host country and public and private U.S. research institutions. In particular, qualified minority-serving institutions are encouraged to submit pre-proposals, including but not limited to, Historically Black Colleges and Universities, Predominantly Black Institutions, Hispanic Serving Institutions, Tribal Colleges and Universities, and Asian American Native Alaskan and Pacific Islander Serving Institutions.

Importance of Human Resource and Institutional Capacity Building

Pre-proposals should briefly indicate how human resource and institutional capacity will be enhanced. Pre-proposals must demonstrate meaningful collaboration in research and training between a Lead U.S. university and one or more Host Country institutions (public research institutions, universities, NGOs, etc.). Other partners such as U.S. universities and public and private sector research institutions (research hospitals, USDA/ARS, etc.) may also be subcontracted. Collaboration with multiple host country institutions is encouraged.

U.S. Lead PIs should strategically select host country partners with a commitment to collaborating long-term toward mutually agreed upon research objectives, to build capacity in critical areas of institutional need within the country, plus most importantly a commitment to contribute in achieving intermediate development outcomes (i.e., policy change, nutritional education, etc.) both within the developing country and region in accord with US Government and more specifically USAID FTF expectations.

Gender Equity

USAID policy requires that gender issues be addressed in all funded projects. Pre-proposals therefore must present a brief gender inclusivity strategy; the integration of gender considerations into the overall design and plans for implementation of the project.

Contractual and Budgetary Considerations

- 1) Each proposal must identify at least one Principal Investigator (PI) from a U.S. institution and one PI from a Host-Country institution. PIs are those individuals that assume the technical leadership and administrative responsibility for the project. Projects may also identify both U.S. and HC Co-PIs and collaborators.
- 2) Pre-proposals must include a summary budget for a 45-month award (January 1, 2014 – September 30, 2017) with total funding level of up to \$3,000,000 utilizing the budget template available at (www.legumelab.msu.edu).
- 3) The summary budget must include a projected budget with a column for each institution participating in the respective project including estimates of institutional costs, negotiated administrative rates (e.g., indirect costs), and institutional match. The Legume Innovation Lab requires that each project provides a minimum of 15% cost share, cash or in-kind contributions, on total costs budgeted by the U.S. university(s). Costs for training of host country scientists at a U.S. university are considered as a “U.S. for Host Country expense” and thus exempt from the cost-share requirement.
- 4) A minimum of 50% of the direct funds must be expended in or on behalf of the Host Country Institutions participating in this Legume Innovation Lab. Higher percentages of funding budgeted for Host Country institutions, however, are viewed favorably.
- 5) A minimum of 30% of proposed project funds within the budget must be designated for Host Country institutional capacity building and human resource development activities. Appropriate capacity building and human resource development activities include MS and PhD graduate training of students from partner host country institutions with research assistantships allowing active student involvement in project research activities.
- 6) Budget proposals may include support for degree and short-term training at both U.S. universities and/or appropriate advanced institutions around the world. All trainees that enroll in a U.S. university and receive any financial support through the Legume Innovation Lab must be in compliance with USAID guidelines for Participant Training. (ADS 253—available at: <http://www.usaid.gov/policy/ads/200/253.pdf>)
- 7) Pre-proposals that leverage support from private and public sources (i.e., through grants, endowments, in-kind contributions) will be given high consideration. Leveraging provides opportunity to broaden the scope and extend outputs of Legume Innovation Lab projects.
- 8) Studies involving human and animal subjects including surveys must obtain full review of protocols and approval from the appropriate U.S. lead-university Institutional Review Board before project implementation in the U.S. and the Host Country.

Instructions for Preparation of Pre-Proposals

Pre-proposals will be the basis for the selection of two or three projects for which full proposals will be invited.

The pre-proposal should include (1) a Cover Page, (2) a Technical Application narrative (maximum of five pages), plus (3) a four-year (45-month) Summary Budget and (4) a Cost Application narrative (maximum of one page). Forms for the Cover Page and Budget can be accessed and downloaded from www.legumelab.msu.edu.

Technical Application (maximum five pages)

A. Technical Approach

1. Introduction- Present a human nutrition, dietary quality, or health challenge in a developing country or region that will serve as the justification for the proposed research and capacity building project. Empirical data and citations of published studies regarding the extent of the challenge/problem and the possible link to edible grain legume consumption are critical. In addition, scientific literature should underpin the formulation of hypotheses and of a technical approach for the proposed research project. Present also a case for the selection of the country (countries) in which to conduct the research.
2. Research Questions or Hypotheses- Identify no more than three focused well-defined research questions or hypotheses to be tested.
3. Research Approach and Methods- Describe innovative research approaches and methods, especially multidisciplinary collaborations where appropriate, that afford a high likelihood of success in answering the specific research questions or testing the hypotheses in the proposed developing country context. Identify cutting-edge research capacities and roles of the collaborating institutions in the proposed study.
4. Collaboration with Host Country Institutions- Present a plan for partnership and collaboration with a team of scientists and laboratories in achievement of project objectives, including division of responsibilities and coordination of activities.

- B. Host Country Institutional Capacity Building - Present a brief plan for human resource development involving innovative cost-effective approaches for degree and short- term training relative to institutional needs of principle target focus country. Comment on integration of training with proposed research activities.
- C. Contribution to US Government's Feed the Future Objectives- Describe alignment and envisioned contribution of proposed research effort to US Government's Feed the Future strategic goals and objectives as defined in the Feed the Future Global Food Security Research Strategy (<http://www.feedthefuture.gov/resource/feed-future-research-strategy>).
- D. Past Experience- Describe previous similar experience(s) of the Lead PI and/or university with successful complex well-managed research projects especially in developing country contexts. Share also experience and expertise in target focus country of proposed project.

Cost Application

- A. Budget Summary for four-year (45 month) project (complete "Summary Budget" Excel

template from www.legumelab.msu.edu/)

B. Budget Narrative (one page maximum)

Provide a narrative explaining the proposed expenditures in the Summary Budget.

Appendix

- Literature Cited
- Short CVs of Lead U.S. and Host Country PIs

Format

Applications must be in English with narrative portions prepared in MS Word with Times New Roman font size 11 and 1.15 line spacing. The Budget Tables for the cost application must be prepared in Microsoft Excel utilizing the forms available at www.legumelab.msu.edu/. Page size should be 8 ½ x 11” with 1” margins. All pages except for the Cover Page must be numbered. An authorized institutional signature is required for the Cover and Budget Summary pages.

Submission of Pre-Proposal

The Technical Application, the Cost Application and the Appendix must be submitted electronically by the deadline of Monday, September 30, 2013 as separate files attached to an email to the legumelab@anr.msu.edu . The Technical and Cost Applications must be submitted as both PDF (with authorized signatures) and Word/Excel files. Proposals that do not meet this deadline or the specified content and format will not be considered.

Evaluation of Pre-Proposals

The following criteria will be used for evaluation of pre-proposals by external peer scientists (with no-conflicts of interest) and the Technical Management Advisory Committee (TMAC) for the Legume Innovation Lab. From the recommendations received, the Director of the Legume Innovation Lab in consultation with the USAID Agreement Officer’s Representative (AOR) will select two to three projects for which full proposals will be requested.

a. Alignment with Feed the Future and Legume Innovation Lab Strategic Objectives

Projects must demonstrate an alignment of both technical approach and institutional collaborations with priorities and strategic research objectives of both the US Government’s Feed the Future (<http://www.feedthefuture.gov/resource/feed-future-research-strategy>) and the Legume Innovation Lab (www.legumelab.msu.edu). This includes support for multi-disciplinary research on grain legumes to generate new knowledge and technologies that if disseminated would improve the nutrition of young children and women, enhance dietary consumption, and ultimately reduce nutritional bio-indicators in strategic focus countries. Pre-proposals are also expected to address cross-cutting issues such as gender equity.

b. Scientific Quality and Innovativeness

The proposed research effort should put forth hypotheses that are founded on excellent science and utilize innovative research approaches and methodologies that will generate quality data to effectively test hypotheses and give rise to new knowledge that can be published in peer reviewed journals and ultimately inform nutritional practice and policy.

c. Technical Merit and Potential for Impact

Strength of research focus and outputs as related to nutrition and health challenges in priority USAID FTF countries- As a USAID financed project, research outputs must demonstrate relevance and potential contributions to substantive impacts; widespread improvements in the

nutrition and health of rural and urban poor in strategic developing countries through the consumption of edible grain legumes. To this end, pre-proposals should make a case for the selection of host country partners and provide assurance that they and ultimate knowledge-users will be engaged at all phases of the project including the planning of research and capacity building activities, implementation and data analysis/interpretation phases.

d. Strength of Team

Project pre-proposals should present a qualified team of Principle Investigators and collaborators and their affiliated institutions, committed to partnering to achieve the objectives of the proposed project. Criteria to be evaluated include selection of strong public and private sector institutions to carry out the proposed collaborative project for maximum technical achievement and impact, and engagement of multi-disciplinary expertise as needed.

e. Institutional Capacity Building

Pre-proposals should give evidence of a commitment to meaningfully collaborate with developing country institutions and to ultimately empower and enhance their capacity to sustainably carry out mission oriented research.

f. Budget

The budget should reflect an effective and efficient use of funds to achieve project research and capacity development objectives. Successful pre-proposals will address the contractual and budget guidelines identified for Legume Innovation Lab projects. Leverage of additional support from other public and private sources (i.e., other grants, endowments, in-kind contributions) to broaden the scope of research and capacity building activities is viewed positively.

Reference Literature

Dewey, KG and Adu-Afarwuah, S. 2008. Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. *Mater. Child Nutr.* 4 (Suppl 1), p 2-85

Korpe, PS and Petri, WA. June 2012. Environmental enteropathy: critical implications of a poorly understood condition. *Trends in Molecular Medicine*, vol. 18, No. 6, p 328-336

McKay, C. et al., 2010. Environmental enteropathy: new targets for nutritional interventions. *Inter. Health* 2(3), p 172-180

Sullivan, PB. 2002. Studies on the small intestine in persistent diarrhea and malnutrition: the Gambian experience. *J. Pediatr. Gastroenterol. Nutr.* 34, S11-S13