**LEGUME INNOVATION LAB FOR COLLABORATIVE RESEARCH
ON GRAIN LEGUMES**

FY 2017 WORK PLAN

<u>**Project Code and Title**</u>**: SO2.2: Enhancing Pulse Value-Chain Performance through Improved Understanding of Consumer Behavior and Decision-Making**

Short Title: Grain Legume Value Chain Initiative

Lead U.S. Principal Investigator and University: Vincent Amanor-Boadu, Kansas State University

Collaborating Host Country and U.S. PIs and Institutions:
1. Gelson Tembo, University of Zambia
2. Lawrence Mapemba, Lilongwe University of Agriculture and Natural Resources, Malawi
3. Fredy Kilima, Sokoine University of Agriculture, Tanzania
4. Allen Featherstone, Kansas State University
5. Kara Ross, Kansas State University

I. Project Problem Statement and Justification

Unlike maize, pulses are not traditional staples in Zambia, Malawi and Tanzania. The average annual per capita consumption of pulses between 2000 and 2011in Tanzania, Malawi and Zambia is respectively 21.0 kg, 14.4 kg and 2.1 kg respectively. In terms of direction, the per capita consumption in Zambia is flat while Tanzania's is declining and Malawi's is increasing. It is important, however, to recognize that the foregoing represent averages across the country and food choices vary across ethnic and socio-economic lines. The market opportunities for grain legumes may differ from these average indicators in the focus countries.

The need to identify the potential demand profiles for grain legumes in the focus countries provide the justification for this research. The results would provide insights into how the legume industry in the different countries may be organized to improve smallholder producers' wellbeing. For example, by identifying consumer preferences for different types of legumes by specific socio-economic and demographic characteristics, it may be possible to develop well-structured value chains commencing from breeders through producers to distributors and retailers to maximize value addition at each of the stages. For example, information about consumer preferences may inform market segmentation and support a focus in the breeding programs being done by National Agricultural Research scientists and their international collaborators to increase payoff and impact. These focused breeding activities may facilitate the development of production clusters to serve specific markets on a national or regional basis, and in so doing, improve the market opportunities accessible to smallholder producers.

The project's fundamental problem is, thus, is to develop a new understanding of the forces and factors shaping and influencing consumers' food choice decisions and use this to facilitate improvements in legume value chains. We envisage this improvement to go from the breeder through the producer and the extension agent to the non-governmental organization working to enhance producers' lot and the industry association staff working to improve the wellbeing of industry members. The project has been structured to use both primary data to elicit information about

consumer preferences about legumes and where they fit in food hierarchies as well as secondary data collected by organizations such as the World Bank and national government agencies in the focus countries.

We see the empirical results from the research foundations insights into how industry stakeholders in the focus countries (private businesses, non-governmental organizations, producers, traders, processors, etc.) and public institutions (research institutes, universities, extension, government, etc.) may be engaged in a search for value creation and expansion opportunities as well as solutions to challenges preventing value chain effectiveness. We also plan to use the results from our analysis of industry capacity gaps to carefully develop and deliver outreach programs aimed at enhancing strategy development, management and decision-making. In the end, the project will provides innovative and unique pathways that bring smallholder producers and other stakeholders into specific alliances to help smallholder producers improve their economic wellbeing.

The project's geographic scope covers Zambia, Malawi and Tanzania; all Feed the Future focus countries. These countries reflect the different changes that are occurring in eastern and southern Africa: increasing urbanization; economic growth and increasing but unequally distributed incomes; and changing demographics, including in agricultural production. The results from this research hopes to provide insights into legumes may be used to the principal objectives of the Feed the Future initiative – reducing poverty, increasing incomes and improving nutrition.

II. Project Activities for the Work plan Period (October 1, 2016 - September 30, 2017)

Objective 1: Identify and analyze the principal factors shaping legume consumption and their relative positions in consumers' food rankings in the selected countries.

Five theses have been completed and seven more are under way and are expected to be completed this coming fiscal year. Studies completed so far have indicated that gravy quality and tradition/culture are important attributes for legume consumption across the three countries. Zambian consumers are more affected by price and size of the bean compared to Malawian and Tanzanian consumers. In Malawi, gravy quality, cooking time, grain size and tradition/culture influence consumption of the top four popular beans. Results from the Malawi survey also indicate that common beans may not be considered "poor man's meat" as households residing in high income areas consume more beans than households residing in low income areas. Results from the three surveys will be shared with our public and private institution partners to encourage their participation in developing outreach programs informing consumers about the multiple benefits of bean consumption and educating upstream chain actors on the consumer preferred bean characteristics.

In addition to these analyses, we are organizing a community outreach project – a bean recipe contest - to encourage consumers to develop innovative ways to consume beans as a main dish instead of a sauce or relish. This contest is focused on urban consumers in Malawi and will give us some practical insights into what factors influence consumers, at least urban Malawi consumers, to consume beans as a main dish. Outcomes of this objective will increase the consumption of beans in urban areas and improve market condition for producers and bean supply chain.

Collaborators
- Mr. Chance Kabeghe, IAPRI, Zambia
- Mr. Simon Mwale, CCARDESA, Botswana
- Dr. Jim Kelly, PI, SO1.A3 (MSU)
- Mr. Kennedy Muimui, ZARI, Zambia

- Dr. Eliud Birachi, CIAT
- Dr. Susan Nchimbi-Msola, Sokoine University of Agriculture
- Dr. Rowland Chirwa, CIAT Malawi
- Others in the CIAT/SABRN research community

Approaches and Methods

Objective 1 employed a survey method to collect consumer information and uses stated preference (Discrete Choice Experiment) method to elicit consumer preferences among alternative legume products in each country. We are analyzing the data using STATA® and standard econometric modeling. We will meet with our private and public institution partners in the respective countries in this fiscal year to share the results and develop strategies in delivering effective outreach in attempt to execute the recommendations from the Objective 1. Each country is planning a national conference and three regional meetings to disseminate the findings from the Objectives 1 and 2. These events will take place in the first half of the upcoming fiscal year. Malawi is hosting a bean recipe contest in Lilongwe between the end of September and the end of October. This event is being organized by the US PIs, Malawian PI and principal leaders of the legume industry in Malawi.

Period	Activity	Specific Responsibility
November 2016	Complete policy brief based on consumption report, distribute to collaborators, industry stakeholders, country USAID missions and policymakers for comment, finalization and rollout process discussion.	Research Team with each HC PI leading their country initiative
October 2016		US PIs and Malawi PI Leading
October 2016	Consumption report distributed to Legume Innovation Lab partners, regional CG partners, country USAID missions and country policy makers.	US PIs and HC PIs Leading
November-December 2016	Report rollout in each country to present lessons learned from Objective 1 and 2 with HC PIs coordinating with local agencies and partners to maximize rollout impact.	Research Team with each HC PI leading their country initiative
August 2017	Complete final policy briefs based on lessons learned from outreach programs and gaps identified in downstream activities.	US PIs and HC PIs Leading

Objective 2: Conduct situation analyses for legume production and marketing/distribution systems with a view to identifying the nature and extent of the gaps in their value chains.

Collaborators
- Mr. Gerald Mgaya, Managing Director, Tanmush, Tanzania
- Ms. Grace Mijiga Mhango, Vice President, Malawi Grain Traders and Processors Association
- Mr. Chance Kabeghe, IAPRI, Zambia
- Mr. Simon Mwale, CCARDESA, Botswana

Approaches and Methods

Objective 2 used secondary data to determine the situation of bean production in the focus countries and focus group interviews to assess gaps in the downstream segment of the legume industry. Econometric modelling and analyses were used to determine the production situation. These analyses were used as training opportunities for MS students in the HC countries who are working on

the project as part of their degree completion requirements under HC PI supervision and mentorship.

There are two components to Objective 2: (1) Situation analyses of primary production; and (2) Situation analyses of downstream activities. The first component of Objective 2 has been completed with the help of our MS students in the respective HC institutions. The specific output of the reports describe and compare the state of bean/cowpea production in the selected countries to identify the different paths that may be used to improve performance in each country. Additionally, three MS theses on the subject coming from the host countries. HC PIs are overseeing students' research activities. With the delay in the completion of the Zambia situation analysis, this has pushed back the completion of the comparison report of the three countries. We anticipate the report of the country comparison situation analyses of primary production to be completed by the end of October 2016.

The second component of Objective 2 involves the situation analyses of downstream activities. These analyses will be conducted with secondary quantitative data from SABREN and primary qualitative data from focus group interviews conducted with industry stakeholders after the national and conference and regional meetings. The results and implications from the consumer study will help guide the assessment in downstream capabilities and reveal gaps in these activities and downstream relationships. Therefore, this second component of Objective 2 will be completed at the beginning of 2017. The results from the situational analyses and Objective 1 will inform the outreach programs planned for this fiscal year including the national conference and regional meetings in each of the three countries. Results from the second component of Objective 2 will be used in the development of outreach programs to address the gaps identified by the industry. The table below provides a schedule of activities planned for FY2017 in association with Objective 2.

Period	Activity	Specific Responsibility
October 2016	Complete country comparison situation analyses of primary production for the three focus countries.	US PIs and HC PIs Leading
March 2017	Complete a situation analyses of downstream activities and report on chain activities in the focus countries.	Research Team with each HC PI leading their country initiative

Objective 3: Implement formal and informal capacity building initiatives to address identified gaps and support value chain management capacity across the legume industry in the focus countries.

Collaborators
- Local trade associations
- Government departments of agriculture and food

Approaches and Methods
HC PIs are on track in their recruitment of MS students. They have each recruited at least two MS students for FY2017 in line with the plan. Each HC PIs have recruited at least one graduate student for the Master of Agribusiness (MAB) program at Kansas State University.

The results from the first two objectives would provide information for developing effective curricula to address the capacity and knowledge gaps in the legume supply chain in the three focus countries. We will work closely with industry stakeholders using innovative engagement methods to identify their strategic management challenges and develop the appropriate curricula to address the identified gaps. We plan to employ multiple pedagogies in delivering the training and exercises that

aim to improve skills and knowledge to enhance stakeholder capabilities. We also plan on using multiple delivery format to reach the most people in the legume industry in the three countries. To ensure sustainability of the training programs, we plan to train local stakeholders as trainers so that they can continue delivering the training programs after this project ends. Host country PIs have the responsibility to work with the industry, faculty and/or students to identify the knowledge and capacity gaps and publicize it with date, time and location.

Period	Activity	Specific Responsibility
October – November 2016	Begin planning for training workshops in each country in the FY2017. HC PIs will coordinate with local agencies to maximize participation in workshops.	Research Team
February - September 2017	Conduct a training workshop in each HC country.	US PIs and HC PIs Leading
October 2016 – September 2017	Work with local policymakers to undertake public education initiatives about the value for nitration in their respective countries	HC PIs with US PIs support

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

The close collaboration between the project and industry stakeholders will allow us to build the Feed the Future performance indicators into our engagements. For example, we expect the capacity building initiatives to contribute to productivity across the whole legume supply chain, from breeders to retailers. To this end, we envisage the project contributing to Indicator #1 (number of people in our degree training programs) and #2 (number of people in short-term training – our seminars, workshops and other engagement initiatives). Because our efforts will include helping the legume industry stakeholders enhance their management capability and decision-making skills, the project will also contribute to Indicator #4. We will endeavor to facilitate public-private partnerships – e.g., between NARS' breeders and the industry in using our information to streamline product development and commercialization. Therefore, we see the project contributing to Indicator #5.

IV.   Outputs

Three specific outputs will be delivered within this work plan period:
- A draft policy brief on how the results from the consumer research may be employed to facilitate public policy in support of the legume industry in the focus countries. It will be circulated for discussion among the stakeholders in each country by the first half of FY2017. (The final policy brief is scheduled to be completed in the second half of FY2017).
- A report of the situation analyses of downstream activities and report on chain activities in the three focus countries.
- One national conference and three regional meetings to disseminate the results from the DCE survey and situational analyses in each country.
- Industry training workshops addressing knowledge and capacity identified in the industry.

V.   Engagement of USAID Field Mission(s)

Despite the high turnover that is the reality of the Missions, we have been lucky to have national staff who are already familiar with our work. We have met and briefed USAID/Zambia Mission about

this project and its expected outputs and impacts. The Director of the Economic Growth Office in Ghana with whom we have been working on another project is being transferred to Malawi as the Deputy Director of the Mission and this will provide us an improved access to the Mission in Malawi. We will continue to explore ways of leveraging our collective resources to enhance the effective impact of this project and those being undertaken by the Missions through associate awards or similar structures.

VI. Partnering and Networking Activities

The nature of the project requires effective partnerships to make it work. To this end, we have built, and will continue to nurture, our relationships with the breeders and the CG institutions in the regions. Specifically, as our results come in, we will share them with our in-country breeders and Legume Innovation Laboratory scientists to explore how information emanating from our research may be incorporated into their own research initiatives to enhance consumption of legumes. We continue to explore partnerships with public and private institutions to facilitate the dissemination of the results even as we explore ways of improving the effectiveness of planned public outreach initiatives.

VII. Leveraging of CRSP Resources

We have been successful in getting some Legume Innovation Laboratory funding to undertake institutional capacity building in Malawi. These resources will allow us to expand the depth of our outreach and capacity building effort through the research community at LUANR and the grain legume community in Malawi. In this coming fiscal year, we are hoping to be successfully in obtaining similar funding opportunities for Tanzania and Zambia so that we can offer outreach and capacity building programs for the research community and grain legume community in those countries. We will continue to explore other opportunities from other institutions in our efforts to leverage our resources to expand our impact and reach.

VIII. Timeline for Achievement of Milestones of Technical Progress

See Milestones for Technical Progress Worksheet

Appendix 1: Work Plan for Training and Capacity Building (FY 2016)
Degree Training:
The project's degree training is limited to MS in agricultural economics and Master of Agribusiness (MAB). We proposed sponsoring two students per year in the three HCs for the MS program and four MAB across the three countries. The tables below provide the situation of degree awarding training programs for the project. None of the beneficiaries are receiving full support under the project. The MS students are receiving a stipend to support their contributions to the research and outreach efforts of project staff. The MAB students receive a full scholarship for tuition and books but are responsible for their program related travel expenses. This has slowed down our recruitment effort. We are exploring some options on how this may be addressed.

Please note: The project is not purchasing any equipment costing more than $5,000.

	Student 1	Student 2
First and Other Names	Wupe	Dinah Tuwanje
Last Name	Msukwa	Banda
Citizenship	Malawian	Malawian
Gender	Male	Female
Training Institution	Lilongwe University of Agriculture and Natural Resources (LUANAR)	Lilongwe University of Agriculture and Natural Resources (LUANAR)
Supervising CRSP PI	Lawrence D. Mapemba	Lawrence D. Mapemba
Degree Program for training	Masters degree	Masters
Program Areas or Discipline	Agricultural economics	Agriculture And Applied Economics
If enrolled at a US university, will Trainee be a "Participant Trainee" as defined by USAID?	N/A	N/A
HC Institution to Benefit from Training	LUANAR	LUANAR
Thesis Title/Research Area	Household Demand for Common Beans in Lilongwe District of Malawi: A Censored Regression Approach	Assessing the importance of common bean attributes in determining market price in Lilongwe district
Start Date	2015	2015
Projected Completion Date	September 2016	September 2016
Training status	Active	ACTIVE
Type of CRSP Support for training activity	Partial	PARTIAL
First and Other Names	Billy Mark	Chitete
Last Name	Dzimbiri	Moses
Citizenship	Malawian	Malawian
Gender	Male	Male
Training Institution	Lilongwe University of Agriculture and Natural Resources (LUANAR)	Lilongwe University of Agriculture and Natural Resources (LUANAR)
Supervising CRSP PI	Lawrence D. Mapemba	Lawrence D. Mapemba
Degree Program for training	Masters	Masters
Program Areas or Discipline	Agribusiness Management	Agricultural and Applied Economics
If enrolled at a US university, will Trainee be a "Participant Trainee" as defined by USAID?	N/A	N/A
HC Institution to Benefit from Training	LUANAR	LUANAR
Thesis Title/Research Area	Do commodity exchanges improve efficiency of bean markets in Malawi: A case of AHLCX and ACE	Market Structure, Conduct and Performance of Beans Marketing System in Malawi
Start Date	2016	2016
Projected Completion Date	September 2017	September 2017
Training status	Pending	Pending
Type of CRSP Support for training activity	PARTIAL	PARTIAL

	Student 1	Student 2
First and Other Names	Ocran	Ezekiel
Last Name	Chengula	Swema
Citizenship	Tanzania	Tanzania
Gender	Male	Male
Training Institution	Sokoine University of Agriculture	Sokoine University of Agriculture
Supervising CRSP PI	Fredy T. M. Kilima	Fredy T. M. Kilima
Degree Program for training	M.Sc.	M.Sc.
Program Areas or Discipline	Agric. Econ.	Agric. Econ.
If enrolled at a US university, will Trainee be a "Participant Trainee" as defined by USAID?	N/A	N/A
HC Institution to Benefit from Training	Ministry of Agriculture Food Security and Cooperatives	Sokoine University of Agriculture
Thesis Title/Research Area	Market Participation Among Smallholder Bean Farmers In Tanzania	Common Beans Attributes and Consumer Preference in Dar Es Salaam, Tanzania
Start Date	September. 2013	September 2015
Projected Completion Date	November 2016	November 2016
Training status	Active	Active
Type of CRSP Support for training activity	Partial	Partial
First and Other Names	Elizabeth	Rameck
Last Name	Medard	Rwakalaza
Citizenship	Tanzania	Tanzania
Gender	Female	Male
Training Institution	Sokoine University of Agriculture	Sokoine University of Agriculture
Supervising CRSP PI	Fredy T. M. Kilima	Fredy T. M. Kilima
Degree Program for training	M.Sc.	M.Sc.
Program Areas or Discipline	Agric. Econ.	Agric. Econ.
If enrolled at a US university, will Trainee be a "Participant Trainee" as defined by USAID?	N/A	N/A
HC Institution to Benefit from Training	Sokoine University of Agriculture	Sokoine University of Agriculture
Thesis Title/Research Area	Not yet decided	Not yet decided
Start Date	April 2016	April 2016
Projected Completion Date	September 2017	September 2017
Training status	Active	Active
Type of CRSP Support for training activity	Partial	Partial

	Student 1	Student 2
First and Other Names	Jackson	Mabvuto
Last Name	Jaccob	Zulu
Citizenship	Tanzania	Zambian
Gender	Male	Male
Training Institution	Sokoine University of Agriculture	University of Zambia
Supervising CRSP PI	Fredy T. M. Kilima	Gelson Tembo
Degree Program for training	M.Sc.	Master of Science
Program Areas or Discipline	Agric. Econ.	Agricultural Economics
If enrolled at a US university, will Trainee be a "Participant Trainee" as defined by USAID?	N/A	N/A
HC Institution to Benefit from Training	Sokoine University of Agriculture	University of Zambia
Thesis Title/Research Area	Not yet decided	Consumer Preferences For Common Beans In Lusaka, Zambia. A Stated Preference Approach
Start Date	April 2016	April 2015
Projected Completion Date	September 2017	March 2017
Training status	Active	Active
Type of CRSP Support for training activity	Partial	Partial
First and Other Names	Isabel	Nandi Nomsa
Last Name	Sakala	Jama
Citizenship	Zambian	Zambian
Gender	Female	Male
Training Institution	University of Zambia	University of Zambia
Supervising CRSP PI	Gelson Tembo	Gelson Tembo
Degree Program for training	Master of Science	Master of Science
Program Areas or Discipline	Agricultural Economics	Agricultural Economics
If enrolled at a US university, will Trainee be a "Participant Trainee" as defined by USAID?	N/A	N/A
HC Institution to Benefit from Training	University of Zambia	University of Zambia
Thesis Title/Research Area	Not yet decided	Not yet decided
Start Date	June 2016	June 2016
Projected Completion Date	July 2017	July 2017
Training status	Active	Active
Type of CRSP Support for training activity	Partial	Partial

	Student 1	**Student 2**
First and Other Names	Ednah	Marvin
Last Name	Kasanda	Mbaso
Citizenship	Zambian	Malawian
Gender	Female	Male
Training Institution	Kansas State University	Kansas State University
Supervising CRSP PI	Vincent Amanor-Boadu	Vincent Amanor-Boadu
Degree Program for training	MAB	MAB
Program Areas or Discipline	Agribusiness	Agribusiness
If enrolled at a US university, will Trainee be a "Participant Trainee" as defined by USAID?		
HC Institution to Benefit from Training	University of Zambia	
Thesis Title/Research Area	Not yet decided	Not yet decided
Start Date	January 2015	August 2016
Projected Completion Date	May 2017	December 2018
Training status	Active	Active
Type of CRSP Support for training activity	Full	Full
First and Other Names	Furaha	
Last Name	Rashid	
Citizenship	Tanzanian	
Gender	Male	
Training Institution	Kansas State University	
Supervising CRSP PI	Vincent Amanor-Boadu	
Degree Program for training	MAB	
Program Areas or Discipline	Agribusiness	
If enrolled at a US university, will Trainee be a "Participant Trainee" as defined by USAID?		
HC Institution to Benefit from Training		
Thesis Title/Research Area	Not yet decided	
Start Date	January 2017	
Projected Completion Date	May 2019	
Training status	Active	
Type of CRSP Support for training activity	Full	

Short-Term Training

Training Type	Workshop	Workshop
Description	Identifying the Different Governance Structures in Value Chains	Closing the Knowledge Gaps in the Legume Industry
Location	Zambia; Malawi; Tanzania	Zambia; Malawi; Tanzania
Duration	1 day	1 day
Dates	TBD	TBD
Participants/Beneficiaries	Agri-food sector stakeholders, faculty, students	Agri-food sector stakeholders, faculty, students
Anticipated Attendance	30 per country (50% male)	50 per country (50% male)
Responsible PI	U.S. PI	U.S. PI
Other Funding Sources	Not yet.	Not yet.
Justification for Training	In anticipation of building value chains in the legume industry, this workshop seek to prepare stakeholders for what it takes to build successful and manage successful value chains.	In response to identified capacity and knowledge gaps in the legume supply chain in the three focus countries, workshops will be developed to closed those gaps and mitigate strategic management challenges.