

FEED THE FUTURE INNOVATION LAB FOR LIVESTOCK SYSTEMS: AN UPDATE ON ACTIVITIES IN ETHIOPIA – NOVEMBER 2016

The U.S. Agency for International Development (USAID) awarded the University of Florida (UF) Institute of Food and Agricultural Sciences (IFAS) funds to establish the Feed the Future Innovation Lab for Livestock Systems. This five-year initiative (October 2015 to September 2020) supports USAID's agricultural research and capacity building work under Feed the Future, the U.S. Government's global hunger and food security initiative. The International Livestock Research Institute (ILRI) is the UF/IFAS partner in implementation of the Livestock Systems Innovation Lab (LSIL).

Background

The LSIL aims to improve the nutrition, health and incomes of the poor by sustainably increasing livestock productivity and marketing, and consumption of animal-source foods (ASF). This aim will be achieved by introducing new location-appropriate technologies, by improving management practices, skills, knowledge, capacity and access to and quality of inputs across livestock value chains, and by supporting the development of a policy environment that fosters sustainable intensification and increased profitability of smallholder livestock systems.

Our Management Entity at UF/IFAS supports and integrates efforts across the target countries, crystallizing and sharing knowledge generated across four Areas of Inquiry (AOIs) and three Cross-cutting Themes (CCTs). The LSIL draws on the expertise of target country, U.S. and foreign universities, institutes and organizations through competitively-funded long-term, multi-disciplinary, integrated applied research and capacity-building projects. Additional non-competitive research efforts complement the competitively-funded projects. Technologies, practices, and policies are analyzed in the context of future impacts and drivers.

Our grant portfolio

We fund the following types of grants:

- Reach grants: Competitive, larger grants of up to \$ 1,000,000, for projects lasting for up to four years. These involve multiple partners engaging in research and capacity building and employing an integrated multidisciplinary approach. Three Reach grants have been awarded for research for development projects in Ethiopia.
- Focus grants: Competitive, smaller grants of up to \$150,000, for projects lasting up to one year. These are for proof of concept or research for development bridging studies. Three Focus grants have been awarded for research for development projects in Ethiopia.
- Catalyst grants: Unsolicited, short-term grants for UF faculty to initiate and implement initiatives that lead to larger projects. As of now, three Catalyst grants for Ethiopia have been selected.
- Strategic partnerships: Unsolicited, collaborative efforts with leading research or development institutions that complement the competitive research agenda. One strategic partnership was established.

Priorities for Ethiopia

Ethiopia is a LSIL target country where activities are expected to be co-funded by USAID and the Bill and Melinda Gates Foundation (BMFG). To identify the priorities in Ethiopia, the LSIL representatives engaged more than forty individual stakeholders during a scoping visit to learn about their perceptions of the priority constraints to ASF production and consumption. This was followed by a multi-stakeholder Innovation Platform meeting that fostered more in-depth discussions, consensus building and joint, participatory identification of the most important priorities. The



*Innovation Platform participants.
Photo credit: M. Eilittä/IFAS-LSIL*

Innovation Platform meeting was held on February 6 and 7, 2016 in Addis Ababa and it was attended by 65 individuals representing the Government of Ethiopia, non-governmental organizations, private organizations, universities, and research institutes. Of the 38 organizations that participated, 7 represented the private sector. The priorities for Ethiopia are presented in Appendix 1.

Overview of ongoing and funded efforts

BMFG proposal

Based on the priorities identified during the LSIL Innovation Platform meeting, the BMFG asked LSIL to focus on the following areas in its application for funds: feed, food safety / environmental enteropathy, and policies relevant to the two areas, with gender and human nutrition as the cross-cutting themes. The LSIL is currently working with BMFG on the application.

Non-competitive Catalyst projects:

The LSIL plans to initiate efforts on the following Catalyst projects, developed based on the priorities identified during the Innovation Platform meeting. A complete description is available in Appendix 2. Additional Catalyst projects will be identified and developed in the future.

- ***Increasing understanding and overcoming behavioral and sociocultural barriers to consumption of animal-source food (ASF) among children under two and pregnant and lactating women.*** The purpose of this project is to contribute to efforts to improve the design of future research and/or development interventions, which aim to increase ASF consumption. The study methods include a review of gray and peer-reviewed literature and key informant interviews, which took place in Ethiopia in May to July, 2016. The study is ongoing and the next phase will involve a survey administered through the internet to key stakeholders. *Completion date:* November 2016.
- ***Building capacity of butchers in domestic abattoirs to improve meat hygiene, safety, quality, preservation and value addition.*** The goal of this proposal is to identify pathways to improve meat safety for both domestic abattoirs and home butchery, and to increase the value of both meat and meat byproducts. The project includes three components: (1) A needs assessment of domestic abattoirs; (2) Development of a train-the-trainer program addressing HACCP needs, slaughter hygiene, processing, and meat quality; and (3) Development of a shelf-stable sausage from hot-boned meat. The first component will be conducted from October 25 to November 4, 2016.
- ***Designing effective interventions to improve productivity, animal disease management, and food safety in improved family poultry (IFP) systems.*** This project focuses on preventing the potential increase in environmental enteropathy that could arise from the planned increases in improved (semi-scavenging) family poultry (IFP) systems envisioned by Ethiopia's Livestock Master Plan (LMP) in order to meet the future demand for meat in the country. The project aims to gain more insights about IFP expansion plans and current animal and hygiene management practices across the value chain from production to consumption. The field research was conducted in May-July 2016, and will result in a full research proposal to test specific interventions aimed at reducing the environmental enteropathy associated with intensification of IFP systems. *Completion date:* November 2016.

Competitive Reach grants:

Following a competitive process with over 50 applications for Ethiopia that were reviewed by the LSIL Technical Evaluation Panel, the following four-year Reach grant project was selected for funding by the LSIL External Advisory Board and approved by USAID and the Ministry of Livestock Development and Fisheries. See Appendix 3 for a more detailed project description, including information on the Rwandese and international collaborators.

- **Linking Cattle Nutrition to Human Nutrition: A Value Chain Approach to Improving the Production, Handling, and Consumption of Animal Source Foods in Ethiopia.** This project led by Kansas State University aims to create a systems-based research approach that strengthens linkages between improved animal-source food production and consumption practices and human nutrition outcomes in Ethiopia. Efforts span research in forage, ruminant nutrition, meat science, dairy science, food safety, human nutrition, and gender.
- **Improving the evidence and policies for better performing livestock systems in Ethiopia [ELISE].** This purpose of this project led by the International Food Policy Research Institute (IFPRI) is to bring markets and consumption – on top of production – forward as an integral component into research on livestock systems. Insights into these aspects will contribute towards more informed and evidence-based decision making and consequently to a better performing livestock sector in Ethiopia. The project will address two broad research themes: (1) Understanding the dairy value chain and (2) Understanding consumption and markets of ASF.
- **Addressing young stock mortality in smallholder farms and pastoral herds of Ethiopia.** The project will be led by University of California, Davis. It focuses on assessing the causes of morbidity and mortality of young stock and on developing technically sound and context-specific solutions to the constraints identified. This project is under revision to ensure that it complements recent and ongoing efforts by the Ministry of Livestock Development and Fisheries to reduce young stock mortality in Ethiopia. *This project will be partly funded by the LSIL Strategic Partnership Funds for Ethiopia.*

Competitive Focus grants:

The LISL received 24 applications for Focus grants for Ethiopia which followed a similar review and approval process as the Reach grants. The following three projects were selected for funding. See Appendix 4 for more detailed project descriptions, including information on the Rwandese and international collaborators.

- **Improving handling practices and microbiological safety of milk and milk products in Borana pastoral communities, Ethiopia.** This University of Addis Ababa-led project aims to improve handling practices of milk and dairy products and thus improve food safety for pastoralists in Borana by (1) improving knowledge, attitudes, and practices of women in the areas of milk consumption and handling and the associated health risks, (2) improving milk storage to maintain its nutritional and hygienic quality.
- **The Effect of Passive Surveillance Training on Animal Health Parameters in Northern Ethiopia.** This University of Georgia-led project will conduct a proof-of-concept research activity involving enhancement of awareness regarding recognition, reporting, and treatment of public and private-good animal diseases. Activities will be conducted Tigray region, a region that is representative of the proportions of livestock but has overall lower productivity compared to the rest of the country, and therefore has potential for great impact.
- **Safe Feed Safe Food: Mycotoxin Prevalence, Risk Assessment and Mitigation Measures in Ethiopia.** This Kansas State University-led project will collaborate with the USDA-funded Feed Enhancement for Ethiopian Development – Phase II (FEED II) project to assess mycotoxin levels in the Ethiopian feed supply network through by sampling feed materials at various farmer cooperative unions. The project will also involve enhancing mycotoxin testing capacity at a reference laboratory in Addis Ababa and building capacity in preventing mycotoxin contamination of feeds.

Next steps

- Reach and Focus grant project start dates: November-December, 2016.
- Innovation Platform meeting: December 2016 - January 2017. The purpose is to ensure that all relevant stakeholders are aware of the funded projects and can provide advice to the project team and support implementation of the projects.

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Appendices:

Appendix I. Priorities developed for Ethiopia

ASF Production and Marketing

- Increasing the quantity and quality of livestock feed and matching feed supply to demand
- Developing innovative feed technologies or systems that enhance animal performance and ensuring their adoption
- Improving market infrastructure and information
- Increasing demand and improving markets for ASF
- Dairy product collection, preservation and value addition
- Genetic improvement of poultry
- Introduction and acceptance (adoption) of new/introduced technologies for backyard poultry
- Development of cattle fattening systems and packages
- Increasing red meat quality and traceability for export (production and processing)

Livestock Disease Management and Food Safety

- Young stock mortality
- Transboundary diseases (FMD, Lumpy Skin)
- Zoonotic diseases: tuberculosis and brucellosis
- Milk safety and quality
- Meat safety

Enabling Policies and Future Systems

- Rationalization of livestock services (veterinary services and feed)
- Input/output market structure, conduct, performance and efficiency
- Data sharing and use for policies/programs (weather, prices, livestock info)
- Land rights/access in the lowlands
- Improvement of the productivity, efficiency and market orientation of milk collection centers to increase the quantity, quality and safety of milk sold

Appendix 2. Ongoing Catalyst projects

Catalyst grants

1. Design effective interventions to improve productivity, animal disease management, and food safety in improved family poultry (IFP) systems

Principal Investigator and lead institution: Dr. Arie Havelaar, University of Florida

Summary: The Ethiopian Livestock Masterplan (LMP) aims to significantly increase poultry production by facilitating the move from traditional (scavenging) family poultry to improved (semi-scavenging) family poultry (IFP) systems. The LMP envisions that the number of IFP keeping households (egg and meat production) should increase by around 250% between 2014 and 2020, but this could increase exposure to zoonotic enteric pathogens. *Campylobacter* spp. are highly infectious and prevalent bacteria in poultry feces and on poultry meats, especially from chickens kept under low biosecurity conditions. Young children are particularly vulnerable because of their immature immune systems and high risk behaviors which have been associated with environmental enteropathy and stunting. Consequently, effective hygiene management strategies need to be developed and tested to prevent or reduce the potential negative impacts of the pathogen on human health.

This project aims to obtain more insight about IFP expansion plans and current animal and hygiene management practices, across the value chain from production to consumption. These data will serve as a baseline for future intervention studies aimed at reducing environmental enteropathy associated with intensification of IFP. Research will involve interviews of key personnel at the Ministry of Livestock and Fisheries, ILRI, and other organizations, as well as field visits. The main deliverable of this project will be a full research proposal using appropriate experimental design to test specifically identified interventions for their ability to reduce environmental enteropathy associated with intensification of IFP.

Activities conducted to date: The field research was conducted in May-July 2016. A study report will be finalized by October 30, 2016.

2. Increasing understanding and overcoming behavioral and sociocultural barriers to consumption of animal-source food (ASF) among children under two and pregnant and lactating women

Principal Investigator and lead institution: Dr. Sarah McKune, University of Florida

Summary: ASF consumption in Ethiopia remains low in livestock-rearing households even when ASF production increases. The peer-reviewed literature demonstrates only modest investigation into reasons for such low ASF consumption, and there has been no systematic review of the literature on myths surrounding ASF consumption or on attempted and successful or ineffective interventions to improve ASF consumption in Ethiopia. A clear understanding of what is needed to change the status quo will require a thorough review of peer-reviewed literature and gray literature from diverse sources, as well as information from surveys and discussions with stakeholders. The focus of this project will be on identifying sociocultural norms, behaviors, myths, and other factors that reduce or prevent ASF consumption. The objective of this study is to obtain a clear understanding



Mother with child.
Photo credit: T. Wilfong/IFAS-LSIL

of the myths and other obstacles to ASF consumption and past successful and unsuccessful interventions implemented to address these obstacles. This will be done with to improve the design of future research and/or development interventions which aim to increase ASF consumption.

Activities conducted to date: The field research was conducted in May-July 2016. A study report will be finalized by November 31, 2016.

3. Building capacity of butchers in domestic abattoirs to improve meat hygiene, safety, quality, preservation and value addition

Principal Investigator and lead institution: Dr. Jason Scheffler, University of Florida

Summary: In Ethiopia, the largest producer of cattle in Africa, there is significant need to improve the efficiency and safety of butchery. Abattoirs catering to the export market increasingly have Hazard Analysis and Critical Control Points (HACCP) plans, are ISO 22000 certified, and are meeting higher sanitary standards. However, smaller, domestic abattoirs generally do not. Successful implementation of a HACCP program is dependent on the establishment of prerequisite programs such as more general, facility-based Good Manufacturing Practices (GMPs) and more specific Sanitation Standard Operating Procedures (SSOPs). There are a number of challenges that must be overcome in Ethiopia to develop effective programs, including outdated regulation and poor enforcement, as well as limited worker and consumer knowledge, challenges of fluctuating demand due to the religious practice of fasting, limited refrigeration, poor transportation, prevalence of parasites, and preference for raw meat.

The goal of this proposal is to identify pathways to improve meat safety for both domestic abattoirs and home butchery, and to increase the value of both meat and byproducts. Improving meat safety is an incremental process, and this project will address it through both training and product development.

Activities conducted to date: Literature review and discussions with relevant USAID project (LMP-LMD) and the Ethiopian Butchers Association. The first phase of the activities took place October 24 - November 4, 2016.

Appendix 3. Funded Reach projects

I. Linking Cattle Nutrition to Human Nutrition: A Value Chain Approach to Improving the Production, Handling, and Consumption of Animal Source Foods in Ethiopia

Principal Investigators (PI) and lead institution: Dr. Jessie Vipham and Dr. Dustin L. Pendell, Kansas State University

Co-PI and Collaborator institutions: Hawassa University, Oda Bultum University (Haramaya University), Ethiopian Institute of Agriculture Research, Texas Tech University, Sustainable Intensification Innovation Lab, Texas Tech University, Sorghum and Millet Innovation Lab, Africa RISING/International Livestock Research Institute, ACDI VOCA, Verde Beef, Digital Green, Ethiopia Public Health Institute, Ethiopia Meat and Dairy Industry Development Institute, Eden-Field Agri-seed Enterprise, Project Mercy.

Summary: The overall research objective of this project is to create a systems-based research approach that strengthens linkages between improved animal-source food production and consumption practices and human nutrition outcomes in Ethiopia. The goal is to identify, in a qualitative and quantitative manner, the pathways between agriculture interventions and nutritional outcomes. The project implements a systems-based research approach that will define and quantify linkages between the various activity domains, including the creation of a conceptual framework, based on quantifiable data collected from each research domain. Focus of the research will be on highland crop-livestock systems and smallholder commercial dairies which prevail in urban and peri-urban areas. Forage on-station research will be conducted at Melkassa, and on-farm trial locations will be chosen based on input from collaborators. Cattle nutrition trials will be held in Hawassa and ChaCha. Collaboration with on-farm research will focus on the areas of influence of Africa RISING. The domains, and their researchable questions and objectives include the following:

- (1) Forage Domain Researchable Question: What strategies strengthen adoption, availability, and productivity of forage systems?
 - Objective: Assess forage sorghum intercropping with annual and perennial forage crops for sustainable cattle forage production.
- (2) Ruminant Nutrition Domain Researchable Question: What are the impacts of better cattle nutrition on meat and milk production and quality?
 - Objectives: (1) Assess strategies for improved protein nutrition of lactating cows differing in genetic capacity for milk production; (2) Evaluate impacts of improved dry season feeding strategies.
- (3) Meat Science Domain Researchable Question: To what degree does consumer preference and product quality enhance or inhibit meat product marketability, on a domestic and export market?
 - Objective: Assess the quality of beef currently produced for export markets, and investigate the impact of alternative production systems on beef quality.
- (4) Dairy Science Domain Researchable Question: What are the appropriate interventions to addressing milk and dairy product handling and storage on the dairy production systems?
 - Objective: Assess key bottlenecks for dairy product marketing and consumption in Ethiopia, including identifying, ranking of importance and determining the willingness to pay for newly developed dairy products.
- (5) Food Safety Domain Researchable Question: What is the food safety risk associated with increased consumption of animal-source foods (meat and milk)?
 - Objectives: (1) Create baselines for foodborne pathogens within abattoirs; (2) Implement strategies to mitigate the burden of foodborne pathogens within abattoirs.
- (6) Human Nutrition
 - Objectives: (1) Determine the current dietary behaviors related to the consumption of animal products at the household level; (2) Identify the cultural, environment, and economic barriers, if

- any, to the adequate consumption of animal products, and determine appropriate human nutrition interventions to overcome barriers.
- (7) Gender
- Objectives: (1) Develop gender sensitive interventions and treatments to address identified gender needs for each domain; (2) Integrate gender sensitivity into extension and outreach programs.

2. Improving the evidence and policies for better performing livestock systems in Ethiopia

Principal Investigator (PI) and lead institution: Dr. Bart Minten, International Food Policy Research Institute (IFPRI)

Co-PI and Collaborator institutions: Ethiopian Development Research Institute (EDRI), Ethiopian Institute for Agricultural Research (EIAR), Ethiopia Strategy Support Program (ESSP)

Summary: The purpose of the project is to bring markets and consumption – on top of production – forward as an integral component into research on livestock systems. Insights into these aspects will contribute towards more informed and evidence-based decision making and consequently to a better performing livestock sector in Ethiopia. More specifically, the project will address two broad research themes:

Theme 1: Understanding the dairy value chain. Despite the importance of a well-functioning dairy value chain for nutrition and income generation, especially for women, it is currently not clear what the most important constraints are for improved value chain functioning in Ethiopia and what is holding the country back to achieve a white revolution, as seen in other countries such as India and Kenya. To inform policy making, the project will focus – using novel primary data representative at each level of the value chain, from rural producers to urban consumers – on analyzing the functioning of Ethiopia’s rural-urban dairy value chain.

Theme 2: Understanding consumption and markets of ASF: A national analysis. The first study under this theme is on “ASF consumption in Ethiopia: Patterns, changes, and drivers”. Using five large representative nation-wide household consumption surveys (from 1996 to 2016), the project will analyze the levels, changes, and drivers for change at the national level in ASF consumption and expenditures. Understanding consumption dynamics, and the role of factors such as income growth and urbanization in this, will allow for the assessment of future demand for different types of ASF – and therefore future livestock systems – in Ethiopia. The second study under this theme will look at “Livestock and ASF price behavior in Ethiopia: Patterns, changes, and drivers”, based on large national price datasets. Understanding price behavior is a very important topic given the large impact of prices (and incomes) on consumption of ASF and the often prohibitive high costs of ASF for poor, vulnerable, and women-headed households. Insights in this matter enormously for informed discussions on policies towards achieving well-functioning livestock marketing systems.

The Ethiopia Strategy Support Program (ESSP) – a collaborative program of IFPRI with the Ethiopian Development Research Institute (EDRI) – will implement the project. ESSP is based in the country and has worked closely with local partners such as the Ethiopian Institute for Agricultural Research (EIAR) and local universities (which will all be partners in this proposed project) in the past. ESSP is guided by an influential national advisory committee that will oversee this proposed project. A two-pronged approach in capacity building will involve training about 150 men and women in specific areas and working closely with local institutions and think-tanks.

3. Addressing young stock mortality in smallholder farms and pastoral herds of Ethiopia

Principal Investigator (PI) and lead institution: Dr. Woutrina Smith, University of California - Davis

Co-PI and Collaborator institutions: Addis Ababa University, University of Gondar Gondar, National Animal Health Diagnostic and Investigation Center

Summary: This project is under revision to ensure that it complements recent and ongoing efforts by the Ministry of Livestock Development and Fisheries to reduce young stock mortality in Ethiopia. The project will focus on assessing various causes of morbidity and mortality including diseases, nutrition and management practices. Subsequently it will develop technically sound and context specific solutions to these factors. This project will be supported by strategic partnership funds due to the importance of reducing young mortality in Ethiopia.

Appendix 4. Funded Focus projects

1. Improving handling practices and microbiological safety of milk and milk products in Borana pastoral communities, Ethiopia

Principal Investigator (PI) and lead institution: Dr. Kebede Amenu, University of Addis Ababa

Co-PI and Collaborator institutions: University of Tennessee, International Livestock Research Institute, Agricultural Research Service- United States Department of Agriculture, Yabello Pastoral and Dryland Agriculture Research Centre, Ethiopian Civil Service University.

Summary: Borana is a pastoral area in southern Ethiopia where milk is a common food. A recent study involving participatory qualitative investigation on the topic focused on four village administrations of the Yabello district in the Borana zone, and microbiological assessment focusing on E. coli count and selected other pathogens was carried out along different levels of milk value chain.

The observation of milk handling and processing practices revealed apparent unhygienic conditions, and high pathogen loads. Pastoral women considered proper smoking of containers and utensils, using various plant species, as an important traditional practice for assuring the quality and safety of milk and dairy products. Other reasons for smoking mentioned were: increased shelf life of products, good consistency of curdled milk, pleasing flavor and health benefits. The study also revealed that pastoralists considered causes of acute mastitis as 'evil eye'. The goal of this project is to improve handling practices of milk and dairy products and thus improve food safety for pastoralists in Borana. The objectives of the project are to assess:

- Knowledge, attitudes, and practices (KAP) of women with regard to milk consumption and handling, and the associated health risks focusing on microbial pathogens and zoonotic diseases, specifically brucellosis (to generate quantitative baseline data).
- The effect of introducing improved storage containers and smoking of containers on the microbial quality and shelf-life of milk and yogurt (ititu).
- The KAP changes of the people following the awareness and creation of good milk production (including mastitis management) and handling practices on the microbiological safety of milk/milk products and targeting selected zoonotic diseases (e.g. brucellosis).

2. The Effect of Passive Surveillance Training on Animal Health Parameters, Northern Ethiopia

Principal Investigator (PI) and lead institution: Dr. Corrie Brown, University of Georgia

Co-PI and Collaborator institutions: Foreign Animal Disease Diagnostic Laboratory (FADDL-VS-APHIS-USDA) and Mekelle University.

Summary: This project will conduct a proof-of-concept research activity involving enhancement of awareness regarding recognition, reporting, and treatment of public and private good animal diseases. Objectives of the project will be to: (1) Measure reporting of public good diseases before and after training, to determine if producer involvement sufficiently enhances awareness and reporting of diseases for which the government is tasked with controlling; (2) Identify perceived barriers to reporting among producers through discussion sessions at workshops delivered; (3) Determine the impact of trainings on the distinction of private good and public good diseases, for more effectively addressing and growing each of these two animal health sectors; (4) Measure the engagement of private practitioners in livestock disease control (both TADs [Transboundary Diseases] and LPDs [Livestock Production Diseases]); (5) Measure owner/producer income levels before and after training to determine if private good diseases can be managed effectively and economically by the private/commercial sector. Activities will encompass 15 Woredas in the Region of Tigray, a region that is representative of the proportions of livestock but has overall lower productivity

compared to the rest of the country, and therefore has potential for great impact. In all, workshops and training for 450 producers will be held, together with approximately 90 public and private veterinarians, to create a network of understanding regarding the importance of recognition of and reporting on transboundary animal diseases (TADs - public good diseases, responsibility of government for control), and the recognition and potential therapeutics for the endemic Livestock Production Diseases (LPDs – private good diseases, responsibility of owner for control). Results will inform future efforts for training in enhancing control of livestock diseases, a key parameter in food security and economic viability.

3. Safe Feed Safe Food: Mycotoxin Prevalence, Risk Assessment and Mitigation Measures in Ethiopia

Principal Investigator (PI) and lead institution: Dr. Deon van Merwe, Kansas State University

Co-PI and Collaborator institutions: Veterinary Drug and Animal Feed Administration and Control Authority (VDAFACA), ACIDI/VOCA Ethiopia.

Summary: Mycotoxins in livestock feed pose a direct threat to livestock health, reduce feed quality and availability, and could affect human health through exposure via the consumption of animal products. The major determinants of mycotoxin production are environmental conditions related to climate and weather patterns, physical damage to crops by factors such as hail, insects, or mechanical equipment, and the presence of high moisture and aerobic conditions anywhere in the production chain from the field to processing and storage. Ethiopian weather patterns, between as well as within seasons, are highly variable, and agricultural practices are varied due to the presence of a wide range of production systems. These factors make mycotoxin production patterns in Ethiopia particularly hard to predict.

This study will assess mycotoxin levels in the feed supply network of Ethiopia through an initial broad sampling survey of feed materials at farmer cooperative unions. The objectives of this project are to: (1) Use mycotoxin prevalence data to assess risks to the Ethiopian livestock industry in areas where testing is conducted; (2) Enhance mycotoxin testing capacity in an important segment of the livestock feed supply in Ethiopia; (3) Communicate mycotoxin risk information to stakeholders in order to enhance risk management strategies. Regional testing facilities and a reference laboratory in Addis Ababa will be equipped and trained to perform mycotoxin testing using lateral flow technology. Regional laboratory results will be verified by testing split samples at a reference laboratory in Addis Ababa, which will in turn be validated through an accredited laboratory in the U.S. by means of HPLC methods. A more strategic sampling and definition of identified mycotoxin hazards will follow based on the initial sampling results. Statistical analysis will be done and risk assessments defined. Findings will be shared with regulators and other stakeholders during briefings.

The project sampling and analysis will center on 24 farmer cooperatives unions (FCUs) (membership 1.18 million) with whom ACIDI/VOCA has been working under the USDA-funded Feed Enhancement for Ethiopian Development – Phase II (FEED II). These FCUs are in highland areas within multiple regional states of Ethiopia where feed enterprise units have been developed to provide improved feed products and services.