

Feed the Future Innovation Lab for Livestock Systems

**Report on Train-The-Trainer
Course on Meat Hygiene**

The Management Entity at the University of Florida

Acknowledgement

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Recommended Citation

Scheffler, J. M. 2018. Report on train-the-trainer course on meat hygiene. Gainesville, FL, USA: Feed the Future Innovation Lab for Livestock Systems.

Essential Bibliographic Information

Leader with Associates Cooperative Agreement Award No. AID-OAA-L-15-00003

Sponsored by the USAID Bureau for Food Security

Sustainably intensifying smallholder livestock systems to improve human nutrition, health, and incomes

Disclaimer

This research is made possible by the generous support of the American people through the United States Agency for International Development (USAID) and its Feed the Future Innovation Lab for Livestock Systems managed by the University of Florida and the International Livestock Research Institute. The contents are the responsibility of the University of Florida and do not necessarily reflect the views of USAID or the United States Government.

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1. Introduction

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. The six target countries for this Lab are Burkina Faso and Niger in West Africa, Ethiopia and Rwanda in East Africa, and Nepal and Cambodia in Asia.

The Livestock Systems Innovation Lab 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.

The research topic for this study results from various interactions with stakeholders in February 2016 that included one-to-one meetings as well as a multi-stakeholder Innovation Platform meeting during which research priorities for the Livestock Systems Innovation Lab were identified.

The research project aligns with USAID mission-funded activities and in particular the Feed the Future Ethiopia Value Chain Activity led by Fintrac. This large development project particularly targets value chains of maize, coffee, chickpea, dairy and livestock. Given the project's strong interest in meat hygiene and enhancements of the meat value chain in general, Fintrac is the right partner to help scale up the training and improved methods introduced by the Livestock Systems Innovation Lab.

2. Purpose of the training course

The overall goal of this particular project within the Livestock Systems Innovation Lab 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.

Phase 1

The first phase of this activity took place from October 25 to November 2, 2016 and consisted of an assessment of three livestock markets, five abattoirs, and eighteen local butchers. Interviews were conducted with owners or managers and a visual assessment was conducted on the facility and when possible, on associated processes. Based on this assessment, a training-of-trainers

course for Ethiopian butcher and abattoir workers on hygiene and meat quality was determined to be a significant step towards improved food safety and quality in Ethiopia. The training program was designed based on the needs assessment.

3. Methodology

Phase 2, training-of-trainers

The team was composed of Dr. Jason Scheffler, Assistant Professor, and Taylor Langford, graduate student, both from the Department of Animal Sciences at the University of Florida, and Dr. Zeleke Mekuriaw, the Livestock Systems Innovation Lab East Africa coordinator, based in Addis Ababa, Ethiopia. The UF researchers collaborated with the Ethiopian Meat and Dairy Industry Development Institute (EMDIDI) and the Feed the Future Ethiopia Value Chain Activity.

Training course objectives:

- To help participants to understand the principles of adult learning and how to deliver an effective training course
- To familiarize participants with the basic hygiene practices needed to ensure safe meat supply
- To teach participants how to deliver training for butchers and/or abattoir personnel
- To engage trainers in development of the training course and empower them to evolve the course over time by integrating new information

Target audience: The training course targeted technical staff from EMDIDI, the Ministry of Livestock and Fisheries, butcher association members and other key actors. All participants were selected based on having relevant expertise and jobs in the subject area to ensure they can facilitate training courses in the near future. Of the 20 participants, half were selected and funded by the Feed the Future Ethiopia Value Chain Activity, and the other half were selected and funded by the Livestock Systems Innovation Lab. Geographically, participants hailed from Addis Ababa, Tigray, Amhara, Bishoftu, Oromia, and Southern Nations, Nationalities, and Peoples' Region. Two participants were women. See Annex 1 for the list of participants.

The train-the-trainer course started on August 25, 2017. Dr. Yirgalem Gebremeskel, from USAID Ethiopia, provided a welcome speech. Tesfaye Lemma, from Fintrac, introduced the USAID Ethiopia Value Chain Activity, and Zeleke Mekuriaw introduced the Livestock Systems Innovation Lab. We then provided a report on the status of Ethiopian butchers and abattoirs based on the Phase 1 needs assessment conducted in October 2016. The flow of product from primary producer to consumer was defined. Factors that influence the market were discussed, including

change of ownership and effect of religion on timing of the workweek. Observations on hygiene and technique were presented and perceived challenges in making improvements were described.

Next, we addressed the general hazards common in Ethiopia and basic cleaning and sanitation. We described five biological hazards in meat including nontyphoidal *Salmonella enterica*, *E. coli* O157:H7, *Listeria monocytogenes*, *Toxoplasma gondii*, *Tania saginata/Cysticercosis bovis*. While not all-inclusive, these five hazards have incidence rates in Ethiopia reported in the scientific literature.

For the second day of training, we moved on to specific butcher and abattoir concepts. In the afternoon, the participants had an open discussion on some of the issues abattoirs and butchers are currently facing—a conversation that was beneficial as the participants recognized that they all have a role in food safety. Tesfaye Lemma, from Fintrac, provided a presentation on animal welfare, and we concluded with a hand washing demonstration using a Glo Germ gel and black light.

On the third day of training, participants were taken to the Mana Qalmaa Kristaana abattoir to witness the slaughter of two steers. The facility normally processes animals from 10 p.m. to 5 a.m., but it specifically reserved two steers for the training at 7 a.m. Participants viewed the entire process and discussed it with workers and the inspector. Next, participants were divided into four teams, and each team visited a different butcher to assess the facility. Both Taylor Langford and Dr. Scheffler observed that their respective groups pulled aside the owner/manager and discussed what they observed, both good and bad. This unprompted aspect was a positive indication that these same participants can serve as both trainers and auditors. Participants returned to the meeting room and prepared presentations on what they observed at both the abattoir and butcher shops.

The final day of the training was focused on teaching participants to build their own training program. Participants were asked to plan an agenda, including audience, topics to be covered, time allotment, and what materials they needed to complete their training successfully.

The last day in Ethiopia included transport from Adama to Addis Ababa and a visit to the USAID Mission at the U.S. Embassy. We met with Bryan Byrne and Faith Bartz Tarr to discuss how the activity went and to propose development of an accreditation system.

4. Results

- We had 100% attendance from the 20 participants for all four days of the training. This is notable as other training programs facilitated by Fintrac and other organizations commonly observed a rapid decline in attendance as the training progressed.

- Pre- and post-tests indicated a 10% increase in knowledge. Participants had a significant amount of expertise and experience before the training. In many cases, the content of the training-of-trainers (TOT) reaffirmed what they already knew, but it was appropriate for the subsequent audience, as the training cascades.
- Generally, the participants acknowledged that results of the Phase 1 needs assessment were a fair evaluation of product flow and known issues in meat production. One point of contention was the suggestion to include more women. There are some culturally defined roles for men and women. While there were hurdles in increasing inclusion of women, the participants recognized that there is a possibility to expand the role of women in meat production.
- Much of the ensuing discussion on identified hazards centered on the actual incidence of *Tania* spp. and current measures to reduce incidence, and specifically on better management preharvest to prevent cattle from grazing on likely infected areas. Additionally, there was discussion about the risk versus benefit of raw meat consumption. Suggesting healthy adults abstain from raw meat consumption did not gain much traction because it is so culturally ingrained and preferred for taste. However, participants recognized that vulnerable populations (young, old, pregnant, or otherwise immunocompromised) should not consume raw meat. Over time, this recognition is likely to reduce consumption, as children not given raw meat may become adults that do not eat raw meat.
- There was a perception of greater willingness to reduce or avoid consumption of raw meat than expected. This may have been because of the level of education of the audience; nevertheless, it was encouraging to hear participants offer that they would no longer consume raw meat or, at least, suggest that they would no longer serve it to their children.
- The participants found the use of Glo Germ particularly useful to teach proper handwashing technique.
- When participants presented their observations from the practical visits, groups were particularly aggressive in their criticism of the abattoir. The team noted that recommendations that are not practical are not helpful, and that rather there needs to be a recognition of the nature and location of the facility and identification of reasonable and achievable improvements that can be made. The audience generally did a good job of articulating both the problems and positive aspects of what they observed.
- The groups independently indicated that a three-day training for abattoir workers and a one-day training for butchers was most appropriate. Successful completion of the training, including attendance at all sessions, merited a certificate of completion, which was awarded to all 20 participants.
- A significant benefit from the training was simply gathering this group of participants that were diverse geographically and represented a range of governmental, abattoir, and butcher perspectives. This opportunity led to rich discussions on a range of pertinent topics, and participants left with a long list of contacts to add to their network.

- The USAID Mission was pleased to hear the training focused on improving technique and other low-cost aspects that could be implemented without significant investments in infrastructure. They were very interested in the possibility of an accreditation program and were positive about the opportunity at least partially to support that venture as early as the coming spring.
- As of December 2017, at least 166 abattoir and butchery workers had been trained. Assuming each participant came from a butcher shop that is selling the meat from one bull per day (approximately 115 kg of meat) and a consumer that consumes 0.5 kg of meat, there is potential to impact more than 38,000 people a day ($166 \text{ butchers} \times 115 \text{ kg/day} \times 2 \text{ people per kg}$) by providing meat produced under more hygienic conditions. Any participant in the training from an abattoir has the potential to increase the impact exponentially.

5. Recommendations

- A follow up with trainers should be done within the next six to twelve months to ensure training is progressing as expected and to suggest adjustments as necessary.
- An auditing and certification program should be initiated by the Ministry of Livestock and Fisheries to build on improvements stemming from the training and to stimulate continued progress. A scorecard was piloted during the TOT practicals, which provides a starting point for the design of assessments.

6. Next steps

- Follow-up assessment of training activities
- Development of an auditing and certification system. Identification of a governing body to conduct audits and administer certifications. The participants from this TOT course would be well suited to be auditors.
- Current efforts at UF are developing a shelf stable, dried beef product that can be made with ingredients and equipment found in Ethiopia that also effectively controls pathogens such as nontyphoidal *Salmonella enterica*, *E. coli* 0157:H7, and *Listeria monocytogenes*. A recipe and fact sheet can be developed and potentially distributed through the Butchers' Association.

Annex 1 - List of participants

	Name
1	Aman Jabir
2	Ayele Sahle
2	Tesfaye Hurrisa
4	Sisay Negussie Mamo
5	Dinku Sime
6	Dr. Wondosen Bekele (Director)
7	Dr. Bitsu Kiflu
8	Mulunesh Biresa
9	Abebe Getachew
10	Kidanemariam Tadesse
11	Dr. Meleku Asefa
12	Tsegaye Haile
13	Teshome Jadema Tolera
14	Abubeker Mahammed
15	Dr. Eshetu Belayneh
16	Demeke Hailu
17	Dr. Zeleke Gebre-Egziabher
18	Fetlework Workineh
19	Dr. Gebrehiwot Teshale
20	Tesfay Gebremariam

Annex 2 - Training course agenda

Day 1	Topic
08:00 - 08:30	Welcome and introductions
08:30 - 09:15	Introduction to the Livestock Systems Innovation Lab
09:00 - 09:15	Introduction to the Ethiopia Value Chain Activity
09:00 - 10:15	Current status of Ethiopian Butchers
10:15 - 10:45	Coffee break
10:30 - 12:00	How to train adults
12:00 - 13:00	Lunch
13:00 - 15:00	Biological, chemical, and physical hazards
15:00 - 15:15	Coffee break
15:15 - 17:00	General hygiene and sanitation for abattoir and butchery workers
Day 2	
08:00 - 10:00	Butcher specific concepts and techniques for improved hygiene and meat quality
10:00 - 10:15	Coffee break
10:15 - 11:00	Abattoir specific concepts and techniques for improved hygiene and meat quality
11:00-12:00	Humane handling of livestock
12:00 - 13:00	Lunch
13:00 - 17:00	Preparation for field practice: review of important concepts of the day to inform what to look for and questions to ask at abattoir
15:00 - 15:15	Coffee break
15:15 - 17:00	Preparation for field practice: review of important concepts of the day to inform what to look for and questions to ask at butchers. Auditing score sheets provided
Day 3	
7:00 - 10:00	Site visit to abattoir. Practice Audits
10:00 - 10:15	Coffee break

10:15 - 12:00	Site visit to butcher(s). Practice Audits
12:00 - 13:00	Lunch at butcher
13:00 - 15:00	Feedback from the abattoir visit: presentation by different groups, identification of points of emphasis
15:00 - 15:15	Coffee break
15:15-17:00	Feedback from the butcher visit: presentation by different groups, identification of points of emphasis
Day 4	
08:00 - 10:00	Structuring training for abattoir workers
10:00 - 10:15	Coffee break
10:15 - 12:00	Structuring training for butchers
12:00 - 13:00	Lunch
13:00 - 15:00	Evolving the training course over time for continuous improvement
15:00 - 15:50	Coffee break
15:15 - 16:15	Discussion: questions and concerns of participants
16:15 - 17:00	Handing out of certificates and closure



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The U.S. Government's Global Hunger & Food Security Initiative

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