

**VOLUNTEER REPORT FORMAT**

*To be submitted to CRS at the end of volunteer assignment and shared with the Host*

**1.1 Assignment information: ET49**

- a) Volunteer Name: Loren Sprouse
- b) Host Organization: Lume Adama Farmers Cooperative Union
- c) Assignment: Modjo, Ethiopia
- d) Dates of Assignment: April 3-23, 2015
- e) Number of days worked: 18

**1.2.1 Objective 1 in your SOW: Train and technically demonstrate on appropriate and modern ways of grains storage in warehouses and storages to avoid/minimize losses****a) Progress with the objective**

- Current Situation: LAFCU does not test moisture content regularly as a part of monitoring grain for storage and wheat prior to milling for flour
  - Union had state-of-art testing equipment for moisture testing from USAID at Modjo: One Draminski unit (Note: this is the best test set) and three Sinar units.
  - Management and workers did not know how to use test sets
- Read manuals for testers and wrote step-by-step procedures for use
- Trained Modjo workers and management to use testers
- Contacted USA flour milling and grain marketing experts for information

**b) Expected impacts/results**

- Findings:
  - Various grain samples from the warehouse tested 9.3%
  - Wheat samples at the flour mill tested 13.2%
- Importance of moisture testing for the co-op
  - LAFCU loses 1.25% of grain financial value for every 1% moisture loss
  - Example: Grain received from a primary co-op at 15% and sold at 9% by LAFCU loses 7.5% of its financial value while in the warehouse
- Importance of moisture testing for the flour mill
  - The optimal moisture level prior to milling is 15 to 16% after washing/tempering
  - Flour mill produces less bran in flour and whiter wheat
  - Flour mill receives less wear, runs quieter, and uses less power
  - Flour will stay at high quality up to 15% moisture. Therefore, LAFCU sells more flour by weight
- LAFCU may determine they are receiving high moisture grain (>15%) from primary co-ops that is highly vulnerable to spoilage
- LAFCU needs to understand the shrinkage that occurs to grain in its warehouse and its associated financial loss impact
- LAFCU needs to maintain a higher moisture content in wheat for milling (15 to 16% after washing and tempering)
- LAFCU needs to maintain grain at 13% or less moisture level for long-term storage

**c) Recommendations**

1. Record moisture on samples of grain received from primary co-ops during harvest
2. Record moisture on samples of grain when sold

3. Record moisture of wheat just prior to milling in the flour every week
4. Maintain history
5. Experiment with tempering times (times between washing and milling) to achieve optimal 15 to 16% moisture level prior to milling
6. Experiment covering final hopper partially with plastic to retain moisture
7. Experiment using misters with water
8. Understand differences between dry and wet season moisture levels and adjust accordingly
9. Most importantly, record results of weekly wheat moisture levels and record results of any experiments so future visits by USA flour milling experts can use this information to help LAFCU improve flour quality

**1.2.1 Objective 1 in your SOW (cont'd): Train and technically demonstrate on appropriate and modern ways of grains storage in warehouses and storages to avoid/minimize losses**

**a) Progress with the objective**

- Current Situation:
  - Warehouse currently filled with grain bags from different primary co-ops
  - Informal knowledge of origin of bags from specific primary co-ops
  - Informal knowledge of crop year of bags
  - The warehouse attempts to sell or use older crop year production first

**b) Expected impacts/results**

- Improve quality and meet customer expectations by implementing Source of Origin Identification (SOID)
  - Allows LAFCU to pay premiums to high quality primary co-ops
  - Allows LAFCU to ID low quality co-ops for corrective action/ discounts
  - Meet international standards and customer expectations
- Improve quality and meet customer expectations by implementing First In/ First Out (FIFO) system
  - Positive ID of crop production year
  - Disposing of all old crop production reduces weevil damage and spoilage
  - Always sell all old crop production before new crop

**c) Recommendations**

- Ink stamp, tag, or marker on top of bags as they enter the warehouse
- 2 digit number or abbreviation for SOID (Example: Boshet = "23" or "BO")
- 1 digit number for year (Example: 2013 = "3")
- Implement SOID in conjunction with Date Labelling ( Example: 2008 Boshet = "8-23" on top of bag

**1.2.1 Objective 1 in your SOW (cont'd): Train and technically demonstrate on appropriate and modern ways of grains storage in warehouses and storages to avoid/minimize losses**

**A) Progress with the Objective**



- Current Situation: Damaged fertilizer inventory
  - Co-ops have fertilizer bags that have been physically damaged by rodents or other deterioration.
  - No action to dispose is being taken due to gov't /union ownership issues

**b) Expected Impacts/Results**

- Improve profitability by disposing of this fertilizer and freeing up co-op space
- Reduce groundwater pollution risk through a damaged inventory disposal process

**c) Recommendations**

- The union procures plastic-lined fertilizer bags for distribution to co-ops as needed
- Co-ops inventory # of damaged bags and report to the union
- Co-ops re-bag in half bags (25kg)
- Union compiles numbers and reports to government as inventory reconciliation. Resolve approval issue with government officials
- Co-op donates one half bag to each farmer purchasing fertilizer (an example)
- NOTE: DO NOT DISPOSE OF THIS FERTILIZER IN A LANDFILL! CONCENTRATED CHEMICALS COULD ENTER THE GROUND WATER!!!

**1.2.2 Objective 2 in your SOW: Train and technically demonstrate on appropriate and modern ways of structural design and/or engineered arrangement of storage materials in warehouses**

**a) Progress with the objective**

- Current Situation: New LAFCU warehouse being built in Adama
  - Footings completed
  - Fill dirt being placed and starting column construction
  - Will be the largest warehouse for LAFCU

**b) Expected impacts/results**

- Increases usable warehouse space
- Improve worker safety and welfare by reducing manual lifting while loading and unloading trucks
- Improvements can allow for use of handcarts and future diesel forklifts
- In addition, the suggested improvements can allow for future use of bulk material containers (10 quintal and 20 quintal containers) to be used

**c) Recommendations**

- Install additional door and create a “truck bed height” loading dock
  - New design specs (LVS completed 4/17/2015) approval and submission to construction contractor
  - Minimize openings at roof peak and eaves to prevent bird intrusion
- Additional actions needed
  - Purchase dock plate (used to transition from warehouse floor to truck bed)



- Purchase large wheeled handcarts (minimum 3) designed for bag handling
- Management field visit to a warehouse with this dock design to observe use and train workers in the new process
- Segregate “new crop” and “old crop” using aisles
- Utilize pallets to reduce weevil damage and improve fumigation results

**1.2.3 Objective 3 in your SOW: Train and technically demonstrate on storage management (inside structures, setup in bulking & bagging, ground lifting, ventilation, distance from the roof & roofing, storage pest control, etc.)**

**a) Progress with the objective**

- Current Situation: LAFCU warehouses has problems with weevils and other insects – mainly affecting wheat and lentils
- Objective: Improve quality and profitability by reducing insect damage

**b) Expected impacts/results**

1. Separation will slow down spread of pests
2. Separation and pallets will improve fumigation results when necessary

**c) Recommendations**

1. Segregate old crop and new crop bags
2. Put aisles between new crop and old crop wheat bags
3. Obtain pallets for wheat and lentils
4. Implement First In/ First Out (FIFO) to move old crop grains out of the warehouse first

**1.2.3 Objective 3 in your SOW (cont’d): Train and technically demonstrate on storage management (inside structures, setup in bulking & bagging, ground lifting, ventilation, distance from the roof & roofing, storage pest control, etc.)**

**a) Progress with the objective**

- Current Situation: Flour mill productivity and safety
  - Wheat in 100kg bags must be transported 100m from the warehouse to the flour mill for milling
  - Bags are loaded onto a truck or trailer, transported to the flour mill, and lifted approx. 3m by hand to be unloaded in a concrete hopper on the outside of the flour mill

**b) Expected Impacts/Results**

- Improve worker productivity and increase worker safety by reducing manual lifting Significantly improves productivity and worker safety when new process is used with tractor carryall
- Increases warehouse space by staging wheat in the flour mill building prior to milling

**c) Recommendations**

- Recommendation 1 (Near-term):
  - Utilize a tractor and construct a 3-point hitch rear “carryall” to transport wheat bags (up to 10 bags/ load) to the flour mill building. (Note: These are commonly used in the USA for hauling and are generally built by farmers)
- Recommendation 2 (Longer term):
  - Change process of unloading wheat at the flour mill using new hopper installed flush in the flour mill floor
  - Stage wheat bags along the wall in currently unused space near the elevator leg
  - Dump wheat bags in the new flush mounted hopper
- Actions Needed:
  - Finalize design of new hopper (LVS completed basic drawings 4/17/2015)
  - Procure materials and construction

**1.2.3 Objective 3 in your SOW (cont’d): Train and technically demonstrate on storage management (inside structures, setup in bulking & bagging, ground lifting, ventilation, distance from the roof & roofing, storage pest control, etc.)**

**Other Near-term Improvement Opportunities:**

- Develop general maintenance check list and schedule, and spare parts inventory for flour mill
- Electronic scales for flour bagging
- Shop vacuum for cleaning flour mill and seed cleaner
- General electrical upgrades
- Pigeon removal from flour mill
- Hand carts for moving grain bags
- Trace wheat back through the logistics process to determine root cause of spoilage

**Strategic Business Opportunities:**

- Develop branding strategy for LAFCU as a retail foods company
- Investigate bulk container shipping for bean export
- Acquire new seed cleaner to improve quality of grain cleaned
  - Removable sieves
  - Top and bottom air delivery
- Investigate Teff seed coating process for mechanical seeding and improved germination

**1.3 Number of people Assisted**

- a) Through formal training: 15
- b) Through direct technical assistance (Do not double count): 59
- c) Out of these above, number of host staffs: 43
- d) Training/assistance by field
- e)

Category	Total	Males	Females
Members/ owners	15	10	5
Employees	30	29	1



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Clients/ Suppliers	2	2	0
Family Members	12	6	6
Total	59+15=74	47	12

#### 1.4 Gender

- What gender roles did you recognize in your host community? Did these roles play a part in your assignment? How? The majority of the people that I interfaced with were males. All of the host management team is males. Six females attended the final presentation.
- How might CRS or the host organization improve opportunities for the women in this host or host community?

#### 1.6 Value of volunteer contribution in \$

- Hours volunteer spent preparing for assignment -- 40
- Estimated value of all material contributions volunteer contributed to host during assignment – 5000 birr

#### 1.7 Value of hosts' contribution in \$ (Please consult the host as well)

- Meals 0
  - Transportation 2000 birr
  - Lodging 0
  - Translation 1000 birr
  - Other (Specify) 0
- =3000 Birr= 150USD**

#### 1.9 Host Profile Data:

Did you obtain any data that supplements or corrects the data in the existing host information as detailed in the SOW? Please list it. The recommendations above outline specific information learned to identify the current situation that is impacting the host.

#### 1.10 Recommendations for CRS:

- Recommendation for future volunteer assistance:
  - Project managers to work with Host management to implement recommendations
  - Technical experts to assess processes and train local personnel to maximize flour quality and yield at the flour mill (and other mills as well)
  - Economic and marketing support to determine new market opportunities for Union products (flour, bread, others)
  - Assignment to trace back wheat through the logistics process to determine the root cause of spoilage