



Africa RISING Ethiopian Highlands Integrated Landscape Management Exchange Visit, 4-7 May 2016

**Lulseged Tamene, Kindu Mekonnen, Shimeles Mengistu, Fikadu
Tessema, and Hailu Terefe**



Produced by

International Livestock Research Institute

Published by

International Livestock Research Institute

May 2016

www.africa-rising.net



The Africa Research In Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development as part of the U.S. government's Feed the Future initiative.

Through action research and development partnerships, Africa RISING will create opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base.

The three regional projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads the program's monitoring, evaluation and impact assessment. <http://africa-rising.net/>



This document is licensed for use under the Creative Commons Attribution 4.0 International Licence.

This document was made possible with support from the American people delivered through the United States Agency for International Development (USAID) as part of the US Government's Feed the Future Initiative. The contents are the responsibility of the producing organization and do not necessarily reflect the opinion of USAID or the U.S. Government.

Contents

Introduction	4
Participant (local partner) selection	4
Field visit of the Basona site	4
Activities visited at Geda watershed (Gina Beret) and Mush/Salasfa village	4
Soil fertility management through manure application	4
Moisture conserving structures	5
Physical and biological conservation	6
Tree Lucerne (Chamaecytisus palmensis)-apiculture integrated intervention	6
Backyard fodder trees, feed storage and feed trough.....	7
Potato storage (DLS)	8
Enset at Basona Worana	8
Field visit in the Lemo site.....	9
Enset farm	9
Physical and Biological conservation activities	9
Crop intensification around backyards	9
Water harvesting and solar pumps.....	10
Livestock feeding system	10
Overall discussion session.....	11
Recommendation.....	15
Acknowledgment	16
Appendixes.....	17

Introduction

As part of a capacity building component related to the ‘integrated landscape management – (ILM) theme, the Africa RISING project organized exchange visits so that local partners including farmers can learn from visiting interventions implemented in different sites. Accordingly, CIAT, the leader of the thematic area in close collaboration with ILRI and Mekelle University, conducted two exchange visits. The first one was conducted in 2014 and involved local partners from two Africa RISING watersheds (Basona and Lemo) to visit successful watersheds in Tigray. The second one was organized such that selected communities from the two AR watersheds visit each other’s site. This report is about the second visit, which generally aimed at visiting interventions implemented after the visit in 2014 and exchange ideas to learn from each other and identify options and technologies that can be replicated. The visit can also help identify constraints/limitations and discuss on ways to resolve them. The visit was composed of experts and farmers from two of the project sites, Basona and Lemo districts.

Participant (local partner) selection

Local farmers (who actively participated in the implementation of watershed management practices), extension workers, University lecturers, staff from the Bureau of Agriculture, and local and district level administrators from each Kebele involved in the exchange visit. The visit started from Debre Birhan area of Basona Woreda, Gudo Beret and Adisghe Kebeles, and ended in Jawe kebele of Lemo woreda. The details of the technologies visited, major issues raised and discussions made during the visit are presented below.

Field visit of the Basona site

The visit started from Basona site, Geda watershed on 04 May 2016 after visiting team members



Figure 1: Visiting team while explanation given by Researchers and experts about the watershed at Gina Beret (Photo: Shimelis/ILRI)

introduced each other (Figure 1). Dr. Kindu Mekonnen and Dr. Lulseged Tamene introduced the objective of the visit and the watershed management activities that are planned to be visited. Further, two PhD students that have got fellowship by AR and undertaking their research at the watershed introduced their main research focuses and expected outcomes. After such brief introduction the invited participants walked across the watershed to visit interventions on selected routes.

Activities visited at Geda watershed (Gina Beret) and Mush/Salasfa village

Soil fertility management through manure application

The first observation in the watershed was manure applied on individual farmer crop fields (Figure 2). According to the chairman of Gudo Beret farmer association, the farmers applied manure before plowing.. Manure was scattered on crop fields that would be spread using spade. Many questions

were raised and comments were given regarding the time and technique of application as well as amount, transportation and way of compost application.

Questions: 1. how is manure being prepared? 2. Why not all farmers apply manure? 3. How can a farmer transport manure to a distant plots from homesteads? 4. Have the yield differences between the chemical fertilizer and manure been compared? 5. If farmers stop burning cow dung and use all for soil fertility improvement (manure), what can they use to fulfill their energy demand?

Answers: Mr. Jemal, NRM expert from Basona woreda office of agriculture, said that once compost is applied, it can be used for about three years without repeated application. This means that farmers can have time to prepare additional compost to address other farmlands. Dr. Kindu reminded that appropriate time and amount of compost application for efficient sustainable yield improvement need to be researched/tested and recommended based on the research findings. Cow dung is collected and stored at homestead. Then, the stored manure, when matured, is transported and distributed on crop fields as evenly as possible. Some farmers have formed cooperation for manure transportation. Each member of the group brings two donkeys at the time of manure transport and if a group has twenty members, for example, there are forty donkeys for manure transportation. So, the labor problem is solved through this arrangement. However, due to limited number of livestock, the manure that can be collected and stored is not adequate to apply to all plots of land in the watershed. Regarding competition with fire wood, most farmers have sufficient eucalyptus trees around their homesteads. In addition, farmers are using energy conserving stove such as Lakech. Dr. Lulseged added that it will also be essential to understand tradeoffs on manure and other technology application to evaluate sustainability.

Suggestions: The difference between the use of chemical fertilizer and manure, time of application and storage techniques should be considered as a potential research topic. For now, we should appreciate the commitment of farmers at least to bring back the nutrient exported in the form of feed and food. Even though chemical fertilizer releases nutrients very quickly and are easy for transportation, manure provides diverse types of nutrients and also improves the soil physical characteristics, water holding capacity of the soil. Manure is also a long-lasting solution than chemical fertilizers. Yet, bringing and spreading of manure on crop fields should be given due attention not to lose the nitrogen; because it is volatile. It is advisable to mix with the soil as soon as possible.

Moisture conserving structures

Small (2.5m x 2.5 m) and large (3m x 4m) percolation pits were prepared to trap water in the field and natural water ways, respectively. The objective of the structures is to enhance the soil moisture of the surrounding areas by trapping the available water during rainy seasons. Furthermore, other structures such as horizontal closed trench, horn trench, eyebrow basin and semi-circular pits were constructed (Figure 4).



Figure 2: Visiting team discussing on compost application while moving through Geda watershed, Gudoberet kebele (Photo: by Shimelis/ILRI)

The structures show interesting results in keeping the surrounding moist and attractive for highland fruit production. According to the kebele developing agents and the kebele chairman the landscape is suitable to establish temperate fruits such as apple. There are 20 youths organized to take over the land for the proposed fruit production. The youth will be responsible for all the managements of the fruits and they will be the sole beneficiary from the output.



Figure 4. Moisture conserving structures

Physical and biological conservation



Figure 5. Visiting team while discussing around one of constructed percolation pit at Geda watershed (Photo: ILRI/ Shimelis Mengistu)

Terraces, trenches, eyebrow basins, deep percolation pits and gully rehabilitation structures were observed as constructed on farmlands, grazing land, and degraded lands (Figure 5). Tree lucerne was planted on terraces and edges of trenches but were defoliated by wild goat ('Midako').

Tree Lucerne (Chamaecytisus palmensis)-apiculture integrated intervention

Severely degraded landscape was planted with tree lucerne three years ago and the site (Figure 6). Three youth groups organized by Adisgie kebele administration manage the land and share benefits through beekeeping, seedling production, apple production activities. Three youth groups have been established to manage the land and share benefits.



Figure 6. Tree lucerne plantation site at Adisgie kebele of Geda watershed (Photo: ILRI/ Shimelis Mengistu)

Twenty beehives were introduced in the tree lucerne and are producing honey and supporting a group of landless youth. The plan is to introduce 60 beehives. In addition to honey production the group has sold tree lucerne leaves and purchased seed for raising tree lucerne seedling at their own nursery. Some questions were raised and discussed:

Questions: 1. Why do you plant eucalyptus tree at each homestead and where are your gardens to produce vegetables? 2. What is the reason for your house walls to be short? 3. What is the reason that we can't see crops? What are the food crops growing in this area? 4. The source of your bee forage is tree lucerne only. What if this plant is destroyed, no diversification? And do you think one kind of flower is enough to produce quality honey? Why don't you plant other forage species? 5. If watershed is free from livestock grazing, where do you get the milk, butter, meat and other livestock services? 6. Mole rat is cutting our tree lucerne, how can we protect it?

Responses: We plant eucalyptus around the homestead to protect the house from strong wind pressure. Since the agro-ecology is in the highland with recurrent frost, eucalyptus is the most resistant plant that adapts well in the area. If we get alternative plant species, we can plan and diversify our plantation. Now many farmers are planting tree lucerne around homesteads as an option to obtain different products and services (Figure 7). Our houses are short walled, this is to withstand wind pressure and increase its lifespan. Regarding vegetables, we plant carrot, cabbage, garlic on irrigation plots. At homesteads, water is critically short, we plant vegetables during summer when we get sufficient rain to grow vegetables. Furthermore, we grow food crops such as barely, faba bean, field pea, wheat, lentil and flax during the main rainy season (Mehir).



Figure 7. Tree Lucerne fodder lots

Seedlings of various species can be brought from Alage TVET for example and tested here to diversify forage source for the bees. The problem is that we do not get yet ample alternative highland flowers. Our livestock are kept at their house (barn, stable) and we feed them there. We get all the products and services of the livestock through cut and carry system.

Discussion - Tree lucerne is a well-adapted and very good plant for this agro-ecology. It protects the soil from erosion and produces good biomass. The seed is a good source of feed for chicken. Even though the research at this watershed is so young, we had conducted feed trial, pruning time and height for better biomass production. Other grass species are also being integrated within the watershed. We plan to introduce additional compatible species for bee forage.

Backyard fodder trees, feed storage and feed trough

The team visited tree lucerne plantation around homestead, crop residue shade and feeding trough in the Salasfa village of Gudo Beret kebele (Figure 8). The farmers who came from Lemo were excited by the feed trough technology and promised to replicate it in their site.



Figure 8: Tree lucerne plantation around home stead (left) and feeding trough (right) in one model farmers home (Hailegnaw Akalewold) at Salasfa village of Gudoberet kebele (Photo: ILRI/ Shimelis Mengistu)

According to Dr. Kindu, there are 285 farmers who have participated on tree Lucerne on-farm action research initiative in the four Africa RISING sites. Feed shade/storage is very important to keep the feed from rain, termites and decay. Feeding troughs save the feed from wastage during livestock feeding. The technologies are very attractive and appreciated by the visiting farmers. It can feed livestock from the two sides, the center is used to put the feed. The height and width of the feed trough can be adjusted as per the type of the livestock; it can be used for cattle and sheep with appropriate design modification.

Potato storage (DLS)

The team also visited potato storage on one female model farmer, Mrs. Desta Woldaregay and Mush irrigation user's cooperative at Mush sub-kebele.

Desta explained different activities that she is involved in the project interventions and how she benefited in terms of attitudinal and livelihood change.

In addition to those by individual farmers, diffused light potato stores are also constructed by a cooperative at Mush to provide potato seed for growers (Figure 9). Mr. Moges Deksiwos

(member and former cooperative leader) briefly explained the history and status of the cooperative, the internal bylaws, share buying and distribution system, their seed quality control system and marketing issues for the visitors. The cooperative was established in 2006 by 40 members with initial capital of 2900 Eth. Birr (equivalent of USD 145). Currently it has more than 500,000 Eth. Birr (equivalent of USD 25000) and more members. In addition to potato seed store, it plans to construct food potato preserving stores in order to minimize the low price at the time of harvest.



Figure 9. Big potato DLS constructed by Mush

Enset at Basona Worana

During the homestead visit, participants from Lemo saw Enset at the backyard of W/ro Desta (Figure 10) and asked its purpose. The owner explained she

uses leaves of Enset and other species of Enset to bake local bread (Difo Dabo) with a locally clay made bakery. Colleagues from Lemu explained the additional benefits of the crop including for food and feed. Mr. Yohannes (from Wachamo University) and farmers from Lemo explained that Mush area and lower part of Geda watershed can grow Enset and they recommend to try growing this crop at least for the purpose of feed until it can be well adapted and used for food. Yohannes and farmers from Lemu stressed that Enset should not be used only for the purpose of baking bread. It was suggested that



Figure 10. Enset grown at a backyard in Basona

concerned experts and researchers need to take the responsibility to undertake Enset adaptation and to train the community on Enset production, management and utilization. Based on the discussion, farmers of Basona showed strong interest to see Enset crop at their place. It is also expected that AR will take this as one of the interventions in the area.

Field visit in the Lemo site

The visit in Lemo, Jawe kebele included Gombora watershed. The major interventions visited include:

Enset farm

Enset is a common crop in the Lemo site. The visit was started by local farmers' and experts who explained the propagation, management and functions of enset (Figure 11). This was interesting as it shade light for the Basona partners as they didn't know the various functions of the crop and its management.



Figure 11. Enset grown at a backyard in Basona

Physical and Biological conservation activities



Figure 12: Bio physical Soil and water conservation structures in Gombora watershed, Jawe kebele (Photo: ILRI/ Shimelis Mengistu)

The team visited different physical and biological soil and water conservation activities. The soil structure, topography and other land use features in Gombora watershed are far different from that of Geda watershed. The agro ecology and soil characteristics are suitable for the growth of many of the biological soil and water conservation (SWC) interventions. Desho and vetiver grasses were main biological conservation measures observed on the terraces of Gobora watershed (Figure 12).

Crop intensification around backyards

Unlike Geda watershed of Gudo Beret kebele, annual and perennial food crops are intensively grown for the purpose of both cash and food in Gombora watershed (Figure 13). This was interesting for the Basona participants as they have limited experience in diversified homestead farming. An interesting visit include intensification and efficient land utilization practiced by Mrs. Bekelech (female model farmer) and Mr. Birhanu (male model farmer).

Water harvesting and solar pumps

Water burrow structure/ shallow wells were constructed by some of the farmers in Gobora watershed to use it efficiently at time of water shortage. In addition to this collection of rain water using water harvesting structure covered with geomembrane was being practiced by farmers in Jawe. One of the model farmer, Mr. Birhanu Tirkaso, was using solar pump to pump out water from well and water collection structure to irrigate his farm and grass land (Figure 13). It was observed that Ato Birhanu and Bekelech constructed a water ways for the runoff water to direct it to their



Figure 13: Intensifying crops around homestead at Ato Birhanu's (left) and W/o Bekelech's (right) home in Gobora watershed of Jawe kebele (Photo: ILRI/ Shimelis Mengistu)



water collection structures.

Livestock feeding system

There is no free grazing practice in Lemo, thus farmers keep animals tied on pastureland around homestead and supplement them through cut and carry system of feeding (Figure 14).



Figure 14: Animals kept tied to graze on pasture land in Gobora watershed on Jawe kebele (Photo: ILRI/ Shimelis Mengistu)

Overall discussion session

After completing the two days' exchange visits at the two sites and associated discussions, a final session was organized to discuss the experiences, lessons, challenges and opportunities. The group met in W/ro Lakeche's house (Lemu). Dr. Lulseged started the discussion by highlighting the initiatives the project took to build capacity through trainings and experience sharing. During his highlight, it was mentioned that the first training/visit laid the foundation and the subsequent ones will help assess how far we have moved, what challenges have we faced, what measures were taken and what should be done in the future to sustain our interventions. Based on this, the floor was open for discussion and several comments/suggestions were made. The major ones are highlighted below.

- a. A participant from Basona was very impressed and mentioned that even an investor would not have done what he saw at the Lemu site. He even linked some of the gardens visited to successful research demonstration plots. He was so impressed with the amount and diversity of work done in the site that highlights how far behind he thinks he is to accomplish some of what he saw. He also said that the visit highlighted the need and possibility of intensifying on small area and produce more than cultivate large area but gain not much. Another person commented "we from Basona are jogging and we know you will not stand and wait for us, please continue your good work and we will try to follow. We hope to be close to what we have seen here one day". Basona colleagues also commented that they have learnt a lot on the home garden management they observed in Lemu. They think that they are behind on this and if they pursue along this line they can benefit a lot – food security, diversity, nutrition.
- b. Another farmer from Basona stressed the appreciation needed to be given to the Lemo colleagues. He specifically mentioned the long ditch constructed inside W/o Bekelech's compound to prevent 'wild animals' damaging plants/fruits. He was impressed with the huge commitment and dedication the family showed to dig all around the compound to make sure that wildlife interference is minimized. In other places, he said, families would have required their children to abandon their school classes to look after their garden from wildlife attack, while in the case of the garden he visited, they found more innovative and sustainable solution. He also described the impressive comment he heard from W/o Bekelech, "maybe in your place you run to your houses when it starts to rain. Here, it is the opposite, I run to the field when it rains to make sure that the rain water is harvested properly.
- c. A farmer from Lemo indicated that it may not be wise to compare the activities done at the two sites because of their natural differences. He thinks that good work is done at watershed level in Basona though he thinks that the work has not reached individual farmers. He also suggested that a lot could have been done around homesteads. He is convinced that the Basona colleagues have learnt few things from Lemo on home garden management. It is important to note here that the Basona visit mainly focused on the interventions at landscape levels (the individual farmers who did lots of interventions were not visited) while in Basona the visit combined both success stories at landscape and farm/plot levels (especially around homesteads).
- d. A participant from Hosanna stated that due to the nature of the places and some of the existing technologies, Lemo site can withstand drought shock for 2-3 years without significant damage while it may be impossible in Basona. The Enset plant is one key component of the system in Lemo that supports the community and livestock during challenging time. He suggested that it can be possible to organize another short exchange visit such that people from Lemo can travel to Basona to train farmers on the use and management of Enset. He said that this can be an important breakthrough for the AR project and the two communities – introduce Enset in the

north Shewa area. The same person also hugely appreciated the fact that AR has included not only farmers and extension workers but also administration as well as University lecturers and researchers. He thinks that this composition is the best that can bring change in a coordinated manner.

- e. Basona colleagues raised serious challenge on irrigating vegetables and fruit crops, high value crops such as onion, tomato and vegetables. However, all have been attacked by diseases. They requested AR to look in to that. They also requested the project to investigate issues related to fertilizer use including whether the current recommendation of DAP and urea is acceptable. They asked for research-based site-specific recommendation including cost-benefit analysis.
- f. The participants stressed the huge benefit of their Tigray visit. They said “in Tigray people are changing stone to bread and in our places we are sitting on ‘gold’ but benefiting nothing”. The fact that they saw what can be done on relatively degraded land inspired them to do more and they will continue to do so. They appreciated AR for that eye-opener visit and for the continued support.
- g. The importance of ‘zero-grazing’ was stressed by both participants. It was pointed out that while moving around long distances livestock will tramp and damage more resources and at the same time spend their energy which otherwise would have been used to build their body. In any case, the livestock do not get much to feed on, so it is not worth letting them roam around.
- h. The participants also stressed the importance of integrating physical and biological conservation measures. This helps to not only stabilize the physical options but also provides additional benefit for the community and thus adoption can be sustainable. There was even an analogy – a sick person will not recover fast and fully if only he/she takes medicine without complementing it with appropriate food and additional nutrients.
- i. There was a comment that Basona site lacks adequate water harvesting measures. In addition, some of the biological measures integrated are too few. It is better to expand on diversity. This can also be helpful for the bees stressing the impressive comment made by one of the Lemo community members (W/o Bekelech) that if bee can get diverse flowers, their honey can be healthier”.
- j. There was also a suggestion that AR try to explore about plants (trees, agroforestry) that can be adapted to the Basona area. Like crops, there should be plants that can adapt relatively cold climate and will be wise to disseminate these to the cooler areas.
- k. There was a suggestion to evaluate those options which have successfully worked and those that did not succeed in a participatory manner, in both sites. This can help learn lessons especially if there were failures. It will also be vital to check those farmers who went to Tigray for the exchange visit but have done nothing or tried very little. It will be important to know what their constraints are and maybe try to get solutions to help them. In addition, it will be good to consult those who did tremendous work but are currently not ‘members’ of the AR project. Those are ideal people to learn from as they do things by their own initiatives and in some cases learning from their neighbors (who are AR project members).
- l. An instructor from Deber Birhan University mentioned that AR project members should be proud of themselves for being engaged in a work that directly benefits the community. He said he is impressed by the amount of work done and the quality of it too. He promised to disseminate the experience he observed and also engage other staff members to collaborate with the project. He also said he will use the site as a laboratory for his students.
- m. Members highlighted the need to expand the work on water harvesting and proper management. They stressed that water is life and SLM at landscape scale is the major approach to harvest water and use for different purposes. One member said “we should not let water leave our community before providing the services we need”.

- n. Communities indicated that they are willing and ready to pay for tested and proven technologies that AR brings. Considering the fact that the project will end sooner or later, the best way to pass the whole project package is through involving selected interested communities (engage them in appropriate technology transfer).
- o. As indicated by members repeatedly, landscape management interventions should provide multipurpose and there should be incentives for the community to actively participate. Because conservation practices show benefit in the long-term awareness creation and complementing with options that can provide faster benefits will be important. In this regard, homestead gardening is considered one of the important, cheaper, and easy practices.
- p. As stated by some members, the experience sharing visit has big role to learn among different community. Moreover, it has also power to create strong friendship and linkage between different societies. These results that we observed in both Geda and Gombora watersheds are the result of experience sharing visit arranged by AR project to Tigray region model watershed. Lemo and Basona team now are also learning many things to each other. Therefore, strongly acknowledge AR project, such experience sharing visit on best practices conducted in different area of the country should be given attention to extend those technologies and best practices to other areas.
- q. Some highlighted the need for continuous community discussion and cooperation among the farmers themselves to bring sound change in sustainable manner by avoiding/alleviating existing challenges within a given locality. In Lemo, the word of community leaders is highly respected and that may be the reason for watershed bylaws to control free grazing come in to practice. Therefore the farmers, understanding that they are the owner of their environment, should come together to discuss on their common challenges and possible solutions. With this community members would be able to take responsibility to avoid possible losses in the environment.
- r. Technologies taken as best in some areas need to be tested in other areas for their adaptation and scaling up/out work should be conducted for their wider adoption by the community. Concerned development and research institution should take responsibility to cooperate and work for the success of such common goals. For instance, Enset need to be tasted for its adaptation in Basona site and scaling work can be done later. Farmer training centers (FTCs) can be used to undertake different technology adaptation works. Both success and failures should be recorded and documented as they will be used as a lesson for future work.
- s. AR project is working with multiple partnership. This brought different organization to come together to discuss on common challenges and opportunities as well as to work together for the same objective. The innovation platform system created by the project both at woreda and kebele levels helps share knowledge and information among different partner organizations. Experts/researchers coming from different organization to participate on different project's activity have got the opportunity to know each other and develop friendship. But, in some case, information flow by experts/researchers (participated on the project work and different forums) to their organization is limited; and this gap needs to be addressed. Those researchers/experts participated on different forums, field works, field day and visits need to share information for their organization.
- t. Finally, both participants thanked AR hugely not only for its research and development support but also for bringing two different communities together and help them form close bond and relationship. They promised to be close and continue exchanging information and supporting each other. There is now strong bond between "North Shewa- Amhara and Hadiya-SNNPR" as one of the participants commented. The participants also suggested the exchange visit to be

more frequent and also include other successful areas than the current AR sites. This can provide broader perspective.

Recommendations

Mrs. Desta Woldaregay from Mush village of Gudo Beret kebele and Mrs. Bekelech Lechamo from Jawe kebele are two of the female model farmers from whom others can learn more from their efforts. As gender is one of the cross cutting issues within AR project activities, it may be wondered if such women are linked to projects that promote the development of female farmers. They can inspire many more outstanding model farmers and help bring realistic livelihood change. AR can play important role in this regard; and be part of interesting movement in the right direction.

Acknowledgments

The participants thanked CIAT, ILRI and Africa RISING project for enlightening them with very important technologies and interventions. The Basona team also hugely appreciated the warm welcome and treatment by the Jawe community members, especially Mr. Adinew and W/ro Laketch. Dr. Lulseged who was the facilitator of meeting/discussions acknowledged both Lemo and Basona teams for their efforts and commitments in sharing their experience in agricultural activities and closed the discussion.

Appendixes

Annex 1. List of Basona Worena team participated on the visit

S/N	Name	Organization	Responsibility
1	Yite Sinishaw	Debre Birhan University	Lecturer in NRM department
2	Jemal Mohamed	Basona woreda office of Agriculture	NRM expert
3	Tadiwos Demsew	Basona woreda administration office	Economic sector process leader
4	Melkamu Dagne	Gudo Beret kebele agriculture office	NRM development agent
5	Ayinadis Amare	Adisgie kebele agriculture office	NTM development agent
6	Bete Shawul	Adisgie kebele	Watershed committee
7	Ashenafi Mulugeta	Adisgie kebele	Watershed committee
8	Gizachew Hailemariam	Adisgie kebele	Watershed committee
9	Gizachew Meri'ed	Adisgie kebele	Watershed committee
10	Teklemariam Woldaregay	Adisgie kebele	Kebele administrator
11	Admasu Desta	Gudo Beret kebele	Watershed committee
12	Tilahun Debebe	Gudo Beret kebele	Watershed committee
13	Getachew Lakew	Gudo Beret kebele	Kebele administrator
14	Tegene Kidanie	Gudo Beret kebele	Watershed committee
15	Beletu Wondafer	Gudo Beret kebele	Watershed committee
16	Shimelis Mengistu	ILRI/Africa RISING project	Assistant site coordinator

Annex 2. List of Lemo team participated on the visit

S/N	Name	Gender	Organization	Responsibility
1	Ewnetu Mamo	M	Lemo woreda Administration	Lemo woreda head
2	Eyuel Tadese	M	Lemo woreda agricultural office	Agri. office head
3	Yohanis Haramo	M	Wachemo University	NRM department head
4	Gezahegn kebede	M	Jewe kebele	farmer
5	Bekelech Belachew	F	Jewe Kebele	farmer
6	Adinew Ayele	M	Jewe kebele	Farmer (Jewe kebele chairman)
7	Workineh Lende	M	Jewe kebele	farmer
8	Samuel Abate	M	Jewe kebele	farmer
9	Birhanu Tirkaso	M	Jewe kebele	farmer
10	Ewnetu Hanano	M	Jewe kebele	farmer
11	Abebe Jala	M	Jewe kebele	farmer
12	Menchulo Ameno	M	Jewe kebele	farmer
13	Andualem Bezabih	M	Jewe kebele office of agriculture	kebele office of Agri head
14	Mulatu Basha	M	Jewe kebele office of agriculture	kebele office of agri crop expert
15	Fikadu Tessema	M	ILRI	Assistance site coordinator