

# Training report on forage production, feed management and utilization for Africa RISING project farmers in Basona Worena, Ethiopia

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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.

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## Introduction

Profitable livestock production is key component for food and nutrition security of community in a given area. This sector is majorly influenced by feed availability and quality as feed cost take more than 60 % of cost of production. Grazing lands that have been serving as a source of natural pasture for livestock in the highlands of Ethiopia are continuously shrinking due to high population pressure, land degradation and conversion of grazing lands into arable lands. As a result feed shortage has become a major constraint for livestock production, and crop residues have emerged as the main components of livestock diet as their production is boosted due to cropping intensification. But, crop residues are generally poor in their nutritive value, with low crude protein content (4%) and digestible organic matter (<50%). Therefore, improved forage production and utilization is considered as a means to ensure feed availability and quality by supplementing the existing role of crop residues in a given area. Awareness creation on farming community is necessary to promote the production of improved forage on different strategy and to ensure proper feed management and utilization for livestock. This farmers' training is therefore initiated to create awareness on farmers so as to promote improved forage production, proper feed management and utilization with especial stress given to tree lucerne and Oat-vetch mixed fodder.

## Objectives

- To create awareness for farmers on livestock production challenges and possible mitigation options,
- To create awareness on farmers about improved forage and there production strategies,
- To let farmers know feed value of tree lucerne and methods of its production, management and feeding for livestock,
- To aware farmers on how to produce, manage and fed Oat-Vetch mixed fodder.

## Trainer team composition

1. Temesgen Alene (Africa RISING project research site coordinator)
2. Nake Ziku ( Animal feed researcher- Debre Birhan research center)
3. Abdu (Animal production and forage development expert)
4. Shimelis Mengistu (Assistant research site coordinator)

## Target Farmers

Farmers trained were tree lucerne and crop residue research protocol participants.

## Training sessions covered

### **Economic importance of livestock production**

It has been briefly stated that livestock production is a key component to support food and nutrition security because of its multiple functions like food and cash source, draught power, organic manure transport and others.

### **Challenges and opportunities of livestock production**

During presentation, Shimelis elaborated major challenges of livestock production and available opportunities for the improvement of the sector. Feed shortage (both in quantity and quality), lack of improved livestock breeds, lack of proper livestock health care and facility, existing traditional

husbandry system, poor or absence of record keeping and information sharing system were some of the challenges mentioned during Shimelis's presentation.

The current big attention given for the sector by the government and the increasing demand for animal product following the expansion of urbanization was mentioned as an opportunity that can promote the growth of the sector.

## **Forage production, its challenges and opportunities**

Grazing lands which were main source of natural pasture are being deteriorated due to different reasons such as high population pressure, land degradation and conversion of grazing lands into arable lands. As a result, crop residues have emerged as the main components of livestock diet as their production is boosted due to cropping intensification. But their nutritive value and digestibility is too low to support animals' extra productivity. Therefore, production of improved fodder using different strategies is mandatory to satisfy feed and nutrient demand of animals if better production and productivity is needed.

Shimelis said that if farmers are able to produce improved forage in their locality and practice proper utilization, it is possible to lower feed cost as it is the feed component that consumes most of livestock production cost (> 60-70 %).

Forage production challenges such as shrinking of grazing land, moisture stress of recurrent drought, lack of awareness, Poor attention given for improved forage production, poor access and distribution of improved forage varieties suitable for the area.

There are also opportunities for improved forage development if farmers are willing and committed to bring change on feed availability and quality. The following opportunities were mentioned by Shimelis during his training presentation.

- There are ways and possible options to undertake forage development with other agricultural activities.
- In addition to improving feed availability, forage development helps to improve land productivity as it serves as biological soil and water conservation measure.
- Forages and their products now a days have become marketable and are serving as cash source.
- There are different forage varieties suitable for different agro ecologies.

## **Livestock feed types**

Types of feeds by their sources, fiber content and functions were briefly described by Shimelis. How to improve access and availability of each type and their proper utilization was also elaborated during the training.

## **Forage development strategies**

Different forage development strategies like backyard forage development, under sowing of cereal crop with forage legumes, forage development on stock exclusion area, forage development on conservation structures, over sowing on existing grazing/pasture land, and field crop production were briefed during the training. Suitable forage species and areas where to promote those strategies were also described on the training.

## **Identification/selection of forage species**

Different factors to be taken into consideration during selection of forage species for the required forage development strategies were discussed during the training. Among these factors the type of strategy and environmental characters (altitude, soil type, rainfall and temperature) of the area were listed as the major ones.

## **Land preparation for forage development**

Like other food crops, forage production needs proper land preparation as this condition could adversely affect the performance of each species, which may have better potential of adaptation, as it was stated during the training. Type of forage species and soil type were some of the factors to be considered for land preparation.

## **Forage plantation**

Three methods of establishing or propagating forage plants (Direct seeding, Seedling, and Cutting and splits) were described during the presentation.

## **Land preparation for forage development**

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## **Highland forage production, management and utilization**

Some of highland forages (Vetch, Oat, Tree lucerne, Fodder beet and phalaris) and their production condition was briefly elaborated on the training. Detail explanation was given especially on production, management and utilization of tree lucerne and Oat-vetch mixed fodder. Methods of production and management issues, the type of benefit these fodders can offer, and the way how to feed these fodder for the animal as a supplement with other locally available feeds were explained in detail during the training.

## **Assessing the impact of fodder supplementation**

Methods how to assess the impact of fodder supplementation, specifically tree lucerne and oat-vetch mixture as fresh or hay for different animals (lactating cows, draught oxen and fattening animal) were described for trainees.

## **Feed demand and supply gap estimation**

Highlight on how to estimate annual feed demand and supply gap was given for trainees.

## Question and Discussion session

Following the training presentation, farmers were asked to forward their opinion whether they are getting expected benefit from livestock production or not and to raised different issues related to livestock production and productivity as well as major observed challenge in their locality. Based on this, farmers stated that they are obtaining multiple benefits from their animals but not sufficient enough because of many reasons as mention on the training. One of the main problem is feed shortage. The following challenges summarized as per the following table were raised as a reason which directly or indirectly affect the availability and/or quality status of livestock feed in the area. Possible mitigation measures indicated by the training team are also listed in the table.

Challenges/obstacles	Targeted issues under the challenges	Measures taken/to be taken
<b>Awareness problem</b>	<ul style="list-style-type: none"> <li>- There is information and knowledge gap on improved forages.</li> <li>- There is awareness problem on different forage production strategy.</li> <li>- There is Knowledge gap on proper management and utilization of feeds.</li> </ul>	<ul style="list-style-type: none"> <li>- Different types of improved forages suitable for the area were displayed and discussed during the training.</li> <li>- Different forage development strategies and forage types suitable for each strategy were briefly elaborated for farmers.</li> <li>- Methods of plantation, harvesting, conservation and utilization of highland forage especially on tree lucerne and Oat-vetch mixed fodder, were discussed in detail.</li> </ul>
<b>Land Shortage</b>	<ul style="list-style-type: none"> <li>- Average land holding is small and most farmers do not have extra land for forage production.</li> </ul>	<ul style="list-style-type: none"> <li>- Farmers were told to practice different forage development strategies suitable for their local situation.</li> <li>- Message was transferred for the farmers to use their land properly and efficiently.</li> <li>- Farmers need to give attention to improve productivity of grazing land by revegetating degraded grazing land.</li> </ul>
<b>Water shortage</b>	<ul style="list-style-type: none"> <li>- Forage development needs water. But there is shortage of water even for house hold consumption (special issue raised in Goshe Bado Kebele).</li> </ul>	<ul style="list-style-type: none"> <li>- Forage can be produced during main rainy season.</li> <li>- Attention should be given to conserve during excess time to use it at time of shortage.</li> <li>- Consultation among the community members and other stake holders is important to bring solution on water resource development, conservation and proper utilization of available water resources.</li> </ul>

Challenges/obstacles	Targeted issues under the challenges	Measures taken/to be taken
<b>Shortage of planting material</b>	<ul style="list-style-type: none"> <li>- Limited distribution of improved forage planting materials.</li> </ul>	<ul style="list-style-type: none"> <li>- Farmers were advised to collect tree lucerne seeds and produce seedlings by themselves.</li> <li>- Once initial forage seed/planting material is obtained, farmers need to produce and conserve for next planting season. They also need to exchange or purchase among themselves.</li> <li>- The extension and research system need to provide improved forage seeds for farmers as initial.</li> </ul>
<b>Lack of commitment and /or attention</b>	<ul style="list-style-type: none"> <li>- Farmers do not give attention for improved forage production</li> <li>- Farmers are not committed enough to ask and get expertise support.</li> </ul>	<ul style="list-style-type: none"> <li>- Farmers need to be committed enough for change.</li> <li>- Farmers need to ask expertise support and initial forage seed.</li> <li>- Farmers need to be committed to learn and practice improved feed technology.</li> </ul>
<b>Free grazing</b>	<ul style="list-style-type: none"> <li>- Free grazing has become a challenge for the survival of tree lucerne and other forage plants.</li> </ul>	<ul style="list-style-type: none"> <li>- The community need to discuss among themselves and reach consensus to develop internal by law and use it to control unnecessary free grazing.</li> <li>- Farmers need to understand that they will access to harvest sufficient fodder from those forage plant if protected for one or two cropping season.</li> <li>- Farmers need to practice environmental friendly livestock husbandry practice with special attention given to fattening.</li> <li>- Farmers need to keep small number and more productive one to avoid overgrazing and practice so that to tie and feed those animals on smaller grazing lands.</li> </ul>
<b>Poor nutritive value of crop residues</b>	<ul style="list-style-type: none"> <li>- Crop residues are serving as main source of animal feed in intensive crop production areas. But their nutritive value and digestibility is low to</li> </ul>	<ul style="list-style-type: none"> <li>- Concerned development or research organization (extension and research sector) need to provide and demonstrate technologies which can improve nutritive value and digestibility of crop residues (for instance EM technology should be introduced and demonstrated).</li> <li>- Farmers need to mix tree lucerne and Oat-vetch mixed fodders to with crop residues have better supplemental feed for their animals.</li> </ul>



Challenges/obstacles	Targeted issues under the challenges	Measures taken/to be taken
	support better animal productivity.	
<b>Poor information sharing and communication</b>	<ul style="list-style-type: none"> <li>- There is no information sharing system through which the farmers can share different issues related to different technologies among each other.</li> </ul>	<ul style="list-style-type: none"> <li>- The extension/research organization should develop a system like innovation plat form so that it will be possible to disseminate information concerning different technologies and options for the community.</li> <li>- Farmers research groups/innovation clusters need to communicate among each other. So that information and knowledge can be easily disseminated to other community members.</li> <li>- Farmers need to share information among each other through the existing local systems like "Idir" and during other community ceremonies.</li> </ul>
<b>Poor or no record keeping system</b>	<ul style="list-style-type: none"> <li>- There is no custom to record input utilization, output obtained and important information which can help to design better way of implementation for better profit.</li> </ul>	<ul style="list-style-type: none"> <li>- Farmers especially those who can read and write need to adapt recording information/data, input utilization and output obtained. So, it is possible to design methods to avoid losses and boost profit to be obtained based on those recorded information.</li> </ul>
<b>Rodent/rat problem</b>	<ul style="list-style-type: none"> <li>- There is loss of planting material in Gina Beret watershed.</li> </ul>	<ul style="list-style-type: none"> <li>- Indigenous options were indicated from experts and farmers. Putting fresh dung or crashed bone at the entrance of the hole will favor development of gnat (on the dung) and termite (on crashed bone) which disturbs rat.</li> <li>- Chemical methods like Ratol can also be used with serious caution to avoid contact or reach of other animals around the treated area.</li> </ul>

The distribution of Phalaris grass is better in Gudo Beret Kebele than Goshe Bado. So the extension is expected to introduce more phalaris planting material to Goshe Bado Kebele to be planted in the water shed for the coming planting season. Tree lucerne harvesting and utilization has been theoretically discussed in detail but it is still needed to practically show for the farmers at field level.

## Reflections Session

At the end of the training farmers from both kebele mentioned that the project is helping them to learn and use more from different on farm research outputs and through different community discussion forums, and trainings. They said that they have been able to know more technology option with the project and they requested the project to bring additional new technologies.

Sebsbie Sahle (head-Kebele agriculture office) and Mikre Gashaw (Goshe Bado kebele chairperson) strongly advised the farmers to change their attitude for better change and to be committed to work together to avoid existing feed shortage and other related problems in the kebele.

Temesgen and Shimelis (from ILRI-Africa RISING project) said that they want to know whether the farmers brought attitudinal change readiness as a result of the training or not by cross checking the number of farmers requesting different forage planting material and implementation of proper tree lucerne management and utilization.

Nake (from Debre Birhan research center) and Abdu (from Woreda office of agriculture) transferred important messages that the farmers need to be committed enough to request any technology support and to adopt efficient and effective utilization of existing resources in the area. They also said that if farmers are ready and request initial technologies, there is a possibility to provide them initial seed technology as Nake promised to search and provide fodder beet planting material. Finally, both appreciated Africa RISING project for arranging such important training.

## Number of participant farmers on the training

Kebele	Number of participant farmers			Remark
	Male	Female	Total	
Goshe Bado	20	5	25	Tree lucerne and crop residue participant
Gudo Beret	47	6	53	Tree lucerne and crop residue participant
Total	67	11	78	