# Gender Analysis in the Mixed Crop-Livestock Farming Systems at Selected Districts of Mid-Rift Valley, Ethiopia

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## Abstract

The study was conducted in Mid-Rift Valley areas of Oromia regional state to analyze gender in the context of the different farming systems (mixed crop-livestock farming systems of high land, mid-high land and low land areas). Five districts namely; Shashamane, Adami Tulu Jido Kombolcha, Ada'a, Fentale and Bora were selected for the study. Ten to twelve key informants were selected per the district. Participatory Rural Appraisal (PRA) techniques like focus group discussion (FGDs), seasonal calendar and historical analysis were used to gather information. Gender analytical tools were also used to assess the gender roles, access to and control over resources, participation in decision making process and for identification and prioritization of production constraints. The result of the study revealed that in mixed crop-livestock farming system of high land, mid-high land and low land areas, women become busier during the harvesting season followed by weeding/cultivation and plantation. Regarding access to resources/benefits, the result of the study has indicated that all household members have access to the household resources/benefits. However, the degree of access varied depending on the degree of control over resources. In all the three farming systems, household decisions are made jointly by husband and wife in male headed households and the women herself in female headed households. Farming system constraints varied between different clusters of farming systems. To this end, though there is still slight differences, a mixed crop-livestock farming systems of high land, mid high land and low land areas of farming systems had several common problems such as low and untimely supply as well as high cost of fertilizer and improved seeds, crop diseases and pests, low selling price of crops particularly during harvesting time, shortage of feeds for livestock, livestock diseases and shortage of cross breed cows/heifers. In addition to these, a mixed crop-livestock farming systems of low land areas had a critical problem of drought and shortage of drinking water. On top of the above mentioned farming system constraints which are common to both male and female farmers, women particularly those who are family heads, had problems such as shortage of labor, oxen and working capital to effectively perform their farm activities. This has resulted in delay in farm activities which in turn leads to low yield and low income. This implies the need to work more on the diverse women's' social and economic problems.

**Key words:** Gender, Farming system, Mid-Rift Valley area

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# 1. Introduction

## 1.1 Background of the study

Constituting more than half of the world's population, women contribute much in development process. Besides, maintaining the daily living of their families and participating in income generating activities, women farmers involve in different farming natural resource management activities. According to Wudnesh (2001), women farmers provide more than half (50-80%) of the total labor and time input required for crop production and cover up to 77% of the labor and time required for livestock production.

Despite their importance as an engine of the economy and guardians of the environment, their contribution was not well recognized. Their development needs were not addressed. What is more, their indigenous knowledge and expertise, they are a base in technology generation and transfer, were not properly identified and utilized. According to Yeshi (2002), gender analysis in different parts of Africa indicates that the crop and livestock production are major sources of livelihood and women's earning from agriculture is low.

An overview of the research endeavors in the past shows us that the issue of gender relations in agricultural production and decision making was given peripheral treatment. As a result, knowledge on the specific needs and roles of the rural women has been scanty. Farm level studies provided plenty of information on major enterprises, production patterns and constraints. However, gender relations in production process and decision making patterns were not properly addressed because information generated was not disaggregated by gender. Collection of the information was targeted to men farmers only. Very few and uncoordinated studies of gender relations have been done so far.

Currently there is a growing recognition of gender consideration in research and development. There are several reasons for mainstreaming gender in research process. In the first place women

are one category of the community and end users of agricultural technologies. This implies the need to make our research more demand driven and client oriented addressing the needs and constraints of both men and women. On the other hand, a given technology could have deferential impact on both men and women. Furthermore, gender participation in the whole research process will enable to exploit the indigenous knowledge and expertise of the female farmers. However, the gender planning and mainstreaming process requires baseline information on gender roles and responsibilities in different activities, access to and control over resources, decision making process and most importantly on the major needs and production constraints of both men and women. Therefore, this study is designed to generate baseline information required for future research planning in the area of livestock production, crop production, fishery and natural resource management.

### 1.2. Objectives

- To understand gender roles and responsibilities of a family members in crop production, livestock production, fishery and natural resource management
- To understand access to and control over resources and participation in decision making process
- To identify gender related constraints in the areas of crop production, livestock production, fishery and natural resources management
- To understand gender differentials in livelihood strategies

## 2. Methodology

### 2.1. Study area

The study was conducted in the major farming systems of mid rift valley. Five districts namely Shashamane, Adami Tulu, Ada'a, Fentale and Bora were selected based on the farming systems and agro-ecological representation of mid rift valley area. Before selecting the study sites, PAs in the respective districts were stratified based on agro-ecological conditions and accessibility of the PAs. Following this, PAs representing the agro-ecological conditions of the district were randomly selected.

### 2.2. Method of data collection

Participatory Rural Appraisal (PRA) techniques like focus group discussion (FGD), seasonal calendar and historical analysis were used to gather information. Gender analytical tools were also used to assess the gender roles, access to and control over resources, participation in decision making process and for identification and prioritization of production constraints.

### 2.3. Sample Size and Method of Sampling

To facilitate the discussion process, both men and women groups were participated in focused group discussion (FGDs). Key informants comprising of community representatives and youngsters were participated in the study. Participatory techniques were employed with a group of farmers using gender analysis and PRA tools. Ten to twelve farmers were participated in FGDs per the sampled PAs and farming systems.

### 2.4. Sources and Types of Data

Both primary and secondary types of data were collected for the study. Secondary data were collected from literatures and respective Districts office of Agriculture and Rural Developments while primary types of data were collected from respondents. Data were collected from purposively selected respondents. Key informants were used for the study. Both men and women farmers were invited for group discussion. The study was mainly based on qualitative type of data.

### 2.5. Methods of data analysis

Qualitative type of data was used for the study. Hence, on spot analysis were made to avoid mis-interpretation of the collected information. The collected data were analyzed through description, narration and interpretation.

## 3. Result and Discussion

Gender roles, access to, control over resource and farming system constraints can vary across different agro-ecologies. Hence, the analysis was made separately for different agro-ecologies. Different agro-ecologies were considered under the selected farming systems. This includes; mixed crop- livestock farming system of high land areas, mixed crop- livestock farming system

of low land areas and mixed crop- livestock farming system of mid-altitude areas. Before data collection, agro-ecologies were identified in collaboration with zonal office of Agriculture and Rural Development. The results of findings were discussed one by one as under.

### 3.1. Description of the sampled farming systems (mixed crop- livestock farming system of high land, mid-high land and low land)

**Rain fall patterns of the sampled area**

The study result is based on the PRA (focus group discussion) obtained from respondents. The rain fall patterns of the area can vary across the farming systems. Hence, the analysis was undertaking separately for mid highland, low highland and highland areas. The high land area receives the annual rain fall which starts in February which extends up to September. However, the distribution of the rain fall is not uniform across seasons where there is high rainfall in between July and August and low rainfall between May and mid of June. On the other hand, in mid-high land farming system, rain fall starts in April and ends in September. However, there is variation in the distribution of rain fall across the months. Relatively high amount of rain fall is received during July and August. In the low land areas, the area receives the annual rain fall which starts in April and extends up to September. The distribution of the rain fall is high in between July and August. This is somehow similar with that of mid-high land area.

**Major crops grown in the sampled areas**

The types of crops grown can vary across the farming systems. In the high land area different crops were identified. In this farming system, there are both common and varying crop. To this end, wheat, barely, teff, beans and field pea are crops commonly grown in this farming system. Though not common across all areas, there are also other important crops such as chicken pea, vetch, lentil, and potato and haricot bean. In addition to these, onion, pepper and cabbage are also grown both under rain fed and irrigation condition.

On the other hand different crops were identified in mid-highlands. The common crop types identified in this farming systems include; teff, maize, wheat, haricot bean and barley are the major crops grown in the faming system. In some areas of the farming system there are also crops like beans, chickpea and field pea. In areas when there is irrigation, farmers also produce tomato, onion, pepper, cabbage, green beans, maize and green pepper.

In lowland areas different crops were identified. The most common crops can include; teff, maize, wheat, haricot bean and Barley are the major crops grown in the faming system. In some

areas of the farming system there are also crops like beans, chickpea and field pea. In areas when there is irrigation, farmers also produce tomato, onion, pepper, cabbage, green beans, maize and green pepper. Generally, there are different that commonly grow in all farming systems.

**Livestock production of the sampled area**

Livestock production is one of the major sources of livelihoods at the area. The livestock reared in the three farming system include cattle, sheep, poultry, goat, donkey, hose and mule. In terms of population, cattle take the first rank followed by poultry sheep, goats, donkeys, horses and mules. In both farming systems (mid-high land and high land) areas, oxen are the most important animal followed by cow, donkeys and sheep whereas in the sampled lowland areas oxen, cow, donkeys and goats are ranked one to four respectively according to their importance. In terms of their population, cattle stand first followed by goats, poultry, donkeys and sheep.

### 3.2. Seasonal calendar across the cluster of farming systems

**Seasonal calendar for a mixed crop-livestock farming system of highland areas**

The cropping calendar can vary across the farming systems. In the high land areas, the cropping calendar for production of wheat, barley, maize and teff (Table 1). Land preparation for maize starts in February while it is in April for wheat, teff and barley. However, in highlands of Shashemene where there is double cropping, there is no need for repeated tillage to plant barley as it is mainly the subsequent crop to be planted following potato.

**Table 1. Cropping calendar for major crops in a mixed crop-livestock farming system of highland areas**

| No | Activity/events | Months of the year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | July | Aug |
| 1 | Season of rainfall | x | | | | x | x | x | xx | | xx | Xx | xx |
| 2 | Seed preparation for: | | | | | | | | | | | | |
| | wheat | | | | | x | | | | | | | |
| | barely | | | | | x | | | | | | | |
| | Maize | | | x | | | | | | | | | |
| | teff | | | | | x | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | Land preparation for: | | | | | | | | | | | | |
| | wheat | | | | | | | | x | xx | x | | |
| | barely | | | | | | | | | | | Xx | |
| | Maize | | | | | | x | x | x | | | | |
| | teff | | | | | | | | x | xx | x | | |
| 4 | Plantation(sowing) | | | | | | | | | | | | |
| | wheat | | | | | | | | | | | X | x |
| | barely | | | | | | | | | | | X | x |
| | Maize | | | | | | | x | xx | | | | |
| | teff | | | | | | | | | | | Xx | x |
| 5 | Cultivation for maize | | | | | | | | | x | x | | |
| 6 | Weeding | | | | | | | | | | | X | x |
| | wheat | xx | | | | | | | | | | | x |
| | barely | xx | | | | | | | | | | | x |
| | maize | | | | | | | | | | x | Xx | x |
| | teff | x | | | | | | | | | | | xx |
| 7 | Harvesting | | x | x | | | | | | | | | |
| | wheat | | | xx | x | | | | | | | | |
| | barely | | | | xx | x | | | | | | | |
| | Maize | | | xx | x | | | | | | | | |
| | teff | | | xx | x | | | | | | | | |
| 8 | Threshing for | | | | | | | | | | | | |
| | -wheat | | | | x | x | | | | | | | |
| | -barely | | | | | xx | | | | | | | |
| | -Maize | | | xx | x | | | | | | | | |
| | -teff | | | | x | x | | | | | | | |
| 9 | Storage | Immediately after threshing | | | | | | | | | | | |

*Source: own PRA result*

**Seasonal calendar for a mixed crop-livestock farming system of mid- highland areas**

The cropping calendar for major crops is indicated in table two & three below. For the crops grown under rain fed condition, the major farm activities (from land preparation to threshing and storage) take place between April and January. Vegetable production is mainly undertaken during the dry seasons using irrigation. Generally vegetables particularly onion and tomato are produced two to three times in a year. In the first production season (September to January), seed and land preparation is undertaken during September and October while plantation and cultivation is performed between November and December and harvesting and selling undertaken during January and February.

**Seasonal calendar for a mixed crop-livestock farming system of low lands**

Cropping calendar for the dominant crops is indicated in table 4 below. Majority of the areas in a mixed crop-livestock farming system of low land areas have a single cropping season under rain fed condition. However, the low land area of Shashamane produces teff and potato twice in a year specifically during spring and summer seasons. Accordingly, teff is planted in March and July. In areas where there is irrigation, farmers have a chance to produces more than one time. Onion, tomato, cabbage, green beans, maize, and pepper are the major crops produced under irrigation.

### 3.3. Gender Roles and Responsibilities

Gender roles and responsibility can vary across the sampled farming systems. Hence, analysis was undertaken separately for each farming systems.

#### 3.3.1. Gender roles and responsibilities for a mixed crop-livestock farming system in highland areas

##### 3.3.1.1. Daily Activity Calendar

**Daily Activity Calendar for Women**

As indicated by participant farmers, harvesting is the peak season during which women become much busy followed by weeding/cultivation and plantation. During harvesting, women spent much of their time on preparing food as harvesting requires more labor. In addition to preparing food, they also participate in collection of harvest and harvesting itself particularly in the case female headed households. In contrast to this, during weeding and cultivation women spent more hours (about 6-8 hours) working in the field while the domestic activities (household chores)

including fetching water and collection of firewood still remains to them. In the study area, women wake up early at 5:00 or 6:00Am and go to bed late at 10:00 or 11:00 PM; accordingly, they work for about 15-16 hours per day. This finding agrees with the one reported by the Transitional Government of Ethiopia, 1993.

**Table 2. Cropping calendar for major crops in a mixed crop-livestock farming system of mid- altitude areas**

| Type of activities | Type of crop | Months | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | Jul | Aug |
| Seed preparation | Teff | | | | x | x | | | | | | | |
| | Maize | | | | x | xx | | | | | | | |
| | Haricot been | | x | x | | | | | | | | | |
| Land preparation | Teff | | | | | | | | x | x | x | | |
| | Maize | | | | | | x | xx | x | | | | |
| | Haricot been | | | | | | | | | x | xx | | |
| Sowing | Teff | | | | | | | | | | | xx | x |
| | Maize | | | | | | | | x | xx | | | |
| | Haricot been | | | | | | | | | | x | x | |
| Cultivation | Maize | | | | | | | | | | x | | |
| | Haricot been | | | | | | | | | | | x | |
| Weeding by hand and chemical | Teff | x | | | | | | | | | | | x |
| | Maize | | | | | | | | | | x | x | |
| | Haricot been | | | | | | | | | | | | x |
| Harvesting | Teff | | x | xx | | | | | | | | | |
| | Maize | | | x | | | | | | | | | |
| | Haricot been | | x | x | | | | | | | | | |
| Threshing | Teff | | | x | xx | | | | | | | | |
| | Maize | | | | x | | | | | | | | |
| | Haricot been | | x | x | | | | | | | | | |
| Storage | The same time to threshing | | | | | | | | | | | | |

*Source: own PRA result*

**Table 3. Seasonal calendar for vegetable production**

| Type of activities | Type of vegetable | Months | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sept | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | Jul | Aug |
| Seedling preparation | Onion | x | x | | | | | | | | | | |
| | Tomato | x | x | | | | | | | | | | |
| Land preparation | Onion | x | x | | | | | | | | | | |
| | Tomato | x | x | | | | | | | | | | |
| Plantation | Onion | | | x | | | | | | | | | |
| | Tomato | | | x | | | | | | | | | |
| Cultivation | Onion | | | x | x | | | | | | | | |
| | Tomato | | | x | x | | | | | | | | |
| Chemical application | Onion | | | x | x | | | | | | | | |
| | Tomato | | | x | x | | | | | | | | |
| Weeding | Onion | | | | x | | | | | | | | |
| | Tomato | | | | x | | | | | | | | |
| harvesting | Onion | | | | | x | xx | | | | | | |
| | Tomato | | | | | x | | | | | | | |
| Marketing | Onion | | | | | x | xx | | | | | | |
| | Tomato | | | | | x | | | | | | | |

*Source: own PRA result*

**Daily Activity Calendar for men**

Like the women group, men also become busier during harvesting followed by plantation, land preparation and weeding/cultivation. According to participant farmers, harvesting is started early at 6:00 and ends at 6:00 in the evening having small break time(one to one and half hours) usually in between 12:30 AM and 2:00 PM. Accordingly, the total numbers of hours spent on harvesting equals 10-11 hours. During land preparation and plantation, men wake up at 5:00 PM to feed oxen and starts plowing at 7:00AM. According to participant farmers, more hours plowing (7-8 hours) is commonly practiced during plantation while it less (about 5-6 hours) during land preparation.

**Table 4. Cropping calendar for dominant crops in low land area**

| Type of activities | Type of crop | Months | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sep | Oct | No | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug |
| Seed preparation | Teff | | | x | | | | | | | | | |
| | Maize | | | x | | | | | | | | | |
| Land preparation | Teff | | | | | | x | | | | | x | |
| | Maize | | | | | | x | xx | | | | | |
| Sowing | Teff | | | | | | | x | | | | x | |
| | Maize | | | | | | | | xx | x | | | |
| Cultivation | Maize | | | | | | | | | x | x x | | |
| Weeding (by hand and using chemical) | Teff | | | | | | | | x | | | | x |
| | Maize | | | | | | | | | | | x x | x |
| Harvesting | Teff | | | | | | | x | | | | | |
| | Maize | | | | | | | | | | | | |
| Threshing | Teff | | | | | | | | x | | | | |
| | Maize | | | | | | | | | | | | |
| Storage | The same time to threshing | | | | | | | | | | | | |

*Source: own PRA result*

**Gender Roles and Responsibilities in crop production**

In this farming system, land preparation, plantation or sowing, secondary cultivation (shilshalo for maize), harvesting, collection of harvest, threshing and storage are mainly carried out by males (husband and son). Women are majorly taking part in weeding, hoeing up and preparation of the seed. They also participate in plantation (in case of row planting), collection of harvest, storage and marketing of grains. However, women rarely participate in tilling the land using oxen (Table 5).

**Table 5. Gender roles and Responsibilities in crop production**

| No | Type of activities | Who does it? | | | | Remarks |
|---|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter | |
| 1 | Land preparation | xxxx | | xxx | | - |
| 2 | Preparation of seed(selection/purchase) | xxxx | xxx | | | - |
| 3 | Plantation(sowing) | xxxx | xx | xxx | x | Females participate in row planting of maize |
| 4 | Cultivation | xx | xxx | xxx | xx | - |
| 5 | Weeding | xxx | xxx | xxx | xx | - |
| 6 | Harvesting and collection | xxxx | xx | xxx | x | - |
| 7 | Threshing | xxxx | x | xxx | x | - |
| 8 | Storage | xxxx | xx | xxx | x | - |

***Remark:*** *xxxx=high level of involvement, xxx=Medium level of involvement, xx= low level of involvement & x= very low level of involvement*
*Source: own PRA result*

**Gender Roles and Responsibilities in livestock production**

Because of its economic as well as social importance, livestock production stands as the second important activity in a mixed farming system of high land areas. It is also an activity in which both men and women are actively participating. In the study areas, women mainly take part in feeding of dairy cows (prior to milking), calves management (feeding), management of sick animals, milking of cows, selling of butter, poultry and its products. However, except poultry, women do not take part in selling of livestock. In case of female headed households, women sell their animals with the assistance of male relatives or neighboring males. Similarly, men are also not totally participating in marketing of milk and milk products (butter and cheese) and milking of cows. Herding and watering of livestock is mainly done by male and female children (son and daughter). Contrary to the livestock, bee keeping activities are totally carried out by men alone (Table 6).

**Table 6. Gender participation in livestock production**

| No | Type of activities | Who does it? | | | |
|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter |
| 1 | Herding of cattle and shoats | xx | x | xxxx | xxx |
| 2 | Watering of cattle and shoats | xx | xx | xxxx | xxx |
| 3 | Feeding of oxen | xxxx | xx | xxx | x |
| 4 | Feeding dairy cows | xx | xxxx | xx | xx |
| 5 | Feeding calves | x | xxxx | xx | xxx |
| 6 | Management of sick animals | xxx | xxxx | xx | xx |
| 7 | Milking of cows | | xxxx | | xxx |
| 8 | Selling of butter and cheese | | xxxx | | xxx |
| 9 | Selling of oxen/bulls | xxxx | | xx | |
| 10 | Selling of cows/heifers | xxxx | | xx | |
| 11 | Selling of calves | xxxx | | xx | |
| 12 | Selling of donkey | xxxx | | | |
| 13 | Selling of goats & Sheep | xxxx | xx | xxx | |
| 14 | Selling of poultry | | xxxx | xx | xxx |
| 15 | Making bee hive and hanging | xxxx | x | xx | |
| 16 | Harvesting of honey | xxxx | | | |
| 17 | Transferring colony | xxxx | | | |
| 18 | Selling of honey | xxxx | | | |

***Remark:*** *xxxx= Shows high level of involvement, xxx=Medium level of involvement, xx= low level of involvement & x= very low level of involvement.*
*Source: own PRA result*

**Gender roles and Responsibilities in natural resource management**

Natural resources such as land and water are a base for any farm production. This implies that both men and women should give special attention to the natural resource management. In the study area, tree growing, control of soil erosion through preparing flood lines (furrows) and contour tillage, crop rotation, application of manure and inorganic fertilizer are the major

activities carried out to conserve and improve soil fertility. Regarding gender participation, these activities are mainly carried out by males (husband and son) and the involvement of females (wife and daughter) is limited to application manure and compost. To some extent, they also participate in tree plantation and management (Table 7).

**Table 7. Gender participation in natural resources management**

| No | Type of activities | Who does it? | | | |
|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter |
| 1 | Raising/purchasing tree seedlings/seeds | xxxx | x | xxx | xx |
| 2 | Plantation | xxxx | x | xx | x |
| 3 | Cultivation | xxxx | x | xxx | x |
| 4 | Pruning | | | | |
| 5 | Soil conservation<br>-Construction of beds<br>-Plantation of grass strips and trees<br>Contour tillage | <br>xxxx<br>xxxx<br>xxxx | <br><br><br> | <br>xx<br>xx<br>xx | <br><br><br> |
| 6 | Soil fertility management<br>-Crop rotation<br>-Compost making & application<br>-Application of inorganic fertilizers<br>- Application of manure | <br>xxxx<br>xxxx<br>xxxx<br>xxx | <br><br>xxx<br><br>xxxx | <br>xx<br>xx<br><br> | <br><br>xx<br><br> |
| 7 | Water harvesting | xxx | | | |

***Remark:*** *xxxx=high level of involvement, xxx=Medium level of involvement, xx= low level of involvement & x= very low level of involvement.*

*Source: own PRA result*

**Gender participation in domestic activities**

Almost all of the domestic activities are carried out by the women (wife and daughter). Preparing food, fetching water, collecting fire wood, taking care of the children, taking grain to the grinding mills, cleaning utensils and purchasing of the consumables are the major domestic activities performed by women. Males are partially taking part in collection of fire wood, fetching water and taking grain to grinding mill.

**Gender participation in off- farm activities**

Involvement in off-farm and non-farm activities is not well common in a mixed crop livestock farming systems of high land areas. This may be due to the fact that in high land areas people are very much busy with farm activities. Preparation and selling of local drinks, grain trading, petty trade, vegetable and livestock trading and daily laborer is the common off- farm activities available in the area. Among these, women are engaged in grain and vegetable trading while men are involving in livestock trading. Both men and women participate in petty trade and daily laborer activities.

**Women participation in community management activities**

Women are actively participating in the community management activities like PA council, *iqub*, village development groups, community meetings, leadership of their own group as a leader and member, social ceremonies such as funerals, wedding and religious programs.

**Access to and control over resources/benefits**

All the family members have access to the household resources and benefits but, their degree of access varies depending on the degree of control over the household resources and benefits. To this end, resources like land, farm tools, and income from sale of food crops, cash crops, livestock and donkey cart is majorly controlled by the husband. Women particularly house wife mainly has control over dairy and poultry products, income from sale of local drinks. On the other hand, income from daily laborer activities is controlled by an individual who was participated in that particular activity. However, in the case of female headed households, all the resources are controlled by the women head of the household.

**House hold's decision making pattern**

Decision making power is one of the important variables that indicate within household gender disparity. It determines access to and control over resources. According to PRA participants, in the study area, decisions on every household issues are made jointly by husband and wife in male headed households and by women household head and her children in case of female headed households. However, the decision making power varies depending on the type of issues/resources and also between households. For instance, decisions regarding allocation of land for various crops and use of improved technologies/inputs are mainly made by the husband in the case of male headed house holds and by women her self in case of female headed households. Similarly, decisions regarding utilization of income from sale of dairy products and

from women performed off-farm activities are mainly made by the wife. Other decisions like on the type of livestock to be sold, utilization of income from livestock and crops is jointly made by husband and wife.

**Gender based livelihood strategy**

In this farming system, livestock rearing and crop production are the major livelihood activities both for men and women. In addition to this, women also lead their life through participating in grain, vegetable trading, sale of local drinks and daily laborer while men participate in livestock trading.

### 3.4. Farming system constraints in a mixed crop-livestock farming system of high land areas

**Constraints to crop production**

High cost of fertilizer, shortage of improved seed, high cost of improved seed, low selling price of crops and poor soil fertility are the major constraints hindering the productivity of the crops in the study area. Among these, high cost of fertilizer, shortage of improved seed and low selling price are the most serious problems ranked one to three respectively where as high cost of improved seed and poor soil fertility are ranked fourth to fifth.

These problems are common to both male and female headed households. On top of these, women in a mixed crop-livestock farming system of high land areas had problems such as shortage of labor, working capital and oxen.

**Constraints to livestock production**

The major constraints to livestock production includes, feed shortage, livestock disease, shortage of drinking water, poor veterinary service, shortage of improved dairy cows/heifers and poultry and lack of awareness on improved dairy management. In terms of their order of importance, shortage of feeds, poor veterinary service, prevalence of diseases and lack of improved dairy cows/heifers and poultry are ranked one to four respectively. PRA result showed that animals feed shortage is becoming more serious due to the declining grazing land which is brought about by an increasing farming land for crop production. In the study area, there is critical feed shortage in between mid January and August. Anthrax, diarrhea, pneumonia, black leg, FMD, pastrollosis and three day sickness are common disease types identified in the area. Sheep and

goat pox and liver fluke for sheep and goats and Newcastle disease for poultry are also the major problems in the area.

**Constraints to beekeeping activities**

Bee keeping activity was one of the sources of livelihood for farmers. But, now at the study area, the possible benefits that can be achieved from this activity are decreasing from time to time due to many factors like shortage of bee forages, pesticides hazard, bee enemy like birds and ants, shortage of colony, lack of casting mould in the case of modern hive and lack of enough knowledge of bee production are among the major bottle necks to beekeeping activities.

**Constraints to poultry production**

Poultry production is one of the sources of livelihood for the farmers of the sampled area. However, the activity is constrained by different factors. Among these, poultry diseases such as NCD (New castle disease), coughing (TB), lack of improved breeds and lack of adequate training on poultry production are the major constraints to poultry production that were identified in this farming system.

**Constraints to natural resource management**

In the study area, natural resource management seems are given less attention. Compared with other sectors (crop and livestock), extension services towards natural resource management is not well strong in the past but, now strong attention has been given to the activity ever than before. However, deforestation and soil erosion are still common phenomenon implying low attention given by farmers to natural resource management. Shortage of tree seeds/seedlings and lack of training and advices to farmers on natural resource management are also the other critical problems.

**Existing opportunities in the farming system**

A mixed crop-livestock farming system of high land areas has relatively favorable environmental conditions for both crop and livestock production. As a result of the good environmental condition, the areas have a potential to grow up various crop types. Because of the availability of crop residues, it is also favorable for dairy production. Comparatively speaking the high land areas are better recipients of extension services.

### 3.5. Gender Roles and Responsibilities in a mixed crop-livestock farming system of mid-high land areas

**Daily activity calendar for women**

The busy season for women is during harvesting followed by weeding/cultivation and plantation. During harvesting, women (wife) wake up early at 6:00 and spent their day time performing both domestic and farm activities. The domestic activity includes activities like cleaning house, preparing breakfast and lunch, milking cows, taking breakfast and lunch to the farm, fetching water and collection of fire wood, preparing and serving dinner.

On top of these, they also participate in collection of harvest which takes them about three and half hours. But, in case the haricot bean, women (both wife and daughter) actively participate in harvesting activity itself which may take them around 8 hours. In this case, the domestic activity will be undertaken by the daughter. When we compare the time spent on farm activities with the domestic activity, women spent more time on farm activities during weeding, cultivation and harvesting of haricot bean. In this faming system, usually women (wife) go to bed at 10:30 in the evening.

**Daily activity calendar for men**

According to the participants, harvesting is the busiest time for men. During this time, men work for about 10 hours in a day. They start harvesting at 6:00 Am and stops at 6:00 PM having a break only for 2 hours i.e. 12:00 Am to 2:00PM.

**Gender roles and responsibilities in crop production**

In this farming system, land preparation, plantation or sowing, secondary cultivation (*shilshalo for maize*), harvesting, collection of harvest, threshing and storage are mainly carried out by males (husband and son). Women are majorly taking part in weeding, hoeing up, harvesting of haricot bean and preparation of the seed. They also participate in row plantation of maize, collection of harvest, storage and marketing of grains. In threshing of teff, women play an important role in plastering the threshing field. However, women rarely participate in tilling the land using oxen (Table 8).

**Table 8. Gender participation in crop production activities**

| No | Type of activities | Who does it? | | | | Remark |
|---|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter | |
| 1 | Land preparation | xxxx | | xxx | | - |
| 2 | Preparation of seed (selection/purchase) | xxxx | xxx | | | - |
| 3 | Plantation(sowing) | xxxx | x | xxx | x | Wife and daughter participate in case of row planting of maize |
| 4 | Cultivation -*Secondary cultivation* | xxxx | | xxx | | No hoeing up for maize in the study areas particularly at Tuchi *Deku* and Malima Bari PAs |
| 5 | Weeding | xxxx | xxxx | xxx x | xxxx | - |
| 6 | Harvesting | xxxx | x | xxx | x | Women (wife & daughter) actively involved in harvesting of haricot bean. At Tuchi Deku and Malima Bari PAs harvesting is mainly done by hired labor |
| 7 | Collection & transportation of harvest | xxxx | xx | xxx | xx | - |
| 8 | Preparation of threshing field | xxxx | xxx | xx | x | Women(wife) plasters threshing field for teff |
| 9 | Threshing | xxxx | | xxx | | - |
| 10 | Storage | xxxx | x | xxx | x | - |
| 11 | Marketing | xxxx | xxx | x | x | - |

***Remark:*** *xxxx=high level of involvement, xxx=Medium level of involvement, xx= low level of involvement & x= very low level of involvement.*
Source: own PRA result

**Gender participation in livestock production**

Because of its economic as well as social importance, livestock production stands as the second important activity in a mixed farming system of mid high land areas. It is also an activity in which both men and women are actively participating. In the study areas, women mainly take part in feeding of dairy cows (prior to milking), calves management (feeding), management of sick animals, milking of cows, selling of butter, poultry and its products. However, except poultry, women do not take part in selling of livestock (Table 9). In case of female headed

households, women sell their animals with the assistance of male relatives or neighboring males. Similarly, men are also not totally participating in marketing of milk and milk products (butter and cheese) and milking of cows. Herding and watering of livestock is mainly done by male and female children (son and daughter).

**Table 9. Gender participation in livestock production**

| No | Type of activities | Who does it? | | | | Remarks |
|---|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter | |
| 1 | Herding | x | x | xxx | xx | - |
| 2 | Watering | x | x | xxx | x | |
| 3 | Feeding of oxen | xx | x | xx | | |
| 4 | Feeding dairy cows | x | xx | x | | |
| 5 | Feeding calves | | xx | | x | |
| 6 | Management of sick animals | x | xx | | x | |
| 7 | Milking of cow | | xx | | x | |
| 8 | Selling of milk products(butter & cheese) | | xx | | x | |
| 9 | Selling of oxen/bulls | xx | | x | | In case of Female headed households, women (wife) may sell with the assistance of her son or other males usually neighbor and relatives |
| 10 | Selling of cows/heifers | xx | | x | | ,, |
| 11 | Selling of calves | xx | | x | | ,, |
| 12 | Selling of donkey/horse/mule | xx | | x | | ,, |
| 13 | Selling of goats & Sheep | xx | | x | | ,, |
| 14 | Selling of poultry | | xx | x | x | - |

***Remark:*** *xxx=high level of involvement, xx=Medium level of involvement, x= low level of involvement*

*Source: Own PRA result*

**Gender participation in natural resource management**

Natural resources such as land and water are a base for any farm production. This implies that both men and women should give special attention to the natural resource management. In the study area, tree growing, control of soil erosion through preparing flood lines (furrows) and contour tillage, crop rotation, application of manure and inorganic fertilizer are the major activities carried out to conserve and improve soil fertility. Regarding gender participation, these activities are mainly carried out by males (husband and son) and females (wife and daughter) participation is limited to application manure and compost. To some extent, women also participate in raising seedlings, tree plantation and management (Table 10).

**Women participation in domestic activities**

Almost all of the domestic activities are carried out by the women (wife and daughter). Preparing food, fetching water, collecting fire wood, taking care of the children, taking grain to the grinding mills, cleaning utensils and purchasing of the consumables are the major domestic activities performed by women. Males are partially taking part in fire wood collection, fetching water and taking grain to grinding mill (Table 11).

**Women participation in community management activities**

Women role is not limited to only the productive and domestic activities. They also plays a great role participating in varies community management activities. The result of PRA reveals that women participate in both social (*Idir*, wedding ceremony) and economic activities (*equb*, development group) as well as in administrative activities (PA council, PA court member, leadership of their own group). They also participate in arbitration of particularly females.

**Gender participation in off farm activities**

Off farm activities are not as such common in this farming system. Households mainly depend on farm activities as a source of income and their means of life. However, in some areas of this faming system there is participation in vegetables (tomato and onion) trading, employment as daily laborer in vegetable production activities and flower farm and petty trade. Women (house wife) are mainly engaged in vegetable trading where as employment as daily laborer is common to all family members. Both husband and wife were reported to participate in petty trade.

**Table 10. Gender participation in natural resources management**

| No | Type of activities | Who does it? | | | | Remark |
|---|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter | |
| 1 | Purchasing tree seedlings/seeds | x | x | | | Raising seedling is not as such common |
| 2 | Preparation of plantation bed | x | | | | - |
| 3 | Plantation | xx | x | xx | x | - |
| 4 | Cultivation | xx | x | xx | x | - |
| 5 | Watering | xx | x | xx | x | - |
| 6 | Soil conservation -flood line | xxx | | xx | | - |
| | -Construction of terrace | | | | | - |
| | - plantation of grass strips and trees | xx | | xx | | At Malima PA only |
| 7 | Soil fertility management | | | | | - |
| | -Crop rotation | xx | | x | | - |
| | -Compost making & application | xx | x | x | x | Compost making is not as such common |
| | -Application of inorganic fertilizers | xx | | | | - |
| 8 | Water harvesting | | | | | Water harvesting is not common |
| 9 | Manure application | xx | xx | x | x | - |
| 10 | Protection of common resources(grazing land, water and trees) | xx | x | x | x | Women contribution is mainly in reporting |

***Remark:*** *xxx=high level of involvement, xx=Medium level of involvement, x= low level of involvement.*

*Source: Own PRA result*

**Table 11. Women participation in domestic activity**

| No | Type of activities | Who does it? | | | |
|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter |
| 1 | Preparing food | | xxxx | | xxx |
| 2 | Fetching of water | x | xxxx | x | xxx |
| 3 | Collection of fire wood | x | xxxx | xx | xxx |
| 4 | Cleaning the house | | xxxx | | xxxx |
| 5 | Taking care of children | | xxxx | | xxx |
| 6 | Cleaning of utensils | | xxxx | | xxxx |
| 7 | Taking grains to grinding mills | x | xxxx | x | xxx |
| 8 | Purchasing of consumable items | | xxxx | | xxx |

***Remark:*** *xxxx=high level of involvement, xxx=Medium level of involvement, xx= low level of involvement & x= very low level of involvement.*
*Source: own PRA result*

**Access and control over resource/benefit**

Access to and control over resources is one of the important factors that indicate gender disparity. In farming system under study, PRA participants have indicated that all household members have access to household resources and benefits. However, the degree of access varies depending on the degree of control over the resources/benefits. For instance, women have better access to income from dairy products, poultry, donkey carts and off-farm activities undertaken by them. For the rest of the resources, however, men have more access.

According to the PRA participants, control over resources/benefits is undertaken jointly by husband and wife in the case male headed Households and by wife in female headed Households. However, the degree of control varies from household to household and depending on the type of resource or benefits. For instance, women have more control over income from dairy products, poultry, donkey carts and off-farm activities undertaken by them where as men has more control over the rest of the resources ( Table 12).

**Table 12. Gender access to and control over resources in a mixed crop-livestock farming system of mid altitude areas**

| No | Resources/benefits | Access to | | | | Control over resources | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter | Husband | Wife | Son | Daughter |
| 1 | Land | x | x | x | x | xxxx | xxx | | |
| 2 | Farm tools | x | x | x | x | xxxx | xx | | |
| 3 | Donkey/horse carts | x | x | x | x | xxxx | xxx | | |
| 4 | Income from sale of food crops | x | x | x | x | xxxx | xxx | | |
| 5 | Income from sale of cash crops | x | x | x | x | xxxx | xx | | |
| 6 | Income from sale of livestock | x | x | x | x | xxxx | xxx | | |
| 7 | Income from sale of dairy products | xx | xxxx | xx | x | | xxxx | | x |
| 8 | Income from sale of skin and hides | xxxx | x | x | x | xxxx | xx | | |
| 9 | Income from donkey carts | x | x | x | x | xx | xxxx | | |
| 10 | Income from off-farm and non-farm activities | x | x | x | x | xx | xx | xx | xx |

***Remark:*** *xxxx=high level of involvement, xxx=Medium level of involvement, xx= low level of involvement & x= very low level of involvement.*

*Source: own PRA result*

**Household's decision making pattern**

Household's decision making pattern is related to many things such as access to and control over resources and resource type. Anyway, in all the cases, despite the difference in decision making power, household decisions are jointly made by husband and wife in case of male headed households and the wife with her children in case of female headed households. Issues like allocation of land for different crops and use of improved technologies is mainly decided by husbands in case of Male headed households and by wife in case of female headed households. Similarly, utilization of income from sale of dairy products, poultry and women performed off-farm activities are mainly decided by women themselves.

### 3.6. Farming system constraints in a mixed crop-livestock farming system in the mid-high land areas

**Constraints to crop production**

As was already indicated crop production is the major economic activity and source of income for the farming communities in the study area. Despite its importance, however, production and productivity of crop is still very low. In view of this, the PRA participants have identified the following constraints to crop production in the study areas:

- High cost of fertilizer and delay in supply of fertilizer
- Shortage of improved seed
- High cost of improved seed
- Low selling price of crop
- Crop disease and pests
- Lack of awareness about the benefit/use of improved varieties

**Constraints to livestock production**

In the study area, livestock production system is still traditional. Farmers mainly keep local animals under their own local management. As a result of this and other factors, the productivity of livestock is low. Generally, the following are the major problems to livestock production in the study areas:

- Shortages of animal feeds due to shortage of grazing land
- Livestock disease (three day sickness, anthrax, blackleg, FMD, blue forque(*arraba gurraachessaa*)
- Shortage of drinking water
- Shortage of improved dairy cows and poultry breeds
- Poor livestock marketing systems

**Constraints to natural resource management**

Natural resources such as land, forest and water are the most important resources and are bases for agricultural production. Despite its importance, however, the attention given to its management is low. Extension service is not well strong. Generally, the following are some of the common constraints to natural management in the study areas:

- Less attention given to natural resource management by farmers
- Lack of adequate training on natural resource management

- Shortage of seedling
- Shortage of water or rainfall for growing trees
- Shortage of land to amplify planting of trees

**Constraints to beekeeping**

Though not widely common, farmers in the study areas also practice beekeeping. However, their way of production is still traditional and consequently the productivity per colony or bee hive is low. According to PRA participants, pesticide hazard, shortage of bee forage, lack of awareness and aggressiveness (stinging behavior) of bees are the major constraints to bee keeping activities in the study areas.

**Constraints to poultry production**

Shortage of improved breed and poultry diseases are the major constraints to poultry production in the study areas.

### 3.7. Gender roles and responsibilities in the mixed crop livestock farming system of low land areas

**Daily activity calendar for women**

Harvesting is the season during which women work load is very high followed by cultivation, weeding and plantation. During harvesting women spent much of the time preparing food as harvesting is undertaken by more people including hired labor. On top of this, they are also participating in collection of harvest. But in case of haricot bean, they are actively participating in harvesting activity itself. As opposed to the harvesting season, women relatively spent more time on farm activities like weeding and cultivation which take them about six (6) hours. In the study area, usually women go to bed at lately at 10:30.

**Daily activity calendar for men**

Harvesting is the peak season during which men become busier followed by plantation and land plantation. During cultivation and weeding men are relatively less busy because there is assistance from family members. During harvesting, men work for longer time tat is for about 10 hours. They start harvesting early at 7:00, take rest for about one hour (12:30pm to 1:30pm) and continue until 6:00pm. The time taken during plantation is also nearly the same to harvesting while it is relatively short during land preparation (5:00 hours).

**Gender participation in crop production**

Both male and female play a significant role in crop production activities. Though the case could be different for male headed households and female headed households activities such as land preparation, plantation, harvesting and secondary cultivation (*shilshalo*) of maize and marketing of grain is mainly under taken by husband whereas women actively participate in preparation of seed, row plantation and secondary cultivation (*shilshalo*) of maize, weeding and harvesting of haricot bean. They are also participating in collection of harvest, storage and marketing (Table 13).

**Table 13. Gender participation in crop production activities**

| No | Type of activities | Who does it? | | | | Remark |
|---|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter | |
| 1 | Land preparation | xxxx | | xxx | | - |
| 2 | Preparation of seed(selection/purchase | xxxx | xxx | | | - |
| 3 | Plantation(sowing) | xxxx | xx | xxx | xx | Wife and daughter participate in case of row planting of maize |
| 4 | Cultivation | xx | xxxx | xxxx | xxx | - |
| | - *shuqunaa/kutkaatoo* | | | | x | - |
| | -*shilshalo* | xxxx | | xxx | | - |
| 5 | Weeding | xxxx | xx | xxx | xxx | - |
| 6 | Harvesting | xxxx | x | xxx | x | Women (wife & daughter) actively involved in harvesting of haricot bean. Harvesting is mainly done by hired labor |
| 7 | Collection &transportation of harvest | xx | x | xx | x | - |
| 9 | Threshing | xxxx | | xxx | | - |
| 10 | Storage | xxxx | xxx | xx | x | - |
| 11 | Marketing | xxxx | xx | x | x | - |

***Remark:*** *xxxx=high level of involvement, xxx=Medium level of involvement, xx= low level of involvement & x= very low level of involvement.*

*Source: own PRA result*

**Gender participation in livestock production**

Both men and women play significant role in livestock production activities. According to the PRA participants, herding and watering of livestock is mainly undertaken by children most commonly by sons. However, during the dry seasons where there is shortage of feed and water, men (husband) also greatly participate in livestock herding and watering. Except for oxen and milking cows for which separate feeding is practiced specifically during plowing and milking respectively, animals are mostly let out to graze at open area. Milking of cows and selling of dairy products is solely done by women. Except poultry, all livestock types are sold by husband. But, in case Female headed households' women sells livestock with the assistance of her children and neighbor farmers or relatives.

The non-participation of women in livestock selling was mainly related to the ownership and control over resources. To this connection, participant farmers expressed in Afan Oromo as that '*Dubartii amanee namni horii irraa hin bitu*' which means buyers do not trust women that she has had permission of selling the animal from her husband. Bee keeping and fishery production are the other component farming. In the study areas, bee keeping activities are mainly of men. But, in contrast to beekeeping, women play significant roles in fish production activities by preparing fishing materials such as fishing gears /nets (Table 14).

**Table 14. Gender participation in livestock production**

| No. | Types of activities | Who does it? | | | | Remark |
|---|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter | |
| 1 | Herding | xx | x | xxxx | xxx | - |
| 2 | Watering | xx | x | xxxx | xxx | - |
| 3 | Feeding of oxen | xxxx | xxx | xx | xx | - |
| 4 | Feeding dairy cows | xx | xxxx | xx | xxx | - |
| 5 | Feeding calves | xx | xxxx | xxx | xxx | - |
| 6 | Management of sick animals | xx | xxxx | xx | xx | - |
| 7 | Milking of cow | | xxxx | | xxx | - |
| | Milking of goat | | xxxx | | xxx | - |
| 8 | Selling of milk | | xxxx | | xx | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| | products(butter & cheese) | | | | | |
| 9 | Selling of oxen/bulls | xxxx | | | | In case of Female headed households women (wife) may sell with the assistance of her son or other males usually neighbor and relatives |
| 10 | Selling of cows/heifers | xxxx | | | | ,, |
| 11 | Selling of calves | xxxx | | | | ,, |
| 12 | Selling of donkey/horse/mule | xxxx | | | | ,, |
| 13 | Selling of goats & Sheep | xxxx | | | | ,, |
| 14 | Selling of poultry | | xxxx | xx | xx | - |
| 15 | Making of bee hive | xxxx | x | xxx | | - |
| 16 | Hanging of beehive | xxxx | | | | - |
| 17 | Harvesting of honey | xxxx | | | | - |
| 18 | Transferring colony | xxxx | | | | - |
| 19 | Selling of honey | xxxx | | | | - |
| 20 | Preparing fishing equipment | xxxx | xxxx | | | Men prepares boat while women make fishing gears |
| 21 | Fishing | xxxx | | xxxx | | - |
| 22 | Selling of fish | xxxx | | xxxx | | - |

***Remark:*** *xxxx=high level of involvement, xxx=Medium level of involvement, xx= low level of involvement & x= very low level of involvement.*

Source: own PRA result

**Gender participation in natural resource management**

Natural resources such as land and water are a base for any farm production. This implies that both men and women should give special attention to the natural resource management. In the study area, tree growing, control of soil erosion through preparing flood lines (furrows) and

contour tillage, crop rotation, application of manure and inorganic fertilizer are the major activities carried out to conserve and improve soil fertility. These activities are mainly carried out by males (husband and son) and female's (wife and daughter) participation is limited to application manure and compost. To some extent, they also participate in raising seedlings, tree plantation and management (Table 15).

**Women participation in domestic activity**

Almost all of the domestic activities are carried out by the women (wife and daughter). Preparing food, fetching water, collecting fire wood, taking care of the children, taking grain to the grinding mills, cleaning utensils and purchasing of the consumables are the major domestic activities performed by women. Males are partially taking part in fire wood collection, fetching water and taking grain to grinding mill (Table 16).

**Women participation in community management activities**

Women's role is not only limited to the productive and domestic activities. They also plays a great role participating in varies community management activities. In view of this, the PRA result indicate that women participate in various community management activities such as *edir*, wedding ceremony, *equb* and development groups organized for both social, environmental and economic purposes. They also participate administration and leadership of community institutions such as PA council and court and leadership of their own group or associations as well as in arbitration of people particularly females.

**Gender participation in off- farm activities**

As compared with a mixed crop-livestock farming system of high land and mid high land areas, off- farm activities are widely practiced in mixed crop- livestock of low land areas. Grain, livestock and vegetable trading, petty trade, employment as daily laborer, selling of local alcoholic drinks and hand crafting are off-farm activities available in the area. Gender participation in these activities varies from activity to activity and from area to area. Vegetable trading and hand crafting like preparation of "*Dantel*", "*Masob*" and fishing gear is mainly carried out by women. Preparation and sale of local alcoholic drinks is by women. Men are mainly involving in grain and livestock trading.

**Table 15. Gender participation in natural resources management**

| No | Activity | Who does it?(* rate the extent of participation using '✓') | | | | Remark |
|---|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter | |
| 1 | purchasing tree seedlings/seeds | x | x | | | Raising seedling is not as such common |
| 2 | Preparation of plantation bed | x | | | | - |
| 3 | Plantation | xx | x | xx | x | - |
| 4 | Cultivation | xx | x | xx | x | - |
| 5 | Watering | xx | x | xx | x | - |
| 6 | Soil conservation<br>-flood line | xxx | | xx | | - |
| | -Construction of terrace | | | | | - |
| | - plantation of grass strips and trees | xx | | xx | | At one PAs only |
| 7 | Soil fertility management | | | | | - |
| | -Crop rotation | xx | | x | | - |
| | -Compost making & application | xx | x | x | x | Compost making is not as such common |
| | -Application of inorganic fertilizers | xx | | | | - |
| 8 | Water harvesting | | | | | Water harvesting is not common |
| 9 | Manure application | xx | xx | x | x | - |
| 10 | Protection of common resources(grazing land, water and trees) | xx | x | x | x | Women contribution is mainly in reporting |

***Remark:*** *xxx=high level of involvement, xx=Medium level of involvement, x= low level of involvement.*

*Source: Own PRA result*

**Table 16. Domestic activities and gender roles**

| No | Activity | Who does it? | | | |
|---|---|---|---|---|---|
| | | Husband | Wife | Son | Daughter |
| 1 | Preparing food | | xx | | x |
| 2 | Fetching of water | x | xxx | x | xx |
| 3 | Collection of fire wood | x | xxxx | xx | xxx |
| 4 | Cleaning the house | | xxxx | | xxxx |
| 5 | Taking care of children | | xxxx | | xx |
| 6 | Cleaning of utensils | | xxxx | | xxxx |
| 7 | Taking grains to grinding mills | x | xxxx | x | xxx |
| 8 | Purchasing of consumable items | | xxxx | | xx |

***Remark:*** *xxxx=high level of involvement, xxx=Medium level of involvement, xx= low level of involvement & x= very low level of involvement.*
*Source: own PRA result*

**Women participation in community management activities**

In this farming system, women are actively participating in community management activities such as PA council, *Iqub*, village development groups, community meetings, women groups/associations as a leader and member, social ceremonies such as funerals, wedding and religious programs.

**Access to and control over resources/benefits**

Access to and control over resources is one of the important factors that indicate gender disparity. In farming system under study, PRA participants have indicated that all household members have access to household resources and benefits. However, the degree of access varies depending on the degree of control over the resources/benefits. For instance, women have better access to income from dairy products, poultry, donkey carts and off-farm activities undertaken by them. For the rest of the resources, however, men have more access.

According to the PRA participants, household resources/benefits are controlled jointly by husband and wife in the case of male headed Households and by wife in female headed Households. However, the extent to which women do participate in the control of resources and benefits varies from household to household and depending on the type of resource or benefits. For instance, women have more control over income from dairy products, poultry, donkey carts and off-farm activities undertaken by themselves where as men has more control over the rest of the resources and benefits.

**House hold's decision making pattern**

Household level decisions regarding resource use and other household matters are made jointly by husband and wife in male headed households and the wife herself in female headed households. However, in the case of income independently controlled by women, decision about its utilization also made by women themselves. The same holds true for the resources or income independently controlled by men (husband).

**Gender based livelihood strategy**

In mixed crop livestock of low land production system, livestock rearing and crop production are the major livelihood activities both for male and women. In addition to this, women also lead their life majorly through participating in vegetable trading, sale of local drinks and hand crafting. Elder sons and daughter are actively involved in daily laborer activities so as to increase their income and livelihood. Grain and livestock trading are the others means of livelihood particularly for men

### 3.7.1. Farming system constraints in the mixed crop livestock farming system of low land areas

**Constraints to crop production**

Shortage of rain fall, high cost of fertilizer, shortage and high cost of improved seed, worms, weevils and birds are the major constraints hindering the productivity of the crops in the study area. Among these, shortage of rain fall, shortage and high cost of improved seeds, high cost of fertilizer and prevalence crop pests (worms) were ranked 1$^{st}$ to 4$^{th}$ respectively according to their

frequency of occurrence. In addition to these, women farmers had problems such as shortage of labor, working capital and oxen.

**Constraints to vegetable production**

- Disease and pest (trips, fungus, rust)
- High cost of Pesticide
- High cost and quality of improved seed
- Lack of training
- Marketing: exploitation by middlemen
- Shortage of working capital
- Infrastructure: poor road and bridge

**Constraints to livestock production**

- Shortage of feeds due to declined size of grazing land
- Poor veterinary services
- Shortage of improved dairy cows and poultry
- Shortage of water
- Disease (Anthrax, LSD, FMD, lice for cattle, PPR, and copper deficiency for shoats and NCD for poultry

**Constraints to Natural Resource Management**

- Shortage of tree seedling
- Shortage of rainfall
- Poor soil condition (poor moisture retention capacity of soil)
- Poor attention given to natural resource management by the people
- Lack of enough awareness about natural resource management
- Poor extension service on natural resource management

**Constraints to fishery production**

- Pollution of lakes due to chemicals from flower farm
- Lack of appropriate fishing gears
- Lack of training on preparation of fishing gears, fishing techniques and fish processing and preservation

- Low selling price of fish

**Constraints to beekeeping**

- Low abundance of bee forages
- Absconding of the colony

## 4. Conclusion and Recommendations

Inline with the objectives of the study seven farming systems namely; mixed crop-livestock farming systems of high land, mid-high land and low land areas of farming systems were analyzed. These farming systems were classified based on agro-ecology and the dominant economic activities out of which the people make their livelihood.

The PRA results on gender analysis have clearly indicated that there are commonalities as well differences in roles and responsibilities across different farming systems. The daily activity calendar exercise has also indicated that in mixed crop-livestock farming systems of high land, mid-high land and low land areas, women become busier during the harvesting season followed by weeding/cultivation and plantation. On top of this, in low land areas where there is shortage of drinking water, particularly during the dry seasons, women travel longer distance to fetch water. This together with the domestic activities, made women to work for about 15-16 hours per day while the male counterparts work only for 10-11 hours per day.

On top of the reproductive and productive activities, in all farming systems, women are actively participating in community management activities such as PA councils, village development groups/ development army, women associations/cooperatives, *idir, iqub*, religious groups and social ceremonies such as wedding and others.

Regarding access to resources/benefits, the PRA result has revealed that despite the slight difference resulting from the degree of control over resources, all household members have access to the household resources/benefits. For instance, men have better access to resources like land, farm implements, and income from sale of crop and livestock as they are the one who has more power of control over those resources/benefits. Similarly, women have more access and control over the household resources such as income from sale of milk and milk products,

poultry and off-farm activities performed by them. However, in female headed households, control over resources/benefits is by the women head herself.

Farming system constraints varied between different clusters of farming systems. To this end, though there is still slight differences, a mixed crop-livestock farming systems of high land, mid high land and low land areas of farming systems had several common problems such as low and untimely supply as well as high cost of fertilizer and improved seeds, crop diseases and pests, low selling price of crops particularly during harvesting time, shortage of feeds for livestock, livestock diseases and shortage of cross bred cows/heifers. In addition to these, a mixed crop-livestock farming systems of low land areas, had a critical problem of drought and shortage of drinking water. Besides to shortage of feeds and water and livestock diseases which are common to the pastoral and agro-pastoral areas, there are problems such as shortage of drought tolerant improved crop varieties and crop diseases and pests commonly occurring in agro-pastoral farming systems.

On top of the above mentioned farming system constraints which are common to both male and female farmers/pastoralists/agro-pastoralists, women particularly those who are family heads, had problems such as shortage of labor, oxen and working capital to effectively perform their farm activities. This would result in delay in farm activities which in turn leads to low yield and low income.

This implies the need to work more on the diverse women social and economic problems. In general, the following areas requires due emphasis in order to solve the production problems of women farmers

- There is a need to improve supply and cost of agricultural inputs (fertilizer, pesticide and improved seeds)
- There is a need to work on development of drinking water both for livestock and people to prevent women from long distance travel to fetch water
- There is a need to arrange credit access for women
- There is a need to work on gender awareness to change the attitude of men towards helping their spouses, access to resources, and control over resources and household's decision making.
- There is a need to provide regular training and advisory services on modern techniques of agricultural production and marketing to women farmers

- There is a need to promote women sensitive farm activities such as dairy and poultry production and off-farm/non-farm income generating activities
- There is a need to develop technologies that reduces women's work load both productive and reproductive activities

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