



***GENDER ANALYSIS ON POST-HARVEST MANAGEMENT OF
SHIFERAWU (MORINGA STENOPETALS (Beker f.) Cufod.): THE
CASE OF DERASHE WOREDA, SNNPR ETHIOPIA.***

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I hereby declare that the dissertation entitled *GENDER ANALYSIS ON POST-HARVEST MANAGEMENT OF SHIFERAWU (MORINGA STENOPETALS): THE CASE OF DERASHE WOREDA, SOUTHERN ETHIOPIA REGION* submitted by me for partial fulfilment of the MSW to Indira Gandhi National Open University, (IGNOU) New Delhi is my own original work and has not been submitted earlier, either to IGNOU or to any other institution for the fulfilment of the requirement for any other program of study. I also declare that no chapter of this manuscript in whole or in part is lifted and incorporated in this report from any earlier work done by me or others.

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ABSTRACT

*Since recently, gender issues have drawn the attention of many scholars. As a result, there is an increasing interest to assess and investigate women's place and role in society with the aim of devising a sound solution to the problems they encounter. The general objective of the study is to gain deeper understanding of gender relation and roles on post-harvest management and utilization of agro-forestry with a particular reference to *M. stenopetala*. To achieve the stated objective, a cross-sectional survey design was employed with a mixed approach of data collection and analysis. Both primary and secondary data were collected. These included both quantitative and qualitative data and information. The population of the study comprised from 3 potential *Moringa* growing kebeles of Derashe woreda. Among ten kebeles Holte, Ateya and Wolyte are selected by simple random sampling techniques through lottery method. Then, households having married and single were targeted for the study. To this end, 69.4 % of sample households having married were drawn from each kebele. Accordingly, 18%, 8.2% and 4% households were selected through systematic random sampling technique. Survey questionnaire, key informant interview, FGDs and observation were major tools to collect primary data. Books, theses, journals, official documents and credible internet sources were also major sources of secondary data. By using the methodology described above, intra-household dynamics in gender role and gender differential in post-harvest management and utilization examined. As to the result of the study most of the harvesting is carried out by women for home consumption and supply to local market. The market survey and observations showed that a large number of women doing trading in the local market, but most of them are poor women, those who have small land size and little agricultural productions and finally The study also revealed that every household activity including *Moringa* dishes preparations are carried out by women without any support of men. Therefore, women are over loaded and play indispensable role in post-harvest management and utilization of *Moringa*. Therefore, the study recommend that agricultural extension and advisory services can play a big role in meeting the challenges and assisting rural women farmers harness the enormous opportunities in the production and usage of *Moringa* tree, this will make it available for all, reduce poverty in the land and improve the livelihood situation of our developing Nation.*

Key words: *Women, gender, agriculture, production, management and utilization*

CHAPTER ONE	1
1. INTRODUCTION	1
1.1 Background of the study	1
1.2 Statement of the Problem.....	4
1.3 Objectives of the Study.....	5
1.3.1 General Objective of the Study.....	5
1.3.2 Specific Objective of the Study.....	5
1.4 Research Questions.....	6
1.5 Significance of the Study	6
1.6 Outline of the Thesis.....	6
CHAPTER TWO.....	7
2. LITERATURE REVIEW.....	7
2.1 The Concept of Gender, Gender Roles, Gender Relations and Gender Analysis.....	7
2.2 The Need for Gender Analysis.....	9
2.3 Gender Analysis in Agriculture.....	9
2.4 Gender Analysis at the Household Level.....	10
2.5 The Changing Social Structure in Agriculture.....	11
2.6 Gender roles in Food production: Women’s ‘Invisible’ Knowledge and Labor	11
2.7 Family, Farming and the Role of Gender in Ethiopia.....	13
2.8 Women's Roles and Adoption of New Technologies.....	18
2.9 Potential Trade-Offs of Agricultural Technologies from a Gender and Social Perspective.....	19
2.10 Gender gaps in the Commercialization Drive.....	22
2.11 Gender Analysis in Agriculture: Analytical Framework.....	23
CHAPTER THREE.....	27
3. RESEARCH METHODOLOGY	27
3.1 Description of the Study Area.....	27
3.1.1 Location.....	27
3.1.2 Climate.....	27
3.1.3 Soil.....	27
3.1.4 Economic Activities.....	28
3.2 Research Methods	29
3.3 Sources of Data.....	29
3.4 Data Collection	30
3.5 Universe of Study.....	30

3.6 Sample Size	30
3.7 Tools for Data Collection.....	31
3.7.1 Key Informant Interview (KII).....	31
3.7.2 Focus Group Discussion (FGD)	31
3.7.3 House Hold Survey	31
3.7.4 Observation.....	31
3.7 Data Processing and Analysis.....	31
CHAPTER FOUR.....	32
4. DATA ANALYSIS AND INTERPRETATION.....	32
4.1 Gender role on different agricultural tasks in parts of Ethiopia	32
4.1.1 Land preparation	32
4.1.2 Cultivation and maintenance.....	34
4.1.4 Decision-making over productive resources.....	36
4.2 Demographic Characteristics of Respondents.....	38
4.3 Natural and Economic Characteristics	40
4.3.1 Land Holding.....	40
4.3.2 Farm Size	40
4.4 Socio-Cultural and Gender Practice in the Community	40
4.5 Gender Role at Harvesting Period.....	41
4.6 Gender and Traditional Domestic Market	42
4.7 Gender and Annual Income of <i>Moringa</i>	43
4.8 Saving Practice from <i>Moringa</i> Income.....	44
4.9 Gender role in Food Preparation and Ways of Consuming <i>Moringa</i> Leaves	44
4.10 Gender in agro biodiversity management of Home garden.....	45
4.11 Development of post-harvest storage methods.....	45
4.12 Knowledge Gaps in Post- Harvest Management.....	46
4.13 Institutional Interventions.....	47
4.14 Policy interventions.....	48
CHAPTER FIVE	50
5. CONCLUSION AND RECOMMENDATIONS.....	50
5.1 Conclusion	50
5.2 Recommendations.....	51
References.....	52
Appendix.....	57

LIST OF TABLES

Table 3.1 Sample size proportion of the target groups	31
Table 4.1 Demographic Characteristics of respondents	39
Table 4.2 Categorization of respondents according to their farm size in the study area	41
Table 4.3 Traditional Market Price of <i>Moringa</i> per bundle.....	43
Table 4.4 Categorization of respondents according to their annual income.....	44
Table 4.5 Ways of consuming <i>Moringa</i> in the study area	45

LIST OF FIGURES

Figure 2.1 Conceptual Framework of the Study.....	26
Figure 3.1 Regional map of the study area	29
Figure 4.1 Gender roles in land preparation activity across different clusters	34
Figure4.2 Gender role in harvest/post-harvest activities	37

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

The international development community has recognized that agriculture is an engine of growth and poverty reduction in countries where it is the main occupation of the poor. But the agricultural sector in many developing countries is underperforming, in part because women, who represent a crucial resource in agriculture and the rural economy through their roles as farmers, labourers and entrepreneurs, almost everywhere, face more severe constraints than men in access to productive resources. Efforts by national governments and the international community to achieve their goals for agricultural development, economic growth and food security will be strengthened and accelerated if they build on the contributions that women make and take steps to alleviate these constraints.

Women make essential contributions to the agricultural and rural economies in all developing countries. Their roles vary considerably between and within regions and are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector. Rural women often manage complex households and pursue multiple livelihood strategies. Their activities typically include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, engaging in trade and marketing, caring for family members and maintaining their homes. Many of these activities are not defined as “economically active employment” in national accounts but they are essential to the wellbeing of rural households (Sofa and Chreyl, 2011).

M. Stenopetala is one of the most useful tropical trees. The relative ease with which it propagates through both sexual and asexual means and its low demand for soil nutrients and water after being planted makes its production and management easy. Introduction of this plant into a farm which has a biodiversity environment can be beneficial for both the owner of the farm and the surrounding eco-system (Foidl et al., 2001).

M. Stenopetala is an indispensable plant to promote at the household level because it is extremely resilient to harsh growing environments, including drought, poor soil quality and

diseases. Locally called “halleko” a green, drought-resistant plant where leaves are commonly used in cooking for human consumption (Berhe et al., 2007).

The plant is a widely deciduous plant that is eaten as a vegetable in the daily diet which is distributed in the South of Ethiopia at an altitude range of about 1100-1600 meters (Mekonnen and Gessesse, 1998).

Leaves from the *M. Stenopetala* tree are a very important vegetable and more than 5 million people depend in Ethiopia, especially during dry seasons (Abuye et al., 2003). The tree is resistant to both insects and pests character and is known to be a fast growing plant where one *Moringa* tree can support a large family for many years (Abuye et al., 2003).

Currently there are thirteen known species of *moringa* trees in the family *Moringaceae*, and a study that evaluated the antioxidant effect and nutritional content of four types (*Moringaoleifera*, *Moringa peregrina*, *Moringa stenopetala* and *Moringa drouhardii*) showed that all have a high content of antioxidants (Yang et al., 2006).

M. stenopetala, which is most common in Ethiopia and Kenya, has the second highest content compared with the other species (Yang et al., 2006). It is stated that all four types have an enormous potential to contribute to improved diet and health, where *M. Stenopetala* is the most important economic species (Yang et al., 2006).

The tree crop of whose leave, seed, bark, pods are of economic importance could be grown as a relatively cheap, all year round, high quality food for both humans and animals. This potential of *Moringa* tree crop for sustainable agriculture has sparked interest among national and international agricultural development stakeholders. This can facilitate the introduction of the *Moringa* crop to rural areas in Africa. However, the success of the cultivation of this crop by small-scale farmers is expectedly hinged on various socio-economic factors (Fuglie, 2001).

These conditions need to be well researched, identified and documented so as to facilitate a successful adoption of the crop for cultivation by small-scale farmers. *Moringa*, because of its socio-economic and cultural importance, is raising a growing international interest among NGOs, scientists, public and private sectors (Ibd).

The socio-economic value of biological diversity resides not only in the direct use that one makes of biological resources, but also in the indirect uses, such as the ecological services (e.g.: improvement of the quality of water and air, the fixing of nitrogen, the formation of soils), socio-cultural uses (e.g.: religious and cultural functions), recreational and aesthetic uses (e.g.: tourism of vision), etc. These uses end up at the level of feeding and the different sectors of activity that are interested in biological diversity (Scoones et al., 1992).

The most recent global debates about alternative development have emphasized gender. A gender approach addresses not only the different needs of women and men, but social structures related to both. According to Mikkelsen, men and women do, after all, play different roles in society (Mikkelsen, 2005:234), which needs to be considered when compiling information about post-harvest management of *M. stenopetala*. Therefore, based on the multifunction of *Moringa* plant, it's categorized under agro-forestry which help women's to full fill the food security of their families in addition to income generation.

Agroforestry was identified as a distinct discipline in agricultural science due to the benefits obtained from suitable combinations of woody perennials and annual crops combining with animal husbandry (Verheij, 2003).

It is the most self-sustaining and sound system as it involves the growing of crops either together or in rotation maintaining the ground cover permanently (Martin and Sherman, 1992). It helps in increasing the output and household earning but also intensifying the tree cover on private lands (Rahman et al., 2012).

The system's adoptability and compatibility with the cultural practices provides better welfare of the society and overall community development. Therefore, it is essential to approach agroforestry with social science knowledge with effective social or organizational technologies. Participation of women is fundamental to agricultural production and is responsible for maintaining the small stock husbandry and larger livestock. Women are also the primary users of various forest products from fuel wood collection to the knowledge about the medicinal value (Ahlawat and Hasumati, 2009).

Women group are considered to be imperative in the agro-forestry system due to some reasons. They perform most of the work in the initial stages of establishment and incur diverse benefits by the low cost inputs in the system.

A woman in the family performs the influential role in absence of man which provides an opportunity to manage the system. The study of role of women in the traditional agroforestry system has become very popular as the differences are seen in the division of labor and management and acquiring various types of products.

Many had brought a successful finding on the contribution of women in the success of any system from planting to final destination for self-use or for sale. With 2/3rd of total Indian population in rural areas the input by women in agricultural and allied activities is a factor of vital importance (Kishtwaria et al., 2009). Gender analysis becomes particularly important in post-harvest utilization given the historical and pivotal roles played by women in agricultural activities (Meinzen-Dicket al., 2011).

This study's main focus is on a gendered analysis on post-harvest management of *Moringa stenopetala*. Gender analysis can be approached differently by different people and in different situations. For the purpose of this study, gender analysis refers to post harvest management, awareness and adoptions of technologies by men and women relative to each other, and the factors that determine such conditions. By comparing women and men rather than looking at women and men as isolated groups, gender analysis illuminates key aspects of a given situation, making it easier to identify obstacles and potentially workable solutions to achieving gender equality and women's empowerment.

1.2 Statement of the Problem

Gender analysis becomes particularly important in post-harvest management given the historical and pivotal roles played by women in agricultural activities (Meinzen-Dicket al., 2011), and the history of failures of previous post-harvest attempts and initiatives which so far have emphasized economic and technical aspects of the post-harvest improvements with little attention paid to socio economic dimensions.

The focus on women and agro-forestry is important for various reasons. Agro-forestry as a farming system in which perennial trees and shrubs are deliberately grown on the same land

management system as annual crops and/or livestock is a common system of production in Africa. At the center of this type of farming system are women farmers who are responsible for producing most of the labor. For example, in the smallholder dairy farms of Central Kenya, it has been reported by Maarse (1995) that women provide most of the labor (cutting grass, manure application, feeding animals, milking, fetching water and even selling milk).

M. stenopetala is most valuable tree among Derashe Women have been played crucial role in post-harvest than men. However this tree remained to be used for house hold consumption and no grass root level promotion is done on the innovation practices to increase the socio economic benefit of the tree.

Since recent years there is a growing national and international interest among NGOs, scientists, public and private sectors, however little have done to increase the awareness of community to benefit from this growing huge potential markets.

In relation to post harvest management of *M. stenopetala* among the Derashe farmers, women's have a better awareness than men's in management of the products of this vibrant agroforestry plant into food security and income generation for their household. In addition this is a unique potential opportunity for Derashe women's to utilize *M. Stenopetala* tree. However, there was a research gap on post-harvest technological adoptions, lack of awareness among men's and women's in a way that every part the tree is edible. Therefore, the focus of this study is to magnify the role of women's in the post-harvest management of *M. stenopetala* relative to men's.

1.3 Objectives of the Study

1.3.1 General Objective of the Study

The general objective of the study is to gain deeper understanding of gender relation and roles on post-harvest management and utilization of agro-forestry with a particular reference to *M. stenopetala*.

1.3.2 Specific Objective of the Study

This study has the following objectives:

- To assess the role of men and women on post-harvest management of *M. stenopetala*,

- To identify knowledge gaps in the area of gender and post-harvest management of *M. stenopetala*,
- To investigate the technological adoptions in post-harvest management of *M.stenopetala* product,
- To assess the institutional interventions to support the farmers in management of *M. stenopetala* .

1.4 Research Questions

1. What roles do men and women play in post-harvest management of *M. stenopetala*?
2. What socio-economic constraints do women and men in different household circumstances encounter in post-harvest management?
3. What gender knowledge gaps exist in the context of study?
4. What lessons can be drawn from this study to inform the development of a gender equality strategy for the implementation of post-harvest management strategies for equitable processes and outcomes for men and women farmers?

1.5 Significance of the Study

This study assessed the possible importance gender analysis on post-harvest management of *M. stenopetala* among the farmers community of Derashe. This would help to impart adequate information about the comparative role of men and women on awareness, technological adoption, income generation activities and food utilizations of *Moringa* product. It also bestows to close the gender gap and empower women's on the post-harvest management of the plant. It can also give prompts for other scholars to conduct further research on the area.

1.6 Outline of the Thesis

The study has organized into five chapters. Chapter one presented the introduction of the study, Chapter two given a literature review explains the gender in agro forestry with its conceptual definitions and framework. Chapter three provides the methodology used, as well as experiences during the data gathered in field survey. Chapter four focuses on the result and discussion in relation to the objectives revealed. Finally, Chapter five provides a conclusion of the study with specific recommendations.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 The Concept of Gender, Gender Roles, Gender Relations and Gender Analysis

Gender has been defined in a variety of ways, both in research and among the general public. Gender involves men as much as it does women. It is more than the differences between women and men, and the term means different things to different people. Early definitions of gender were given to distinguish social and biological aspects of the differences between women and men (Ishengoma, 2005). However, these early writings emphasized the differences between gender and sex. Barbara Rogers, for instance explained that sex is a physical distinction between male and female while gender is a social difference between men and women (Rogers, 1980). This concept also refers to those aspects that are shaped by social forces or to the meaning that a society gives to biological differences (Ishengoma, 2005). In viewing gender in terms of gender division of labor, Rogers stated that in taking the division of labor between men and women in different societies we are taking almost exclusively of gender roles rather than sex roles which is determined by cultural rather than biology (Rogers, 1980). To strengthen this argument, Ellis (1980) as quoted by Regassa, (2000) states that,

“It is misleading to refer to the division of labor between women and men as the ‘the sexual division of labor’ with its overtones of causation by the biological differences between the sexes. An alternative and best way of expressing it] is to refer to the gender division of labor.”

Almaz (1991) also argues that the socially learned patterns of behavior that differentiate men from women in a given society are referred to as one’s gender roles. Gender is then a learned behavior, usually related to one’s sex; but sex status does not necessarily determine gender role.” These assertions are recognitions that division of labor between the two sexes is socially, not biologically determined. As a social construct it is subject to change. The cross-cultural variations in the gender division of labor reveal this fact.

Gender is a social relation. This aspect of gender is best explained by Elson. She stated that gender relations are the socially determined relations that differentiate male and female situation. Gender relations refer to the gender dimension of the social relations structuring the lives of men and women, such as the gender division of labor and the gender differential access to and control

over resources” (Elson, 1995). Gender relations, argues Elson are women’s roles in relation to those of men (and vice versa), rather than women’s or men’s roles separately. Gender is central to the way a society is organized. When we speak of gender, we are concerned with social relations between women and men. It governs relationships. In other words being a woman or a man results from socialization. Like the family, religion, race and other social institutions, gender affects the roles men and women play in a society. Gender also establishes patterns of behavior through interaction with other institutions. It also functions in a similar manner to organize society (Ishengoma, 2005).

Gender involves differences in power. Gender orders social relationships in such a way that some individuals have greater power than do others. It is because of this power differential between women and men, in every society the roles women and men assume accord women fewer opportunities and privileges (Ibid). One form of expression of this power is the power that manifest in to a body of customs, beliefs and social practices that are accepted without question (Shortall, 1999).

The different norms, values and rules dictate women and men to behave act and enjoy in certain ways in their day to day life. These are strong powers that maintain the power relations that existed in a given society. This power relation exhibits itself in the division of labor and the differential access to and control over resources between women and men (Workwoha, et al, 2004).

Gender is a cultural construct. Gender is organized differently in different societies. Accordingly, the expectations for women and men vary throughout the world (Ishengoma, 2005). These differences are perhaps most clearly illustrated in inter-cultural comparisons of what is considered male and female work.

Some conceptualizations of gender implicitly argue that gender roles are stable. However according to Moore, although the relations between men and women are socially constructed, it cannot be assumed to be fixed and predetermined (cited in Regassa, 2000). Gender roles are dynamic and ever changing. They can be changed over time with changes in various factors.

Gender Analysis: refers to a multitude of methods and approaches that look into the roles and relationships between women and men, and their access to and control over resources (Zenebe , 2005).

2.2 The Need for Gender Analysis

The term gender describes the socially determined attributes of men and women, including male and female roles. (In comparison, *sex* denotes the physical and biological differences between males and females.) Gender has proven to be an essential variable for analyzing the roles, responsibilities, constraints, opportunities, incentives, costs, and benefits in agriculture. Innumerable development projects, government programs, research studies, and theoretical models have demonstrated that the improvement of women's access to agricultural research and extension services must begin with an analysis of men's and women's participation in the agricultural production process along two related dimensions: their role in agriculture and their role in the household.

2.3 Gender Analysis in Agriculture

It is now widely demonstrated that rural women, as well as men, throughout the world are engaged in a range of productive activities essential to household welfare, agricultural productivity, and economic growth. Yet women's substantial contribution continues to be systematically marginalized and undervalued in conventional agricultural and economic analyses and policies, while men's contribution remains the central, often the sole, focus of attention (Samanta, 1994).

Women are typically, and wrongly, still characterized as "economically inactive" in statistical surveys of agriculture, a result that tells us more about survey methodology than about reality (Janelid, 1975). Agricultural extension services still do not attach much importance to reaching women farmers or women on the farm. Policy makers and administrators typically still assume (in the face of the empirical data) that men are the farmers and women play only a "supportive role" as farmers' wife (Ibd).

The official definition of a farmer in Nigeria in 1965, for example, was given as "an adult male who has the right to the produce of a farm. Women are not classified as farmers" (FOS, 1966, p. Yet among many studies of rural women in Nigeria (WORDOC, 1988), Akor (1990) found that

92 percent of the surveyed northern rural women gave farming as their primary or secondary occupation. Of these, 74 per cent owned or worked their own separate plots. While the official definition of a farmer in Nigeria has been corrected to be gender neutral, as in most other countries, gender bias is prevalent in official agricultural circles and among field professionals. Similar investigations conducted in selected states in India show that more than 60 per cent of agricultural operations are performed by women farmers, yet the *fact* that "most farmers in India are women" (Shiva, 1991) is simply not reflected in extension provision or training.

2.4 Gender Analysis at the Household Level

The rural household typically is conceptualized in extension programs and agricultural policies as a unit made up of individuals working in similar ways to meet common goals under the direction of a male head. In reality, the household is a more complex and dynamic social entity which may change its composition and goals over time as family members and dependents of varying age groups and sexes engage in various activities to meet the specific responsibilities assigned to each. However, while it is useful to draw attention to the fact that the division of labor along gender lines is a social constant and has profound implications for the organization of agriculture, men's and women's responsibilities and privileges vary along socio cultural and socioeconomic lines specific to a particular time and place. It is thus misleading to make assumptions about the particular patterns in gender relationships to be found in any one household on the basis of data from elsewhere. Even within one country, sweeping generalizations are not advisable. Studies in Nigeria have revealed differences in gender relationships even in ethnically similar rural Nigerian communities just kilometers apart (Olawoye, 1985).

It is thus a mistake to view "rural women" as a homogeneous social classification or to derive policies and services for "women in agriculture" that are not based on empirical research which captures the diversity. As we will see later in the chapter, the consequence is that extension services need to be adapted to circumstance rather than designed on the basis of a single universal model. There is no one packaged extension model which can work for all women in all places (Olawoye, 1989; Berger, DeLancey, & Mellencamp, 1984).

2.5 The Changing Social Structure in Agriculture

As the composition and structure of rural households change (Snyder, 1990), gender responsibilities are under-going rapid change, typically with rural women becoming more responsible for household food security and children's welfare. One powerful indicator of these changes is the incidence of female-headed rural households, which is on the increase in most developing countries. In sub-Saharan Africa, women head an estimated 45 per cent of rural households in Kenya, 35 per cent in Malawi, 30 to 40 per cent in Zambia, and 15 per cent in Nigeria (ECA, 1973; Keller, 1986; World Bank, 1992a; FAO, 1993).

Typically, female-headed households are among the poorest, with the lowest level of food security (Heyzer, 1992), but in areas where female headship is the norm, as in the Caribbean, female headship can be a poor predictor of agricultural output, household welfare, or income status (Jiggins, 1994). In other cases, where women have had access to agricultural resources and services in their own right, as in parts of the Kenyan Highlands, women farming alone or with only sporadic assistance from migrant husbands have proved themselves more than capable of increasing farm productivity, efficiency, and profit (Jiggins, 1994; Saito & Weidemann, 1990).

2.6 Gender roles in Food production: Women's 'Invisible' Knowledge and Labor

The United Nations Food and Agriculture Organization (FAO) reports that women comprise around 43 per cent of the agricultural labor force in developing countries. The percentage is as high as, or even higher than, 80 per cent in some countries in sub Saharan Africa (FAO 2011b): 'the vast majority of food production that is attributable to women makes them the *principle* agents of food security and household welfare in rural areas' (IFAD 2009: 1). Women work as unpaid family laborers; self-employed producers; on- and off-farm employees; entrepreneurs; traders and providers of services; and technology researchers and developers (Hill 2011).

Women are largely responsible for production that benefits local consumption, including subsistence crops such as legumes and vegetables, on smaller plots and more marginal lands. Certain crops are often identified as women's or men's crops, and men tend to produce more cash crops. However, roles vary, as do tasks, and in practice the divisions are blurred. For example, men may help to prepare the plots on which 'women's crops' grow, and women may be involved in weeding 'men's crops'. Because women lack access to capital and resources, their

decisions about what they grow are more limited (Guendel 2009). For example, a study in rural Kenya showed that men were responsible for building the granary and women were responsible for hand digging, harvesting and transporting the crops. In another example, women farmers in Ghana chose to cultivate yams and cassava over maize – traditionally a man’s crop. This decision was made because these crops require fewer external inputs and are cheaper to grow, not because they are ‘women’s crops’ (Ibid.).

Despite their vital contributions, women often do not take credit for much of their farming labor, including laborious work such as weeding and post-harvest processing as well as food preparation, not to mention fuel and water collection and the myriad of other household tasks they perform, which directly contribute to food availability and access. As paid laborers, women often find employment on commercial farms such as those growing fruit, vegetables and flowers for export. Their work tends to be more precarious and underpaid than that of men. In many cases, they also face sexual discrimination and violence in the fields and factories (Spieldoch 2007).

In areas such as livestock production and agro forestry, women’s contributions are hardly counted. For example, although two thirds of the world’s 900 million poor livestock keepers are rural women, few interventions take this into account, and little research has been conducted to better understand these activities (Kristjanson *et al.* 2010: 2).

Women’s participation in agro forestry is high in certain areas such as indigenous fruit and vegetable products and processing. For example, in Benin, 90 per cent of women collect nuts/fruits of the shea tree. In Cameroon, women and children collect the leaves of *Gnetum africanum*, which is used as a vegetable (Kiptot and Franzel 2011). However, often products collected by women have little or no commercial value, whereas men reserve higher-value products for themselves.

Globally, 54.8 million people are engaged in capture fisheries and aquaculture, and 48 million of those can be found in Asia. Women account for half of the global fisheries workforce. They are more active in artisanal fishing and accompanying services such as gathering shells, making nets and administrative tasks than commercial fishing. However, their wages are typically lower than men’s. For example, in Bangladesh, a study found that women received 64 per cent less than

men for catching and sorting post-larval-stage shrimp, 82 per cent less for casual labor, 72 per cent less for processing and packaging, and 60 per cent less for cooking and breeding activities (ADB 2013).

Women also play a key role in food and agricultural processing at the home and community level. This processing work is vital for turning raw grains, roots, tubers, pulses, vegetables, milk, fish and other products into nutritious, safe food, yet it is often not recognized, *'perhaps because women do a lot of this work and it is less "glamorous" as a research subject or policy issue'* (Jennie Dey de Pryck, BRIDGE e-discussion, 2014).

2.7 Family, Farming and the Role of Gender in Ethiopia

Ethiopia is a country with many different nationalities and ethnic groups with heterogeneous traditions, cultures, religions and norms. However in most of rural Ethiopian communities men are considered as the head of household and obtain the user right title to land. User right is strongly related with land tilling/cultivation and the heading of a household. Those who are not directly related with the land through cultivation, including all women, do not receive user rights to land. Women's contribution in the agricultural sector in Ethiopia is significant, yet their identity as farmers is highly contested in social practices and by the agricultural development framework of the country (Yigremew, 2006; Frank, 1999).

In home-garden agro-forestry women are responsible for post-harvest handling, household food supply and selling and trading of some products for care taking of their family. However, according to the traditional social practices and norms in the study area women are prohibited from inheritance as the latter is always from father to son or, in the absence of men in the family, to close male relatives. Women in a household can access and enter men's territory of land use through marriage and their labor input. The extent of their access is mainly determined by the labor input they invest in production (Almaz & Niehof, 2004; Admasu & Struik, 2002).

In terms of household labor input in the traditional home-garden or Agro-forestry in the SNNPRS there is a clear gender division between women and men. Men are responsible for cultivation, livestock herding and planting, while women are generally responsible for household food and care taking, water and fuel wood collection, dairy and food production, harvesting and

processing. In particular women are important in the production and processing of enset in SNNPRS (Ibd).

In the agrarian society marriage is important as it contributes to the onset and establishment of new households and new production units (Fafchamps & Quisumbing, 2005). In Ethiopia marriage customs are characterized by extensive agro-ecological, religious and ethnic diversity which represents the status of women differently. Women's status and right in Ethiopia decline moving from north to south (Fafchamps & Quisumbing, 2005). Polygamous marriage is a common practice in the Muslim societies and in most ethnic groups of the southern part of the country including SNNPRS, while monogamy is dominant in the northern part. In the south marriage without bride price is impossible, while bride price is not a requirement in the north. As an example, in Amhara regional state of Ethiopia marriage is based on the contribution of spouses. Women mostly contribute property such as oxen or cattle while men contribute land and house (Askale, 2005).

However, the common principle of marriage in the rural Ethiopian context is patriarchal, whereby wives are expected to move to the residential area of their husband where the land is registered in the husbands' name. This indicates that the gender difference in a household starts at the beginning of the household formation. Moreover marriage in Ethiopia is mostly arranged by parents, not only regarding the choice of the bride and the groom but also on how much start-up capital is required by the newly-weds, which is decided by what they are giving as an advanced inheritance (Fafchamps & Quisumbing, 2005).

Gender relations (like all social relations) include both material and ideological components, which are represented not only in the division of labor and resources but also in ideas, which attribute women and men with different abilities, attitudes, desires, traits and behavior (Agarwal,1997b). The unequal relation between women and men perceived and conceptualized as socially constructed through gendered meanings and practices (Bock & Shortall, 2006; Brandth, 1995).

Based on the feminist scholars' (e.g. Lindeborg (2012); Brandth *et al.* (2004); Agarwal (1997b) use of gender as an analytical variable, (Kumer & Nair, 2004) argue that gender is a relational concept that describes how women and men are differentiated and ordered in a given socio-

cultural context, and further how gender inequality divided society into two communities of interest. It also presents men being centrally featured in the hierarchy of control.

Similar to what has been demonstrated by Lidestav and Nordfjell (2005) in Swedish family forestry, I argue that in the context of home-garden agro-forestry of Ethiopia, gender is inter-related with ownership and user right, inheritance, division of labor, market and marriage pattern through social practices. That can be illustrated in a ‘cobweb structure “and constitutes the social reality within which the agents exist in the specific context. In the Ethiopian context, market is included as an important institution while tax is considered less important and excluded in the adapted model. Institutional differences between the two countries are considered in the adapted model, such as the pattern of marriage, and land ownership versus user rights. Through this analysis the adapted model is used in order to understand the social practices in the context of home-garden agro-forestry in Ethiopia.

The substantial difference and the gender inequality in land use rights persist over a life cycle in many African countries, including Ethiopia, because men mostly bring greater wealth to marriage than women do. Inequalities and discrepancies in resource use and control between groups and individuals based on socio economic or political status, ethnicity and gender are the main characteristics of access to land and resources in rural societies of the developing countries (Kameri-Mbote, 2004). Although poor people use resources to meet their livelihood, the opportunities and constraints in accessing these resources may vary for women and men (Torkelsson, 2007).

There is a strong relationship between land use and power relationship in society for getting access to and rights over resources. The major constraint for the implementation of legal rights in rural Africa is the recognition of customary rules and cultural practices. Customary law tends to be the unwritten social rules and structures of a community derived from shared values and based on tradition (Kameri-Mbote, 2005).

In many parts of Africa it has been defined by various ethnic groups for their internal organization and administration (Butt *et al.*, 2010; Kameri-Mbote, 2004; Gray & Kevane, 1999). Customary law is recognized by the courts and exists as a second body of law (in addition to the statutory law/legislation) governing citizens in the countries of sub-Saharan Africa (Knight,

2010; Joireman, 2008). It has a stronger influence on people in rural areas, but also affects urbanities in so far that it regulates issues such as property rights, marriage and inheritance" (Joireman, 2008).

The dominance of men and masculinity is most pervasive in the customary law where the patriarchal realities prevent the implementation of legal rights (Kameri-Mbote, 2004). Similar experiences from East African countries, for example the Registered Land Act (RLA) of Kenya was bounded to exclude most women from securing land titles, since they have general user rights. The Tanzanian Village Land Act of 1999 that includes provision of land rights for strengthening women's situation has been less viable and side-lined as the discriminatory customary inheritance law continues (Ik Dahl *et al.*, 2005).

These general practices indicate that gender sensitive international and national legislative changes and policies do not necessarily translate into real rights and influence but are being biased of customs and social norms that favor men's right to land. Kumer and Nair (2004) argue that the customary and patriarchal rules in Africa prevent real substantive land right to women. Problems related with property rights are difficult to solve through means of policy Place (2009), as it is anchored in customary patriarchy law in African countries. Although customary law is not uniform across Africa, women's land use rights through her husband, father and brother is common. In a few cases when women have property rights before marriage, the control will be exercised with her husband's consent to acquire the right of use over property. Therefore, the decision on the management of the land is under the sole control of her husband. According to property rights in the customary laws of most African countries, women do not own or inherit land because they are part of the wealth of the community and therefore cannot be locus of land rights' grant and inheritance, which is limited to fathers and sons in a household. Therefore, in most parts of Africa, including Ethiopia, women commonly have access to land through marriage only.

Gender equality became an important focus of the Ethiopian government and gender mainstreaming has been a slogan in urban and rural development since the downfall of the derg regime in 1991. After the fall of the derg there have been many efforts designed to empower women and promoting their rights through policies, initiatives and programs (Newton, 2011). The National Policy on Women ('Women's Policy') formulated in 1993, aimed to establish

gender equitability in all rights including land rights. It was reinforced and renewed by the 1995 land policy. Yegremew (2001) has also described the growing concern about women in Ethiopia by pointing out some initiatives considered at national and regional levels to promote gender equality and equity.

Those initiatives included Women's National Policy (1993), Development Social Welfare Policy (1996), Food Security Strategy (2002), Ethiopian Women's Development Fund (2001), and the Sustainable Development and Poverty Reduction Program (2002) including the national slogan 'gender mainstreaming'. Despite that, rural women are still the most disadvantaged and vulnerable group in society and their role in rural development are invisible. This is a reflection of the existing male dominant legal, cultural, political and institutional administrations that limits the implementation and achievements of gender equality and gender mainstreaming.

A number of other development policy documents aimed at rural development programs have entered gender equality, such as the Agricultural Development Led Industrialization (ADLI), the Population Policy, the Education and Training Policy, the Health Policy, the Environmental Policy, the Cultural Policy and the Policy on Natural Resources and Environment (Newton, 2011). Therefore, the Ethiopian government's commitment to gender mainstreaming is explicit within the Ethiopian Constitution (1995), which is the "supreme law of the land". The Constitution maintains a commitment towards the equal rights of women and men and recommends affirmative action to address past inequalities. Its Article 35 also asserts that women have the right to inherit, equal rights in marriage and right for equal share. Although women are given equality in the Constitution, gender-based inequalities remain huge and women lack access to land and social participation (Spring & Groelsema, 2004).

The limitation with the 1995 Ethiopian Constitution is that it recognizes social practices such as customary and religious laws relating to marriage, divorce, ownership and inheritance (Demessie *et al.*, 2004). This is partly because the majority of women and some men have limited awareness and information about legislation, policies and local institutions related to women's and men's equal rights.

2.8 Women's Roles and Adoption of New Technologies

Past experience and studies on rural women and adoption and use of appropriate technologies have indicated why it is vital to collect, analyze, and understand information about women and men's multiple roles (e.g., Whitehead 1985). Several country studies and multi-country syntheses have confirmed the need to take due account of the "social organization of work" (Ahmed1985). This includes factors of location, particularly the simultaneous supervision and performance of child care, cooking, and food processing.

This means that important areas for research identified have included not only time and duration of activities but also the types of cooperation and control, which occur between different family members, and the types of rewards and benefits enjoyed by different categories of participant's children, kin, spouses, community members, and so forth. Clearly ethnic variations in such arrangements need to be investigated in multicultural contexts.

At the same time, important differences exist between situations in which agricultural transformations are moving toward creating a paid female (and male) agricultural labor force, or the withdrawal of women into work for household consumption, or the diversion of women to other types of income-earning activities such as trade and tourism. An important differentiating factor for women as well as men farmers will be access to and ownership of land and access to and control over new kinds of machines that reduce labor and energy needs.

One issue that much research and debate has underlined is that studies of the impacts of technological change and adoption of new technologies cannot use a soldiery household model as a unit for research, in view of the empirically established pervasiveness of sex-based intra-household differences in the allocations of resources, responsibilities, and decision-making power. At the same time anthropological studies in Africa have highlighted the need to take into account descent groups as owners, managers, producers and allocators of resources, as well as systems of social security. All these facts support the contention that a multiple-role approach to the study of the needs and situations of women farmers with regard to new technologies is inevitable to gain understanding of processes of innovation and continuing lack of innovation and to design and implement plans, programs, and projects that enhance women's roles as farmers and mothers, further promoting levels of living of rural households and nation-states and further enhancing chances for sustainable human development in rural areas of Africa.

2.9 Potential Trade-Offs of Agricultural Technologies from a Gender and Social Perspective

The objectives of agricultural research for development interventions must be clearly and explicitly defined, whether they concern economic development (e.g., increasing income through higher yields or value-chain development), human development (e.g., home-gardens for better nutrition), or mainly environmental sustainability (e.g., carbon sequestration in perm culture). While agricultural and economic development can lead to income growth, the latter is only a means to reach human development but not its objective in itself (Anand and Sen 2000). This distinction is that the objective of development is not the yield or income as such but the expansion of possibilities in life is important in relation to agricultural technology development from a gender and social perspective.

Agricultural technologies can help reduce labor and drudgery, diminish physical strain, free up time for other activities, and/or lead to increasing income and control over outputs. However, when a new agricultural technology is characterized as labor-saving, “it is important to determine whose labor is saved and at what point during the agricultural season” (doss 2001, p. 2080).

Several studies have shown that women’s labor burden can increase with new technologies, such as when women take on additional tasks or when current tasks become more burdensome, for instance when applying fertilizer leads to the need for more weeding or more output to process both tasks often done by women (Doss 2001).

Interventions that focus narrowly on agricultural innovations and production increases may involve unintended livelihood trade-offs, such as malnourishment, anemia or morbidity (Berti et al. 2004), which must be weighed against potential benefits. In the end, how the net effects look for a woman must be decided by her alone (Doss 2001).

Women farmers often lose control over the market niches, resources and products they traditionally manage, once those resources and products become lucrative: men will often take over production and marketing, even of traditional women’s crops (Berti et al. 2004; Doss 2001; Momsen 2010; World Bank 2009). Thus, what appears as progress or development from one perspective actually brings negative side effects, increasing women’s dependence and

diminishing their income opportunities, power, and traditional status (Momsen [2010](#); Moser [1993](#)).

The potential positive or negative effects of improved agricultural technologies may be very context specific, depending on cultural and social circumstances: see Paris and Pingali ([1996](#)) on the gendered impact of a new labor-saving technology. The introduction of a mechanical thresher in the Philippines reduced labor for both men and women, as threshing is much faster. Farmers were thus able to grow a second rice crop which benefitted women as it increased their employment opportunities in transplanting, weeding and harvesting. The benefits outweighed the reduced labor demand for threshing. Conversely, in Bangladesh the introduction of a mechanical thresher affected poor and landless women negatively because it replaced their work as threshers. As cultural restrictions prevented these women from leaving their homestead, they could not look for alternative employment opportunities and thus lost an important income source (Paris and Pingali [1996](#)).

In Vietnam, plastic row/drum seeder technologies were promoted due to their advantages over the traditional transplanting or broadcasting method of rice production. Paris and Truong Thi Ngoc Chi ([2005](#)) showed that the farmers who adopted the row seeders were those who had good access to extension agents and relatively better educated wives. However, adoption of the new seeders eliminated the important wage labor and income opportunity of rice transplanting for more than half the women in poor farming households, who previously worked as agricultural wage laborers.

Another example of unfavorable effects of an agricultural innovation intervention is the promotion of maize-bean intercropping in Zambia in a context where, traditionally, maize and especially high-yielding varieties is controlled by men, whereas beans are considered women's crops. Women were reluctant to adopt the intercropping system because they feared that they would lose their control over bean cropping and their entitlements to the beans. Specifically, they worried that household food consumption would suffer if their husbands sold the beans for cash and used the income either for them or to purchase non-food items (Feldstein 2000 cited by Charman [2008](#)).

Women thus resisted adoption and the chance to improve yields, increase soil quality and contribute to sustainability was missed. Male and female farmers often prefer different crops or crop varieties. Several studies have shown that women and men value maize traits differently and prefer different trait combinations, relating to differences in the intended consumption objective: whether for market, for own consumption, for food security, for special dishes, or for feed (Badstue [2006](#); Bellon [1996](#); Bellon et al. [2003](#); Deere [2005](#); Hellin et al. [2010](#)).

Men often prefer high-yielding varieties and value the potential to sell surplus production. Women's reproductive roles tend to influence their priorities towards food security and varieties that are palatable, nutritious, and meet processing and storing requirements (Badstue [2006](#); Bellon et al. [2003](#); Doss [2001](#)).

In both Mexico and southern Africa, women farmers' varietal preferences are also linked to their productive role and income generation from the artisanal processing and sale of traditional maize products (Badstue [2006](#); Bellon et al. [2003](#); Doss [2001](#)). In yet another case, women explained that, despite their superior yields, improved maize varieties often took longer to cook, requiring more firewood and labor than farmer varieties (Hellin et al. [2010](#)).

As these cases illustrate, it is not necessarily possible to predict how the introduction of new agricultural technologies may affect the patterns of labor, resource and land allocation between men and women. Neither is it possible to say how this may influence whether a new technology is adopted or not, and who will benefit or lose from adoption. Both intended and unintended impacts can occur at the individual, household and/or community levels. The challenge of estimating potential consequences relates both to gender considerations (Doss [2001](#)) and broader aspects of human and sustainable development.

As part of the food system, agricultural production, processing and marketing can contribute to food and nutrition security, as well as to health, decent livelihoods, gender equity, safe working conditions, and participation in political and cultural life (Anderson [2008](#)). Food security is only achieved when each individual has physical and economic access to adequate food or to the means to procure such food (FAO [1996](#)).

Access to food and a nutritious diet can be achieved through people's own production of food, through income-generating activities (within or outside agriculture), through a mix of both or, if otherwise not possible, through special social programs (Beuchelt and Virchow 2012).

The categories are ones where gender and social differences can play important roles: food and nutrition security as well as diversity; health aspects; access to information and technology; resources and labor; income, marketing and value chains. The definitions of the categories derive from a review of the literature on human rights-based approaches to development, particularly for agriculture, nutrition and women (Socorro Diokno 2013).

2.10 Gender gaps in the Commercialization Drive

The strategy to transform and commercialize agriculture is aimed at optimizing productivity and increasing the competitiveness of Rwanda's agriculture products. These efforts are expected to provide agribusiness opportunities for farming households. While commercialization is noble, there is also a danger that women farmers and poor households, especially WHH do not benefit at the same level as men headed households. There are already gender disparities in the value addition and marketing of agricultural commodities where more economic commodities are controlled by men as the case with coffee and tea. During the consultations, it was also established that women are associated with marketing small quantities of produce while larger quantities are marketed by men who also control the income from the sales (Joireman, 2008)

Households with small land sizes may not benefit from the commercialization drive as they rarely produce marketable surpluses. One aspect of concern from commercialization is use of income from sales. While women provide most of the labor in farming activities at household level, of concern are disparities in the sharing of income. From the consultations, women in the southern districts indicated that men are generally responsible for marketing family produce. While the women are the custodians of the income, a greater percentage is used by the men on personal issues. Women indicated that it requires a woman who is very strategic and highly confident to manage the husband so that income is used on family affairs. In the northern districts, men prophesied that women are not to be trusted with money, thus, men are responsible for marketing large quantities of produce and keep the money.

Families rarely discuss about how the income from farm produce sales is to be used on family issues. Northern women are responsible for selling small quantities of farm produce and the income is injected into the family economy to meet food and other livelihoods requirements. In all districts, it was reported that women headed households are characterized by effective communication on income use and sharing among household members. The commercialization drive for both men and women farmers is impeded by limited access to market information, limited knowledge, skills and technologies for processing and storage, limited access to credit to support secondary agri-business and lack of entrepreneurship skills. In traditional home-garden agro-forestry, crop production is primarily for subsistence, not for the market. However women are responsible for selling surplus food crops, fruits, vegetables and dairy products to supplement their household food supply while livestock, poles and timber has been traded by men. The expansion of that and eucalyptus resulting in reduced area share of food crop and a dairy product has also limited women's opportunities of trading and marketing such farm products. Meanwhile, men's market opportunities and control through trading of that, and eucalyptus has increased in the study region (Ibd).

Women are mainly involved in "petty trading" such as buying and selling of small scale products for subsidizing food supply in their household. Men are involved in livestock trading and whole sale and large scale trading of food crops such as potatoes, avocado and trading of items besides that and eucalyptus in the market.

2.11 Gender Analysis in Agriculture: Analytical Framework

Women have not been visible for development planners and practitioners for long. According to Overholt, et al (1991), "women are key actors in the economic system, yet they neglected in development plans, and left untapped a potentially large economic contribution." This has necessitated making a gender analysis to illuminate women's contribution to the economic development of a nation. In light of this fact, gender has proved to be an essential variable for analyzing the roles of women in social and economic development in general and in agricultural production in particular.

Thus, gender analysis reveals the roles and relationships of women and men in society, and the inequalities in those relationships (Williams, et al, 1995). It helps to understand the relationship between the two sexes and its effect on the gender roles and responsibilities, access to and

control over resources and benefits and the power relations and decision making (Workwoha, et al, 2004).

Today, there are different types of gender analysis frameworks. They are step by step tools for carrying out gender analysis which help to raise questions and analyze information. These gender analysis frameworks are not distinct or mutually exclusive; rather they are adopted to serve a particular situation. For the purpose of the present study, however, the Harvard Analytical Framework, also called the Gender Roles Framework (GRF) is used to shade light on the contribution women farmers in post-harvest socio economic utilizations of *Moringa stenopetala* among the Derashe farmers. It is one of the earliest gender analysis and planning frameworks. It is developed by the Harvard Institute for International Development in collaboration with the WID office of USAID (ILO, 1998). One of the aims of GRF is to demonstrate the contribution of women in socio economic development (Ibid).

By recognizing differences between women's and men's roles in production and reproduction, the assumed homogeneity of the farm household should be replaced by the concept of 'intra-household dynamics' (Feidstein and Poats, 1989). The analytical and conceptual focus of GRF is therefore "intra-household dynamics" – which is the gender division of labor and gender differences in access to and control over resources (Miller and Razavi, 1998). It begins with the recognition that the household is not an undifferentiated unit with a common production and consumption function (Miller and Razavi, 1998; Feidstein and Poats, 1989). Rather, it is a heterogeneous unit. However, the framework offers no guideline or analytical tool for extending the gender analysis from the household to other institutions like the community (Miller and Razavi, 1998).

The GRF has four interrelated components: technological adoption on post-harvest utilizations; gender knowledge gaps on post-harvest patterns of utilizations of *Moringa*; institutional interventions to promote *Moringa* and gender role in market, financial and intra household post-harvest utilizations of *Moringa* .

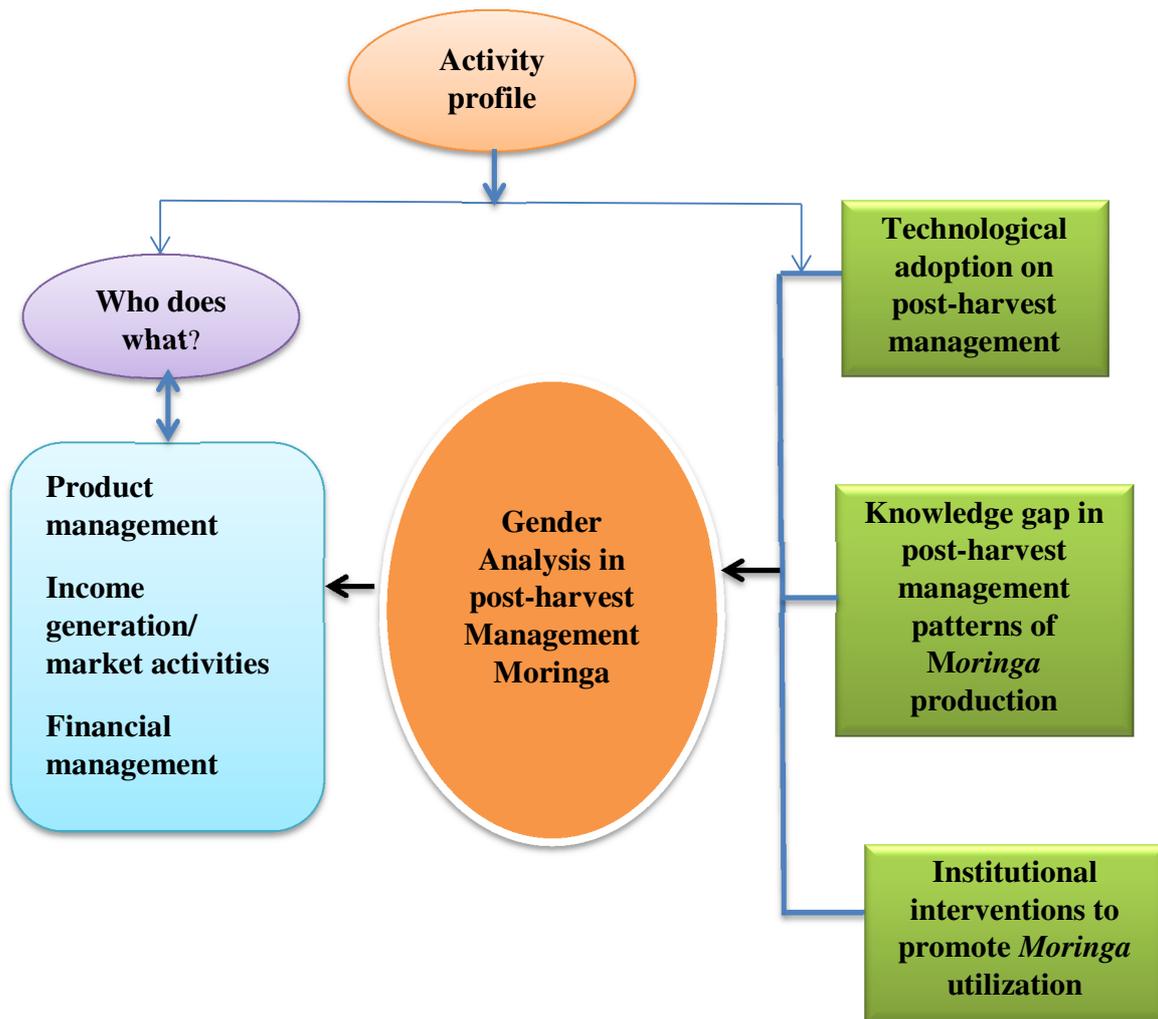


Figure 2.1 Conceptual Frame work

The first step in doing gender analysis is to identify gender roles. Essentially, this is a process of finding out “who does what.” The virtual impossibility of separating productive and reproductive work roles on farm makes it difficult to conceptualize the farm work done by women (Shortall, 1999). And hence, the activity profile is “based on the concept of gender based division of labor” in production and reproduction tasks (Overholt, et al, 1991). It identifies how much time is spent on each activity, and how often this work is done (example, daily or seasonally), and where the activities take place (GDRC, 2002; Overholt, et al, 1991).

The access and control profile considers productive resources. It differentiates between access to a resource and control over decision with regard to its allocation and use (Overholt, et al, 1991, GDRC, 2002). It identifies “what resource individuals command to carry out their activities and the benefits they derive from them” (Overholt, et al, 1991). In gender analysis, access to and

control over resources is one of the principal factors determining the economic and social status of women (Zenebe, 2005).

The third component of GRF “focuses on the underlying factors which determine the gender division of labor and gender-related access to and control over resources and benefits” (Overholt, et al, 1991). The factors, the authors argue, which determine who does what in any population sub-group and what access and control individual have to resources and benefits are broad and interrelated (Ibid).

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Description of the Study Area

Derashe was chosen as a study area for two main reasons. The first reason is that high *Moringa* trees are found to be growing in the locality. Secondly there was study gap on the area on the role of women on post-harvest management of *M.stenopetala*.

3.1.1 Location

The area is located at the southern part of the country within GPS coordinate location of 5°-6° N and 37°- 37° 30'E. The area endowed with 47% plain lowlands, 43% hilly and 10% of mountainous highland topography and the altitude ranged 1140-2614. The study which will be conducted in SNNPR.

Derashe is bordered on the south by Konso special woreda, on the west by the Weito River which separates it from the Debub Omo Zone, on the north by the Gamo Gofa Zone, on the northeast by Lake Chamo, and on the east by Amaro special woreda. The administrative center of Derashe is Gidole CSA (2004). Derashe had 57 kilometers of all-weather roads and 44 kilometers of dry-weather roads, for an average road density of 66 kilometers per 1000 square kilometers. High points in Derashe include Mount Gardolla 2545 meters CSA (2004).

3.1.2 Climate

The mean annual rainfall in the area is ranged from 600-1600 mm and according to traditional agro climatic condition the study area is categorized as Dega (cold), Woyina-dega (moderate) and Kola (warm) with 17.24%, 34.17 % & 48.61percent respectively. The area has bimodal climate, the major rainy season is the belg season from March to May, and the minor, meher season is from September to November both in the lowland and highland areas and *Hagaya*' is called minor rainy season from August to October (Derashe woreda administration, 2013).

3.1.3 Soil

Soil in the study area are majorly characterized by 48% clay, 30% red and 22% black soil with water holding capacity, it cracks during dry season of the year and hence it is vertisol in its origin. In the rugged mid-highland areas of Derashe remnants of volcanic ashes predominantly

exist indicating the surrounding soil to be cambisol in its origin (Derashe woreda administration, 2013).

3.1.4 Economic Activities

The economy of Derashe woreda was predominantly agriculture and mixed agriculture. Farmers were producing both crops and livestock as it is in elsewhere in Segen zone. Crops such as teff, maize and Sorghum are dominant among in almost all kebeles, wheat and barley are dominant in few kebeles and “Chat” dominates the stimulant crops in the woreda (Derashe woreda administration, 2013).

The major financial institutes in Derashe woreda are Omo Microfinance Institution (OMFI) and the Ethiopian Commercial Bank. CBE was located in the woreda center and its service confined to the woreda capital Gidole. However, it is OMFI that serves in not only the woreda center but also it has a door to door service through kebele saving and credit agents by expanding its outreach in all 18 kebeles of the woreda (OMFI strategic plan, 2014).

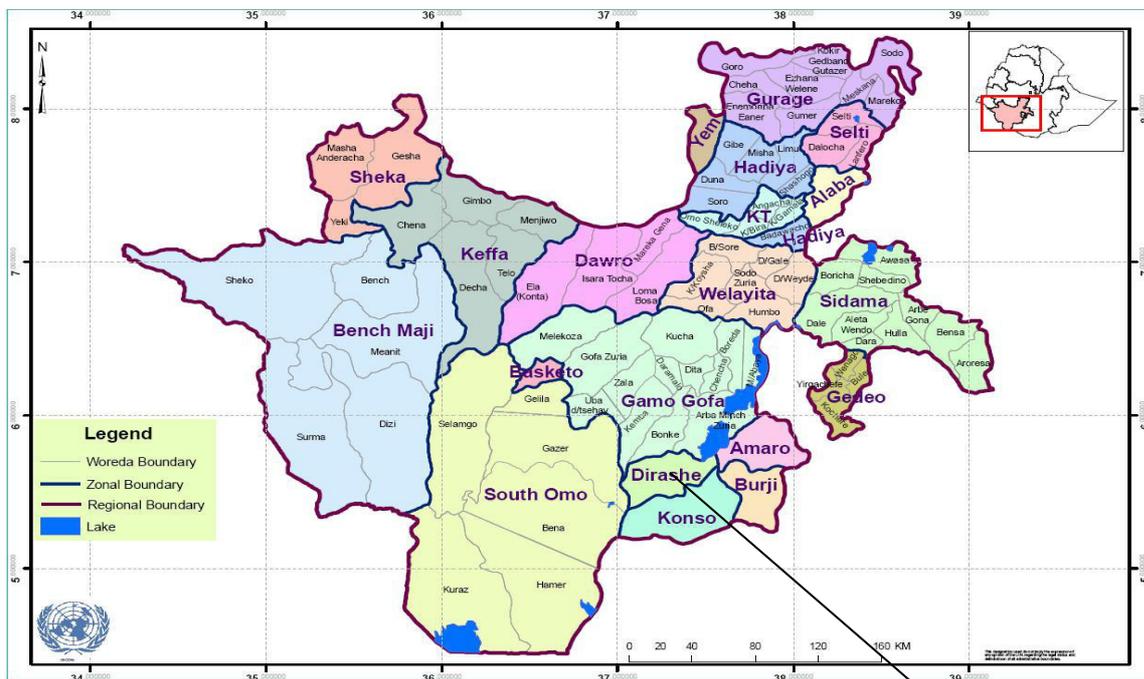


Figure 3.2 Regional map of the study area

3.2 Research Methods

The research used to apply mixed approach which includes both qualitative and quantitative data. It used cross sectional survey. In cross sectional survey, information's on all variables are collected at specific point in time. Therefore, the research used concurrent triangulation design which is familiar to mixed method approach.

The "triangulation" method is a mixed method design proposed to be used for the study as it increases the validity of evaluation and research findings (Mathison, 1998). It helps to overcome intrinsic biases (measurement bias, sampling bias and procedural bias) and other problems associated with a single research method (Yeasmin and Rahman, 2012). Data relevant to meet the objectives of the research was collected from the research site (Derashe woreda, SNNPR of Ethiopia).

The quantitative aspect of the data was mainly focused on description of key demographic profiles, measurement of selected socioeconomic variables and analysis of relationship among the dependent and independent variables. Simple random and proportionate stratified sampling techniques were used for the selection of kebeles and sample sizes respectively.

The qualitative data considered the agricultural office expert, *moringa* processor and distributor agents, well known elders who had detail knowledge, narration of the contexts and further examinations of attitudinal and perceptual issues of the respondent on the topic of the study; purposive sampling used in selection of participants.

Advantages of using Purposive Sampling:

- Use of the best available knowledge concerning the sample subjects.
- Better control of significant variables.
- Sample groups data can be easily matched.
- Homogeneity of subjects used in the sample.

3.3 Sources of Data

Data was collected from both primary and secondary sources. Primary data collected through household survey, FGD, KII and observation. Whereas secondary sources taken from different published and unpublished reading materials, reference books.

3.4 Data Collection

Data were gathered through structured interview questioners and semi structured questioners. In collection of relevant data for the study the target groups were interviewed and the questionnaires were distributed. The type of questionnaires used in some closed and open ended questionnaire.

3.5 Universe of Study

The study was conducted in Derashe Woreda, which is found in Segen zone, SNNPR, of Ethiopia. It focused specifically on the potential *Moringa* growing kebeles of Derashe woreda. The study concentrated on the gender analysis on post-harvest management of *M. stenopetala*.

3.6 Sample Size

The population (universe) of the study consisted ten *Moringa* growing Keble's of Derashe woreda. The researcher has drawn a sample size of 98 persons from three *Moringa* growing Keble's which were Holte, Ateya and Wolyte by simple random sampling techniques through lottery method. The estimated population of households for each kebele is 2,070, 1,365 and 1,719 respectively. The total population of these three kebele is 5,154 households. The following formula is selected for sample size determination. The sample size is determined by Yamane's sampling formula.

$$N = \frac{N}{1 + N(e)^2} \qquad n = \frac{5154}{1 + 5154(0.1)^2} \qquad n = \frac{5154}{52.54}$$

$$n = 98$$

The level of confidence is 90% with the precision or standard error of 0.1 percent.

Table 3.1 Sample size

Kebeles	N(Population) By house hold	P(Proportion)	% (Percentages)	P*n
Holte	2,070	0.3979	39.79	39
Ateya	1,365	0.2654	26.54	26
Wolyte	1,719	0.3367	33.67	33
Total	5154	1.00	100	98

Where: N= Population, n- sample size, P-proportion,

3.7 Tools for Data Collection

Instruments employed for data collection were key informant interview, focus group discussion, household survey and observation each of the instruments described as follow.

3.7.1 Key Informant Interview (KII)

Key informant interviews were conducted with five selected individuals who have long experiences on topic of the study such as *Moringa* processor and distributor agents, woreda agricultural office experts and environmental protection office experts.

3.7.2 Focus Group Discussion (FGD)

FGD was conducted with sample farmers from three kebeles. In the focus group discussion the target groups were purposively selected from elders who had details of knowledge and from active market participants of *Moringa* market. The discussion was conducted in accordance with the established standard way of organizing FGD.

3.7.3 House Hold Survey

To generate information at household level, cross sectional survey was undertaken using structured questionnaires. Eight enumerators were recruited based on their proficiency in communicating using Derashe language, educational background, and prior exposure to similar work. Training was given to enumerators on the content of the questionnaire schedule and procedures to be followed in the process of collecting the requested data.

3.7.4 Observation

Another data collection instruments employed for data collection was observation. The researcher was collected data from direct observation of the study area; checklist was prepared and Photo graphs had taken by using digital camera.

3.7 Data Processing and Analysis

The sources of the data were quantitative and qualitative in nature. Therefore, data collected from the questionnaires used to analyze by descriptive statistics frequency, percentage, tables and charts, were used suitable to analyze socio-economic data. To ease the computation SPSS version 20 (Statistical Package for Social Sciences) programs used to process and analyze the collected data.

CHAPTER FOUR

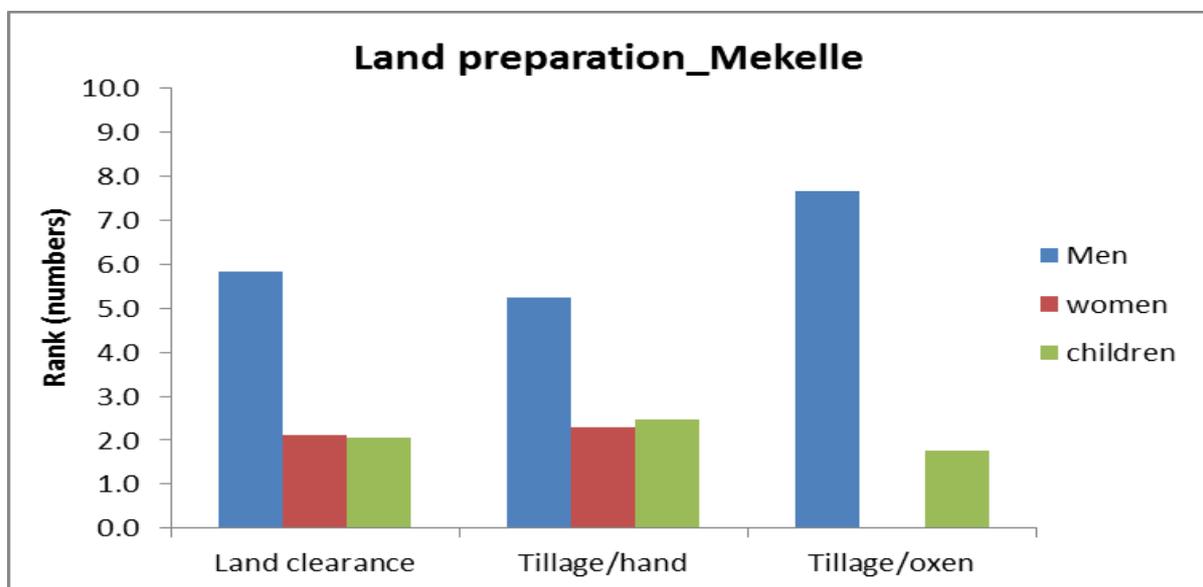
4. DATA ANALYSIS AND INTERPRETATION

4.1 Gender role on different agricultural tasks in parts of Ethiopia

Many labor-intensive agricultural activities such as land preparation, weeding, harvesting and transporting require active involvement of women and men. Analysis of the gender division of labor in different farm tasks has revealed that women across the study sites take part in almost all farming activities. The only exception is ploughing, which is exclusively done by men. In the following paragraphs the analysis will be given for land preparation (4.1.1), cultivation and maintenance (4.1.2), harvest and post-harvest management (4.1.3) and (4.1.4) Decision making over productive resources

4.1.1 Land preparation

Land preparation includes land clearance, hand tillage and oxen ploughing. It becomes clear that when hand tillage is practiced, both men and women are involved, but when an ox ploughing is practiced, men take full responsibility (sometimes helped by their sons). Haramaya cluster is an exception: land is cultivated using traditional hoes (ox drawn plough farming is not common in this area) (Biruktawit, et al., 2014).



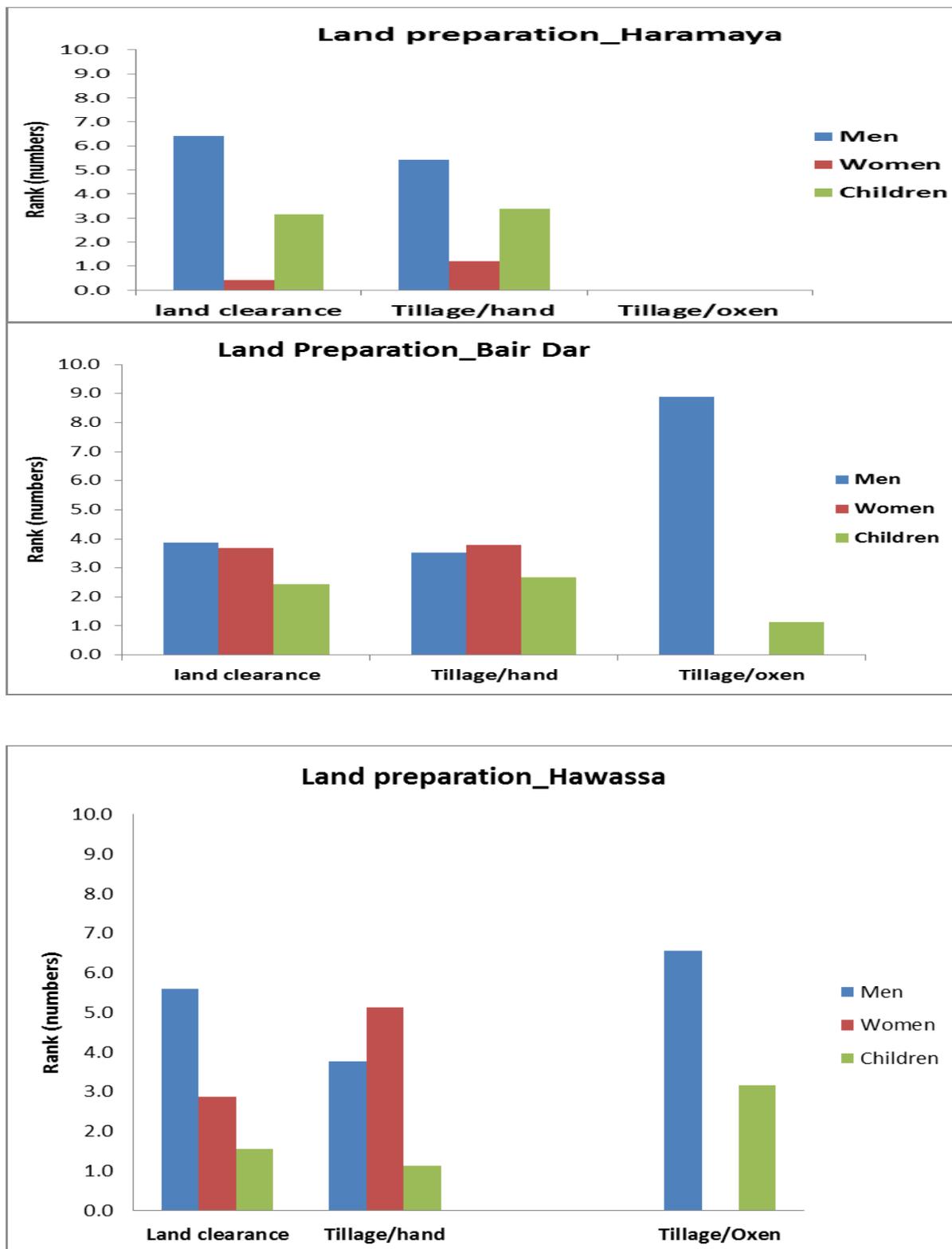


Figure 4.1 Gender roles in Land preparation Source: Biruktawit, et al., 2014

In Hawassa cluster the analysis showed that when household did not own oxen, labour exchange was common as was hand tillage. When a family engages in hand tillage, women are generally most involved in this activity. When households do own oxen, men are responsible for ploughing. Boys sometime assist their father. The following quote illustrates this point. One of the respondents has a husband who is structurally ill. They do not own oxen. She expressed her challenges:

“I try to engage in “debo”, labour exchange, with neighbours, and then ask the neighbours to help me with ploughing of my land. It is very challenging to find help in time. If I don’t manage to find others to help, I do the tilling manually. (Female respondent 13, Guguma, Interviewed on May 4, 2014)

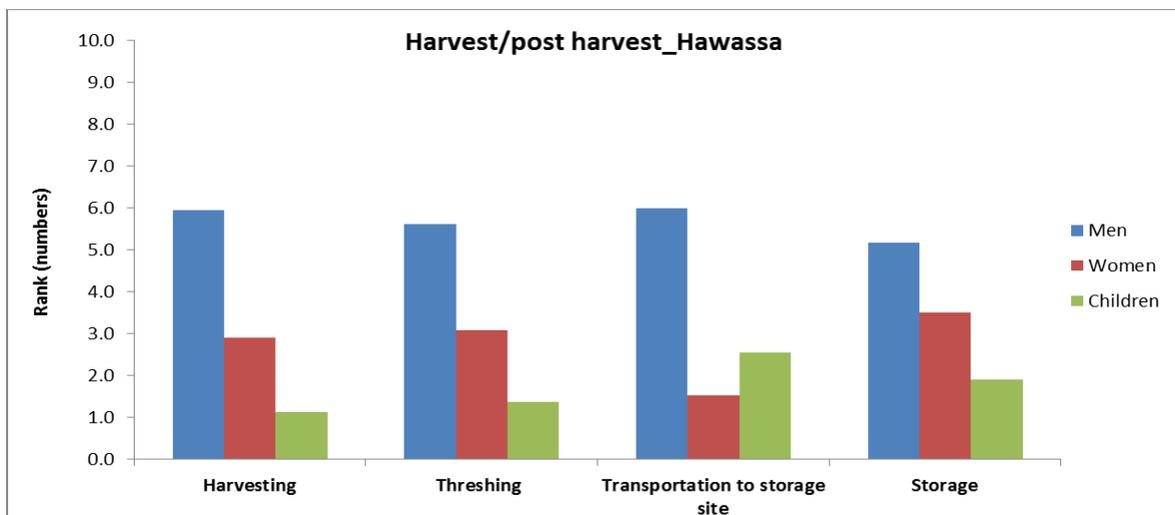
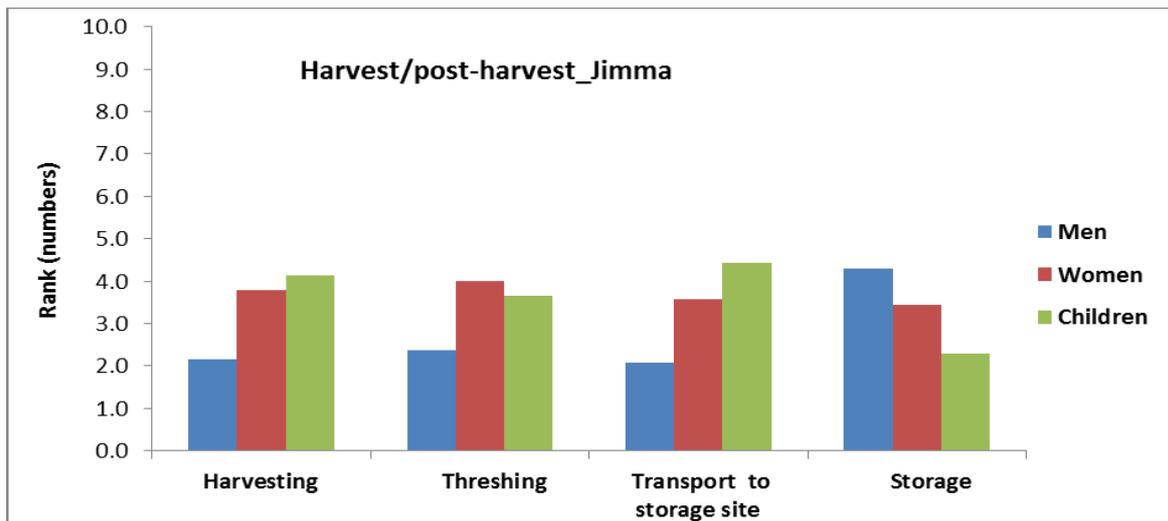
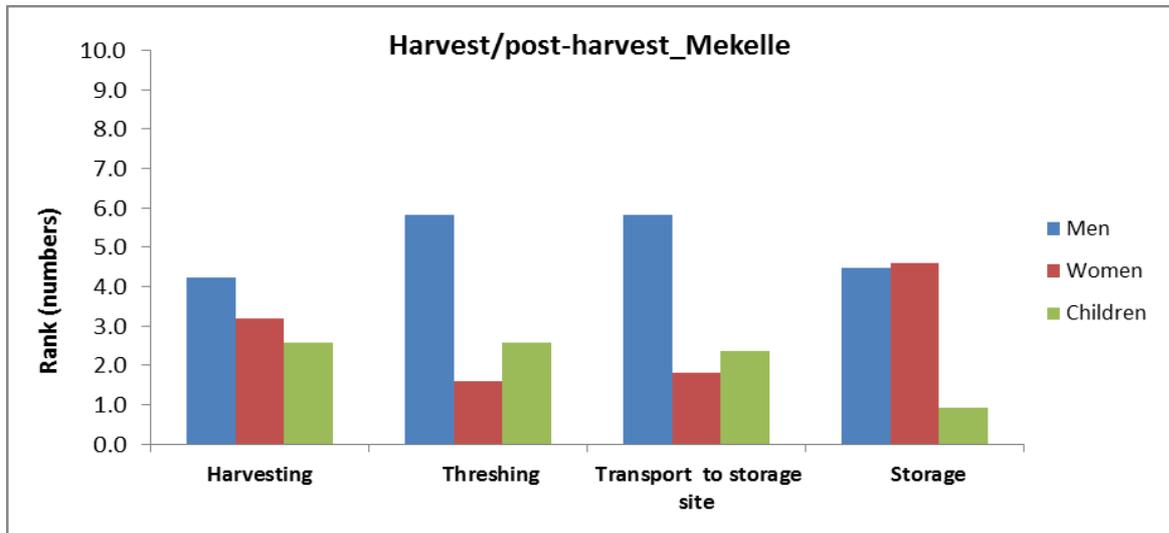
4.1.2 Cultivation and maintenance

In cultivation and maintenance, sowing/planting, weeding, fertilizer application, pesticide application, and daily management are included. These tasks are almost equally executed by both women and men. Women involvement varies from cluster to cluster, but irrespective of these variations, there is hardly any activity in which women are not actively involved (Biruktawit, et al., 2014).

The study showed that women are involved in most activities, but their engagement on weeding is significant. Furthermore, the study revealed that children are also involved in most of the activities. Despite their engagement in school, they assist the family during their spare time. Those who do not go to school also help (especially in tasks such as poultry and livestock rearing). Especially in Jimma and Haramaya the role of children seems to be considerable in cultivation and maintenance tasks. In Jimma, some of the husbands (in MHHs) were engaged in part time government job and there are times they spend their time outside their farm. In that case it is the responsibility of wife and children to take care of their farm (Ibd).

In general, in all clusters, men dominate in seed selection, day-to-day management, and pesticide application (if applied). For seed selection, most respondents mentioned that due to the fact that it was an improved variety, it was the husband who received training on most aspects including seed selection. Because he received training, he was also responsible for seed selection; in the past women were also partly responsible for seed selection (especially for those local varieties which they think they are tasty while cooking).

4.1.3 Harvest and post-harvest management



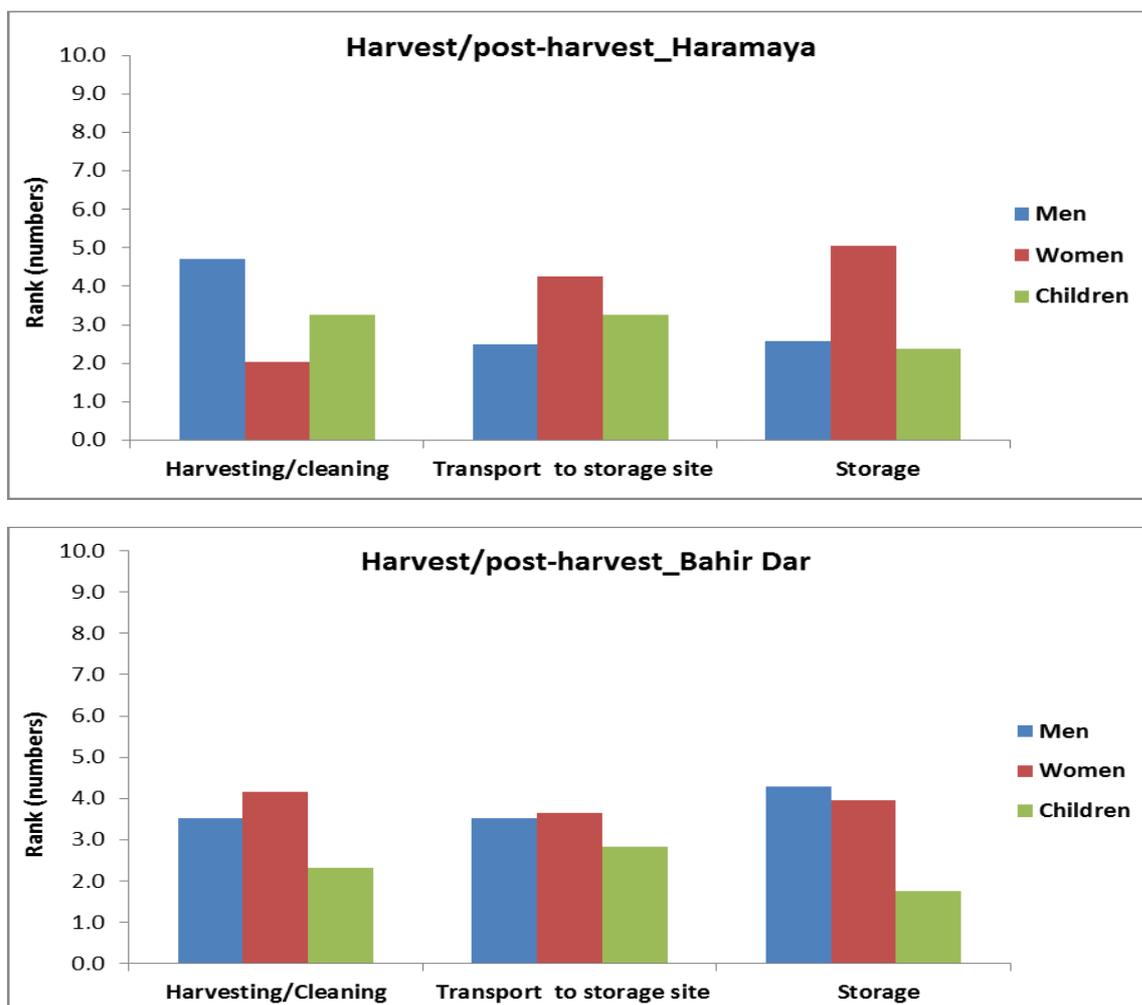


Figure 4.2 Gender roles in Harvest/post-harvest Activities

Source: Biruktawit, et al., 2014

The above graph showed that women are active in tasks related to harvesting their final products. These include harvesting, threshing, storage and even transporting products to their storage site (could be temporary or permanent storage site).

4.1.4 Decision-making over productive resources

The study also examined the gendered differences in decision-making over productive resources, focusing on decisions in the use of end-products like dairy, honey, harvested crops, etc. The respondents indicated that the whole family has access to different resources such as land, water, etc. However, the “power to make decisions” is traditionally positioned in the hands of men.

Women are usually under-represented in the decision-making process. The analysis below (Figure 6 (a-e)) shows clearly that while men tend to dominate decisions regarding the use of crops, cattle and apiculture products (i.e. honey), women have equal to full control over decisions regarding small ruminants, poultry and products from the home-garden. In Bahir Dar, Hawassa, Mekelle, men also have more decision-making power regarding small ruminants (sheep and goat), while in Haramaya and Jimma, women have more decision-making power regarding these animals. Poultry, sheep and goat are also the type of products where women's involvement in management is highest (Biruktawit, et al. 2014).

Moreover, these are mostly products that are home-consumed. In some cases chicken are sold, but it is more common to use chicken and dairy products as home-consumption products. In Haramaya, the graph shows that men have better control over home garden resources. This is due to the fact that most of the respondents own their farm close to their home, and grow all kinds of crops including high-value crops such as cereals and cash crops like *Khat* (Ibd).

Decision making within households sometimes has to do with bargaining. Though some women have a bargaining power over market-oriented resources (e.g. fattened animals), which is an improvement from past years, yet they typically have control over small items such as home-garden products, poultry and small ruminants. On the other hand, men have control over high-value crops as well as cattle. In line with this, the study also found out that small products such as poultry and garden products are primarily used for household consumption and get sold if they are surplus. In this case, women have full control over the money obtained from sale, and it is similar across all clusters. When it comes to products like crop and cattle it is men who have control. The money from these products sale is usually used to buy and pay for fertilizer loan, buy oxen or improved breed animals, construct house and cover children school expenses (including house rent for children attending school in nearby town), family/veterinary medication, buy extra land, and for some social events like wedding and "Edir" (social payment). During in-depth discussion with some households it was mentioned that the bargaining position of women has changed and is still changing. Most respondents gave as explanation that this changing position is related to the economic position of the wife and household. The more women earn for the household, the more they participate in decision-making. A second mentioned reason, which relates to the first, was that there is increasing awareness among men

and women on noticeable inequalities, and there is a general feeling among both men and women that this should be changed (Biruktawit, et al. 2014).

4.2 Demographic Characteristics of Respondents

The demographic profiles of the respondents in the study included family size, sex, age and marital status, level of education, occupation and size of farm.

Table 4.1 Demographic Characteristics of respondents

Variables	Category	Frequency	Percent/%/
Sex	Female	60	61.2
	Male	38	38.8
	Total	98	100
Age	17-25	10	10.2
	26-35	42	42.8
	36-45	20	20.4
	46-56	14	14.4
	56 and above	12	12.2
	Total	98	100
Marital Status	Married	68	69.4
	Single	4	4
	Divorced	8	8.2
	Widowed	18	18.4
	Total	98	100
Education Level	No formal education	30	30.6
	Read and write	35	35.7
	Primary school	20	20.4
	Junior primary school	10	10.2
	High school	3	3.1
	Total	98	100
House hold Size	Small size (2-4)	29	29.6
	Medium size (5-9)	51	52
	Large size 10 and above	18	18.4
	Total	98	100
Occupation	Farming	65	66.3
	Farming and trading	33	33.7
	Trading	0	0
	Remittance	0	0
	Pension	0	0
	Total	98	100

Source: own survey, 2016

According to the survey data among the 98 house hold respondents 60 of them, which accounts for 61.2 percent were females, whereas the rest 38 respondents or (38.8%) were males.

From the house hold survey respondents the highest groups (42.2%) were between the ages of 26-35. The next majority age group is 36-45 which accounts for (20.4%) followed by 46-56 that is 14.4%. The dotages above 56 are 12.2%.

The smallest portion of the respondents was the youth group between 17-25 accounts for only 10.2 percent i.e. limited to 10 respondents out of 98. The mean (average) age of parent respondents is 41 years.

We understood from this age distribution; the rural community is composed of people at the age of adulthood taken as active labor force. This age distribution has a positive contribution on the agricultural production and the entire socio-economic activity of the community.

Marital status was also categorized into four categories. These four categories are: married, single, divorced and widowed. Majority of the respondents (68) were married which accounts for 69.4 percent, with 18.4 % of widowed respondents, 8.2 % divorced, and 4 % single.

Regarding to the educational status, 35 of the respondents (30.6%) didn't attend formal education or they are illiterate as shown in (table 4.2). This indicates the existence of high level of illiteracy in the target groups of the study area. Among the respondents 35.7 percent, 20.4 percent, 10.2 percent, and 3.1 percent are can read and write, primary school, junior primary school, high school, vocational school and college diploma respectively.

According to the focus group discussants this illiteracy is resulted from lack of access to schools in the vicinity and less attention to education on the behalf of their parents in the past. Consequently, this low level of human capital (knowledge) has an impact on their livelihood activities, because low level of education means low use of modern agricultural technologies which can affect the productivity of the farmers.

From questionnaire survey it was found that family size scores of the farmers ranged from 1-9 with an average 5.69 and standard deviation 2.28. Most of the farmers (52%) had medium size families compared to 29.6% small and 18.4% of the farmers had large families.

Bearing in mind the educational status of parent respondents being moderately illiterate (read and write), it is not surprising that majority of them (66.3%) are depend on farming, followed by 33.7 percent farming and trading shown in (table 4.2). The source of income in the study area

was mainly agriculture. It was found that almost all the respondents were practiced agriculture. This indicates that there is a potential for growing of *Moringa* as majority of the respondents were farmers.

4.3 Natural and Economic Characteristics

4.3.1 Land Holding

Among (98) sample households 73.4 percent were men owned farm land followed by those 26.6 percent women owned a farm land. This shows that the highest agricultural land ownership is dominated by men's therefore; women's have a little role in holding an asset.

4.3.2 Farm Size

Table 4.2 Categorization of respondents according to their farm size in the study area

Categories	Respondents		Range		Mean	St. Dev.
	No	%	Min.	Max.		
Small size farm (0.58-1) ha	65	66.3	1.00	6.00	1.35	2.37
Medium size farm (1-1.5) ha	19	19.3				
Large size farm (1.5) ha and above	14	14.4				
Total	98	100				

Source: own survey, 2016

In any agrarian economy, land is the basic livelihood asset of farmers for all farm activities. It is important for agricultural production. The result of this study showed that farm size of the farmer ranged from 1 to 6 hectares with an average of 1.35 and standard deviation of 2.37 ha. Among the farmers, 67.9 % was small size, 12.2 % was medium size and 19.9 % was large size farm owned.

4.4 Socio-Cultural and Gender Practice in the Community

Cultural factors are the most proximate determinants of women's place and status in a given society. In many societies, women have a subordinate status. It is documented in many studies that men feel that women's work is marginal/subsidiary to what men do and consider it as wifely duty rather than work. Similarly, women as well as men consider that men are responsible to perform 'heavy' and 'important' tasks and they therefore are in charge of every privilege in the household. On the other hand, women are believed to engage in 'less important' works as a result

they enjoy less privilege. This is so believed in spite the lack of a parameter that measures a given work to level it as either 'heavy' and 'important.'

According to various studies that base themselves on direct matrix ranking and pilling method, the time and labour demand of a given task is taken to differentiate the nature of the work done by women and men. Accordingly, it is revealed that the longer the time and the more labour a certain task requires the more heavy the activity is (Workwoha, et al, 2004).

Moreover, some activities could be performed alongside with other activities. So, it can be argued that the more overlapping and repetitive the work, the heavy it is (Ibid).

This is in one way or another related to the patriarchal system that favors men. Powerful male supremacy norms dictate that a woman's status be defined only through the men who are responsible for her: father, husband, brother, son (Safilios-Rothschild, 1985). Within such a context of patriarchal values, women's work and economic contributions tend to be viewed as supplementary and auxiliary to men's work and breadwinning function (Ibid).

An implicit assumption is made that the woman is basically a mother and housewife; any productive work she carries out is considered socially secondary, an extension of her primary function, and thus it has tended to remain unnoticed, more so in the case of rural women (Reddy and Rani, 1982). In societies of rigid system of patriarchy, the norms, values, and social structures, creates mechanisms that hide rural women's contribution to third world agriculture, especially among the poor, and maintain the image of female dependency on men (Safilios-Rothschild, 1985).

4.5 Gender Role at Harvesting Period

Harvesting period of *Moringa* tree were categorized in to five, as weekly, monthly, once in a two month, quarterly and throughout the year. This study revealed that 60.2% of respondents collect weekly, 25.6% respondents collect throughout the year, 12.2% of respondents collect monthly and 1.9% of respondents collect once in a two months. According to the focus group discussants the reason for the availability of the tree in every season is that it's extremely fast-growing plants and drought resistant.

Beside this, women play a vital role during harvesting period rather than men. Mostly the leaves of the plant mainly used for household consumption beyond the mild income creations.

Most of the harvesting is carried out by women for home consumption and supply to local market. Men are generally responsible in the heavier tasks (land preparation, fence building, well digging and tree harvesting), while women manage the day-to-day maintenance tasks.

4.6 Gender and Traditional Domestic Market

Table 4.3 Traditional Market Price of *Moringa* per bundle

Price description	Respondents		Range		Mean	St. Dev.
	No	%	Minimum	Maximum		
one birr	19	19.3	1.00	7.00	2.83	1.60
two birr	41	41.8				
three birr	20	20.4				
five birr	11	11.3				
seven birr	7	7.2				
Total	98	100				

Source: own survey, 2016

In traditional home-garden agro-forestry, crop production is primarily for subsistence, not for the market. However women are responsible for selling surplus food crops, fruits, vegetables and dairy products to supplement their household food supply while livestock, cereals and cash crops has been traded by men.

In the study area the traditional price of *Moringa* leaves per bundle ranged from 1 to 7 birr with an average of 2.83 and standard deviation of 1.60. Among the farmers, 19.2% sells one birr, 34.6% sells two birr, 22.4% sells three birr, 19.2 sells five birr and 4.5% of respondents sell seven birr per bundle.

The market survey and observations showed that a large number of women doing trading in the local market, but most of them are poor women, those who have small land size and little agricultural productions. Further, they are mainly involved in “petty trading” such as buying and selling of small scale products for subsidizing food supply in their household. Men are involved in livestock trading and whole sale and large scale trading of cereals such as teff, maize, sorghum and other food crops like onions.

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4.7 Gender and Annual Income of Moringa

Table 4.4 Categorization of respondents according to their annual income

Categories	Respondents		Range		Mean	St. Dev.
	No	%	Min.	Max.		
Marginal income (100-1000)	38	38.8	350	8000	3011.11	2557.68
Low income (1001-2000)	23	23.5				
Medium income (2001-5000)	27	27.5				
High income (5001-9000)	10	10.2				
Total	98	100				

Source: own survey, 2016

The annual income of the farmer is ranged 350-8000 birr with an average of 3011.11 birr and standard deviation of 2557.68. As ranged annual income 24.3% of the farmers were found marginal, 24.3% low, medium 25% and 26.4% in high income category.

Endeshaw (2003), reported that *Moringa* apart from being consumed as a vegetable, it’s also marketed as a source of income in a local market in the Derashe, Konso and Gamo Gofa. The study revealed that about 82% income gained from the plant managed by women and the rest 18% income handled by men. This showed that women have more responsible than men in post-harvest management of *Moringa* product. .

4.8 Saving Practice from Moringa Income

The respondents were also asked about saving practices from the income of *Moringa* with Yes/No option. The result of the study shows about 37.2% had saving practice from the income of *Moringa* market whereas the rest of 62.3% of respondents had no saving practice beyond their routine consumption of the earned money. From personal observation most of the farmers who brought *Moringa* to sell in the local market used the earned money to buy different material that was needed at their home like soap, salt, sugar, spices and so on.

4.9 Gender role in Food Preparation and Ways of Consuming Moringa Leaves

Table 4.5 Ways of consuming *Moringa* in the study area

Description	Frequency	Percent
Cooking	54	55
mixing with other food type	18	18.4
both in mixing with other food type and cooking	26	26.6
Total	98	100

Source: own survey, 2016

As obviously showed in a plenty of studies that every part of *Moringa* plant is edible and assure food security as a result of this, the people of the study area consume the leave part of the plant in accordance with this, the majority of the respondents 53.8% consume both in mixing with other food type and cooking, 34.6% consume by cooking and 11.6% consume by mixing with other food type as well. The study revealed that every household activity including *Moringa* dishes preparations are carried out by women without any support of men. Therefore, women are over loaded and play indispensable role in post-harvest utilization of *Moringa*.

From personal observation everyone used the same type of *moringa* dishes with small differences in how the maize flour was used. The four dishes are called “Kurkufa”, “Fosesae” “liquid Cheqa” and “Kita Be halleko”. The notion of using *Moringa* in mixed dishes is evident and fits in well with the cultural practices of the Derashe community, since they also indicated that they used mixed dishes when cooking with traditional leafy vegetables.

Women control *Moringa* products that are used on day to day needs of house members. The role of women and men were highly different over the control of resources and responsibility for each crop or tree and animals and their products in study area. Products of *Moringa* that are used for home consumption and low daily income had been managed by women.

4.10 Gender in agro biodiversity management of Home garden

Home gardens had high crop biodiversity which women manage most of them for daily needs than men. This agrees with Victoria Rays et al (2010) who argues that gardens managed mainly by women had a larger diversity of uses for species and a larger diversity of species per unit area. On-farm preservation of species within home garden was a highly effective method that benefits the people.

Women in study sites were conserving a variety of fruits, vegetable, medicinal plants and spices in their home gardens. The study showed that 90% of crop and 10% tree species were preferred by women to be cultivated within home gardens. About 49% of the women believed that women play a larger role than men in home garden agro-biodiversity conservation, while 38% believed that men played a larger role than women, and 13% believed that men and women play equal roles. The study finds that the absence of women the diversity of plant species is highly endangered especially those medicinal plants, spices and ornamentals. This agrees with Robert (2007) who noted that women are more familiar with both the field identities and the medicinal values of the local flora than men.

Lemlem et al. (2010) has also indicated that women's preferences for crop varieties differ from that of men. Women opt to produce types or varieties which are mainly used for domestic consumption, whereas men prefer crop varieties which have high market demand and fetch high prices. For example, women rank first the spices, medicinal, vegetable and fuel wood crops which are grown near to house and controlled by themselves.

According to FAO (1999) men and women have often developed different expertise and knowledge about the local environment, plant and animal species and their products uses and management. These gender differentiated local knowledge systems play a decisive role in the in situ conservation, management and improvement of genetic resources for food and agriculture.

4.11 Development of post-harvest storage methods

In the study area both men and women farmers are using *Moringa* product for daily consumption and there is no mechanism in post-harvest storage. Therefore, many agroforestry products, particularly fruits and vegetables, have a very short shelf life.

According to the feedback obtained from focus group discussants there is a private sector engages on *moringa* processor and distribution at the capital of Derashe woreda called “Gidole”, the owner of the sector have *Moringa* processing unit with different staffs of professionals. Wholesale traders normally store their produce in large heaps on the open ground with protection from rain, sunshine and wind. Processing of *Moringa* leaves can be difficult if it is done during rainy days. Within 24 hours the fresh *Moringa* leaves, if not totally dehydrated and dried, would acquire mould and will lose their nutrients. Dryer or dehydrating machine is very important at the very start of the process of every product. *Moringa* leaves will be dried gradually with hot air fan at 50 to 60 degrees centigrade using a cabinet drier. When dried, the leaves will be milled with pulverizing machine. However farmers of the Derashe woreda have no idea in post-harvest storage of *Moringa* leaves other than the primitive and traditional utilizations.

4.12 Knowledge Gaps in Post- Harvest Management

The study revealed that there are knowledge gaps among the farmers in understanding that every part of *Moringa* plant is edible and lack of awareness in technological uses on the plant product.

Base on personal observation all the farmers in the study site consume only the leave part of *Moringa* plant; they don't have any awareness on post- harvest technological uses and ways of handling the product of this miracle tree. Educating and informing them about the advantages and profit that they will gain by using different parts of the plant in accordance with technological inputs in their surroundings will inspire and give them hope to look forward to in the future because they will learn the value of their labor and would realize to utilize their time properly in order to have more income.

Development of efficient agricultural and processing techniques also needs to be accompanied by capacity building. Women need to develop their business and marketing skills in addition to processing techniques. Key skills required include; how to assess demand, develop business plans, negotiating skills, record keeping and adoption of technologies before and after harvest. A key issue is whether training should involve individuals or groups; this depends on the particular situation.

4.13 Institutional Interventions

The existences of private sectors were given with the yes/no option. Based on information gathered from survey about 51.9 percent of respondents confirm yes to the presence of private sector in *Moringa* market whereas 48.1 percent of the respondents said no to the existence private sector in *Moringa* market.

From the interview obtained by the owner of private sector (age 35) on the intervention towards capacity building of the women expressed as follow:

“Here in Derashe woreda I am the owner of Mars Moringa processor and distributor profit making organization. The role my organization playing in empowering, giving training and awareness creation on how to use technological inputs on post-harvest management of the plant is low due to recent establishment of the sector. Howe ever in the near future we have a plan to impart lesson on the way women farmers going to be empowered on farming and post-harvest utilizations of the plant products.”

In the study area in every kebele there is agricultural office. The level of local government intervention was categorized in to five. From the result of the study 7.7%, 5.8%, 18.6%, 6.4%, 7.7% & 53.8% of respondents the level of intervention to support and promote the women were very high, high, medium, low, very low and no support respectively.

According to focus group discussants, farmers didn't knew why local government fail to gave several support and encouragement to women on post-harvest management of *Moringa* plant, If the women promoted well the product will increase because of wide range of service that women offers and they appealed that government should liaised with community to educate and help farmers to plant more *Moringa* tree on their lands since it form integral part of house hold economy.

Based on personal observation; women producers in sub-Saharan Africa are trapped at the production end of the value chain. This disadvantaged position limits their control over and returns from the productive process. For women to come out of this trap, governments, NGOs and the private sector need to intervene by assisting women to form and strengthen farmers' groups or associations and linking them up with markets. By engaging in collective action

women would be able to gain a more powerful position in the value chain. Such a powerful position would help women to:

- Achieve stronger bargaining power
- Sell in bulk
- Purchase inputs in bulk
- Ensure a sustainable supply of products
- Reduce transaction costs
- Attract more and larger buyers
- Access outside resources, such as extension and development assistance
- Access fair-trade and other certified markets, and above all
- Contribute to the policy formulation process.

4.14 Policy interventions

An enabling policy environment is critical in making sure that agro forestry benefits women. At the national level, governments in developing countries need to acknowledge that women are the backbone of agriculture, yet they face many challenges, that limit their production. Gender sensitive policies need to be put in place. This section highlights major policy recommendations, many of which are also relevant to other sectors which if put in place, will go a long way in enabling women benefit fully from agro forestry. Ensuring that extension services to benefit women, deliberate gender sensitive interventions need to be put in place including;

- ▶ Training more women extension officers, particularly to serve communities that have strong traditions that prohibit male extension officers from interacting with women farmers.
- ▶ Targeting women's groups for assistance. This review has shown the effectiveness of targeting such groups as a means of disseminating information and technology to women.
- ▶ Finding out from women which periods of the season and days of the week they are free to meet and holding meetings, field days and seminars at these times.
- ▶ Holding separate meetings for men and women.
- ▶ Organizing video show sessions for women who are not able to participate in tours.
- ▶ Ensuring that at least half of those who participate in any activity are women.

- ▶ Ensuring that extension activities address different interest groups. This review has shown that women are more interested in products such as fruits, fuel wood and vegetables while men are more inclined towards timber and poles. That women and men have different planting objectives and evaluation criteria means that they require different extension approaches.

Since non-wood agro forestry products play a significant role in improving the livelihoods of poor farmers, who are mainly women, it is imperative that training institutions and policy makers integrate these species and their products in the mainstream extension packages as part of a basket of options for improving livelihoods.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The purpose of the study was to gain deeper understanding of gender relation and roles on post-harvest management and utilization of agro-forestry with a particular reference to *Moringa stenopetala*.

It was explored from the results of the study that the potential women role obtained from post-harvest management of *Moringa stenopetals* are inexhaustible when a contribution to house hold and agricultural activities to be considered. Based on the information obtained and the subsequent analysis the following conclusions have been drawn.

Women and men play a significant role in the development of agricultural production. Their effort in agriculture is crucial to the provision of an adequate food supply for their household. In this regard, women make essential contributions in agricultural activities. They often manage household responsibilities as well as agricultural activities. In the study area women do almost half of the labour required for agricultural production. Female farmers participate in all aspects of agricultural production except ploughing. They perform numerous labour-intensive jobs such as land preparation, weeding, harvesting, threshing and storing.

According to the economic importance women have been benefited and get freedom to control over the petty income obtained from *Moringa* market; even if the income was low as compared with other type of agricultural production. This study also revealed that though there are changes occurring within the household e.g. in some households consultation with women take place particularly on money from the sale of a product, nevertheless men are still the heads of households and the principal decision-makers. It is also noted that men are often more involved in control over cash crops while women have control over small items such as *Moringa* products, poultry and small ruminants.

Based on the study result farmers have no access to use and adopt new technologies on post - harvest management of *Moringa Stenopetala*, therefore there are lack of awareness on

technological inputs. Government agricultural institution failed to introduce and to adopt new technologies on post-harvest management of agricultural productions.

5.2 Recommendations

The study has the following recommendations:-

- Rural women greatly need the benefits of labour-saving technologies and practices to reduce their workload. Extension services are important for diffusing technology and good practices.
- The concerned bodies should continue to play a lead role in ensuring that women farmers and women on the farm receive training, information, and improved technologies. Their services often are increasing in scope and scale, either as complementary support to government efforts or to fill the gaps created as government expenditures and capabilities decline.
- Agricultural extension and advisory services can play a big role in meeting the challenges and assisting rural women farmers harness the enormous opportunities in the production and usage of *Moringa* tree, this will make it available for all, reduce poverty in the land and improve the livelihood situation of our developing Nation.
- The presence and functioning of clear policy guidelines and their implementation plans would also be useful to systematically track down the gender outcomes.
- Government strategy focuses on socio economic research around adoption, cost and impact of the improved technologies. Special emphasis should be placed on understanding environment in which different women (e.g. female heads, women in male headed households or women in polygamous households) operate and their needs.

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Appendix

Appendix 1. Survey Questionnaire

Introduction

First of all I would like to say thank you for your kind cooperation in completing the questionnaire sparing from your precious time. I am graduate student of Indra Gandhi National Open University, department of social work. This study is for partial fulfillment of the requirements for the award of master's degree.

Objectives: The general objective of the study is to gain deeper understanding of gender relation and roles on post-harvest management and utilization of agro-forestry with a particular reference to *M. stenopetala*

General instruction: You are kindly requested to make a tick mark in the boxes provided and write your response on the space given. Use extra paper the space is not enough. Your honest and frank answers are appreciated.

Section A- Background

Keble ----- Village ----- Center -----
Interviewer Name -----Code No-----

Information on Household's Members

1. Size of household 2 3 4 5 6 7

2. Sex of household head Male Female

3. What is your age in years? (Choose the correct range)

17-25	<input type="checkbox"/>
26-35	<input type="checkbox"/>
36-45	<input type="checkbox"/>
46-56	<input type="checkbox"/>
56+	<input type="checkbox"/>

4. What is your marital status?

Married	1
Single	2
Divorced	3
Widowed	4

5. What is your highest educational level?

No formal education	1
Read and write	2
Junior primary school	3
Primary school	4
Secondary	5
Technical school	6
Diploma	7
Degree	8

6. Occupation of household head Farming Trading Remittance Pension
 Farming and trading

B. Gender and Related Questions

1. Do you have a farm land? Yes No

2. What is the size of land in hectare? 0.58-1 1-1.5 1.5-2 2-2.58 3 & above

3. What are the main crops cultivated by members of your household? Maize
 Sorghum Teffe Moringa Mixed

4. When do you harvest the Moringa?

Weekly	Monthly	Once in three months	Quarterly	Throughout the year

5. The role of women during harvesting time of Moringa?

H/Significant	Significant	Neutral	Insignificant	H/Insignificant

6. Do you consume *Moringa*?

Yes	No

7. The role of women in households' activities and food preparations?

Very high	High	Medium	Low	Very low

8. Who decides to plant Moringa? Women Men Jointly

9. Activities carried by Women and Men

	Women	Men	Remark
Land clearance			
Weeding			
Watering (in irrigated sites)			
Keeping crop from birds/rodents/other			
Day to day management			
Harvesting			
Threshing/cleaning			
Transportation to storage site			
Storing			
Transport to market			
Way of transporting			
Who sells? Why?			
Where do you sell?			
When do you sell? (e.g. big market days, which month,)			
How do you sell (using scale, bag?)			

10. Who is involved in management of *Moringa*?

women	men	Both

11. How do you manage the tree?

Traditionally	Professionally	No management of the plant

12. Is there any agricultural extension office in your Keble?

Yes	No

13. How do you examine the level of local government intervention in planting, managing & giving technical support to get more production from the plant?

Very high	High	Medium	Low	Very low
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14. What is the price of *moringa* leaves per bundle? 1 birr 2 birr 3 birr 4 birr
 5birr 6 birr 7 birr

15. What is your average monthly/yearly income? Monthly----- Yearly-----

16. Is there any farmers association that work for common profit?

Yes	No

17. How do you observe the degree of private sector to make the market smooth?

Very high	High	Medium	Low	Very low

18. Do you have practice of saving part of your monthly and/or annually income in cash in financial and/or social institutions like Iqub for future?

Yes	No

19. If yes, how much did you save on average per month or per year (specify the one you can state more accurately)? _____ Birr per month _____ Birr per year.

Appendix 2.Focus Group Discussion Questions

1. How do you elaborate educational status?
2. When do you harvest? And how do you observe the role of women?
3. How do women Manage *Moringa* tree?
4. How do you evaluate the level of intervention by local government to empower women?
5. Does the private sector have a role in educating women on post-harvest management?

Appendix 3.Key Informant Interview Questions

1. How do you evaluate the role of women on pre and post-harvest management of *Moringa* plant?
2. How does the farmers managing the plant?
3. What are the roles of the government in supporting the farmers on post-harvest management?
4. Is there any role that private sector play to empower women on farming activities?