

**DETERMINANTS OF WOMEN PARTICIPATION IN AGROFORESTRY PRACTICES
IN AGULE COUNTY, PALLISA DISTRICT**

BY

OPELUN LAWRENCE

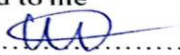
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**A RESEARCH REPORT SUBMITTED TO THE FACULTY OF SCIENCE AND
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UNIVERSITY**

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Declaration

I Opedun Lawrence declare that this is my personal proposal work from my exposure in the field of women participation in agro-forestry and it has never been presented to any other institution of higher learning for the award of bachelor's degree. Any mistake to this report should be attributed to me

Sign..........

Date:.....5/09/2021.....

Approval

This is to certify that Opedun Lawrence did research and this is a true representation of the findings. I am therefore recommending that this report be submitted to the Faculty of science and education of Busitema University.

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Supervisor;

Approval

This is to certify that Opedun Lawrence did research and this is a true representation of the findings. I am therefore recommending that this report be submitted to the Faculty of science and education of Busitema University.

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Mr. Ben Moi Otema Patrick

Supervisor;

Dedication

First and foremost, I would like to send my Special dedication to my Family particularly my parents (Father and Mother), all my siblings and friends for their full support during my research project writing period. Special thanks and appreciation I do dedicate to my beloved wife to be; Ms. Amoding Grace. Thank you so much for supporting me with everything that you were able to provide for me during this course, advise, motivation, encouraging peace of mind, my god grant us the best in lives as we are going to make wonderful things on earth, let's keep moving forward.

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List of abbreviations

NGOs: Non Government Organizations

IUFRO: International Union of Forest Research Organizations

ICRAF: International Centre for Research Agro forestry/World Agro forestry Centre

NRCAF: National Research Centre for Agro forestry

ICAR: Indian Council of Agricultural Research

SPSS: Statistical Package for Social Science

NEMA: National Environmental Management Organization

FHHs: Female Households

Abstract

Agro forestry has a number of beneficial effects on smallholder farmer's households including diversification of income from tree products, food security and sustainability of farming systems. This study was carried out in Oboliso sub county during my course at Busitema university in July 2024. The aim of this study was to assess women participation in agro forestry and its impacts on food security and livelihoods of the households. The specific objectives were to examine the role of women in agro forestry, explore the challenges faced by women engaged and come up with possible solutions to the above challenges. Data were collected from 50 respondents using structured questionnaires, interviews(face to face) and observation methods. The findings showed that the major challenges facing women participation in agro forestry are; limited access to resources (land, credits), gender norms and roles, limited decision power, unequal benefit sharing, heavy workload burden, limited access to extension services. Based on these findings, it was concluded that; women have been disadvantaged even though they are willing to carry out agro forestry practices. Therefore, it is recommended that, the local government officials and non- government organizations should; Encourage women farmers to participate in agro forestry, revise gender-sensitive policies, conduct targeted programs, carry out gender mainstreaming, create awareness about women's role and potential , collaborate with other organizations, provide financial assistance, mentor women to provide opportunities

CHAPTURE ONE

: INTRODUCTION

This section includes the background of the study (historical background, theoretical background and conceptual background), problem statement, objectives of the study (main and specific objectives), and Research questions, Justification, Scope of the study and Conceptual framework

1.1 Background of the study

1.1.1 Historical background

Since the 1995 women conference in Beijing, donors, policy makers and development practitioners have pointed out the critical roles of gender in development Programmes (Peterman *et al.*, 2010), there is general consensus that gender inequalities in areas such as ownership and access to resources, land tenure systems, education, extension and healthy have contributed to lower agricultural productivity and higher poverty levels. Analysis of gender roles and relations as they relate to forest use and benefits is important for the development of interventions and policies that promote sustainable resource management, livelihood security and improved well-being (Islam & Sultana, 2005).

Women are often responsible for food production and decision-making in rural societies. For example, a study in 95 developing countries found that women made up a significant portion of the agricultural labor force, ranging from 17.5% to 46.2%. Women's involvement in agriculture has been documented in various regions such as sub-Saharan Africa, India, Nepal, and Latin America (Sharma *et al.*, 1980). In addition, women have been primary users of forestry products like fuel wood, wild foods, and fodder. Research has shown that women are often responsible for wood collection and utilization, with a significant percentage of fuel collection being done by women (Kiptot & Franzel, 2012a). Women also make different uses of forest products compared to men, showing detailed knowledge about tree species and their uses (Wood *et al.*, 1980). Women's intimate involvement with forest products and agricultural production has led to a greater understanding of environmental issues compared to men. Studies have highlighted

instances where local women have undertaken conservation efforts even without formal support or recognition (Kiptot & Franzel, 2012b). Women have demonstrated leadership in conservation projects and have shown a deep understanding of the ecological impact of their activities (Wiff *et al.*, 1977).

1.1.2 Theoretical background

Impacts of women participation in Agro-forestry include; a combination of environmental feminist and feminist political ecology theories in its identification and analysis of gender issues as they relate to FTA value chains in Latin America (Kristjanson *et al.*, 2019). As a result, it highlights the importance of understanding both symbolic representations and material aspects in order to promote sustainable and equitable natural resource development (Agarwal Citation 1998). This requires assessment of the ideas surrounding gender and nature; and also the distribution of labour, resources and decision-making power regarding FTA resources. Furthermore, gender as one of several power relations that structure actors' engagement with the environment and natural resources (Rocheleau *et al.*, 1996).

According to Cornwall's (2016), the discussions about women's empowerment frameworks was carried out in order to understand women's and men's roles and how their benefits from value chains can influence gender equality outcomes. To address the root causes of gender inequality and effect transformative change, shifts in formal policies and laws are necessary; however, engagement with culturally constructed ideas and beliefs about gender is as well critically important (Meinzen-Dick *et al.*, 2011).

1.1.3 Conceptual background

The concept of gender in the study was not only about women participation but also men and youth involvement in agro-forestry. This was conducted in order to lay emphasis on women, examine their participation and evaluate them in terms of outcomes while highlighting gender discrepancies so that strategies to challenge gender imbalances are put in place (Newton, 2016). This aimed to ensure that women are given opportunities to be able to make decisions, access resources equitably, hold positions and benefits from

Development initiatives such as agro-forestry by educating them in order to increase the food security and livelihood of household in the community(Nilsson, 2004).

Agro-forestry; According to King (1967) may be defined as an efficient and integrated land use management system by raising of certain agriculture crops, forest tree species and/ or animals simultaneously or sequentially on the same unit of land with appropriate management practices which results in overall increase in production under particular set of climatic and edaphic conditions and social-economic status of local people.

Consideration of gender aspects is needed to ensure that none of the sexes are marginalized in agro-forestry interventions. Globally, women farmers are known to have played significant roles in agro-forestry, especially at the early stage of tree establishment(Parejo & Radulović, 2023).

Women's participation refers to the involvement of women in various aspects of agro-forestry practices alongside men. They participate in activities such as fodder production and utilization, soil fertility management, woodlots establishment, and indigenous fruit and vegetable production and processing, Management of trees, crops, livestock, and other resources within the agro-forestry system

Livelihood in the context of agro forestry refers to the means and resources that individuals or communities rely on for their sustenance and well-being. It encompasses not only the economic aspects but also social, cultural, and environmental dimensions that contribute to a person's quality of life. In agro forestry systems, livelihoods are often closely tied to the sustainable management of trees, crops, and livestock within a diversified agricultural landscape(Poulton& Poole, 2001).

Food security within an agro forestry system pertains to the ability of individuals or communities to access sufficient, safe, and nutritious food consistently. Food security is achieved through the integration of trees with agricultural crops and livestock, which can enhance dietary diversity, resilience to climate change impacts, and income generation opportunities. Agro forestry practices contribute to food security by providing a range of food products, improving soil fertility, conserving water resources, and supporting biodiversity(Meinzen-Dick *et al.*, 2011).

1.2 Problem statement

Women's participation in agro forestry remain disadvantaged due to cultural, social and economic factors such as limited access to resources like land and tree resources, finance, extension information and appropriate technology. In addition African Societies have taboos that prohibit women from undertaking certain activities; this also limits their participation in developmental interventions(Newton, 2016).

However, Women are increasingly assuming leadership roles and decision-making in the absence of men which may be caused by rural-urban migration of men in search of off-farm income. This gives women the opportunity to take a responsibility of managing trees, agricultural crops and animals which enables them to obtain food, fuel wood, fodder, fruits and other products to support their families and the community(Nilsson, 2004).

Therefore, this research aims at assessing how women's participation in Agro forestry impacts the livelihood and food security of households with effective access to resources such as land, finance, extension services and decision making. Formulate recommendations to address the existing gaps for an effective Agro forestry practices(Poulton& Poole, 2001).

1.3 Objectives

1.3.1 Main objective

The main objective of this study was to assess the impact of women participation in agro forestry practices on the livelihood and food security of households.

1.3.2 Specific objectives

The specific objectives were:

1. To examine the role of women in agro-forestry
2. To explore the challenges faced by women engaged in agro-forestry
3. To come up with the possible solutions to the above challenges

1.4 Research questions

1. What are the roles played by women in agro forestry system of agriculture in Agule County, Pallisa District?
2. Are women able to carry out the needed operations so as to manage agro forestry technologies?
3. Which challenges are faced with women involved in Agro forestry?
4. What are the possible solutions to the above challenges?

1.5 Hypotheses

H1: Women's active participation in agro-forestry may lead to an increase in household income through the sale of agro-forestry products such as fruits, timber, and fodder. This additional income can contribute to improved livelihoods by providing resources for essential needs and investments(Rubery& Koukiadaki, 2018).

H2: Women's involvement in agro-forestry practices can enhance food security within households by diversifying food sources. Agro-forestry systems that incorporate fruit and vegetable production alongside traditional crops can provide a more varied and nutritious diet, reducing food insecurity.

H3: Women's engagement in agro-forestry activities like soil fertility management can lead to improved soil health and productivity. By integrating trees with crops, women can contribute to sustainable agricultural practices that maintain soil fertility over a long term, benefiting overall food production(Shackleton, Paumgarten, Kassa, Husselman, & Zida, 2011).

1.6 Justification

There are some constraints that affect women participation which constitute mainly of the use of traditional systems and indigenous varieties of trees which lead to a decrease in the level of output inform of fruits, fuel, timber, fodder, etc. This is also stimulated by the fact that most local smallholder (women) farmers carry out Agro forestry practices on

small scale hence leading to unstable food security in the parishes like Omotoi and Kateki in Oboliso Sub County (Temu& Temu, 2005).

Women farmers face a challenge in access to improved tree species, land and trees, markets, financial resources, decision- making, Education and extension services, improved agro forestry technologies. This has contributed to low level of participation among women farmers in Agro forestry(Stadlmayr *et al.*, 2023).

Conducting this research study will therefore oversee that the challenges are taken into account and solved to increase involvement of women participation in agro forestry practices by making critical recommendations to the relevant policy makers. Also, both the National and local governments will be advised on employing more women as part of agricultural extension workers to promote gender equality and dissemination of useful information and new technologies and hence result to increased livelihood and food security of the households.

1.7 Significance of the study

The country and national government can use the findings to enact policies tailored at building gender balance of farmers involved in agro forestry as an income generating activity. Also helps in buffer households diversification and improve overall financial stability.

Farmers will benefit through better support enhanced by partnership between them, county and national government through use of the findings of the study.

Other researchers could also build on the findings of the current research on their future research

This study aims at empowers women by providing opportunities for skill development, leadership roles, and decision-making in natural resource management. This enables women to gain confidence, autonomy, and a stronger voice within their households and communities. This empowerment contributes to more equitable distribution of resources and benefits within households(Wemali, 2014).

1.8 Scope of the study

The study covers three parishes, that is; Omotoi, Kateki and Ogasiyan) in Oboliso sub-county located in Agule county, Pallisa district. The research is broadly designed to assess the impacts of women participation in Agro forestry on livelihood and food security of households in Agule county, Pallisa district. The respondents include men, women, youth, researcher and extension workers around the areas(Yesigomwe, 2008).

1.9 Conceptual framework.

Watermelon farming involves the cultivation of watermelon plants for the purpose of harvesting their fruits. To establish a successful watermelon farming operation, it is essential to have a well-defined conceptual framework that encompasses various aspects such as land preparation, seed selection, planting techniques, irrigation methods, pest and disease management, fertilization practices, harvesting procedures, and post-harvest handling.

CHAPTER TWO

: LITERATURE REVIEW

2.1 Introduction

This chapter is divided into sub topics to aid in understanding the views of other author's regarding women's participation in Agro-forestry system, livelihood and food security of households. The first deals with Agro forestry systems commonly practiced by women farmers(Garrity, 2004). In other topics like women and Agro-forestry system discusses; the roles of women in Agro-forestry system, why women should focus in Agro-forestry, challenges faced by women, their abilities to manage Agro-forestry systems and benefits of Agro-forestry to women(Nair, 1991).

2:2 Agro-forestry systems commonly practiced by women farmers

2:2:1 Traditional Agro-forestry system

The major trees/ crops are the home-gardens, the trees are scattered on the cropland, planted on boundaries and in woodlots. Windbreaks, alley cropping and Silvipastoral systems were common. Since some homes had many trees/ crops combinations, the occurrence of each combination was considered separately at 100%. Most trees growing naturally were left purposely to meet farmers needs especially fuel wood and building poles. Planted trees were around homesteads in woodlots, at homestead boundaries and on croplands. Trees/crops growing on private compounds provided firewood, building poles, medicines and fruits. This findings agrees with the report by Hoekstra and Djinide(1988) that several trees found in the traditional farming systems are not deliberated grown together with the agricultural crops(Schroeder, 1999).

It also shows that traditional Agri-silvicultural farming systems in the region have gradual changes as farmers have now shifted from the tradition of complete clearing of trees when opening land for farming to protecting or planting trees around the garden or around the homestead. The farmers' decisions to protect or plant trees on their farms were influenced by the perceived value of agro-forestry to enhance farm production. Trees planted for fruits, firewood, fodder, building poles, fibers, machines, trellis for passion fruitsvinesand to mark land boundaries(Rocheleau& Edmunds, 1997).

Several woodlots(94%) were less than 1 hectare compared to 1-4 hectare for agricultural plots implying that little land was allocated to tree growing(Rasingam & Parthasarathy, 2009). Eucalyptus woodlots were planted in tobacco fields to provide firewood for curing tobacco. Flue curing of tobacco growing therefore needs to be accompanied by tree planting to reduce pressure on natural woodlands as major source of firewood therefore farmers need to be sensitized to accompany tobacco growing with planting of trees as flue cured tobacco and s considered to be of high quality and preferred by farmers because it fetches high prices (Aliro, 1993)

According to Lovett and Haq (2000) , (Booth, 1988 #188)the majority of trees and shrubs are always maintained on cultivated land because of their valuable, non-timber production s. In this respect, some species are used to protect livestock form intense heat and for tethering, for congregation during the day and shades are also essential parts of these environs. The farmers views about different tree species is consistent with the argument by Rocheleau *et al.*, (1988) (Sinclair, 1998 #189) that researcher and Development workers can learn from the local community by studying there indigenous knowledge about agro forestry systems by observing and recording their actual practices. It also confirms that rural people have a great deal and of useful information that can be incorporated into policies which farmers would easily benefit from. After all, the farmer's tradition farming practices are usually the outcome of the repeated, well organized and selective trails cured out over a long period of time. These selections always results in maintenance of those species that do not compete severally with crops for light, water advisable and which even permits significant crop fields increases and other environmental benefits valued by the farmers (Leach and Mearns, 1988)

2:3Women and Agro forestry system

This section discusses, the roles of women in Agro forestry system, Reasons why it's to involve women in the agro forestry practices (why focus on women and Agro forestry), Abilities of women to manage Agro forestry system and benefits of Agro forestry to women (or livelihood and food security of households)

2:3:1 Role of women in Agro forestry system

The gender division of labor in Ethiopia in general varies with the different farming systems and in various cultures and agro ecological locations, the results of this study supports the ideas that Women participation in agriculture is high in hoe cultivation(Almaz.,2001)

According to Akhter *et al* (2010), Women generally play major roles in agro forestry practices. However, their role and level of participation vary in different practices largely based on the location B of the practice (distance from home), types and purpose of the dominant crops produced in the practices. When women were asked about their participation in different agro forestry management (95%) responded that they play a major role in home gardens, (82%) responded that they participate in village forest gardens and (15%) of the women responded that they participate in woodlots. The high participation of women in home-gardens management could be due to proximity of the practice to homestead and women can take care of it while undertaking their domestic responsibility. Abeba (2011) also reported that women play a key role in home-gardens management and they are usually responsible for large part of food production. On the other hand, according to Watson and Eyzaguirre (2002),

- (1) Women play major role in home-gardens because they have direct access to raise their incomes
- (2) They are generally the guardians of home-gardens and devote much of their time in care and management of the home-gardens.

2:3:2 why focus on women and Agro forestry system

According to Boserup (1970), Women in Africa play a very important role in agricultural production; this role is widely portrayed from Africa, Asia, the Caribbean and Latin America to highlight women's central positions in the economic life of their societies. Based on her work and that of many others such as Fortmann (1985), Rocheleau (1995),(Haddad *et al*, 1997); Quisumbing(1996) various propositions have been brought forth;

1. Women play role in most production system
2. Women's contribution to food security is made in the face of great obstacle

3. Although women contribute substantially, there is systematic exclusion from the benefits associated with technological change
4. If women had access to the some resources like education, farm inputs, labor as men, food production would be boosted by 10-20%
5. Despite the key role that women play, their contribution to agro forestry is largely ignored by policy markers.

In addition, Agro forestry is a low-cost system that requires minimal inputs and offers adversity of products and services such as fodder, food, timber, fruits and soil fertility improvement. It offers immense opportunities to women who in most cases cannot afford to adopt high cost technologies due to their several cash and credit constraints.

Despite their important role in agricultural production, women are still disadvantaged I the agricultural sector due to cultural, social and economic factors such as limited access to resources and households decision making. Such reasons that are directly linked to include land and tree resources, finance, extension I formation, labor and appropriate technology. Furthermore, many African Societies have taboos that prohibit women from undertaking certain activities which may limit their participation in developmental interventions such as agro forestry.

2:3:3 Abilities of women to manage Agro forestry system

Although men and women are both involved in management of tree planted on the farms, the literature confirms the fact that women do most of the work, especially at the initial stages of tree establishment. A study conducted by Epaphra(2002) in Tanzania and Gerhard(2006) in Zimbabwe; it was not ted that over 60%of women in Tanzania are responsible for managing trees species planted on farms while over 80% in Zimbabwe are responsible for watering young seedlings

This trend is confirmed by another study that was done by the National Agro forestry Research Project in Embu Kenya to determine early stages of adoption of calliandra fodder in the central highlands of Kenya. It was found that although 91% of households using calliandra were male-headed, in 89% of these households, female were responsible for managing calliandra (Franzel et al., 2002) A similar scenario was observed in Uganda

by Nyeko et al(2004) where the proportion of households in which women managed calliandra was 83%in lake Victoria Crescent, 97% in the southern dry lands and 84%in the Southern Highlands. study by wanyoike(2001) on adoption of calliandra gender. It was noted that more male-headed households (17%) than female-headed households (11%) had adopted calliandra. Farms managed jointly by men and women had more trees than those managed solely by men or women, perhaps because the jointly managed farms had access to pooled labor provided by both spouses

2:3:4 Benefits of Agro forestry to women.

Women's participation in indigenous fruit enterprises in sub-Saharan Africa is much greater than for exotic fruits because the former are considered a domain for women and children. Several authors have reported that women receive substantial financial benefits from indigenous fruit tree products. Women generate income through processing and selling of jam, drinks, gruel, sauces and flavorings agents, their involvement is however still mostly confined to the small retail trade while men control the wholesale trade (Njuki *et al.*, 2005)

On the other hands, According to Njuki *et al* (2005), women are likely to control commodities that generate lower revenue whereas men control ones that generate high revenues. Some of the constraints which women face in marketing include lack of capital, poor market infrastructure, high cost of transportation due to the poor road conditions and theft of their products and money at the markets Other constraints include lack of appropriate technology and limited access to processing technologies, marketing strategies and market information.

2:4 Challenges faced by women in participating in Agro forestry

This section brings out clearly, the challenges faced by women; Land and tree tenure, household decision-making, Access to financial resources, Access to Education and extension visits, lack of appropriate technology. These challenges are major limitations to women's participation in Agro forestry system.

2:4:1 Land and tree tenure

Women in Africa have limited rights to land except in isolated cases. This is because land tenure systems in many parts of Africa grant rights to own and dispose of land to adult males (Place 1994). While there is tremendous variation across the African continent, the bottom line is that in patrilineal societies, women's rights are often through ties to their husbands and these rights according to Gray and Kevane (undated) may cease to exist upon divorce,

Tree tenure is the right of owning and using trees. Different parts of trees and any benefits from their harvesting, sale or use may entail different rights of ownership and use among men and women. However, men usually have the overall authority as pertains to tree products that are considered to have high returns. For instance, women among the Luo and Luhya communities of Nyanza and Western Provinces of Kenya respectively have rights of collection and use of fruits, but are restricted from harvesting fuel wood of high value timber trees such as *Markhamialutea* and *Albizia* spp. (Bradley 1991; Rocheleau and Edmunds 1997). A species such as *Sesbaniasesban*, which is good for fuelwood and soil fertility improvement is considered a woman's tree and therefore they have the authority to plant, manage, use and dispose of it as they please. Among the Akamba community of Eastern Kenya, Rocheleau and Edmunds (1997) report that tree planting and felling have been primarily a male's domain, while women have enjoyed use and access rights to fodder, fuel wood, fiber, fruits and mulch. Tree products such as charcoal, logs, timber, large branches and poles are considered a male domain.

Domesticated fruit trees of commercial and economic importance such as mangoes, papayas and oranges are known to be planted and harvested by both men and women in many parts of Africa (Okigbo 1980). There are however certain fruit trees that are considered to be traditionally feminine crops because they are considered subsistence and grown around the homestead. Bush mango (*Irvingiagabonensis*), bread fruit (*Artocarpusaltilis*), oil bean tree (*Pentaclethramacrophylla*), bananas (*Musa sapientum*) and plantain (*Musa paradisiaca*) are planted and processed by women in West Africa (Nwonwu 1996). In parklands of West Africa, women are responsible for the collection and processing of *Vitellariaparadoxa* (shea nut) and therefore men normally retain these trees for their wives (Schreckenber 2004).

2:4:2 Household decision-making

Gender related decision-making which is often linked to intra household resource allocation is an important determinant of the adoption of agro forestry technologies by both men and women. There is considerable evidence that women's decision making power in households is limited to byproducts of men's trees, subsistence crops that have low returns on labour and those that involve less advanced technologies (Abbas. 1997)

According to Chavangi (1994), the general understanding in western Kenya among the Luhya community for instance is that the husband, as the head of household, has the overall control of the household resources and in that capacity, everything in the household is viewed as belonging to him. The wife is therefore expected to seek the opinion of her husband and ultimately his consent before going ahead with any plans that may bring about any changes in the allocation of household's resources. In a study in western Kenya where the World Agro forestry Centre (ICRAF) was testing hedgerow intercropping in the early 1990s, observations made about decision making among the Luo and Luhya were not rigidly divided by gender domains although men had significant decision making power especially in cases where there was conflict in the use of resources i.e. how much of the pruning to use as mulch and fodder respectively (David 1998). Similarly, in southeastern Nigeria, the same trend was observed among the Igbo community (Francis and Atta-Krah 1989). Among the Akamba community of Eastern Kenya, male heads of households are the main decision makers on matters of tree planting as recorded in 45.6% of the cases studied by Muok et al. (1998). Cases where both husband and wife made decisions about tree planting were 21.1% while 14.4% of decision making was made by women who either had husbands working away from home or were widows.

2:4:3 Access to financial resources

Access to financial resources such as credit, is linked to women's access to property, land, education and information (ILO 1998). Restricted ownership of land impedes women from obtaining guarantees, which would enable them to secure access to credit from formal financial institutions (ILO 1998; Quisumbing and Pandolfelli 2010). To overcome this limitations, women in many parts of Africa have devised other innovative

means of getting credit such as joining informal saving clubs popularly known as ‘merry go round’ or ‘chama’ in Kenya (Kiptot 2007) or ‘tontines’ in Senegal (Guerin 2006). Unfortunately these clubs may not provide them with enough capital to start big income generating projects. Kabeer (2005) and Quisumbing and Pandolfelli (2010) caution that access to financial credit alone may not be enough if women invest in micro-enterprises that have low returns.

2:4:4 Education and extension visits

The uptake of new technologies is often influenced by farmers’ contact with extension services. Several studies have shown that women have lower access to agricultural extension than men. In Malawi for instance, 19% of women had access to extension compared to 81% of men (Gilbert *et al.* 2002). In Uganda, women had 1.13 contacts with extension compared to men’s 2.03 (Katungi *et al.* 2008). Figures released by UNEP/GRID-Arendal (2008) show that although 70% of agricultural work in Benin and Zimbabwe is carried out by women, there are less than 10% female extension staff. In addition, most of the extension services are focused on cash crops (men’s crops) rather than food and subsistence crops, which are considered to be women’s domain.

2:4:5 Lack of appropriate technology

Most women in sub Saharan Africa undertake their activities manually due to lack of suitable household, farm and processing technology. For instance, women in Burkina Faso use 3–4 days to prepare P. biglobosa fermented seeds while extraction of shea nut butter is a physically strenuous and time consuming exercise (Teklehaimanot 2004). Technologies to improve crop production are also limited for women farmers. The use of animal traction is known to substantially reduce the demand for women’s labour yet most of them lack access to this valuable technology. In Zambia, the use of a plough to weed, a task performed by women, can be performed six times faster (Allen 1984)

2:5 Proportion of women participating in agro-forestry.

In a study on the achievements and impact of a fodder project in the central highlands of Kenya, Wambugu *et al.* (2001) found that out of 2,600 group members involved in establishing fodder shrub nurseries, 60% were women. FHHs accounted for 15% of all

planting households which is only slightly lower than the proportion of female headed households (18%) in central Kenya (Kimenye 1998). The high participation of women was facilitated by project extension staff, which targeted women's groups or groups with mostly women members. On soil fertility management, a review of 10 studies undertaken in Kenya, Zambia, Uganda and Malawi on factors likely to affect the adoption of improved fallows, biomass transfer and mixed intercropping technologies showed that in all except two studies, gender was not a significant variable affecting the use of soil fertility technologies. These findings are consistent with most reviews in the literature on gender differences in agricultural production. For example, Quisumbing (1996) review on male-female differences in agricultural productivity found that most studies on differences in technical efficiency between male and female farm managers showed insignificant differences (Rocheleau & Edmunds, 1997). That is female farmers are equally efficient as male farmers if individual characteristics and input levels are controlled. In another review of several studies on gender differences in non-land agricultural inputs, Peterman *et al.* (2010) found that most of them did not find gender a significant variable influencing the adoption of inputs such as inorganic fertilizer and improved seed (Rex, Pfaller, Rinaldi, Polak, & Galgiani, 1993).

CHAPTER THREE

: RESEARCH METHODOLOGY

3.1 Introduction

This chapter mainly described how the research was carried out on the topic of the study. It covered the area of study, research design, the population of study, sampling design, sample size and its determination and data collection and management.

3.2 Research design

This is a technique a researcher employs to logically and cogently integrate the various study components. It's an essential component of every research project since it describes the procedures and methods that can be followed in order to evaluate data, guaranteeing that the study is carried out in an organized and exacting way. Therefore during the time of my research both quantitative and qualitative approaches were used, these are considered complementarily in line with Dey (1993) who state that enumeration depend on adequate conceptualization which cannot ignore numbers. Qualitative according to Marshall and Rossman(1989) was designed appropriately for in depth research, this approach was chosen due to the fact that accuracy was centralized to it. It minimized bias and maximized reliability of the results. The study was gender focused where both men and women were selected.

3:3 Research area

The study was under taken in Agule county, Pallisa district in mainly three parishes i.e. Omotoi, Dudi and Kateki parishes in Oboliso sub county. The choice of these three locations was influenced by the low participation of women in Agro-forestry practices. Therefore, there was need to involve women participation in Agro-forestry practices so as to ensure steady livelihood and food security of local households

3.4 Target population

The target population was mainly women farmers practicing agro-forestry particularly in Dudi, Omotoi and Kateki parishes in Oboliso Sub County.

3:5 Sampling

3:5:1 Selection of parishes

Three parishes were selected from seven Parishes with in Oboliso Sub-County, Pallisa District

3:5:2 Selection of respondents

Sixteen (16) farmers (women, men, Parish leaders, Representatives of NEMA, etc) were randomly selected from each parish irrespective of their level of education, resulting in a total of 50 respondents including the researcher.

3:5:3 Sample size

A sample of 50 respondents was selected from the target population including one extension worker.

3:6 Data collection

The data was collected in June, 2024, from 50 randomly selected farmers in Oboliso Sub County, Pallisa district through individual interviews using a well structured questionnaire. The women farmers were selected from 3 parishes based on their location sub county. The researcher was able to consult the research supervisors, parish leadership about the research and the aim of the study and expressed the need to conduct an interview and structured questionnaire with farmers in their areas especially women. Selected participants were visited by the researcher to seek their willingness to participate in the study. The methods of data collection used included; structured questionnaire, interviews and observation.

3:6:1 Interviews

Face to face and telephone interviews were carried out with respondents who participated in the study as key informants. This was mainly to target key respondents like parish leaders, women and men involved in Agro-forestry.

3:6:2 Observations

In addition to the above methods, observation as a method of data collection was also used. Here the researcher moved around the three parishes with the intention of getting access to cultivation sites of those farmers who practice Agro-forestry(Shukla, Desai, & Modi, 2020).

3:6:3 Data analysis

The data was analyzed using Microsoft Excel and Statistical Package for Social Sciences (SPSS) and finally a report written and submitted to the department of agriculture Busitema University.

CHAPTER FOUR

: PRESENTATION OF RESULTS AND DISCUSSION

4.1 Introduction

This chapter shows the results and the discussion of the data that was collected in the field. It includes the demographic information (gender, age , marital status, level of education/working status), agro-forestry participation, livelihood impacts of agro-forestry, impacts on food security, land ownership and participation in agro-forestry, empowerment and decision making, challenges faced by women in agro-forestry and their solution and solutions taken to address the challenges.

4.2 Demographic information

4.2.1 Gender of the respondents

Table 1, the gender of the respondents

Gender Category	Frequency(n=50)
Male	12
Female	38
Total	50

From the table above, 24% of the respondents were males and 76% were females. This indicated that more women participated in the data collection process since they were the target population as compared to men whose percentage was less than that of women.

4.2.2 Age of the respondents

Table 2, the age of the respondents

Age(years)	Percentage
15-25	20
25-35	50
35-45	20
Above 45	10

The results in table 2 above indicate that 20% of the respondents were aged between 15-25 years, 50% were aged between 25-35%, 20% were aged between 35-45 years and 10% were aged above 45 years. This indicates that most of the respondents were aged between 25-35 years within which they are most likely to be economically stable. These study findings are in line with (makombe, 2006) who found out that most of the people involved in informal economic and environmental conservation practices were aged between 20 and 49 years

4.2.3 Marital status of the respondents

Table 3, marital status of the respondents

Status	Percentage
Married	80
Single	20

This shows that the majority of the respondents (Women) were married (80%) were married and 20% of the respondents were not married. Therefore there is much willingness by women to participate in Agro-forestry (crop growing, animal rearing and tree planting) in order to produce food to support their families hence food security and livelihood has been improved in some villages like Omotoi and Kateki.

4.2.4 Working status of the respondents

Table 4, working status of the respondents

Status	Percentage
Working	18
Non-working	76
Student	6

The results indicated in *table 4* above reveals that 18% of the respondents were working, 76% fell under non-working class and 6% were students.

4.3 Land ownership and participation of women on agro-forestry

4.3.1 Land ownership

Table 5, land ownership of women

Size of Land	Frequency (n=50)	Percentage(%)
Less than 1ha	24	48
1-5 ha	20	40
6-10ha	06	18
More than 10ha	00	00
Total	50	100

From the table above, it's indicated that 24 respondents (women) owned less than 1 hectare, 20 owned between 1-5 hectares, 04of the respondents owned between 6-10 hectares and none of the respondents owned more than 10 hectares of land. Therefore very many women were carrying out agro-forestry practices on less than 1 hectare and these participants who had more than 2 hectares gave much attention to crop growth than tree planting. This is because most of the women had negative attitude towards tree growing due to the belief that trees needs a lot of land, take long to mature and that trees could not increase on food security. Hence they took crop growing as their major prior activity so as to provide food for their families and the community.

4.3.2 Agro- forestry participation

Activities engaged by the respondents

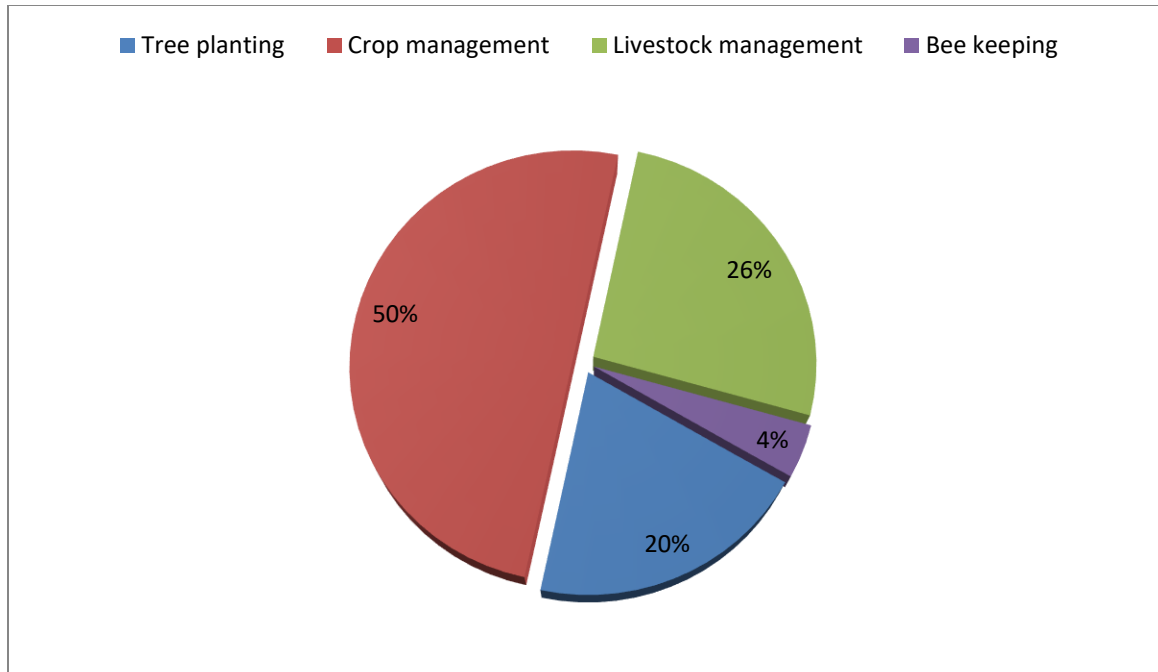


Figure 1, Shows the women participation in different agro-forestry activities

From the table above, many respondents (50%) were involved in crops growing, followed by livestock rearing with 26%, 20% carried out tree growing and 04% in bee keeping. This indicated that majority of the respondents were involved in crop management and livestock rearing because of ready market, minimal capital and local knowledge required. However, tree planting is also practiced but not at a greater percentage because some farmers suggested that, trees take long to mature, small size of land and lack of improved tree species which can mature faster. Bee keeping was also least practiced activity in these areas because bees are dangerous or aggressive’

4.4 Challenges faced by women in agro forestry participation

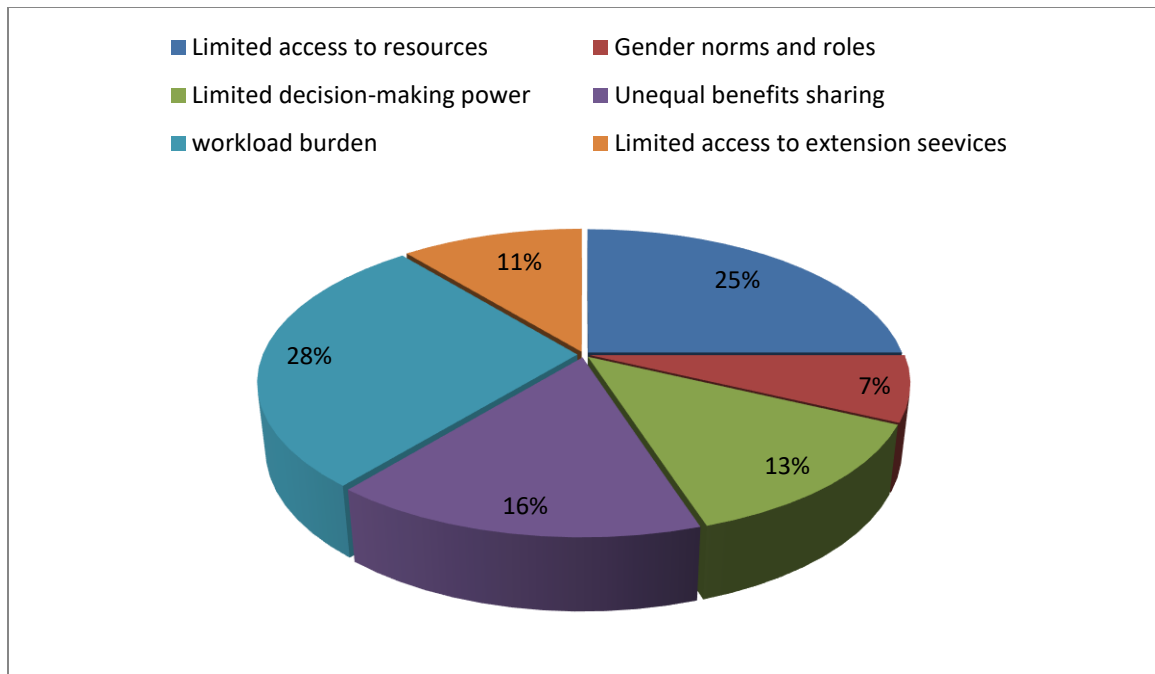


Figure 2: Major challenges faced by the women participating in agro forestry

According to the findings from the table above, I found that the major challenge faced by women farmers was workload burden in Agule County. This was shown by the highest percentage(28%) of women who declared to be suffering from this problem. Heavy workload of women affects their ability to fully participate in agro forestry initiatives due to multiple responsibilities within a household and the community.

In addition, 25% of the respondents suggested that limited access to resources such as land, credit, inputs like tree seedlings, fertilizers, etc denies them opportunity to effectively participate in agro forestry activities such as tree planting, crop management, livestock rearing in Agule County. This is because women do not have legal rights over the ownership and use of land as well as lack of collateral security so as to allow them acquire loans from lending institutions such as Banks. This therefore denies them chance to fullyparticipate in agro forestry.

From table 7 above, 07% of the respondents faced a challenge of Gender Norms and roles in their communities. These women said that traditional beliefs often dictate that certain tasks or enterprises within agro forestry are more suited for men, leading to women being excluded from decision-making processes or high value activities.

Basing on the information obtained from data collection, 13% of the respondents in Agule County faced a challenge of limited decision-making power. Women said that, they are always denied opportunity to take decisions when it comes to agro forestry practices by their spouse. Therefore this hinders their ability to invest in or expand agro forestry enterprises.

From the table 7 above, it was also indicated that 16% of women were disadvantaged on benefit sharing. Women raised complains that “most of the agro forestry products of higher commercial value such as timber are often controlled by men while products of lower value or those considered part of their traditional role like firewood are left for them. This reduces their interest to participate in agro forestry.

The data collected from table 7 above, shown that 11% of the respondents(women) faced a challenge of limited access to extension services like workshops, seminars and sensitization on improve technologies and methods in agro forestry management. Women said that this leaves them incompetent, that is, with limited skills and knowledge on modern technologies, improved tree species and proper management practices so as ensure maximum production of food to promote food security and improved livelihood of people.

4.5 Solutions that should be taken to address the challenges.

“Increase the level of women participation in agro forestry so as to increase food security and improve their livelihood”

Steps to increase women participation in agro forestry, increase food security and livelihood should be taken in different levels as shown in the table 8 below.

Table 6: Possible solutions to the problems faced by the women in agro-forestry

Level	Action points/measures
Policy and programmatic	(i) Gender-sensitive policy (ii) Gender mainstreaming (iii) Targeted programs
Community and Household	(i) Awareness and sensitization

	(ii) Community engagement (iii) Household decision-making
Capacity building and support	(i) Training and capacity building (ii) Access to credits and resources (iii) Mentorship and Networking
Addressing gender-based Constraints	(i) Addressing gender-based violence (ii) Challenging gender stereotypes (iii) Childcare support

Basing on the challenges mentioned above, I was able to come up with the following action measures that should be taken to address the challenges so as to increase women participation in agro forestry, food security and improved livelihood. These measures/ action points can be seen in levels as follows.

4.5.1 Policy and programmatic level

Gender-sensitive policies; Policies that address gender inequality protect women rights such as paid family leave, equal pay for equal work for both men and female should be developed by the concerned institutions.

Targeted programs; Programs that target women such as facilitating and strengthening of women’s agro forestry association, holding separate meetings for women farmers should be designed so as to provide training, credits and technology access

Gender mainstreaming; The government and concerned institutions like international Union of Forest Research Organizations (IUFRO), World Agro forestry Centre should integrate gender considerations especially women into agro forestry programs and projects such as tree planting, selling of agro forestry products.

4.5.2 Community and Household level

Awareness and Sensitization; Associations like African Women’s Network for Community development should be extended to the villages by extension workers and

concerned officials so as to raise awareness about women's roles and potential in agro forestry.

Community Engagement; Engagement with the community can be encouraged through building relationships, identifying champions and involving women in decision-making. This can establish trust with women through regular interactions, encourage women who are already engaged and ensure women participation in planning respectively.

Household decision-making; joint decision making can be encouraged through creating conducive environment and use of gender-sensitive language so as to foster an inclusive and respectful atmosphere and avoid language that reinforces gender biases. This can also support women's involvement in agro forestry so as to ensure steady food security and livelihood.

4.5.3. Capacity building and support

Training and capacity building; provide women with agro forestry training, entrepreneurship skills and technical assistance. This can be done through collaborating with institutions like Indian Council of Agricultural Research (ICAR) and National Research Centre for Agro forestry(NRCAF)

Access to credit and resources; Government and other financial institution like private lending institutions should provide financial literacy training, microfinance programs, and collateral-free loans and women empowerment programs. This can improve women's access to credit and resources, enabling them to improve their economic stability, independence in agro forestry activities hence increasing food security and livelihood

Mentorship and Networking; this can be done through agro forestry networking, international Union of Forest Research Organizations (IUFRO) and International Centre for Research in Agro forestry (ICRAF). This can provide opportunities for women to connect learn and grow in their agro forestry endeavors, helping to address gender disparities and improve food security

4.5.4. Addressing Gender-Based Constraints

Addressing gender-based violence; this can be done through implementing initiatives such as policy reforms, awareness campaigns and support service by government and policymakers, NGOs and Organizations respectively to address gender-based violence and ensure women's safety.

Challenging gender stereotypes; such as traditional gender roles, men are stronger than women, men are better leaders and decision-makers than women. This can help to promote equitable and inclusive society where individuals (women) can reach their full potential in agro forestry participation regardless of their gender

Childcare support; Organizations such as NGOs, private sector companies, family members and childcare centres should be given to women who are willing to participate in agro forestry. This can enable them overcome a significant barrier to participate in agro forestry activities.

CHAPTER FIVE

: CONCLUSIONS AND RECOMMENDATIONS

This chapter consists of the conclusions of the study and the recommendations of the study in line with each objective.

5.1 Key findings

During the data collection on women participation in agro forestry practices, the following were found to be the key points:

1. Biggest percentage of women(48%) owned less than 1hactare of land (table 5)
2. Women engaged in various agro forestry activities like crop management, livestock management, tree planting. However, crop management was the major agro forestry practice conducted by many women(50%) (figure 1)
3. Women who were practicing agro forestry in Agule county faced various challenges (figure 2)
4. Women participation in agro forestry has the capacity to improve the food production and livelihood. However. This can only be possible if they are given chance to take part in agro forestry practices

5.2 Conclusion;

Basing on the above findings, the following conclusions were made

5.2.1 Agro forestry practices by women in Agule

Women in Agule county were practicing agro forestry activities like tree planting, livestock management and bee keeping on small skill which could not benefit there families and community. However, crop growing was the major agro forestry activity so as to provide food to their families.

Women participation in agro forestry was still traditional in Agule county. This was due to use of rudimentary tools caused by lack of support by the concerned body that could provide modern tools and equipments to women farmers inform of incentives, loams, etc.

In conclusion women farmers in Agule county are willing to carry out all agro forestry practices like their counterparts, when they are empowered, supported as well as considering them in everything concerning agro forestry.

5.2.2. Challenges faced by women participating in agro forestry in Agule

The major challenges faced by women who participate in agro forestry activities according to the research findings include the following:

- (i) Limited access to resources like land, credits
- (ii) Gender norms and roles
- (iii) Limited decision-making power
- (iv) Unequal benefit sharing
- (v) Workload burden in their families
- (vi) Limited access to extension services

5.2.3 Solutions /Strategies to encourage women farmers to participate in agro forestry practices

According to the findings obtained from women. The following strategies were suggested to encourage women participation in agro forestry

- (i) Formulating gender-sensitive policy
- (ii) Conducting gender mainstreaming
- (iii) Focusing on targeted programs like holding separate meetings for women farmers
- (iv) Creating awareness and sensitization of women by extension workers and concerned officials
- (v) Community engagement through building relationships involving women in decision-making process
- (vi) Training and capacity building through collaboration with institutions like Indians Council of Agricultural Research
- (vii) Engaging women in household decision-making through creating conducive environment and use of gender- sensitive language.

5.3 Recommendations

Basing on the findings of this study conducted in Agule county, Pallisa district, the following recommendations are suggested.

1. Local government officials and Non-Government Organizations (NGOs) should encourage women farmers to participate in agro-forestry so as to increase the level of food production in Agule county, Pallisa district.
2. Gender-sensitive policies should be revised to ensure equal pay for equal work for both men and female so as to address gender inequality and protect women rights in Agule county, Pallisa district.
3. The government and concerned officials should conduct Targeted programs such as facilitating and strengthening of women's agro forestry association, holding separate meetings for women farmers so as to provide training, credits and technology access(Islam & Sultana, 2005).
4. Organizations like international Union of Forest Research Organizations (IUFRO), World Agro forestry Centre(ICRAF) can carry out **gender mainstreaming** in order integrate women into agro forestry programs and projects such as tree planting, selling of agro forestry products(Islam & Sultana, 2005).
5. Concerned Associations and organizations such as African Women's Network for Community development should employ extension workers to **sensitize** women farmers in various villages in order to create **awareness** about women's roles and potential in agro forestry(Kristjanson et al., 2019).
6. **Government should collaborate with organizations like** Indian Council of Agricultural Research (ICAR) and National Research Centre for Agro forestry (NRCAF) **to train and build capacity of women farmer. This enables them to acquire** entrepreneurship skills and technical assistance(Charles & Wellard, 2023).
7. Government and other financial institution like private lending institutions should provide financial literacy training, microfinance programs, collateral-free loans and women empowerment programs. This can improve women's access to credit and

resources, enabling them to improve their economic stability, independence in agro forestry activities hence increasing food security and livelihood(Shackleton et al., 2011).

8. Mentorship and Networking; this can be done through agro forestry networking, international Union of Forest Research Organizations (IUFRO) and International Centre for Research in Agro forestry (ICRAF). This can provide opportunities for women to connect learn and grow in their agro forestry endeavors, helping to address gender disparities and improve food security(Agarwal, 2010){Shackleton, 2011 #213}.
9. Policy reforms, awareness campaigns and support service should be conducted by government and policymakers, NGOs and Organizations respectively to address gender-based violence and ensure women's safety.
10. Gender stereotypes, for example, traditional gender roles, men are stronger than women, men are better leaders and decision-makers than women can be challenged by the government, this helps to promote equitable and inclusive society where individuals (women) can reach their full potential in agro forestry participation regardless of their gender
11. Organizations such as NGOs, private sector companies, family members and childcare centre's should give childcare support to women who are willing to participate in agro forestry. This can enable them overcome a significant barrier to participate in agro forestry activities.

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