

JIMMA UNIVERSITY SCHOOL OF GRADUATE STUDIES COLLEGE OF
SOCIAL SCIENCES AND HUMANITIES DEPARTMENT OF SOCIOLOGY

A THESIS SUBMITTED TO COLLEGE OF SOCIAL SCIENCES AND
HUMANITIES IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
THE AWARD OF MASTERS DEGREE IN SOCIAL ANTHROPOLOGY

GENDER BASED DIFFERENCES IN ACCESS TO SERVICES AND
INFORMATION PROVIDED BY AGRICULTURAL EXTENSION AGENTS IN
YAYYO WOREDA

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Declaration

I hereby declare that this thesis entitled, "*Gender based differences in access to services and information provided by agricultural extension agents in yayyo woreda* ", has been carried out by me under the guidance and supervision of Dr. Dejene Teshome and Dr. Mulunesh Abebe

This thesis is original and has not been submitted for the award of any degree in any University or institutions.

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Approval

This thesis entitled "*Gender based differences in access to inputs, services, and information provided by agricultural extension agents: a case of yayoo woreda*" has been approved for proposed work for partial fulfillment of the degree of masters in Social Anthropology.

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ABSTRACT

This study tried to investigate gender based difference in access to agricultural extension services provided by local agricultural extension agents in four kebeles of Yayyo Woreda to better understand the context at the ground and suggest ways forward to improve the disparity between male and female farmers who are household heads. Four variables; access to agricultural extension services, gender, farmers' socio-economic background and attitude toward local extension agents were used in the study. More importantly, the study examined if access to agricultural extension services which comprises access to information, access to agricultural inputs (fertilizer, seeds and pest sides), and access to professional and technical support (training) was mainly affected based on gender difference. Moreover, the study tried to address socio-economic difference among male and female headed farmers and their attitudes toward agricultural extension services and agents as well. Using explanatory research design quantitative data from 145 respondent and qualitative data obtained through FDG and interview was analyzed descriptively and inferentially. The results showed that both male and female headed farmers had contact with local agents though men headed farmers frequently did so. Moreover, men headed farmers cultivated comparatively more land than female headed farmers and as well as used full agricultural extension service packages especially in agricultural inputs (accessing seeds, fertilizer and pest sides. Women headed farmers shown to have less resources and time to devote to agricultural activities. These resulted in lesser amounts of harvest on the part of female headed farmers. Notable difference neither was also nor found between male and female headed farmers with regard to access to information and training. Therefore, difference in access to agricultural extension services was not a direct result of gender factor. But gender indirectly affected access to agricultural extension services since men headed farmers were found in a better position in terms of socio-economic background and comparatively afford to pay for agricultural extension services especially agricultural inputs. Female headed households are expected to do both house chores and agricultural works simultaneously, so they are more responsible than male headed households. To ensure equitable access of agricultural extension services especially fertilizer, seeds and pest sides, it is important to facilitate timely credit for female headed farmers not only to buy these inputs but also to help them own oxen to improve their usage of extension services and coverage of cultivated agricultural land.

Acknowledgement

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Abbreviations and acronyms

EAS - Extension and advisory services

AEAs - Agricultural Extension Agents

FAO - Food and Agriculture Organization of the United Nations

IFPRI - International Food Research Policy Institute

MOFA - Ministry of Food and Agriculture

IFAD - International Fund for Agriculture Development

ILO - International Labor Organization

MDGs - Millennium Development Goals

FGD - Focus Group Discussion

SPSS - Statistical Package for Social Science

ADLI - Agricultural Development led industry

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CHAPTER ONE

Introduction

1.1 Background of the Study

Various recent reports by different development organizations and eminent scholars in the field of agriculture highlighted the necessity of investing in Agriculture for African continents to be self-sufficient in food security by 2050 (World Bank, 2000). To untangle the subsistence mode of traditional agricultural practice requires not only paradigm shift in thinking and practice but also requires initiatives and clear policy directions and strategies. Many developing countries have long recognized agriculture as a fundamental driver of economic growth and poverty reduction. This is never truer than Ethiopia where agricultural sector supports more than 80% of the economic activities of the country. According to the some estimates eighty-three percent of the population of Ethiopia directly depends on agriculture for their livelihoods and agriculture contributes up to 85 percent of employment, 50 percent of gross domestic product (GDP) and up to 90 percent of foreign currency (IFPRI, 2010).

Cognizant of the role of agriculture in the Ethiopian economy, government policy emphasizes agricultural development-led industrialization (ADLI). To facilitate this many agricultural development programs had developed and put into practice over the years. One of the notable such programs is agricultural extension which commenced to help subsistence farmers improve their productivity via access to information, inputs and services provided by agricultural development agents assigned across rural districts. Though a lot has been achieved, the program has its own ups and down since its inception. One of the challenges is disparity in the provision of agricultural extension program services based on gender (Quisumbing et al., 2008).

The role of women in discharging agricultural activities is not by any means negligible especially in Africa. Nevertheless, culturally in many societies agriculture taken us a man's job while women primarily entrusted to take care of domestic chores. Thus, women's contributions in agriculture is belittled and in some instances denied. Contrary to this, the fact of the matter is that women in developing countries, particularly in rural areas of developing countries, play a major role in household and community survival strategies and contribute significantly to the rural economy and agriculture in particular. According to 2010/11 FAO, report women compromise on average 43 % of agricultural labour force in developing countries, ranging from

20% in Latin America, to 50 % in Eastern Asia and sub-Saharan Africa (FAO, 2011) .The report argues that reducing gender inequalities in access to productive resources and services could produce an increase in yields on woman's farmers between 20 % and 30 % which could raise agricultural output in developing countries by 2.5 % to 4% (FAO, 2011). Realizing these gains require men and women farmers to have access to information, skills and tools they need to improve their yields. This in turn requires reforming the institutions involved in the delivery of those services.

Recent figures regarding men's and women's access to advisory services continues to show relatively low levels of contact between farmers and extension agents, with disproportional lower levels of access for women. World Bank review in 2010 on selected regions of Ethiopia, India and Ghana found that the levels of access to agricultural extension varied by region and by type of crop or livestock, but that women's access was regularly less than men's across all regions included in the review. In Ethiopian, female farmers' access stands at 20 % compared with men's, who enjoyed 27% more access. The World Bank report (2010) indicates that the disparity in access to extension services is wide between male-headed and female-headed households.

Despite their essential contributions to the lives of their families and communities, women are deprived of equal access to productive resources, markets and services (Fontana et al, 2010; FAO, 2011; World Bank B et al, 2009). Women, particularly those in male-headed households, tend to participate less than men in formal activities like training, cooperatives, and official meetings (Frank, 1999). Women also tend to be less dominant in managing and controlling some of the household resources such as household incomes, land and capital. Moreover, women shoulder excessive workload and face difficulties of accessing or controlling the key factors of production, and lack of appropriate information, extension and advisory services (ILRI, 2011; World Bank, 2008).

Furthermore, programs and projects that do not pay due attention to gender in their activities, often increases existing inequalities between men and women (World Bank, 2008). Such gender based constraints have adverse implications to the performance of agricultural development initiatives, food and nutrition security, and wellbeing of the rural poor in particular (FAO, 2011).

On the other hand, increasing opportunities for women influences productivity and agriculture led growth. (FAO, 2011) estimates show that if women had the same access to productive resources and services as men, they could increase productions on their farms by 20–30 %. This increase could raise total agricultural output in developing countries by 2.5–4 % and reduce the number of hungry people in the world by 12–17 %. Furthermore, when women’s productivity and incomes increase, the benefits amplify across families and generations, because women are known to devote a larger fraction of their income to their children’s health and nutrition (USAID, 2011).

Recognizing the contribution of women to agricultural production is necessary for raising productivity and fostering development. In lieu of this the government of Ethiopia designed policies, initiatives and affirmative actions to help the disadvantaged groups of societies including women. The aim of this study is therefore to look into or investigate the disparity between male and female farmers by comparing the provision of agricultural extension program services, inputs and information provided to them by agricultural extension workers or agents in Yayyo Woreda, Iluu Abba Bora Zone, South West Ethiopia.

1.2 Statement of the problem

The trend in Ethiopia regarding the roles of women in agriculture is not apparently different from the situation in other developing countries. Many reports produced by various non-governmental organizations and development agencies substantiate this fact that disparity based on gender exists in the provision of agricultural extension program services; access to information and inputs regardless of favorable policy direction and affirmative initiatives geared to mitigate the gap. However, this claim is rarely supported through empirical findings as little has been studied. In other words, it is difficult to find studies that focused on average rural male and female headed farmers who head the household in the country regarding difference in their access to agricultural extension information, input and services provided by local extension agents. This study is therefore designed to break the ice by considering men and female farmers in *Yayyo* Woreda as a case to understand the prevalent context at grass root level. This was done via explanatory research design which makes use of mixed methods and case study strategies. The study had four variables; access to agricultural extension services as a dependent variable, gender, socio

economic characteristics and attitude toward extension agents as independent variables. By and large this study attempted to answer the following four basic research questions.

1.2.1 Basic research questions;

- Do women and men farmers who are household heads get equal access to agricultural extension services provided by local extension agents?
- What factor(s) affect female farmers significantly in access to agricultural extension services?
- What are the mechanisms which help to achieve or ensure equitable agricultural extension service provision for both sexes?

1.3 Objective of the study

1.3.1 General objective

The main purpose of this study was to examine gender disparity in access to agricultural extension services provided by agricultural extension agents in four kebeles of Yayyo Woreda in Ilu Ababor Zone, in Oromia regional state.

1.3.2 Specific objectives

The specific objectives of the study are;

- To examine existence of equal agricultural extension service access for both male and female farmers.
- To examine factor (s) significantly influencing access to agricultural extension services for both male and female farmers.
- To identify constraints faced by men and women farmers alike in accessing and implementing agricultural extension services or programs.
- To assess effective mechanisms that ensure equitable provision of agricultural extension services both for male and female farmers.

1.4 Significance of the study

This study has a number of significance for different segments of the society. First the study provide empirical data and evidence to researchers who want to pursue study in the area under investigation. By comparing services, inputs, information provided by agricultural extension workers to male and female headed farmers, the study will reveal or portray the existing context and phenomenon regarding provision of agricultural extension services in Yayyo Woreda .

This in turn would have positive implication for stakeholders and decision makers at different levels. For instance, the result will help decision makers to address the disparity if any between male and female farmers and how best to do it. In other words, the result help authorities concerned agricultural extension program to make necessary informative changes to the way they do their business. In short, this study would be helpful to understand how agricultural extension services; access to information and inputs varies depending on the gender of the farmers.

1.5 Scope of the Study

Scope of the research refers mainly to geographical scope, conceptual scope and methodological scope. In terms of geographic scope the setting of this study is Yayyo Woreda. It is located in south western part of Oromia Regional State in Iluu Abba Bora administrative zone. The zone is bordered in east by East Wollega and Jimma zones, in West by Gambella Regional State, in South by SNNPR and in North by West Wollega. The total area of the zone is 1,633,156.6 hectares divided into twenty two districts including *Yayyo*. The subjects of the study are male and female farmers who selected from some kebeles of the Woreda

Conceptually, this study only looked into difference between male and female farmers who are household heads in terms of access to inputs, services, and information provided by agricultural extension program services. The economic benefit or gain for male and female farmers due to disparity in access to input and information is beyond the scope of this research. The research is an explanatory study that would make use of mixed method and case study strategy.

1.6 Ethical Issues

Ethical issues emerge as one plan research; seek access to organizations and to individuals, collect, analyses and report data. According to Saunders, M., Lewis P., and Thornhill, A (2007) in the context of research, ethics refers to the appropriateness of behavior in relation to the rights of those who become the subject of the study, or are affected by it. In short ethics is the ‘moral principles, norms or standards of behavior that guide moral choices about our behavior and our relationships with others’. Therefore in this study as a researcher I tried my level best to ensure that the research was designed methodologically in sound and morally in a defensible way to all

those who were involved. For instance, prior to participation consent sought from the participants and privacy of possible and actual participants maintained.

1.7 Organization of the report

The report organized into five chapters. The first chapter provides brief introduction and background of the study by highlighting notably the need for the study topic, the research gap, basic research questions, and objectives. The second chapter is about literature review. Research methodology is presented in the third chapter. Chapter four presents data analysis, interpretation and discussion of the results of the study by comparing against earlier empirical findings. Finally, in the last chapter, summaries, recommendation and implication of the study was presented.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theoretical Literature

2.1.1. Agricultural Extension

Different authors define agricultural extension services in different ways. For example, Birner et al (2009) and Chirstopois (2010) define agricultural extension and advisory services (EAS) as a systems and mechanisms designed to build and support the capacity of rural farmers and other stake holders. For Maunder (1972) and Asiabaka (2002) on the other hand agricultural extension service refers to input, access to credit, access to agricultural agents, and knowledge and attitude of farmers towards agricultural extension services. According to them the main roles of agricultural extension services are for improved income and nutrition purposes. Anderson (2007) on his part defines agricultural extension and advisory services as the entire set of organizations that support and facilitate people who engaged in agricultural production, by solving their problems and providing information, skills and technologies to improve their livelihoods. There are certain basic elements across all the above definition. Access to information, inputs and technologies. Apart from these we understand that agricultural extension services are meant to improve primarily the livelihood of farmers not for commercial farmers.

2.1.2 Gender disparity in access to agricultural extensions services

Regarding gender based differences in access to agricultural inputs the results of different empirical research were mixed. Findings from several studies contradict initial expectations that female household heads are disadvantaged in their fertilizer usage and adoption of rates. Some research had showed that there were no significant gender differences in access to agricultural inputs. Some relevant recent studies are reviewed below.

Freeman and Omiti (2003) and Bourdilan et al (2002) , found that the gender of household head has no significant effect on adoption and intensity of use in organic fertilizer in 399 households in Kenya and among stratified sample of 136 to 200 households in Zimbabwe . In sample of 156 households in Malawi, Chirwa (2005) also found that men and women plot owners do not differ significantly with respect to fertilizer adoption. However, in parallel analysis using the sample

but using headship as an indicator of gender he found female headed household are less likely to adopt fertilizers.

Horrell and Krishnan (2007) found no significant differences in maize fertilizer usage per acre by female household heads in Zimbabwe. Doss and Morris (2001) study of 420 maize farmers in Ghana found that no significant differences in rates of adoption between male and female farmers.

Doss and Morris (2001) study, in Ghana found that once researchers controlled for access to complementary inputs (land, education, labor), they found no significant differences in rates of modern seed variety adoption between male and female farmers. Similarly, Thapa (2009) found little evidence for gender differences in value of farm output in 2,360 Nepalese household after controlling for access to inorganic fertilizers and other key inputs. However, other empirical research had showed that there is gender gaps (differences) in using for a wide range of agricultural technologies, including machines and tools, improved plant varieties and animal breeds, fertilizers, pest control measures and management techniques (FAO, 2011).

Udry et al., (1995) studied gender differentials in farm productivity in African households and found that plots controlled by women for all crops have significantly lower yields in comparison with men controlled plots within a same year and same cropping patterns. He stated that this is due to women have less access than men to productive resources and opportunities.

Gilbert, et al., (2002), analyzed a cropping system trial survey in Malawi and found a significant gender differences in fertilizers use among the 1,385 farmers selected to participate in the trial.

Tiruneh et al., (2000) in their study of households in Ethiopia found that a significant higher proportion of male than female heads of household use improved wheat.

Atreya's (2007) , exploration of pesticide knowledge , attitudes and practices , among 434 household in Nepal found that almost all respondents were aware of negative impacts pesticide use on human health and environment , however , female were at higher risk of incomplete usage because they had less knowledge of how to use pesticide safely. Generally, many of these studies however, identify alternative channels through which gender disparities persist, such as receiving lower prices for yields or through poor access to markets.

The provision of agricultural extension can lead to significant yield increases. However, extension provision in developing economies remains low for both women and men, and especially, women tend to make less use than men of extension services (Meinzen-Dick et al., 2010). Even though large number of women throughout the world contribute to national agricultural output and family food security, studies from Latin America, South Asia, and Sub-Saharan Africa consistently indicate that rural women are more likely constrained in having access to agricultural extension services than men of equivalent socio-economic conditions (Fletschner, 2009; Diagne et al., 2000).

Fletschner, (2011) states , “the agricultural extension services have been largely designed, shaped and applied with the male head of household as the intended client, and fail to recognize that women are active, productive and engaged economic agents with their own financial needs and constraints ". Gurmesa (2011) in his survey found that the proportion of women farmers received advisory services from extension agents during production season of 2008/9 was low which indicates that the existing linkage between development agents and women farmer is low. In his studies he also realized that participation of women on training, field day and demonstration is very low (Gurmesa et al. (2011)).

Luchia (2010) also found that women participation in modular training was poor, and indicated the need to arrange alternative training programs for women farmers. According to a 1988–89 FAO survey of extension organizations covering 97 countries with sex disaggregated data only 5 percent of all extension resources were directed to women. Moreover, only 15 percent of the extension personnel were female (FAO, 1993).

A study in Malawi found that women had no contact with extension agents and their participation was very limited (Hirschmann, D., and M. Vaughan (1984). Gilbert et al., 2002 indicated that for livestock-related extension services, the results are slightly better. : For example, in Ghana, 0–24 percent of female-headed households and 0–15 percent of female spouses have been accessed versus 5–34 percent of male-headed households in the same country, and in Karnataka, India, 71 percent of female-headed households versus 78 percent of male-headed households have been accessed by agricultural extension agents (World Bank and IFPRI, 2010).

Use of inputs as the actual application of that resource in productivity at the individual or household level are obtained through extraction, purchase, or barter. Access to agricultural input such as new technology, improved seeds, fertilizer, insecticides and herbicides are crucial in maintaining and improving agricultural productivity. As different reports indicates that the use of purchased inputs depends on the availability and accessibility of complementary assets such as land, credit, education and labour, all of which tend to be more constrained for female-headed households than for male-headed households (World Bank, FAO and IFAD, 2009).

2.1.3 Factors affecting provision of agricultural extension services

Pandey et al., (2010) studied the gender role in rice farming in the Philippines and stated that gender roles and gender relations within households are strongly influenced by social, cultural, economic circumstances, family structure, and the degree of labor participation in the marketplace. Women tend to have less in access to inputs, services, information, and training provided by agricultural extension workers than men. For example, Food and Agricultural Organization (FAO) survey identified some constraints which limit women's access to extension services. These are: cultural restrictions which prevent male extension officers from meeting women farmers, domestic responsibilities which sometimes limit women's mobility, making it harder for them to attend meetings and trainings away from home.

2.1.3.1 Cultural factors

Farming wives rarely gain different advice from the government extension services. Yet women, whether heads of household, wives or daughters, are actively involved in farming throughout the country. Given the cultural constraints inhibiting the interaction of men and women, female farmers both in male and female-headed household are not benefiting as well from the extension system.

Dagnachew (2002) states that extension efforts and technological packages usually address men farmers. Extension agents are most likely to visit male farmers than women farmers. The low level of women's education and cultural barriers prevent them from the exposure to extension channels by their initiative. The male-dominated extension system also often restrains from contacting and working with women due to the strong taboos and value systems in the rural areas.

According to Tewodaj et al. (2009) the national goal is that women should account for 50 percent of extension users, but many barriers to women's participation in extension programs were found, including cultural norms and the inappropriateness of the "women's development package" for female household heads, as opposed to farm wives.

Danida also (2004) found that women's workloads, cultural norms prevented them from travelling, and their domestic obligations made it more difficult for them to access training. He stated that in order to develop effective training and successfully target women, it is important to address their role within the household. The scheduling of training often does not take account of the chores that women are expected to carry out, such as cooking, cleaning and childcare (Collett and Gale, 2009).

The extent to which the extension agent's gender mattered differed significantly according to socio-cultural contexts. In many cases, though, male extension agents were less able to reach women farmers, as cultural and social restrictions on interactions between genders may constrain or even prohibit the kind of contact that extension training entails. Cultural attitudes among male extension agents may also limit the importance they attach to women's training, and they may lack understanding of women's priorities and training needs (ibid or Collett and Gale, 2009).

As Developmental Agricultural workers' are evaluated mainly based on the types and number of technology packages they were able to disseminate and the number of farmers they could reach out, the DAs are more likely to focus their efforts to the relatively well to do farmers. This is because women are generally not perceived to be farmers or are poor and live in remote locations. This would further limit women's access to extension and other services including credit, fertilizer and improved seed. In addition to these factors, rural women's ability to improve production and productivity is also by gender determined responsibilities such as feeding and caring for the family (Deribe, 2007).

2.1.3.2. Socio - economic Factors

Socio-economic status also clearly plays a role in women access to agricultural extension services. There was a great deal of social differences between educated extension agents and illiterate farmers, regardless of gender. Lack of education and higher levels of illiteracy among women is constraint to women receiving extension services (FAO 2011).

Better-educated farmers are somewhat more likely to receive farm or home visits by extension officers, and a much greater proportion of them than illiterate farmers attend extension community meetings and visit demonstration plots. Better-endowed farmers similarly access extension services more than asset-poorer farmers (Tewodaj et al., 2009). In many areas, women's formal schooling and levels of literacy lag behind those of men. Low levels of literacy may constrain women's access to extension support, as differing levels of literacy often are not taken into account in designing extension materials.

According to (Collett and Gale, 2009) literacy is connected with confidence, and women with low literacy levels may lack the confidence to participate in training or to seek help from trainers if they do participate illiteracy presents constraints to farmers in their daily lives and it generally affects their activities and programs especially in farming .

It was noted that trainers should ensure that training they deliver was practical and accessible. They would have been able to give smallholders more technical information and support if farmers had been able to read written materials. Literacy, therefore, remains a priority for training in rural settings (Collett and Gale, 2009).

Only training that accurately addresses the needs of women smallholders, and takes into account both their different productive activities and their needs in accessing and applying training, offers serious prospects for raising women's productivity and improving their livelihoods. A proper understanding of the challenges women face is important for evaluating what kind of training makes a difference to women smallholders and for designing programs that effectively target women smallholders. Women's sense that training is not relevant to them is often one of the major barriers that prevent them accessing training (Collett and Gale, 2009).

For the livestock types kept near the home, women are frequently responsible for providing feed and water for the livestock and for dairy production, and in some areas are involved in collecting animal dung from grazing lands. As is the case with many spheres in agriculture, control over the sale of and proceeds from livestock and livestock products is generally gender differentiated, with women tending to market small livestock and poultry, as well as dairy products and eggs. The sale of cattle and other large livestock is for the most part in the male domain. Agricultural extension packages tailored for women have emphasized sheep and goat husbandry and poultry. This gender division of agricultural activities has constrained women's access to extension

services. Horticultural production and the raising of poultry and small ruminants has been considered a part of “home economics” until quite recently, leaving women excluded from other kinds of extension advice, training, and credit (Tewodaj et al., 2009).

Financial capital can also have wider impacts on access to extension, as a lack of assets impacts on the time available for activities other than production for the home. It was found that 40.8% of farmers did not take part in the existing sub-Saharan Africa extension program because of a lack of working capital. High transaction costs prevented the poor from accessing a wide range of services, and that travel time and costs were a major issue (Collett and Gale, 2009).

2.1.3.3 Institutional Factors

Agricultural education and training in general in sub-Saharan Africa has persistently failed to meet the needs of farmers. This failure has lessened from a system that historically has been fragmented, with limited relationships between providers and the market, and a top-down approach. It was for this reason that, the World Bank has called for a more demand-led system, and for training in rural areas to move beyond delivering technical agricultural skills towards helping farmers mobilize, engage with markets, and manage both farm and non-farm businesses (World Bank et al., 2008).

On the other hand, according to Deribe (2007) due to attitude, the agricultural extension services in Ethiopia are male dominated from the national to the local levels. Front-line male extension workers tend to work mainly with male farmers, they do so less often with female household heads.

According to different studies, in most developing countries, the sizes of extension staffs and budgets are small relative to the number of farmers. This forced various approaches to the delivery of extension services to be devised in an attempt to spread the resources of the extension institutions as far as possible (Stavis, et al. 1979, Eicher and Baker, 1982). These approaches ranges from direct one-to-one contact between the extension agent and each farmer, which usually reaches a limited number of farmers, to mass communication methods that have the potential to reach a great many farmers.

Concerning this Tewodaj et al. (2009) has noted that agricultural extension in Ethiopia emphasize top-down approach to service provision. Agricultural extension workers have

received relatively hard allocations for joining farmers in technology packages and have been evaluated on this basis. Extension also works through “model” or “progressive” farmers, who tend to be better off and male. That means communication is mostly one way, with extension agents transferring knowledge to farmers.

2.1.3.4 Agriculture, staff and Management

Another constraining factor that make Women to have less in access to inputs, services, and information, provided by agricultural extension workers than men is the way that agricultural institutions and policy are designed, staffed and managed.

According to (Mamusha, 2007) most of agricultural extension workers have been men, except in the field of home economics, and they have provided services mainly to heads of household, regardless of gender. For example, in Ethiopia, the public sector is the primary source of extension services. Historically, services have been provided via a top- down, command-and-control mode, in which extension workers receive relatively hard quotas for signing up farmers for fixed technology “packages,” and farmers are expected to serve as passive jugs for the knowledge transferred to them.

Doss and Morris, (2001) stated that there are very few women agricultural extension agents who interact with sister women farmers also, their inability to speak the formal language, through which extension services are offered.

Besides the deficiency of extension program to target women farmers, women’s participation is constrained by practices like the expectation that women need husband’s approval for any legal transaction (Doss, Cheryl R. 1999).

2. 2 CONCEPTUAL FRAME WORK

This part contains theories which used as a perspective from which the research was discussed. Feminist theory is chosen for this study to guide the discussion as it provides the role women and men in the development process. Feminist theory has much to offer in terms of its ability to open the door to asking new and different questions about women's roles and their participation in the development process. Feminist anthropology has been intimately tied to the study of gender and its construction by various societies (that examines both women and men. The theory also attempted to focus more broadly on the issue of gender (Leonardo, 1991).

The year 1970s was the period when dialogue on the place of women in development reached its peak. As a result, successive development approaches have been developed by development professionals. These approaches are women in development (WID); gender and development (GAD); and empowerment. Supporters of Women in Development (WID) approach have identified the marginalization of women in development arena and their emphasis was to bring an end to the exclusion of women from development systems by integrating them in the development process through specific projects for women (Debusscher; 2010).

WID perspective has played a huge role in decreasing the exclusion of women from the development process. However, by the late 1970s, feminist development practitioners suspected the effectiveness of WID perspective for its focus 'on women in isolation' without considering the prevailing unequal gender relations Hence, after the 1995 the WID paradigm was replaced by the GAD paradigm since the former was considered as a conservative approach that maintains the gendered status quo (Moser , 1993).

In contrast to WID approaches, the GAD uses the concept of 'gender' instead of 'women'. The GAD considers women in the complexity of 'social relations of gender'. As a holistic approach, it urges for fundamental changes in socio-economic and political structures. It sees women as agents of change rather than passive recipients of development efforts. According to the GAD, top-down state intervention can play a major role in women's emancipation. The main instrument of the GAD is the 'gender- mainstreaming'. The instrument of 'gender-mainstreaming' aims at integrating women's concerns in the design, implementation, and evaluation of all socio-economic and political policies. Therefore, the success of the GAD depends in the first place on the willingness of the state that very often fails (Young; 1997).

The most recent approach, is the empowerment approach that argues a gender-sensitive transformation of the structures in which women's subordination is prevailed. The approach however, argues that this transformation should begin at grass-roots level in a 'bottom-up' manner in that women increase their socio-economic and political powers. According to the empowerment approach, the state, as a male-dominated institution, is not in a position to defend women's concerns. Therefore, the empowerment approach underlines the necessity of women to increase their socio-economic, political, and cultural power so that they can challenge the

existing structures by themselves. The main instruments of the empowerment approach are awareness raising and political mobilization (Kabeer; 2001).

This study considers the empowerment approach to be the most critical and promising, and puts a special emphasis on it. Therefore by conducting this research on a Comparative study on services , inputs and information provision to male and women headed households by agricultural extension workers in Yayyo Woreda, I have tried to clearly articulate feminist perspective (empowerment approach) on answering questions of women's place in development.

CHAPTER THREE METHODOLOGY

3.1 Research Design

This study employed explanatory research design to establish causal relationships between variables; access to agricultural extension services, gender, socio-economic characteristics, and farmers attitude. In explanatory study the emphasis is on studying a situation or a problem in order to explain the relationships between variables (Saunders, et al., 2007). The study adopted case study strategy to examine the prevailing situation in some four selected kebeles of *Yayyo Woreda*. Robson (2002) defines case study as ‘a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence. Hence case study strategy is of particular importance if one wishes to gain a rich understanding of the context of the research and the processes being enacted (Cohen, Manion and Morrison, 2007). At the same time the strategy allows mixed methods of data collection techniques and analysis.

3.2. Setting and population of the study

The study was conducted in *Yayyo Woreda* on four randomly selected kebeles among the total of 17. The study area constitutes 25% of the *Woreda*. The participants of the study are male and female farmers who are household heads. According to the information I obtained from the district currently there are about 2535 households in the randomly selected four kebeles. Among these 2168 were male headed farmers while the rest 367 were female headed households. The sampling frame constituted 419 farmers from Geri 43 female and 376 male farmers, 746 from Gechi 128 female and 617 male farmers, 293 from Amuma 47 female and 246 male farmers, and 1078 from Sombo 149 female and 929 male farmers.

3.3 Sampling techniques and Procedure

Sampling is the process or technique of selecting a suitable sample for the purpose of determining parameters or characteristics of the whole population. Multistage sampling techniques will be employed as both qualitative and quantitative data is sought for the study. First four rural county or kebeles were randomly selected among the seventeen kebeles of the *Yayyo Woreda* from the list. Then stratified sampling method used to determine the sample size for quantitative data. Kebeles in which farmers came from were used as strata and

proportionately 20% of male and female headed farmers were drawn from each kebele as a sample size from 2535 total population of the study. As opposed to this, purposive sampling methods used to determine the participants who were involved in the study to obtain qualitative data.

3.4 Sample size Determination

To estimate sample size, an estimate of the population proportion is also needed. With 20% of population proportion, at 95 degree confidence level and 5 percent margin of errors the actual sample size or valid sample size can be computed by the following formula and procedure.

$$n = p\% \times q\% \times \left[\frac{z}{e\%} \right]^2$$

Where

n is the minimum sample size required

$p\%$ is the proportion belonging to the specified category

$q\%$ is the proportion not belonging to the specified category

z is the z value corresponding to the level of confidence required

$e\%$ is the margin of error required.

$$\begin{aligned} n &= 20\% \times 80\% \times [1.96/5]^2 \\ &= 2535 \times (0.392)^2 \\ &= 2535 \times 0.154 \\ &= 246 \text{ participants} \end{aligned}$$

It is important to adjust the minimum sample size (Sunders p: 614) using the following formula as the former one is often used for large population size especially above 10,000.

$$n' = \frac{n}{1 + \left(\frac{n}{N} \right)}$$

Where

n' is the adjusted minimum sample size

n is the minimum sample size (as calculated above)

N is the total population.

$$\begin{aligned} n' &= 246/1+(n/N) \\ &= 246/1.097 = 224 \end{aligned}$$

Therefore, the adjusted minimum sample size is 224 farmers.

3.5 Methods of data collection

An explanatory research which often employs case study strategy may use various data collection techniques in combination (Cohen et al 2007, Saunders et al 2007, Creswell 2012). These may include, for example, interviews, observation, documentary analysis and questionnaires. This is important to triangulate multiple sources of data to ensure that the data tells what it supposed to tell. Thus both qualitative and quantitative data was collected for the study. The qualitative data was meant to explain the quantitative analysis.

3.5.1 Qualitative Data

Qualitative data collected mainly through key informants interview and focus group discussion. The participants were selected based on certain criteria to fit the objectives of the study. Sixteen farmers were involved in the key informants interview in total, 8 male and 8 females i.e., two male and two female headed farmers from each kebeles. In addition government officers have been identified for key informant's interview based on their responsibilities in implementing and supporting the Woreda agricultural extension services. In this procedure, a total of 10 interviews (one vice administration official of the Woreda, two agricultural officers from each kebele were interviewed. In addition, two FGD were conducted one with agricultural extension experts and the other with farmers both male and female headed. Each FGD involved six participants both men and women headed farmers together.

3.5.2 Quantitative Data

Quantitative data was collected through survey questionnaires developed and partially adapted. The questionnaires were developed based on the concepts and ideas related to the variables of the study and reviews of related literature. They involved different types of items ranging from open to close. This can be found attached under the appendix.

3.6 Method of data Analysis

Data obtained through survey questions was analyzed through descriptive and inferential statistics via data management software SPSS 20. Descriptive tools such as frequency, percent, mean and standard deviation were employed to explore factors causing gender disparity in access to agricultural extension services along with remedial solution. Thus the descriptive tools used to

answer the first and third research questions. Chi-square and t-tests were inferential statistical tools used in the study. These mainly used to answer the second research question which examined significance of gender based disparity in access to extension services by comparing scores of important significant factors among male and female farmers. Moreover, qualitative data was categorized thematically and analyzed, interpreted and summarized based on content analysis of issues under discussion. Qualitative data discussed based on quantitative results.

Chapter four

Analysis and Result

4.1 Preliminary Analysis

This part mainly concerned with preparing the data for analyses. It specifically includes examination of the data, response rate, and reliability test.

4.1.1 Examination of the data and response rate

Survey questions were managed to be distributed to 180 participants out of a total of 224 sample size who should have been covered from four Kebeles of Yayyo Woreda. Among these 152 individuals filled the questionnaire. However, 7 participant's questionnaires were rejected due to numerous missing responses. Finally, 145 questionnaires deemed fit and used for analysis in the study. Based on this, calculated response rate stands at 64.73%.

Following this the quantitative data was coded and fed into SPSS 20. Before analysis the data was also inspected visually and via plot for instance, by looking for further missing values, identifying outlier and out of range values. This is important to ensure that statistical assumptions were met for every analyses required.

4.2 Descriptive statistical Analysis

4.2.1 Demographic Variables

A total of 145 participants who took part in the study came from four different Kebeles, 36 from Geri, 49 from Sombo, and 30 each from Amuma and Gechi as illustrated below in the figure.

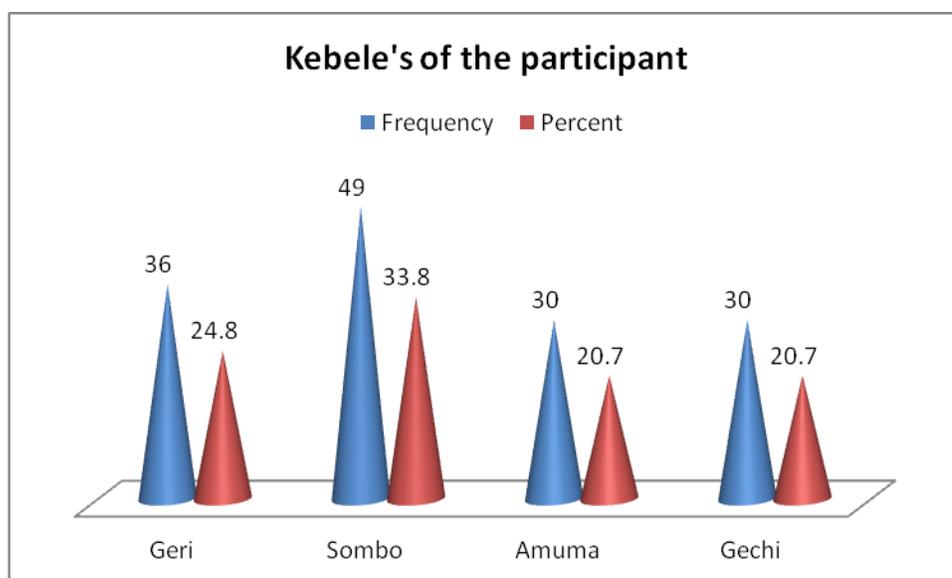


Figure 1: Kebeles' of the respondent

The participants involve 89 males and 56 female household headed farmers' as illustrated below in the table. From the data we can see that the majority of the respondents are male headed farmers.

Table 1: Gender of the respondents

Sex					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	89	61.4	61.4	61.4
	Female	56	38.6	38.6	100
	Total	145	100	100	

Source: **Household filed survey 2017.**

Regarding the level of education 46 (31.7%) farmers cannot read and write or they have not yet received neither formal nor non-formal education, 58 (40%) at least can manage to read and write, 33 (22.8%) of them received primary school education while only 7 (4.8%) managed to enroll in secondary school. No one has attended higher education yet.

Investment in human capital is one of the key ingredients of sustainable economic growth and development. The level of human capital available in the household is strongly correlated with measures such as agricultural productivity, household income and nutritional outcomes (FAO, 2011). Gender gaps exist in education, especially among male headed and female headed

household. Evidence from table 2 below, regarding level of education among male and female headed can reveal the disparity that has existed in education. The lower primary and no education population are less likely to read with understanding making them unable to read with understanding instructions of use of a product (e.g. pesticides, fertilizer's) etc. that may provide vital information to agricultural development.

31.7% of the participants have never received both formal and non-formal education. Among these uneducated individuals the majority 21.5% are female headed farmers. In other words, most female headed farmers cannot read and write. Contrary to this, only a few numbers of male headed farmers 10.4% found to be illiterate; the majority at least can read and write. More can be observed from the following table.

Table 2: Sex and level of education

		Sex * Level of Education Cross tabulation					Total
		level of education					
		No	read and write	primary school	secondary school		
Sex	Male	Count	15	40	28	6	89
		% of Total	10.40%	27.80%	19.40%	4.20%	61.80%
	Female	Count	31	18	5	1	55
		% of Total	21.50%	12.50%	3.50%	0.70%	38.20%
Total	Count	46	58	33	7	144	
	% of Total	31.90%	40.30%	22.90%	4.90%	100.00%	

Source: Household filed survey 2017.

4.2.2 Socio-economic Characteristics

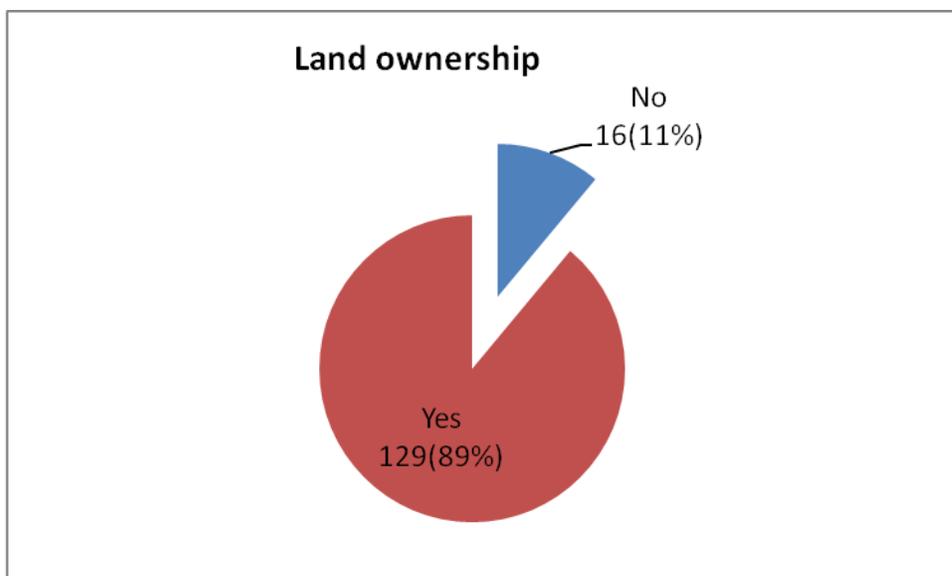
A Socio-economic characteristic involves variables such as land ownership, size owned, size cultivated, use of agricultural inputs such as seeds, fertilizer, pest sides and harvest or yield per annum. Attempt had been made to investigate and evaluate if significant difference exists between male and female headed farmers who are their household heads in relation to the aforementioned variables.

Table 3 Socio-economic characteristics summary statistics:

		Statistics				
		land ownership	Size owned in hectares	total size cultivated	agricultural inputs used in last harvest	annual yield from last harvest
N	Valid	145	145	145	140	141
	Missing	0	0	0	5	4
Mean		0.89	2.41	1.91	3.85	42.91
Median		1	3	2	5	38
Mode		1	3	2	5	40
Std. Deviation		0.314	1.169	0.972	2.046	27.693
Minimum		0	0	0	1	4
Maximum		1	4	4	6	120

Source: Household filed survey 2017.

Land is the most important household asset for households that depend on agriculture for their livelihoods. Access to land is a basic requirement for farming and control over land is synonymous with wealth, status and power in many areas. Strengthening women's access to and control of land is an important means of raising their status and influence within the communities. Improving women's access to land and security of tenure has direct impacts on farm productivity and can also have far-reaching implications for improving household welfare (FAO, 2011). The first column of the above table shows the nature of land ownership and the mean, median and mode scores exhibits overwhelming land ownership among the participants. The size of land ownership in hectare ranges from nil to 4 and average ownership is (Mean=2.41 hectares) and most own 3 hectares (mode= 3). Total size cultivated was much smaller and the mean and mode score almost show 2 hectares per farmer in average. Participants were given six options (1=fertilizer, 2=pest sides, 3= seeds, 4= none, 5= 1&2, and 6=all) regarding the agricultural inputs used in the last harvest. The result shows overwhelming use of fertilizer and pest sides (mode=5). Annual yield from last harvest indicates modest gain (mean= 42 and mode=40 kuntals). Each of the variables in the table summary also treated at some length separately below.



Source: Household filed survey 2017.

Figure 2: Land ownership

Overwhelming number of farmers almost 89% reported land ownership as can be observed in the figure above while 11% did not. The majority of this group basically farms someone else plot of land on the basis of contractual agreement to share the yield or as a day laborer. As can be observed from the following Cross tabulation table, from 16 farmers who reported absence of land ownership almost 15(10%) were male headed farmers. Only a single female farmer reported that she did not own the land.

4.3 Inferential statistical analysis

Table 4: Gender*land ownership

		Sex * land ownership Cross tabulation			
		land ownership		Total	
		No	Yes		
Sex	Male	Count	15	74	89
		% of Total	10.30%	51.00%	61.40%
	Female	Count	1	55	56
		% of Total	0.70%	37.90%	38.60%
Total	Count	16	129	145	
	% of Total	11.00%	89.00%	100.00%	

Source: Household filed survey 2017.

This difference observed in terms of landownership among female and male headed households is statistically significant at ($\chi^2 = 7.950$, $df=1$ & $p=.005$). However, the magnitude of the variation or difference between the groups is minor since the value of chi-square is very close to the cut-off value (6.18) which is the minimum expected count.

Table 5: land ownership chi-square tests

Gender*land ownership Chi-Square Tests						
	Value	D f	Asymp. Sig. (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)	Point Probability
Pearson Chi-Square	7.950 _a	1	0.005	0.005	0.003	
Continuity Correction ^b	6.489	1	0.011			
Likelihood Ratio	9.931	1	0.002	0.003	0.003	
Fisher's Exact Test				0.005	0.003	
Linear-by-Linear Association	7.895 _c	1	0.005	0.005	0.003	0.003
N of Valid Cases	145					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.18.

Size owned and cultivated

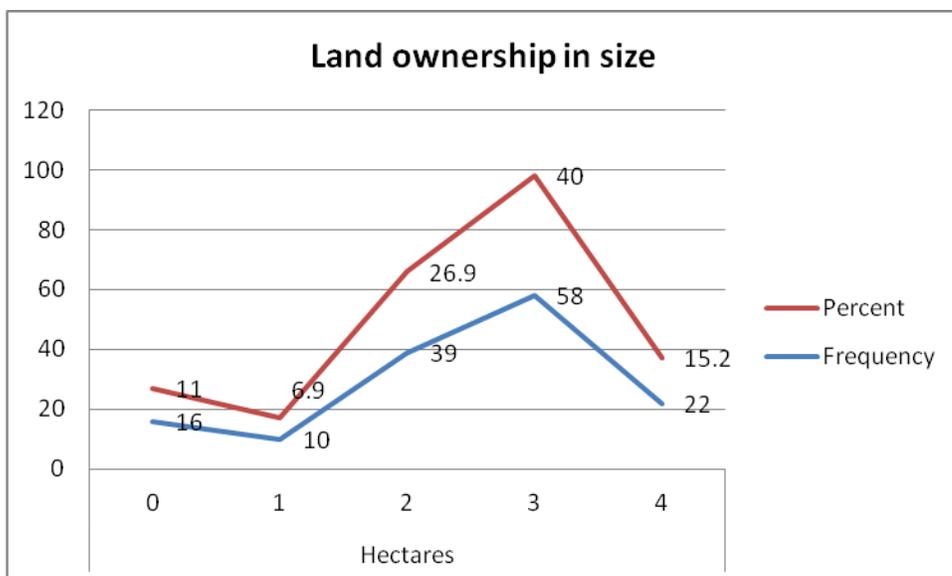


Figure 3: land ownership in size

The majority of the farmers roughly about 58(40%) own three hectares of land. Around 22 (15.2%) individuals reported to have own about 4 hectares, 39(26.9%) farmers own 2 hectares of land. Only 10(6.9%) farmers own less than two hectares of land. In terms of the size owned there is no statistically significant difference between male and female headed farmers. Equally more than half in both category own 3 and more hectares as the following table depicts visually. However from the result of FGD and interview it was understood that , even if most of female headed farmers had owned land they, had rent their land for other farmers who have no land , the problem of most of female headed household's is that , they did not have oxen , which again affect their participation in agricultural extension services provided by extension agents such as trainings , information , fertilizer etc.

Table 6: size of land owed in hectares*sex cross tabulation

total land owned in hectares * Sex Cross tabulation				
		Sex		Total
		Male	Female	
1	Count	8	2	10
	% of Total	5.30%	1.40%	6.20%
2	Count	19	20	39
	% of Total	13.10%	13.80%	26.90%
3	Count	35	23	58
	% of Total	24.10%	15.90%	40.00%

4	Count	12	10	22
	% of Total	8.30%	6.90%	15.20%
Total	Count	89	56	145
	% of Total	61.40%	38.60%	100.00%

Source: Household filed survey 2017.

However, there is definitely significant variation in terms of the cultivated land size between male and female headed counter parts ($\chi^2=46.664$, $df=7$ & $p=.000$) as illustrated in the table below.

Source: Household filed survey 2017.

Chi-Square Tests						
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	44.818 ^a	7	0	0		
Likelihood Ratio	53.414	7	0	0		
Fisher's Exact Test	46.664			0		
Linear-by-Linear Association	.823 ^b	1	0.364	0.382	0.195	0.023
N of Valid Cases	145					

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is .39.

Source: Household filed survey 2017.

The majority of female farmers 43(29.7%) out of 56(38%) managed to cultivate only two hectares .Comparatively one-third of male headed farmers cultivated the same size in last harvest. But more than 32% of men headed cultivated 3 and more hectares. Therefore, men headed farmer's cultivated more land than female headed farmers as demonstrated in the figure. This is the case because from interview result it was understood that a great deal of female farmers do not own oxen. Oxen are the most important components of the livestock as a source for ploughing and preparing the land for cultivation. Lack of access to livestock in general and to oxen in particular proves to be quite problematic for farming households. Since many of female headed households are without oxen, they usually are forced to give their lands to other farmers to share cropping arrangements, which is disadvantageous for Female headed household (Frank, 1999, Quisuimbing et al., 2010). Regarding this idea one of female headed informants asserted the condition in this ways;

*I have no oxen that I can used to cultivate the land
Therefore, I cannot cultivate all land that I have
To cultivate the land I have used hired labor (male headed farmer)*

And we share the product according to their agreement after the harvest.

Not to cultivate all the land that they have and using hired labour to cultivate the land had indirectly affect the amount of product that female headed household farmers had produced which again affect the services provided by agricultural extension agents.

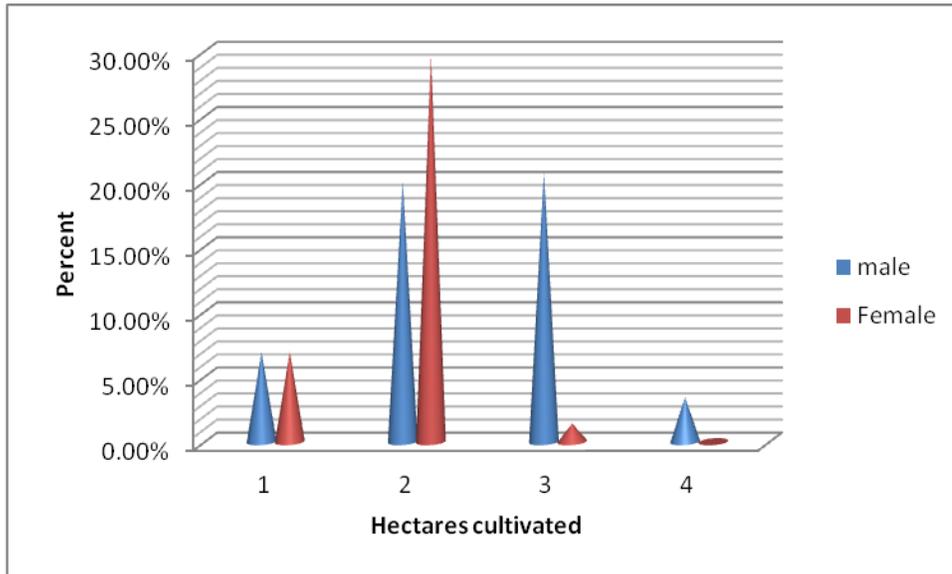


Figure 4: Hectares cultivated

Source: Household filed survey 2017.

Agricultural inputs used in last harvest

Table 7: Agricultural inputs used in last harvest

Agricultural inputs used in last harvest					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fertilizer	46	31.7	32.9	32.9
	Seeds	1	.7	.7	33.6
	Fertilizer & pest side	66	45.5	47.1	81.4
	Fertilizer, seeds, & pest sides	26	17.9	18.6	100.0
Total		140	96.6	100.0	
Missing	System	5	3.4		
Total		145	100.0		

Source: Household filed survey 2017.

Use of chemical fertilizer is believed to increase annual agricultural production (Rebecca, 2012). And the use of purchased inputs depends on the availability of complementary assets such as land, credit, education and labour, all of which are more constrained for female headed households than for male headed households (FAO, 2011).

As clearly depicted in the table above around 46 (31.7%) farmers only used fertilizer as agricultural inputs in the last harvest, about 66 (45.5%) farmers used both fertilizer and pest sides while fertilizer, seeds and pest sides were in combination used by about 26 (17.9%) farmers. seed was the least favored or sought after agricultural inputs by the farmers. The following Cross tabulation table indicates whether there was variation among female and male household heads.

The trend was similar for all other inputs.

Chi-Square Tests						
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	22.701 _a	4	0.000	0.000		
Likelihood Ratio	32.425	4	0.000	0.000		
Fisher's Exact Test	28.059			0.000		
Linear-by-Linear Association	4.382 ^b	1	0.036	0.038	0.021	0.004
N of Valid Cases	140					

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is .39.

Source: Household filed survey 2017.

According to the assumption of chi-square test cells which have expected count less than 5 should not exceed 20%. This assumption is not maintained in the above test. In such case it is advisable to use and report Fisher's exact test (Cohen, 2007). Based on this the statistics table above shows statistically significant variation ($\chi^2=28.059$, $df=4$ & $p=.000$) between male and female headed farmers in the use of agricultural inputs (fertilizer, seeds and pest sides). Although, nearly equal percentage of male and female headed farmers used fertilizer (17% & 16%) and pest sides (23.6% & 23.6%), about 18.6% of men headed farmers used the three inputs in combination (fertilizer, seeds and pest sides) while none of the female headed farmers did so. Women showed less tendencies to use improved seeds.

In supporting the above ideas the result of interview with agricultural extension agents, as well as from the FGD with male and female headed farmers it was understood that most of female headed household farmers are less interested to use inputs provided by agricultural extension agents as well private sectors because of many factors. Concerning this one of my female headed informants had told me in this ways;

Most of the time I have used the dust around my home as fertilizer because I have no capital to afford agricultural inputs provided by government the credit which was facilitated by the government also can't reach for us on time this indirectly affects the yield that I can got .

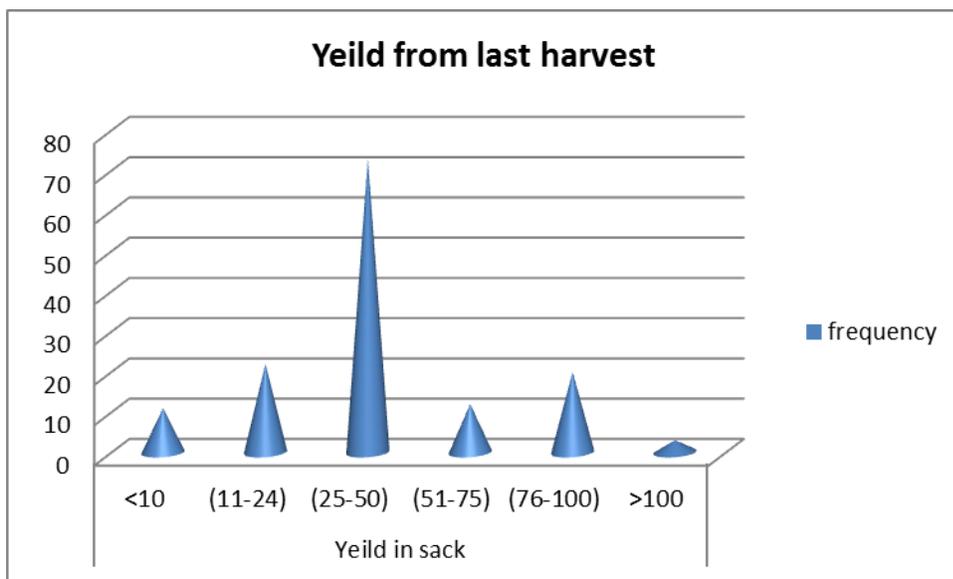


Figure 5: Yield from last harvest

As can be read from the figure above from all four kebeles in total around 11 farmers harvested 10 kuntals and less, 22 earn yield between 11 -24 kuntals , the majority about 73 farmers harvested between 25- 50 kuntals, 12 farmers earn between 51-75 kuntals, 20 earn between 76-100, and only three managed to obtain more than 100 kuntals . The following group statistics table shows men farmers in average harvested 49.44 kuntals (Mean=49.44) while females headed farmers obtained far less yield of 32.7 kuntals in average. However, it is very well documented in a number of literature (FAO, 2013; Masset, 2011) that agriculture is fundamental importance for both household food consumption and nutrition.

The next contingency table illustrates if these mean difference statistically significant.

Table 8: T-test for harvest

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
annual yield from last harvest	Equal variances assumed	45.77	0	3.65	139	0	16.733	4.584	7.67	25.796	
	Equal variances not assumed			4.271	123.121	0	16.733	3.918	8.978	24.487	

Variation in terms of yield among male and female headed farmers as observed in the table above is significant. In other words there was significant difference in scores for males (M=49.44, SD=32.2) and females [M=32.7, SD=13.42; $t(123) = 4.271, p=.000$]. The magnitude of the differences in the means was moderate (eta squared=0.116) according to Cohn’s guideline sited in Pallant (2007). This means 11.6% of variation in yield attributes to gender difference.

The maximum yield female headed farmers managed to harvest last season was 50 kuntals. No one earned beyond this benchmark. All women headed farmers gained 50 and less. As opposed to this only few male headed farmers around 15% harvested 50 and less Kuntals. The majority around 74% gained yields of 50 kuntals and above as can be seen in the table below. This is understandable provided that men headed farmers out did women headed farmers in the coverage of cultivated land and use of agricultural inputs according to the discussion in the preceding section.

Yield from last harvest					
Yield in kuntals		Sex		Total	
		Male	Female		
<10	% of Total	5.70%	2.10%	7.80%	
2(11-24)	% of Total	9.90%	5.70%	15.60%	
3(25-50)	% of Total	22.70%	29.10%	51.80%	
4(51-74)	% of Total	6.40%	2.10%	8.50%	
5(75-100)	% of Total	14.20%	0.00%	14.20%	
6(>100)	% of Total	2.10%	0.00%	2.10%	
	% of Total	61.00%	39.00%	100.00%	

4.3.1 Provision of agricultural services

This part covered or dealt with participants contact with local agricultural extension agents, frequency and types of services provided to the farmers, mechanisms of training and female farmers' treatment by local extension agents.

Having contact is the first step in accessing agricultural extension services provided by the local agents. In this regard both sexes had reported having contact with local agricultural extension agents (99%). In all four Kebles the agents are found to be only males. There are no female local agents. The result of interview with vice administration and the administration of agricultural offices of the Woreda asserted this idea. He stated for us that there are only male agricultural extension agents employed in the Woreda. He stated that currently there are (35) thirty five male agricultural extension agents employed in Yayyo Woreda. Concerning the above ideas one of female headed farmers said;

The Absence of large number female agricultural extension workers doesn't have significant impacts on me. Male agricultural extension agents without any problem they approached me. But sometimes I doesn't freely newly employed male agricultural extension agents.

From the results interview as well from FGD it is well understood that it is good if there are more female agricultural extension workers as that of male agricultural extension workers. Because they may approach female headed farmers more than male agricultural extension agents

The frequency of contact illustrated in the figure below indicates 28 (19.3%) farmers having contacts with local agents sometimes, 36 farmers about 24.8% regularly meets the local agents but the majority 76(52.4%) often meet with agricultural extension workers. As the results of interview with agricultural extension workers had also showed that most of the time agricultural extension agents had contacts both male headed and female headed households equally without any discrimination. The result of interview with agricultural agents asserted that however, the difference between male and female headed had been seen while agricultural extension programs had been implemented, because since male and female headed farmers had taken agricultural extension services Women headed lags behind implementation. The following graph illustrates more details.

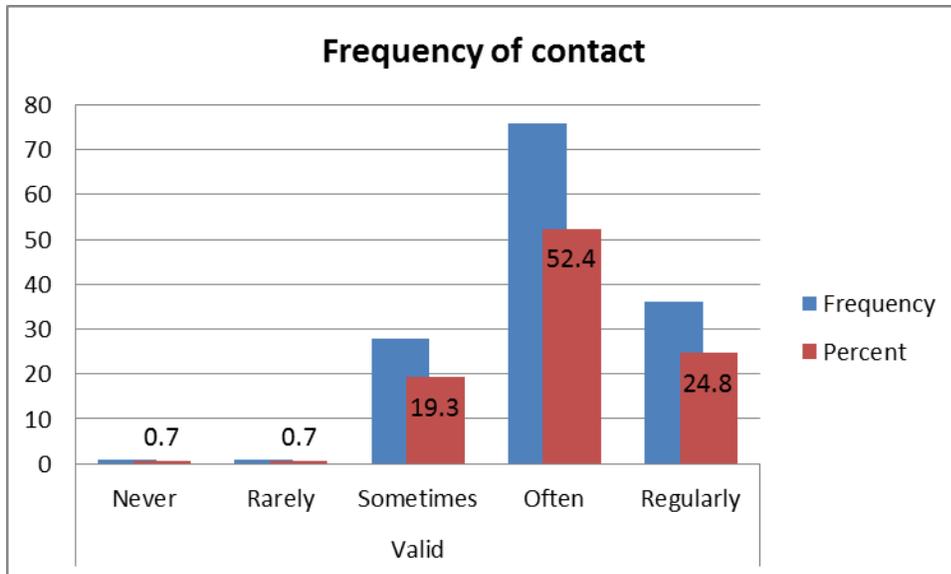


Figure 6: Frequency of contacts

Access to agricultural information through agricultural extension agent is therefore not dependent on the educational level of respondents, because majority of my informants doesn't have at least primary education, but they had contact with agricultural extension agents.

The Food and Agricultural Organization (FAO, 2011) survey identified some constraints which limit women's access to extension services. Which are: cultural restrictions which prevent male extension officers from meeting women farmers. Domestic responsibilities sometimes limit women's mobility, making it harder for them to attend meetings and trainings away from home. There are very few women agricultural extension agents who interact with fellow women farmers also, their inability to speak the formal language, through which extension services are offered. The result of the study had also showed that statistically there was significant difference ($\chi^2 = 14.495$, $df=4$ & $p = .002$), between male and female headed farmers in terms of frequency of contact with local extension workers as the following contingency table shows. Women sometimes (11.3%) and often (23.2%) meet with local agents while men often (30.3%) and regularly (21.1%) contacts local agricultural workers. Therefore, men household heads more frequently contact extension workers. The strength of the variation is modest with phi coefficient ($\phi = .316$ & $\text{sig.} = .007$).

Chi-Square Tests						
	Value	D f	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	14.182 _a	4	0.007	0.002		
Likelihood Ratio	15.746	4	0.003	0.002		
Fisher's Exact Test	14.495			0.002		
Linear-by-Linear Association	10.870 _b	1	0.001	0.001	0.001	0
N of Valid Cases	142					

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is .39.

The local extension workers provide different services to the farmers. This includes; up-to date info, agricultural inputs, training support, professional technical support and experience sharing. About 59% of the participants responded that the local extension workers can provide the entire aforementioned list while 34.5% differs and reported they often get mainly agricultural inputs and technical professional support (see row of some in the table below).

Table 9: Percentage distribution agricultural services provided

Types of services often get from extension workers					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Info	1	0.7	0.7	0.7
	Inputs	7	4.8	4.9	5.6
Valid	All	86	59.3	59.7	65.3
	Some	50	34.5	34.7	100
	Total	144	99.3	100	
Missing	System	1	0.7		
Total		145	100		

Source: Household filed survey 2017.

The question is do women and men headed farmers equally get access to these services. To find this out it is important to cross tabulate participants sex against access to different services provided by local agricultural extension agents.

Chi-Square Tests						
	Value	d f	Asymp. Sig. (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)	Point Probability
Pearson Chi-Square	3.938 _a	3	0.268	0.239		
Likelihood Ratio	4.554	3	0.207	0.213		
Fisher's Exact Test	3.65			0.268		

Linear-by-Linear Association	.613 ^b	1	0.434	0.471	0.25	0.055
N of Valid Cases	144					

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .39.

The statistics in the table shows that statistically there is no significant difference between male farmers and their female headed counterparts ($\chi^2=3.360$, $df=3$ & $p= .268$). The derived chi-square value does not indicate a statistically significant difference. To be significant the chi-square value at 3 degree of freedom should be in minimum 7.81($p<0.05$) and 11.34($p<0.01$) (Pallant 2007). Values below these points indicates occurrence of variation due to chance.

Participants were given four alternatives regarding the training mechanism employed by local extension agents. These are classroom training, demonstration sites at FTCs, on farm demonstration, and farmer’s field day. 35(24.1%) reported the frequent use of on-farm demonstration, 53(36.6%) farmers reported the frequent use of all the four mechanisms, while the majority about 56(38.6%) reported mainly the frequent use of two methods namely classroom training and on-farm demonstration as illustrated below.

Table 10: Training mechanisms used

		training mechanisms often used			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	on-farm demonstration	35	24.1	24.3	24.3
	All	53	36.6	36.8	61.1
	Some	56	38.6	38.9	100
	Total	144	99.3	100	
Missing	System	1	0.7		
Total		145	100		

Source: Household filed survey 2017.

Based on gender the statistics seems significant ($\chi^2=14.200$, $df=2$ & $p=.001$) but the chi-square value is almost equal with the cut-off value (13.61) or in other word the minimum expected count which is 13.61 as illustrated below at the bottom of contingency table. To be significant the chi-square value should surpass this point.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.200 ^a	2	0.001
Likelihood Ratio	14.842	2	0.001
Linear-by-Linear Association	3.88	1	0.049
N of Valid Cases	144		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.61.

The participants split mainly in half regarding the frequency of training they received annually. 40.7% of them said to have received training twice a year while the other equal half stated that training frequently given once per year. The frequency of training is not significantly different between kebeles ($\chi^2=13.605$, $df=12$ & $p=.327$). Similarly the frequency of training received both by male and female headed farmers is not statistically significantly different ($\chi^2=8.885$, $df=4$ & $p=.064$). Even though there is no difference between male and female headed farmers, key informants interview with agricultural extension agents result show that even though they invite both farm households' farmers are not willing to participate in agricultural extension services programs because they need incentives to participate.

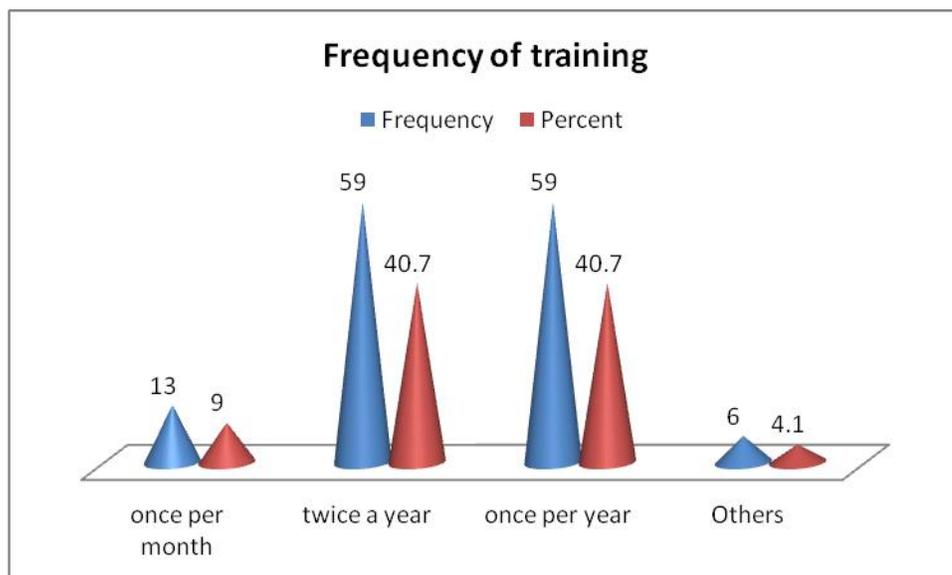


Figure 7: Frequency of training. Source: Household filed survey 2017.

Lastly local agricultural extension works did not treat female headed farmers neither differently from male headed counterpart nor provide special support across all kebeles despite local agents are being all in all found to be male in sex. As a case in point 99.3% reported equal treatment as male counter parts. Regarding the above ideas my informants anonymously agreed that even though all of agricultural extension agents are male, there is no any problem that female headed farmers faces because of sex differences.

4.3.2 Attitude toward extension agents

Attitude toward agricultural extension service agents can affect the provision of services. Five point liker scales was used for the instrument in this part. Farmers do not have unfavorable attitude toward local extension agents rather their view is neutral (mean=3.28, median=3.20 and mode=3). In other words the majority of farmers who account 110 (78%) reported to have neither negative nor positive attitude. only 28 farmers about 19% expressed having favorable attitude toward local extension agents

Table 11: Attitude toward extension agents

Attitude toward extension agents					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Neutral	110	78	78	78	
Agree	28	19	19	97.9	
Strongly agree	3	2.1	2.1	100	
Total	141	97.2	100		
Missing	4	2.8			
Total	145	100			

Source: Household filed survey 2017.

In terms of attitude statistically significant variation is not observed between male and female headed farmer as the following t-tests shows.

T-Tests

The independent-sample t test is used to compare two groups' scores on the same variable. Here it used to compare attitude mean score of male and female farmers to evaluate whether there is a difference in their opinion.

Group Statistics					
Sex	N	Mean	Std. Deviation	Std. Error Mean	

Attitude toward extension agents	Male	86	3.27	0.308	0.033
	Female	55	3.3	0.438	0.059

The group statistics table shows 4 missing responses 3 from male category and 1 from female farmers. The mean statistics for male is 3.27 and standard deviation of 0.308 and a mean of 3.30 and standard deviation 0.438 for female farmers. The Levene's test for equality of variances indicate normal distribution of the data (sig. = 0.255 > p=0.05).

Table 12: Independent sample t-test for attitude

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower		Upper
Attitude toward extension agents	Equal variances assumed	1.306	0.255	-0.463	139	0.644	-0.029	0.063	-0.153	0.095
	Equal variances not assumed			-0.429	87.861	0.669	-0.029	0.068	-0.164	0.106

Source: Household filed survey 2017.

The result in the table generally illustrates that there was no significant difference in scores for males (M=3.27, SD=0.308) and females [M=3.30, SD=0.438; t (139) =-.463, p=.644]. The magnitude of the differences in the means was very small (eta squared=0.0013).

4.3 The result of Interview and focus group Discussion

4.3.1 The result of interview with agricultural extension workers

The result of interview with agricultural extension workers and local Woreda officials and local agricultural extension agents.

As the results of interview showed that Agricultural extension program is most of the time was conducted in group; farmers had got the services of agricultural extension services both in groups and also individually and tried to implement Agricultural extension program provided by agricultural extension workers. According to the results of interview with agricultural extension workers the difference between farmers however had seen while agricultural extension programs had been implemented. As the results of interview had showed that most of the time agricultural extension workers had contacts both male headed and female headed households equally without any discrimination.

To increase agricultural productivity full packages had been implemented by agricultural extension workers that incorporated the usage of different agricultural inputs such as urea, dap, and selected seed, cattle rising, modern bee farming, and cattle hybrid.

As the results of interview had showed that most of framers had taken and implemented full agricultural extension packages program and that currently per hectare the products of model framers had even reached up to 70 kuntals. And that farmers had also began to sow seeds in row. Farmers had also begun to rotate or change what they had farmed year by year. With regard to cattle's feeding elephant grass as well as Disho grass had widely used by farmers to feed their cattle.

The major problems in implementing agricultural extension package in the Woreda is that even if agricultural extension services are provided to all farmers equally farmers are not equal in taking and implementing agricultural extension programs. As the results of interview had showed that female headed household famers are late in taking Agricultural Extension package's but better in implementation, in contrary female headed households are easily takes Agricultural Extension package's programs but lacks behind male headed households in implementing it.

Female headed households most of the time interested to use the dust things found around their home as fertilizer. A female headed household also wants to farm around their home areas, rather

than going too far areas. If the necessary advice or training is provided they also want to be engaged in honey productions.

In Yayo Woreda most of agricultural extension workers are male but, the absence of female agricultural extension workers did not have significant impacts on the implementation of agricultural extension programs especially on female headed household.

4.3.1.2 The results of FGD with Female and Male Headed Households

In Yayo Woreda the participation of both male headed and female headed households in agricultural extension services is good. Women's had highly participated in agricultural extension program, they perform different and many activities in the household task such as preparing foods and the like in addition to the known agricultural works.

There is also an impact (problems) that may be created by household (men) on women. The results of FGD had showed that sometimes there is a conflict on resources between husbands and the wife.

In providing agricultural extension services (fertilizer, pesticide etc.) both male headed and female headed households equally participated. In providing agricultural extension services by agricultural extension workers there is no discrimination made based on gender. Without any discrimination based on gender both male headed and female headed households had got equal services provided by agricultural extension workers.

When female headed and male headed households came together in informal and formal institution the most important issues they had raised is that about the prices of products farmers had produced and sold is to be cheap and goods and services farmers had bought is to be high prices. Farmers had sold agricultural products with cheap prices for example farmers raised that farmers had sold one Kuntals of maize with 400 birr, in contrary farmers had bought one kuntals of Teff with 1000 to 1500 birr since in the area Teff is not produced.

The results of FGD had showed that an agricultural activity is a long process; starting from the beginning to the end many peoples had taken parts. Most of the time it was female headed households that had perform agricultural activities by hired labor, and according to my informants the prices of hired labor is 500 to 600 birr per months, male headed households also

perform agricultural activities by hired labor especially during the periods of harvesting the prices of hired labor is 50-60 birr per day .

As the results of interview had showed that both male headed and female headed households had equally participate in public sphere and forward their ideas freely , the participants of focus group discussion had said that currently female (women) are highly and freely participate in in public activities .

As the results of FGD had showed that no special attention is given to female headed household, but there are a very few female headed household model in the Woreda comparing to male headed households. As the results of focus group discussion had showed that farmers had performed agricultural activities with collaboration of their families' members.

The results of focus group discussion had also showed that currently both male headed and female headed households had equally participated in public sphere and had speak freely in meetings , even in the presences of male headed households .

Generally, the major problems of farmers (both male headed and female headed households) in Yayyo Woreda are the following;

1Rural urban migrations, which makes the rest of people to be affected.

2, The provision of agricultural inputs did not be provided to farms with credits, that mean agricultural inputs such as pesticide, and farmers had been bought in cash by the framers.

3The cost of fertilizer is beyond the buying capacities of farmers.

4Even if some of the kebeles of the Woreda are nearer to the urban areas of the Woreda they had no the provision of light services

Most of the time female headed household had rent their land for other farmers who have no land , the problem of most of female headed household's is that , even if they had land , the did not have oxen , but however , Female Headed Household had taken parts or participates in getting the services provided by Agricultural Extension workers such trainings , in getting information , fertilizer provision and involving in compost preparation . The results of FGD with both male headed household and female headed household had showed that agricultural

extension workers had provided equal services for both female and male headed household regarding the provision of fertilizer, in giving advice etc.

4.3.1.3 .THE RESULTS OF INTERVIEW WITH WOREDA ADMINSTRATIVE BEREAU

According to the result of interview with vice administration of the Woreda and the administration of agricultural offices of the Woreda there are both male and female agricultural extension workers employed in the Woreda . And currently there are (35) thirty five male agricultural extension workers and 2 (two) female agricultural extension workers employed in Yayo Woreda.

Absence of large number female agricultural extension workers doesn't have significant impacts. Male agricultural extension workers without any problem they approach female headed farmers. But sometimes female headed farmers doesn't freely interact male agricultural extension workers (saalfachuun jira). Accordingly it is good if there are more female agricultural extension workers as that of male agricultural extension workers. Because they may approach female headed farmers more than male agricultural extension worker. Currently, female headed farmers can play a great role in agricultural productivity and also they approached male agricultural extension workers without any fear.

According to our informants (the administrative of the Woreda agricultural office agricultural extension program is conducted in three methods ; the first one is by discussing with the societies or the communities , secondly by discussing with small groups and thirdly , through going to house to house . Additionally subject matter specialist (SMS) would be went to rural area to assist agricultural extension workers and checked whether or not agricultural extension packages are fully implemented or not. So, there is a system of surprising agricultural extension workers.

Currently, full agricultural extension package are implemented in the Woreda. For example a farmer that involved farming has also additionally involved in cattle rising and hen production as well as coffee farming. Farmers are also advised to use natural (compost) and industrial fertilizers side by side. In another ways farmers were classified as;

1. Model farmers – those farmers that achieved three and above agricultural extension packages and a farmers that tried to produce other model farmers.

2. Medium farmers and poor farmers those farmers that were supported through the provision of agricultural inputs such as fertilizer and also supported and advised by model farmers or the supported by model farmers.

According to the Woreda officials the experiences of model farmers is documented by using modern technologies such as mobile. The experiences of model farmers would be displayed in farmer's day.

According to the results of interview the major problem in the Woreda is the provision of credit facilities. The credit was facilitated after farmers had sown grains which do not recognize the time and interests of farmers.

According to the Woreda official especially for female headed household farmers, without any criteria facilitated to get saving and credit services, and they had got credit services most of the time through their through their unions (association) . It was model farmers that had got credit services individually.

Generally from our interview we understand that female headed households had got the access of saving and credits when they needed.

The results of interview had also showed that In Yayo Woreda there is equal participation of Male Headed and Female Headed Households. The attitudes (outlooks) of the society to wards female headed farmers is also good (encouraging).

4.5 Results and Discussions

This study was aimed to answer four basic research questions proposed. In this section results of the study were discussed in light of the basic research questions. The first research question enquires if male and female household heads differ in terms of access to agricultural extension services provided by local extension agents.

Having contact with agricultural extension worker is essential for access to the provision of different agricultural extension services. In all four kebeles about 99% of the farmers found to have contact with local agricultural extension agents with the varying degree of contacts, 19.3% sometimes, 52.4% often and 24.8% regularly. Although both sexes had contact with local extension agents' men household heads found to have more frequent and regular contact extension workers.

This finding is consistent with a number of studies. FAO (2011) observed that service providers tend to approach male headed farmers more often than female headed farmers because of the general misperception that women do not farm and that there would be a —trickle-down effect from male household heads.

The local extension workers provide different services to the farmers. This includes; up-to date info, agricultural inputs, training, professional technical support and experience sharing. Thus about 59% of the participants reported that they had access to these services in last harvest. While 34.5% reported that they often get mainly agricultural inputs and technical professional support. However, statistically significant difference was not found between male headed farmers and their female counterparts ($\chi^2=3.360$, $df=3$ & $p= .268$). This finding support the results of study conducted in Kenya and Zimbabwe. Freeman and Omiti (2003) and (Bourdilan etal 2002), found that the gender of household head has no significant effect on adoption and intensity of use in organic fertilizer in households in Kenya. In addition study conducted in Zimbabwe by Chirwa (2005) also found that men and women plot owners do not differ significantly with respect to fertilizer adoption.

Classroom training and on-farm demonstration at FTCs, were more commonly and frequently used methods of training among different modes of trainings.

The second research question probes if there is a socio-economic background difference between male and female headed farmers in the study population. When it comes to the notion of socio-

economic characteristics, variables of interest were land ownership, size of land owned and cultivated, agricultural inputs used in last harvest and agricultural yield.

Overwhelmingly 89% of the farmers own land while the rest 11% do not. Among the latter group around 10% found to be male headed farmers. Almost all female farmers own agricultural land. From the study it is now clear whether the ownership trace back to heir from biological family or that of husband. The difference observed in terms of landownership among female and male headed households was statistically significant at ($\chi^2 = 7.950$, $df=1$ & $p=.005$) but the difference is minor.

In terms of the land size owned in hectares, statistically significant difference was not observed between male and female headed counterparts. Half of the population from each category own 3 and more hectares of land. However, there is variation in terms of the cultivated land size between male and female counter parts ($\chi^2=44.818$, $df=7$ & $p=.000$). Thus majority of female headed farmers 29.7% out of the 38% managed to cultivate only two hectares while majority of the men headed farmers in contrast about 32% of cultivated 3 and more hectares. The disparity was due to lack of resources to commit to agricultural activities by female headed farmers.

When it comes to the use of agricultural inputs seeds found to be the least favored or sought after agricultural inputs by the farmers especially women. Nearly equal percentage of male and female farmers used fertilizer (17% & 16%) and pest sides (23.6% & 23.6%), but only about 18.6% of men were used the three inputs in combination (fertilizer, seeds and pest sides) in the last harvest. This was also statistically found to be significant. This result is also in line with Tiruneh et al. (2000) study of households in Ethiopia and findings which indicates significant higher proportion of male than female heads of household use improved seeds such as wheat.

Yield from the last harvest ranges from 4-120 kuntals. The maximum yield female farmers managed to harvest were 50 kuntals and less. As opposed to this, the majority of male farmers around 74% gained yields of 50 sacks and above. In average men harvested about 49 sacks while female farmers gained average yield of 32.71 Kuntals. The difference was statistically significant with effect size (eta squared= 0.116). In other words the variation observed in yield between female male farmers is 11.6%. Udry et al. (1995) study on gender differentials in farm productivity in African households support this point and found that plots controlled by women

for all crops have significantly lower yields in comparison with men controlled plots within a same year and same cropping patterns. He stated that this is due to women have less access than men to productive resources and opportunities. However, some study like that of Thapa (2009) shows otherwise and indicate little evidence for gender differences in value of farm output, access to inorganic fertilizers and other key inputs.

To conclude, except in the size of land ownership there was statistically significant difference between male and female farmers in socio-economic backgrounds. Male farmers are in better position in cultivating more land and use of more agricultural inputs such as seeds, fertilizers and pest sides hence yield.

Regarding the third question socio-economic background among male and female household head farmers affect access to agricultural extension service. Female farmers due to lack of oxen conduct their agricultural activities either by hiring daily laborers or contracting or renting their farm for male farmers to share the harvest. Since the cost of labor is high they like incur financial or running costs. Moreover, when they contract their land to someone their yield decreases. Therefore, economically this situation hinders them to access full packages of agricultural extension services. As opposed to this attitude and sex played insignificant role in affecting access to agricultural extension services as the results of both qualitative and quantitative ones showed.

Chapter five

5. Conclusion and Recommendation

5.1 Conclusion of the Study

This study was aimed to investigate gender based differences in access to agricultural extension services by using both quantitative and qualitative data. Four variables; access to agricultural extension services, gender, farmers' socio-economic background and attitude toward local extension agents were used in the study. More importantly, the study examined gender based disparity in access to agricultural extension services which comprises access to information, access to agricultural inputs (fertilizer, seeds and pest sides), and access to professional and technical support (training). Moreover, the study tried to address influence of difference in socio-economic factor or background and attitudes toward extension agents among male and female farmers in access to agricultural extension services.

The local extension workers provide different services to the farmers mainly up-to date information, agricultural inputs, and training or professional technical support. Both female and male farmers had contact with local agricultural extension workers and access to these services. There was no statistically significant difference between male and female farmers in this regard. The qualitative data substantiates the quantitative result.

When it comes to socio-economic background significant difference was found between male and female farmers not in terms of land ownership and size owned but rather in the size of cultivated land, use of agricultural inputs and harvest or agricultural yield. Men cultivated more land in size, used more agricultural inputs and gained more kuntals of yield than their female counterparts. A great deal of female farmers who did not own oxen contract their land or hired someone for different agricultural tasks. This means less harvest and more financial cost. Thus at times they find it difficult to access agricultural inputs such as fertilizer and seeds which requires more financial cost as they cannot pay for it. This in turn found to have affected female farmers access to agricultural services.

With regard to attitude female and male farmers did not differ from one another in their opinion. Female farmers in particular did not have unfavorable attitude toward agricultural extension workers even though all local agents in the four kebeles happens to be male.

Finally, difference in access to agricultural extension services was not direct result of gender factor. But gender indirectly affected access to agricultural extension services by impacting farmers' socio-economic background which comparatively hinders female farmers' access to agricultural extension services. To ensure equitable provision of agricultural extension services especially fertilizer, seeds and pest sides, it is important to facilitate timely credit for female farmers not only to buy these inputs but also oxen.

5 .2. RECOMMENDATION

Based on the study results and conclusion given, the following recommendations are suggested.

- An understanding of women's farming role and constraints is a prerequisite for any country to prepare gender policy in agriculture. The role of women in agriculture needs to be recognized.
- Careful planning and follow up of agricultural extension services is crucial and critical by Woreda agricultural offices and agricultural extension agents so as to bring improved household agricultural production among women and male headed farmers of the Woreda.
- I recommend to the agricultural extension office to work on more effective extension services for female headed farmers in order to maximize their agricultural production from their limited land and livestock holdings.
- I recommended to the Woreda agricultural extension office to plan regular contacts of extension agents especially to female headed farmers so as to increase the potentials of increased access to information, credit, inputs which are important to production.
- The use of improved seeds significantly increases agricultural production for both female and male headed households. Thus, we recommend that special attention should be given to increase the number of female headed farmers who should use agricultural inputs and also should focus on increased use of improved seeds and fertilizer by female headed households so as to increase their agricultural production.
- I recommend an effort to be made by the Woreda administrative and agricultural officers to improve the literacy rate of particularly female headed farmers.

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Appendix 1 Questionnaire

JIMMA UNIVERSITY

SCHOOL OF GRADUATE STUDIES COLLEGE OF SOCIAL SCIENCES AND HUMANITIES

I. Survey Questionnaire

This questionnaire is designed for the purpose of gathering data on Gender based differences in access to inputs, services and information provided by agricultural extension workers in yayyo Woreda.

The final paper that will be written based on the data you have provided is intended to serve for an academic purpose and recommendation for improved gender based services. Therefore, you are kindly requested to provide accurate information as much as possible. I confirm you that all individual data will be treated confidentially and only aggregate and average information will be taken.

I thank you very much in advance for your time and valuable information you provide me!

PART ONE

I. PERSONAL INFORMATION

Age _____

Sex _____

Head of the household Yes No

Level of education;

None D. Secondary school

Can read and write E. Preparatory

Primary school F. College

5) Family size (in No.) _____

6) Name of your Kebele _____

II SOCIO-ECONOMIC CHARACTERISTICS

1 Do you own land? 1= Yes 0= No

- a) Total land owned in hectare _____
- b) Total size cultivated _____
2. Agricultural inputs used in last harvest
- a) Fertilizer b) pest sides c) seeds d) none
- e) Others (specify) _____
3. Annual yield obtained from last harvest (12 months) _____
4. Are you involved in any activities of formal and informal institutions/ Organizations in your area? (Social participation) 1= Yes 0= No
- a) If yes, specify type of institution/ Organization _____.
- b) Frequency of participation: 0= Never 1= Sometimes 2= whenever conducted

III. Provision of agricultural extension services

1. Did you have any contact with agricultural extension agent in your area? 1=Yes 0= No
2. If 'No' is your answer for the above question, what is your reason?
- 1= No agents in nearby 2 = Not interested in services 3 = others (specify) _____
3. Gender of the local agricultural extension agent(s) 1= male(s) 2. Female(s) 3. Both
4. Frequency of contacts over the last 12 months 0=never 1= rarely 2= sometimes 3= often 4= regularly
5. What types of service most of the time do you get from agricultural extension workers?
1. Training support 1=Yes 0= No
2. Information 1=Yes 0= No
3. Inputs Supply (fertilizer, seeds, and peptides) 1=Yes 0= No
4. Experience sharing 1=Yes 0= No
6. What type of training mechanism often used by Agricultural Extension workers?
1. Classrooms training
2. Demonstration sites at FTCs
3. On-farm demonstration
4. Farmers' field days
- Frequency of training: 1=Once per week 2=once per month 3= Two time a year
- 4= once per year 5= others _____

IV. Women's attitude towards Agricultural Extension Agents/ workers)

Use the following scales 1= strongly disagree 2 = disagree 3 = undecided/neutral

4 = agree 5 = strongly agree

Items	5	4	3	2	1
1. To bring about substantial improvement in agricultural production, it is necessary to retain frequent contact with Agricultural Extension workers					
2. Discussing agricultural matters with AEs is important					
3. help and co-operation from AEs is helpful					
4. I believe it is useful to discuss the agricultural matters to AEs, because they are particularly interested in women farmers					
5. Women farmers given special attention in the provision of agricultural extension services by local agents					
4. little attention is given to female farmers					
5. Agricultural Extension service agents fail to recognize women as farmers					
6. I wish this community had more male agricultural extension workers					
7. Using only indigenous Knowledge is more important than formal extension services for sustainable farming practices, better nutrition and food security.					
8. Integration of indigenous practices and formal agricultural services is important for sustainable farming practices, better nutrition and food security.					

Appendix II

QUESTIONS FOR INTERVIEW

Interview question for agricultural office of the Woreda

1. How do you think the agricultural extension programs are going on in your Woreda?
2. In the community who should be addressed by the extension programs? Male or female farmers? Why?
3. What agricultural extension services do you provide in the local area?
 4. Criteria for evaluation of the agricultural extension programs?
5. What are the most important packages included in your extension programs to farmers?
 6. What achievements or good practices do you documented so far?
 7. What problems do you see in the current AE programs in your Woreda?
 8. What important packages are included in your extension programs to farmers?
 9. How many agricultural extension agents do you have? Male_____ Female _____
 10. Are there placements (assignments by kebeles) farmers' association?

Appendix III

QUESTIONS FOR INTERVIEW

Interview question for agricultural extension agents

1. What is the role your office in agricultural extension programs that are carried out in the Woreda?
2. If, yes, how is your involvement in the program:
3. Do you give any capacity building training or orientations to female farmers?
4. If yes, who do participate and how? Wives Female headed households
5. What roles do you play in linking female farmers to credit associations or to government and non-government organizations?

Appendix IV

QUESTIONS FOR FOCUS GROUP DISCUSSION

A. for Extension workers

1. In your day to day activities in your local area whom do you usually contact? Male headed? Female headed?

2. Do you contact wives? If no, why?

3. Who usually involve in agricultural extension programs? Extension packages? Male headed? Female headed?

4. Do you organize farmers' field day for experience sharing? Field demonstration?

If no, why?

5. Do you face any problem in accessing farmers to any extension programs? If yes, what?

Why do you think this happened?

6. What are the major agricultural extension services that you provide to farmers?

Environmental protection? Household nutrition improvement? Household income improvement?

7. How do you address these issues to farmers? Through training? Field demonstration?

On-farm demonstration?

B. For Female headed Households and Male Headed Households

Focus Group Discussion with Female headed Households and Male Headed Households

1. What is your participation in the extension services?

2. How do extension agents provide their service? Is a difference based on gender?

3. When you are joining together in informal and formal institution what are the issues you often raised?

4. How do you perform the agricultural activities? Family members/ labor or hired labor? If hired labor is involved who hired and doesn't?

5. Do the agricultural extension agents inform the households to participate in agricultural extension services training and other activities in a systematic way or schedule?

6. Are there requirements to receive EAS: physical?

7. Do these requirements exclude the possibility for women / other resource- poor farmers to receive services?

8. Can men and women interact freely in public?

9. Do social norms limit women's ability to speak in the presence of men?

10. Are women able to voice their needs in mixed groups?