

**GENDER ROLE AND DECISION MAKING IN
HOUSEHOLD ECONOMIC ACTIVITIES BETWEEN
FARM AND LANDLESS HOUSEHOLDS IN
BOGALE TOWNSHIP**

ZIN MAR WIN

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FARM AND LANDLESS HOUSEHOLDS IN
BOGALE TOWNSHIP**

ZIN MAR WIN

**A Thesis submitted to the Post-Graduate Committee of
the Yezin Agricultural University as a Partial
Fulfillment of the Requirements for the Degree of
Master of Agricultural Science
(Agricultural Economics)**

Yezin Agricultural University

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The thesis attached here to, entitled “Gender role and decision making in household economics activities between farm and landless households in Bogale Township” was prepared and submitted by Zin Mar Win under the direction of the chairperson of the candidate supervisory committee and has been approved by all members of that committee and board of examiners as a partial fulfillment of requirements for the degree of **Master of Agricultural Science (Agricultural Economics)**.

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This thesis represents the original work of the author, except where otherwise stated; it has not been submitted previously for a degree or any other University.

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DEDICATED TO MY BELOVED PARENTS,

U THEIN TAN AND DAW HTAY SHI

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ABSTRACT

The study was conducted in six villages, Bogale Township collaboration with IRRI gender expert by ACIAR program. The primary data were collected from 163 sample women off-farm and landless households by using structured questionnaire in June 2015. The study aims to compare the household income between farm and landless households, to analyze the gender perspective in decision making, to study the role of gender in participation of extension and training activities, to explore the detail time allocation of women and to examine the determinants of household annual income. As the findings, crop income was the main income in farm households while off-farm income and non-farm income were major sources in landless households. Sample farm and landless households were facing with higher indebtedness than previous year. Farm households accessed more credit sources and higher credit amount than landless. Women decision making power of farm household's in livestock rearing was the highest and that of landless households was the highest in non-farm economic activities. Nutrition and healthy food training was the highest participated one among the trainings. Rice production training was second highest training for farm households. Time utilization for business work was very few while leisure time was the highest in both households.

By means of the farm household income function, household income was positively and significantly affected by farm size, respondent's education and women decision in livestock rearing. Household head's education and women decision in crop production were negatively related to household income. In the landless household income function, household head's education was positively and significantly related to household income. Women working in business, in housework, in leisure time and dependency ratio were negatively associated with household income.

Based on the study, educational investment plan in rural areas such as vocational training would be promoted for women and young people to secure livelihoods and poverty reduction. Other income generation activities would be encouraged to improve living standard. Better infrastructure should be provided to create linkage not only between cities and villages but also between farm and non-farm sectors. Women would be encouraged and empowered to participate more intensively in non-farm activities in order to reduce poverty and income inequality.

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CHAPTER I

INTRODUCTION

1.1 Background Information of Agricultural Sector in Myanmar

Agriculture is very important in Myanmar's economy. Agriculture sector contributes 22.1% of GDP, 20% of total export earnings; and employs 61.2% of the labor force in 2014-2015. Rice is considered both a major food crop and major export food item. In 2014-2015, agriculture accounted for 23.4% of export value and up to 2.9 %, if livestock and fisheries are to be included (MOAI 2015). Labor absorption rate is the highest in the rice industry and nearly three-fourths of farm household income is derived from rice farming and related activities (Larry C.Y et al. 2013).

Major paddy growing areas of the country are Ayeyarwaddy, Bago, Mandalay, Yangon and Sagaing Regions. The majority of Myanmar's sown area is planted to monsoon rice, whereas summer rice is planted between November and February in the delta region in the country's lower part and from January to March in central dry-zone regions.

Average farm size in Myanmar is 6.7 acres (2.7 ha) which is moderate by regional standards. Because of the importance of the agricultural sector in Myanmar, small farm size is correlated to poverty. Landlessness is found in most of the population which consider their primary occupation as agriculture. They are mostly employed as casual workers and tend to be poorer than land owning households (World Vision 2016). Without land of their own to cultivate, most rural landless households depend on intermittent wage labor, frequently on neighboring farms for their income.

Agricultural activities are the most important source of income for rural households in Myanmar and make up 70 percent of total household income. The remaining 30 percent of the total household income originates from non-agricultural activities. At the same time, several non-agricultural activities also provide opportunities for income and employment to the labor force belonging to both farmer and landless households. The small farmers and landless households depend on rural non-farm activities as the secondary source of income.

Agriculture plays an important role in both poverty reduction and economic growth. Agriculture remains the main source of income for rural household in Myanmar. Agricultural extension and advisory services play an important role in agricultural

development and can contribute to improving the welfare of farmers and other people living in rural areas. Rural poverty reduction is generally sought in the role of agriculture in contributing to farm incomes. However, non-farm employment in rural areas can also be a major contributor.

1.2 Gender Concept

The concept is defined as the social differences and relations between men and women. These social differences vary widely among societies and culture and changes overtime (International Labor Organization 2000). D'Hease and Kirsten(2006) defined gender as the socially constructed power relations between men and women characterized by a set of arrangements of culturally variable attributes and roles that men and women play in their daily lives. Gender refers to the qualitative and interdependent character of women and men's positions in society (Wombeogo 2007).

1.3 Gender Role in Rural Household

Agriculture is the mainstay of economic activity in the rural areas, which provides the population with household and national food security. Therefore, looking at gender does not focus primarily on women or men, but rather on the relationships between their different roles, responsibilities, opportunities and needs. Both men and women have been playing a significant role in the development of agricultural production.

In almost all societies, women and men differ in their activities and undertakings, regarding access to and control over resources and participating in decision-making. The ability to participate in decision-making is one measure of women's relative power within the household. Housework in general is a factor that limits women's ability to engage in paid employment (Mohammed, B.T. and A.F. Abdulquadri, 2012).

Gender effects on the distribution of resources, wealth, work, decision-making, political power as well as the enjoyment of rights and entitlements within the family and in public life. In most cases, men are the heads of households and are therefore the principal decision-makers in the household although some consultation with women may take place. For most rural households the decisions around the management of resources are taken by men; generally, men are dominant in decision making (World Bank 2000).But the agricultural sector in many developing countries is underperforming, in part because women, who represent a crucial resource in agriculture and the rural

economy through their roles as farmers, laborers and entrepreneurs, almost everywhere, face more severe constraints than men in access to productive resources.

Women's participation in public life such as in village meetings is very low, as is their participation in and access to social networks. A significant portion of agricultural work, most notably during the paddy transplanting and harvesting seasons, but also in daily labor to supplement the family income, is done by women. Rural women often manage complex households and pursue multiple livelihood strategies. Their activities typically include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, engaging in trade and marketing, caring for family members and maintaining their homes (Doss, Ch. et al. 2011).

Most of the rural women spend much time every day on agricultural and domestic tasks, with little time for rest or recreation. Most of the women in rural areas have to bear double burden of domestic and outside work. Rural women's contribution to productive activities (farming, livestock, and aquaculture, off-farm income generating activities, wage labor and home gardening) is significantly higher than that of their male counterparts. Rural women are responsible for almost all domestic activities (cooking, family care, cleaning and washing). Women are also seeking a better balance in the division of labor in the domestic household, need encouragement for their personal and professional development and more support in their bid to achieve financial independence, and to participate fully in decision-making.

Women's role in Myanmar family life is great. Gender and sustainable agricultural development depends on women. Myanmar women enjoy equal rights as men. In Myanmar society, it is the women who managed the family decision making in providing food, clothing, schooling, control of property etc. Although, the women may go out to work for the development of the society, they still have the major responsibility to look after the family welfare (Johanna Ringkvist 2013).

1.3 Rationale of the Study

Agricultural planning and development are crucial to human survival, but they usually precede limited consideration of the importance of gender issues at the production level. Empirical evidences reveal that women, who constitute approximately half of the rural labor force, are economically active in each sub-sector of the rural economy.

Empirical evidences further revealed that women farmers have lower access to land, resource entitlements and inputs such as credit and technology and less participation in planning and the formulation of policy in the sector than their male counterparts (Fletschner, D. 2009). Women tend to have less contact with extension services than men and generally use lower levels of technology because of problems of access, cultural restrictions on use or lesser interest in doing research on women's crops and livestock (World Bank 2000). The role played by both women and men in rural agricultural development program via extension and training service should equally be considerable. So far, no study has been conducted in the study area on women participation in agricultural extension and training services for improved household income. Thus, this study investigates the participation in agricultural extension and training services consisting by gender in both production and income related information in improving the production and income of households.

Rice farming income is a dominant rural economy as well as culturally important activity in this area. Insufficient capital due to limited access to formal sources of credit forces farmers to apply less farm inputs, particularly fertilizer, which makes their rice crop less productive. These constraints are not easy to perform for the most of rice farmer.

Gender is a concept used in social science analysis to look at the role and activities of men and women. Gender plays an important role in the payment of labor wage. Various researches have not been conducted on the role of women and men in the agricultural sector. Thus, the roles of both women and men in agriculture in Bogale Township will be discussed in this study.

When women are employed, they are usually paid less than men, even for the same tasks. Even though the economic contribution of rural women is substantial, it is largely unacknowledged. In addition to their economic activities, the traditional division of labor gives women the primary responsibility for such domestic chores like cleaning, cooking, childcare and fetching water. Women limited accesses to market, economic service, health care and political activities (public sphere) leads to lower levels of well-being, high infant and maternal mortality and birth rates which in turn retards the development of the goals of the study area.

Normally, women are excluded and limited to participate in decision making, economic activities and livelihoods diversification both in their households and their communities. These lead to women being unable to diversify their livelihoods. Lack of

access to resources coupled with gender suppressive tendencies as a result of tradition could lead to high levels of poverty among women (Wombeogo, 2007).

The economic contribution rural women made to community development that involves their participation in different forms of economic activities for their family and societal development. Rural women have an important role in economic activities which leads to the entire development of a community; therefore in order to achieve rural community development an attention to women that involves in economic and developmental activities with men is required. Women's participation and their role in economic structures is an indicator of the modernization of the family economy and economic development, community development strategies should be based on a more active participation of rural women in economic activities. Participation of women in economic and development activities is significant, today women play major roles in the economic development of a country.

House works are vitally associated with women in all societies; they are involved in business work activities for the well-being of their family and community development in general. This study further emphasizes that the role of women in economic activities is necessarily important in families whereby the husband alone can afford all the responsibilities of the family.

Non-farm activities as apart from agriculture play an important role for rural livelihood as most of local people living in rural area engage in agricultural activities which are very vulnerable under uncertainty such as climate change, extreme and severe events, and recently urbanization. Income should be included incomes received in cash or in-kind, whether generated through wage labor or self-employment; employment includes self-employment unless otherwise stated or implied by the context. Non-farm activities play a principal role directly by contributing considerably to rural households' income, and indirectly by influencing agricultural activities with potential implications for sustainability. Improvements in infrastructure, education, health and financial services help to facilitate access to rural non-farm income sources.

Pressure on natural resources could be reduced if households have alternative sources for their livelihoods. Promoting development of innovation for traditional job such as handicraft, ironing, diversifying sources of income, adapting small business would facilitate increasing of cash income from non-farm activities. Meanwhile, if there is no or few potential to keep the non-farm incomes increasing sustainably in the future, the farmers will face the options in dilemma. Promoting non-farm activities in rural area

is gaining attention as a strategy for poverty reduction, job creation, promotion of education and consumption. However, the conditions for promoting and enhancing role of non-farm activities in the rural areas are not highly taking into account for rural development.

In Myanmar as elsewhere, women's contributions to society and the need to protect and enable the position of women economically, socially, and politically, globally women's rights are still devalued. Women in Myanmar face more discrimination and more barriers than men in accessing or owning land, participating in consultations and decision-making processes regarding land, and in utilizing dispute mechanisms. There are many reasons for this, including social or cultural inequality caused by internalized gender roles, limited education, skills and abilities, or lack of time or money (Action Aid, 2012).

1.4 Objectives of the Study

The purpose of this study was to contribute a greater understanding of the role of women and men played in household as well as production and income-generating activities. The general objective of this study was to observe gender role and decision making comparison with in farm and landless household income activities in Bogale Township.

The main specific objectives of the study were as follows:

- (1) To compare the conditions of household income between farmer and landless households in Bogale Township
- (2) To analyze the gender perspective in decision making of household economic activities and community level of farm households and landless households in study area
- (3) To study the role of gender in participation of extension and training activities of farm households and landless households in study area
- (4) To explore daily time allocation of domestic and outside works by women in farm and landless households in study area
- (5) To examine the role of gender in household income by mean of income function analysis

CHAPTER II

LITERATURE REVIEW

2.1 Role of Women in Household Income Composition

2.1.1 Theoretical concept

Gender analysis is considered as an important tool to identify the participation of male and female rural dwellers in on and off farm activities. Gender analysis ultimately leads to formulate a policy. The objective of the policy is to provide the protection to women area such as health, nutrition, opportunities in employment and promotion, better care of aged women, education, protection and participation in managerial acts. Such analyses are essential to recognize the different roles of gender in farming system. They also help understand the way such roles are influenced by latest interventions (Yisehak, K. 2008). Similarly, Hanoi (2004) elaborated gender analysis as the process of exploring and examining the reasons for the existence of disparities, evaluating these disparities and finding out ways to resolve them.

Households can gain income by doing many jobs involved with both agriculture and non-agriculture. Women are good partners of the socio-economic development of the country in general and the family in particular. They can contribute significantly to the socio-economic upliftment of the family if proper environment with facilities can be ensured. Women make essential contributions to the agricultural and rural economies in all developing countries. The rural women have participated in important roles in wide range of income generating activities and childcare (Pal, M. S. 2001). Female agricultural workers contribute significantly to household economy, but they lack education, health and other support services and often do not have access to economic resources (Tuteja, U. 2000).

Ferdoushi Ahmed et al. (2011) said that income is an important factor to determine individual's standard of living. Involvement of women in income earning activities is now substantially recognized as a crucial factor for family survival, especially in subsistence family.

Women play a significant and crucial role in agricultural development and allied fields including in the main crop production, livestock production, horticulture, post-harvest operations, agro/ social forestry, fisheries, etc. The nature and extent of women's involvement in agriculture, no doubt, varies greatly from region to region. Even within a region, their involvement varies widely among different ecological sub-zones, farming

systems, castes, classes and stages in the family cycle. But regardless of these variations, there is hardly any activity in agricultural production, except ploughing in which women are not actively involved (Dr. Roshan Lal and Dr. Ashok Khurana 2011).

Poor landless women, who know little about new productive opportunities, are encouraged to consider alternative income-generating opportunities based on the use of common property resources (e.g. leasing a village pond to produce freshwater fish) or on producing products within their own households – backyard poultry, gardening, mushrooms or producing vermin compost (Swanson and Rajalahti 2010).

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

Women with low earnings capacities and weak labour market attachment would gain from basic income; they usually are housewives and single mothers. Obviously, basic income would not be the solution to all their problems. Women with high earnings capacities and a strong labour market attachment, that is, women with career, autonomous, without children, with high salaries in short term they wouldn't obtain anything from a basic income, but author thinks that in long term they might suffer an increase in discrimination when they try to obtain a job because “when these women are young, it will be difficult for an employer to distinguish whether one of these women belongs to this category, or to the category of the women with high earning capacities but lower labour market attachment (Robeyns, I. 2000).

Rashid Menhasset et al. (2014) said that most of the females were engaged in income generating activities i.e. agriculture and handicraft and working at industries. In this regards participation of the women in income generating activities could be an effective tool to reduce poverty and hunger, improve child nutrition and ensure access to better health and education facilities.

2.1.2 Empirical review findings

Chandrama Goswami (2013) studied female agricultural worker in Assam: a case study of Darrange district at India in 2007-2008. In this study, sample household divided into four farm size categories such as landless, marginal, small and big). The results indicated that the share of female workers from wage employment in the landless and marginal households was high, contributing more than 50 percent to total household income. However the contribution of females from small and big farm households was less compared to income from cultivation or dairy enterprise due to social customs, which did not allow a female to work as a laborer except in extreme situations. This author concluded that female workers contribute significantly to household income and their earnings were crucial especially for landless and marginal farm households. The proportionate contribution of females was, however, found to decline with increasing farm size. This is because the participation rate of women in agriculture was mostly governed by the economic condition of their family.

Kyaw D. and J. K. Routray (2006) studied that gender and rural poverty in Myanmar: a micro level study in Chaung U, Kyaukpadaung, and Magway in 2003. The results showed that the majority of male heads are engaged as farmers (81 percent), 3 percent in livestock farming, 3.8 percent as agricultural laborers, 4.4 percent as non-agricultural laborers, 2 percent as street vendors, and 2.5 percent as home-based workers and 2.5 percent as jaggery workers. About 63 percent of female heads were engaged as farmers, 7 percent in livestock farming, 3 percent as jaggery workers, 13 percent as agricultural laborers, 3 percent as nonagricultural laborers, and 5 percent as both street vendors and home-based workers. The female heads earned lower average daily per capita income than the male heads in all types of employment except non-agricultural labor.

Cheryl Doss et al. (2011) studied the role of women in agriculture in 2009 that indicated the contribution of women to agricultural and food production is significant but it is impossible to verify empirically the share produced by women. Women's participation in rural labor markets varies considerably across regions, but invariably women are over represented in unpaid, seasonal and part-time work, and the available evidence suggests that women are often paid less than men, for the same work.

Natasha Choudhary et al. (2009) studied that women's economic contribution through their unpaid household work: the case of India in 2008. Results showed that the respondents of 15 percent of urban women and 25 percent of rural women said that they

had no income because they were (full-time) housewives. They stayed at home to carry out their responsibilities as mothers, managing the day-to-day activities of the family: feeding children, cooking, cleaning and so on. In both urban and rural areas, women earned far less than men. For urban women who earned an income, most (40%) received less than 1,000 rupees (USD 20) per month. The fairly high levels of education of urban females mentioned above appeared to have little or no impact on their income.

2.2 Gender Perspective in Decision Making Around Production and Income Generating Activities

2.2.1 Theoretical concept

The level of women participation in decision-making process not only varies from region to region but also from one activity to another (Tipilda and Panhwar 2008). The involvement of rural women in domestic and commercial agricultural work and decision-making varies significantly across countries and regions, but global trends indicate that there are now more women than men working in agriculture overall (Kathleen Collett 2010). Women who earn an income therefore have a greater influence in household decision-making (Oppong 2005). In some areas women, alone or together with men, play important roles in most of the decisions related to animal production activities and crop production activities.

Women's role in decision making process is an important factor and needs to be considered for woman empowerment. Women's active involvement in decision making is considered essential for rapid economic development of the country. Subita Sharma et al. (2013) indicated that women's contribution to economic development is vital, there is a need of proportionate increase in her involvement in decision making process, because the success and progress of any production depends upon the plans made and decisions taken.

Rural women play a very significant role in agriculture. A large portion of rural women perform unpaid work in agriculture. Women in rural areas, take up various roles from managing the household chores to taking care of children and livestock. Women roles vary considerably between and within regions and are changing rapidly in many parts of the world, primarily where economic and social forces are transforming the agricultural sector. The situation needs to attract more attention if the males migrate to cities and the entire burden needs to be managed by women. However, many of these activities are not defined as "economically active employment" in national accounts but

women are essential to the well-being of rural households. Despite women's involvement in day by day care, livestock management is still considered a man's role by livestock planners and decision maker because the work that women do is seldom recognize (World Bank 2009).

Abhey Singh Godara et al. (2014) supposed that decision-making is a fundamental process that incorporates all the functions of family resource management. Rural women perform all the duties of household, attending to farm labor, caring of domestic animals but in spite of discharging all the duties of household, no recognition is given to women immense contribution. But women involvement in decision-making process of household remained in a very low position as all important decisions are made by head of the family or the male members because majority of the females have not provided opportunities to get education due to have the policy of discrimination against the females of the family.

Luxembourg (2000) indicated that women's contribution to local and community development is significant, but rural women everywhere are in a minority in decision-making and planning, particularly at regional and national levels. This is in part due to women's multiple roles and workload, but is also due to the persistence of traditional views about women's and men's roles in society. The low level of participation by women in decision making inevitably leads to biases in the priorities and policies pursued by development organizations. A balanced participation by women and men in decision making is important for local democracy and for the quality of decisions taken on developments that affect the life and future of rural communities and economies.

2.2.1 Empirical research findings

Ahmed J. U. et al. (2013) suggested that participation of women in decision making process in some selected areas of Mymensingh district, Bangladesh in 2012. In order to measure the degree of participation eight variables were selection of crop, management of production activities, selling of crop, purchase of input, post harvest operation, cash management, children's education and marriage of children. Participation of women in decision making process was according to small farm, medium farm and large farm and each decision aspect had three categories. In small farm families, the proportion of women's participation in decision making was higher (45%) in post harvesting operations, compared to other aspects of decision. It was observed that women decision making in post harvesting operation was low in large farm (40%). Female took decision in post harvesting operations in all farms averagely 43.33%. In case of crop

selection women decision making percentage in small, medium and large farms were 40%, 30% and 10%, respectively. In the case of purchasing agricultural inputs it were 20%, 25% and 30%, respectively. Women's participation percentage in management of production activities in small, medium and large farms were 25%, 40% and 20%. Women's participation in cash management, children's education, marriage of children in small farm 15%, 25%, 25% , in medium farm 30%, 30%, 25% and in large farm 20%, 30%, 20%, respectively. Women decision making power was only satisfied in post-harvest operation for all categories of farm but low for all others variables in the study area.

Narmatha N. et al. (2015) examined gender wise decision making in sheep and goat keeping activities in Namakkal district of Tamil Nadu, India in 2011. Decision was taken mostly by men in majority of the occasional activities like construction of shed 53.22%, sale of goat/sheep 51.50%, vaccination 49.36%, deworming of goat/sheep 48.07%, treatment of sick animal, purchasing of feed from market 43.35%. Joint decision was more in the activities of flushing of does and ewes 49.36% and purchasing of feed from market 35.19%. Decisions on all the regular activities, viz., watering 51.93%, care of pregnant does/ewes 50.64%, taking goats for grazing 47.21%, identification sick animal 46.78%, cleaning shed 45.06%, feeding of marketing stock 44.64%, collecting fodder and feeding of breeding buck/ram 43.35% were taken independently by women.

Padam Simkhada et al. (2010) studied women's autonomy in household decision-making: a demographic study in Nepal in 2006. The data consists of women's four types of household decision making; own health care, making major household purchases, making purchase for daily household needs and visits to her family or relatives. Results showed that women's autonomy in decision making is positively associated with their age, employment and number of living children. Women's participation in decision making to make major household purchases also had a strong significant association with socio-background characteristics in making major household purchases. Women from rural area and Terai region had less autonomy in decision making in all four types of outcome measure.

Gitanjali Hajra (2012) measured determinants of household decision making among women in Kolkata Slum areas of India: an application of multinomial logistic regression. The study showed that level of education of women had significant effect on decision in level of savings and family planning, whereas, level of education had no significant effect on decision in family expenditure and healthcare. Age was a significant

determinant in decision of family planning but age of a woman did not play any significant role in taking decision in family savings, family expenditure and healthcare expenditure. But income did not play any significant role in any one of the four dimensions of family decision making progress within the household among woman.

ChayalK.et al. (2013) studied that involvement of farm women in decision-making in agriculture at India in 2012. Results indicated that farm women's involvement in decision making process in agriculture field quite minimal. Consequently, marketing of agricultural inputs and farm produce, manure/ fertilizer application type and manure/ fertilizer application were the activities where in involvement was very poor.

2.3 Role of Gender in Participation of Extension and Training

2.3.1 Theoretical concept

Different authors define agricultural extension in different ways (for example, Asiabaka 2002) however, all having a common understanding as it is to dealing with the improvement of the standard of living of the rural farmers. In this study agricultural extension service is used to refer agricultural services that include, input, access to credit, access to agricultural agents, and knowledge and attitude of farmers towards agricultural extension services to improve income and production as provided by Myanmar governments and other organizations. In general, involving female farmers in agricultural extension services leads to improve production and income; and enhanced well-being of rural households and hence improved nutrition and food self-sufficiency.

Anderson (2007) defines the terms agricultural extension and advisory services as “the entire set of organizations that support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills and technologies to improve their livelihoods”. Extension services can be organized and delivered in a variety of forms, but their ultimate aim is to increase farmers' productivity and income.

Extension has been recently defined as “systems that facilitate the access of farmers, their organizations and other market actors to knowledge, information and technologies; facilitate their interaction with partners in research, education, agribusiness, and other relevant institutions; and assist them to develop their own technical, organizational and management skills and practices” (Ian Christoplos 2010). Agricultural extension services are generally interested in farmers (usually assumed men), and the use of farm sources and various problems in farm management (Nuray Kizilaslan 2007).

Agricultural extension still remain one of the most crucial and critical means to reach farming households in the rural areas and globally. The contribution of women to food security in developing countries is extensively documented. Most developing countries, rural women are the basis of small-scale agriculture, the farm labor force and day-to-day family subsistence. Rural women are faced with a number of constraints, they have more difficulties than men in gaining access to land, credit and extension services (Ogundiran Oluwasola Adekunle 2013).

Agricultural extension – the provision of information, training and advice in agricultural production – is one way to tackle the hurdles that women face in agricultural production, as these services provide a means for women to learn new or improved production techniques, to receive training and advice, to organize themselves and to improve their access to inputs and markets. This empowerment in turn translates into both higher income and improved income stability for women, which promotes their standing in the sector and increases overall food security (Bonn and Eschborn 2013).

Nuray Kizilaslan (2007) said that both economic and social process of change follows the conditions of world that change rapidly. The improvement in technology, increasing transportation possibilities, widespread and efficient use of mass media means, organic and sustainable farming, and such changes influence rural women. The need for training together with this change has increased. The training will ensure the improvement in human resources, the use of technology more rational along with a faster adaptation to changing life conditions. Therefore, it is necessary that women have part in extension training and they should not be neglected.

The training of village-based female extension workers is an effective way to reach and actively involve women in extension activities as it ensures that appropriate communication strategies are used to interact with women. Women in fact may find it more difficult to participate in formal training activities outside the village because of lack of self-esteem and education. Weak self-esteem can hinder women's capacity to speak out freely in group meetings and interact with extension agents. In addition, since women bear primary responsibility for childcare and reproductive work, extension services need to be brought closer to female farmers at times when they can attend meetings (Quisumbing and Pandolfelli 2009).

Sevgi Tuzun Rad et al. (2011) said that extension education programs play a key role in the implementation of rural development programs and to increase the living standard of the women and their families in the rural areas. The role played by women

farmers in meeting the challenges of agricultural production and developments are quite prominent. Their relevance and significance, therefore, cannot be trivialized (Rahman2008). Women are less likely than men to own land or livestock, adopt new technologies, use credit or other financial services, or receive education or extension advice. In some cases, women do not even control the use of their own time (FAO 2010-2011).

2.3.2 Empirical research findings

SoltaniSh.et al. (2012) studied factors influencing rural women participation in agricultural extension programs, case study Mazandaran, Iran, in 2010-2011. Results showed that rural women participation in extension programs was less than average. The studied rural women were more interested in communication with female extension workers and rural women facilitators. Moreover, rural women who were the owner of their rice farm and garden had more participation in extension programs.

Analysis of effectiveness of agricultural extension service in among rural women: a case study of Odeda local government, Ogun State, Nigeria in 2009 was conducted by Ogundiran Oluwasola Adekunle (2013). Women's access to agricultural inputs had not improved proportionately. Therefore, agricultural extension had little or not improved technology to extend to women farmers who grow the traditional food crops. In other cases, technology was available, but women were unable to obtain the credit to purchase the inputs needed to utilize the new technology.

In India, farm women groups have been formed to act as focal points for agricultural support services targeting poor female farmers. The emphasis has been on simple low-cost, environmentally-friendly technologies such as seed selection and treatment, making compost, use of bio-fertilizers and bio-pesticides, post-harvest storage, etc. Agricultural training was found to have a positive impact on women in terms of both increased income and greater self-esteem. Some women reported having acquired a greater role in decision-making after the training both in farm-related matters and gender issues. Women reported that they were now being regarded as experts on agricultural methods, that others were seeking their advice and that they had gained the respect of the community (Danida 2004).

Sevgi Tuzun Rad et al. (2011) studied Women's literacy and extension education in rural eastern Mediterranean Turkey in 2000. In the research area, women's participation to extension education programs and training was quite low. Their

participation in agricultural training programs was even lower. This is because women consider their first duty as taking care of their housework and they did not perceive themselves as agricultural producers. The training activities in which women usually participate were activities which strengthen women's traditional role in the family and society at large.

2.4 Detail Time Allocation During 24 Hours of Rural Women

2.4.1 Theoretical concept

Time is one of the most important resources, for household but also for the national economy. That is the reason of research time allocation from an economic perspective. In many developing countries female participation in the labor force is low, particularly in off-farm activities.

Home management is an essential component of family living, contributing to health, happiness and wellbeing of the family. The home management is a dynamic force in day-to-day living and is the administrative side of family living. Well-organized, effective and dynamic uses of resources help in the proper management of the house, whereby goals are achieved to attain maximum satisfaction (Satheesh et al. 2005).

Reddi (2003) described that the role of women in the household was customarily significant. Women's work were started early from bed till late night at household and fields. The family work incorporated fetching water, cleaning the house, washing utensils, sweeping, food preparation, feeding and bathing children, fetching fuel, provision of food to fields, stitching and supervising children's education, livestock and poultry care which was also considered as housework.

Women worldwide perform most of the of domestic tasks, including both household maintenance and childcare, even when they are employed part or full time, the mean time spent on unpaid care work by women is more than twice of that for men (Kulshreshtha and Singh 2005).

2.4.2 Empirical research findings

Biswas W.K. et al. (2001) studied technology in context for rural Bangladesh: the options from an improved cooking stove for women in 2000. The author indicated that rural women contribute significantly less time in income generation activities (direct and indirect) than household activities. Excluding sleeping, they spend on average 18 hours a day including two and a half hours of rest or free time which was quite reasonable.

Housewives spend more time looking after children than other activities under the heading of family responsibilities. By culture, rural women were responsible to serve food to all family members. If children were small, mother spends a significant amount of time for holding, bathing, feeding children.

Xinyu Cao and Yanwei Chai (2007) studied gender-role based differences in time allocation: a case study of Shenzhen, China in 2002 that found clear individuals' role in the household: men were dominant in out-of-home activities, but women dominate in-home activities. On average, women carry more maintenance responsibilities than men, but men spend more time on work and leisure activities than women, especially on the weekend. The researcher pointed out that most people spend their time at home and around their neighborhoods, especially the female. Further, the influences of household structure on time allocation of both household heads demonstrated substantial gender-role differences.

Amin and Luciana (2008) in their study on terms of marriage and time-use patterns of young wives conducted in rural Bangladesh found that the average woman spends 29 percent of the day doing domestic chores, and nearly all women reported some domestic activity. They also found that the amount of domestic work increases with number of children.

Nwosu, C. S. and R. U. Onyeneke, (2012) studied that socioeconomic analysis of rural women's time utilization on farm, non-farm and leisure activities in Ohaji/Egbema local government area of Imo State, Nigeria in 2007. Results showed that age of the women influenced the time spent on farming and non-farming activities negatively and significantly. Marital status, educational level, household size, and income level positively and significantly affected the amount of time spent on farming activities. Income and educational level positively and significantly affected the amount of time spent by rural women on non-farm income generating activities. Age, marital status, educational level, and household size negatively affected the amount of time spent by rural women on leisure while income positively and significantly affected the amount of time spent by rural women on leisure. The daily average amount of time spent by rural women on farming activities, non-farming activities, and leisure were 10.81, 6.30 and 6.90 hours respectively.

Munir Khan et al. (2012) studied that participation of women in agriculture activities in district Peshawar in 2004-2005. The study showed that all of the sampled women have been actively involved in household activities comprising breakfast, house

cleaning, dish washing, cooking and childcare sewing and embroidery and laundry. Most time consuming activities were child care, cooking and laundry these respondent spent an average 1.6, 1.3 and 0.98 hours respectively on these activities. The less time consuming activities was house cleaning an average of 0.52 hours/day. On average sampled respondent spent 6.53 hours daily on various household activities.

Natasha Choudhary et al. (2009) studied that women's economic contribution through their unpaid household work: the case of India in 2008. Result showed that women often spend six to eight hours per day on paid activities: 60% of women in this study were involved in paid activities after which they carried out their household activities.

2.5 Role of Gender in Household Income Function

2.5.1 Theoretical concept

In income generating theory, it is expressed that women often adopt new town-based activities to generate income. The theory argues that selected women are involved in the sale of milk, based on pastoral production; the collection and sale of firewood, which may be environmentally unsustainable; and income generation through small-scale trading, which has become increasingly important as it has increased market integration in northern Kenya (Nduma, I.2001).

Gender relates to socially assigned roles and behaviors attributable to men and women; it refers to the social meaning of biological sex differences. Gender roles are roles that are played by both women and men and which are not determined by biological factors but by the socioeconomic and cultural environment or situation (ICA-ILO 2001). Gender affects the distribution of resources, wealth, work, decision-making, political power as well as the enjoyment of rights and entitlements within the family and in public life (Welch et al. 2000).

The "gender division of labor" refers to the allocation of different jobs or types of work to men and women, usually by tradition and custom (Alexander, P. and S. Baden, 2000). Gender perspective refers to the situation where socio - cultural antecedent of gender inequality and gender roles are recognized. Results of the allocation of gender roles have created differences in education, power, wealth and authority, giving different status to men and women within the same set up with one sex dominating the other. Classification of gender, through gender role, gender identity and gender expression, has

perpetuated the differences that exist between the genders in their activities (Priscilia Eni Akam 2009).

Gender analysis examines how the roles, rights, and responsibilities of men and women interact and how that affects outcomes. In agriculture, gender analysis provides insights into how socially constructed roles and responsibilities shape the myriad decisions around agricultural production and processing (Cheryl Doss 2013).

Abhey Singh Godara (2014) said that the role of women has always been a multi-dimensional and significant as women have performed well in case of agricultural activities, domestic activities, marketing activities as far as labor requirement is considered.

Income is the most important factor for human wellbeing as well as the living standard, health status, social and political power (Mondal et al., 2009). Chayal, K. et al. (2013) said that despite women's critical contribution to the family income through productive activities, no recognition is given to them as an important contributor and their contribution is not recorded. They are still remained invisible workers.

Bopha Hour et al. (2011) said that women participated in all activities in livelihood, both income and non-income works. Thus, women participation in decision-making is very necessary for household livelihood. Most heads of the family are men expect for widows and single women, who play very important roles as the heads of their families and as decision-makers in the family; even though, women participated actively in income generation.

Men and women play distinct roles in agriculture. In developing countries, and particularly in rural areas of developing countries, women play a major role in household and community survival strategies and contribute significantly to the rural economy and agriculture in particular (Huria Ali Mahdi 2014).

2.5.2 Empirical research findings

An assessment of women participation in farm household income: a study in some selected areas of Mymensingh district of Bangladesh was studied in 2012. (Ahmed, J. U. et al. 2013). In the study, yearly income was the dependent variable and independent variables were farm size, number of female earning member, women income, family size and annual expenditure. Based on the study, the regression co-efficient of farm size was significant at 5 percent level. The number of female earning member increases by a unit then the household income positively influenced by estimated value. But the co-efficient

was insignificant. The regression co-efficient of women income was significant at 5 percent level holding all other variables constant. The regression co-efficient of family size was negatively significant at 5 percent level which implies that holding all other variables constant. The regression co-efficient of expenditure was statistically significant at 1 percent level. It indicated that 1 percent increase in expenditure would increase household income by 0.665 percent, keeping other factors constant.

The role of gender in agricultural productivity in the Philippines: the average treatment effect in 2012 was observed by Krishna H. et al. (2015). Female-headed farm households had limited access to land, had a higher value of rice production than their male counterparts. However, there was no significant difference between net farm incomes earned by male- and female-headed farm households. Female-headed households had higher fixed costs, consequently earning less total household income. Findings from this study indicated that women were less efficient in farming, but were more likely to adopt improved seed varieties. In addition, female-headed farm households were better at controlling farming costs.

Kyaw D. and J. K. Routray (2006) studied average per capita income of rural households in Myanmar using regression analysis in 2003. In the study, average daily per capita income of household was the dependent variable and independent variables were gender of household head, household size, land holding size, degraded land size, cattle heads, labor force, sources of income, and received irrigation water. Based on the analysis, the household size, and degraded land size variables were negatively and significantly associated with the average per capita income. The land holding size, cattle heads, and labor numbers have significantly and positively influenced on the average per capita income. The gender of the household's head variable indicated that if a household head were male, then the rural income would be significantly increased.

Adewuyi, A.K and E.F Adebayo, (2014) studied profitability differential of rice production by male and female farmers in Adamawa State, Nigeria. The male farmers were observed to be operating at a higher level of profitability than their female counterparts. It implied that male farmers earned more profits from rice production in the study area than the female farmers. This could be due to the limited access the female farmers usually have to resources of production in comparison with the male farmers.

Beyene (2008) studied determinants of off-farm participation decision of farm households in Ethiopia in 1999. In rural areas of developing countries in general and Ethiopia in particular, labor market participation was the major source of income for

many landless and small farm households. Production and productivity of the agricultural sector was low, farm households' income was not sufficient even to feed their families. Most of the sample farmers (79%) were participating in off-farm activities mainly to supplement their agricultural income. Excess labor in the family and the seasonality of agriculture were the other key factors responsible for farmers to participate in off-farm activities. Large family in the rural households resulted in declining farm size which in turn results in low level of per capita production and hence less income. The seasonality of agriculture caused a farm family to have excess labor during the slack season, which induced them to engage in other non-farm activities.

CHAPTER III

RESEARCH METHODOLOGY

3.1 General Description of the Study Area

Bogale Township, one of the major rice growing regions of Myanmar, was selected as a sample survey area located in the Ayeyarwaddy Region on the southern part of Myanmar. Bogale is situated at latitude 16° 16' 07" N and longitude 95° 22' 09" E and it can be reflected the average representative of Myanmar rice growing conditions. This area is also designated as main rice bowl of Myanmar because of its ideal location of the rice cultivation base on delta.

The total area of Bogale is 2,250 km² with a population of 322,665 people and including 71 village tracts comprising 589 villages. There were 43,224 urban populations and 279,441 rural populations. In urban involved a population 20,530 male and 22,694 female. In rural involved a population 138,766 male and 140,675 female. Farming is given first priority as main source of income. Livestock and fisheries are also a major food source and source of income for farmer and landless household in this area. Usually, paddy is the main crop in both monsoon and summer season. Monsoon paddy cultivated from the last week of June and harvested at November and December depending on the condition of varieties and weather. The summer growing season is actually shorter but yields a greater amount of rice. According to the 2015 growing season data, 310,824 acres (125,839.68 ha) of monsoon paddy and about 100,830 acres (40,821.86 ha) of summer paddy were grown as the whole township.

3.2 Data Collection and Sampling Procedure

To achieve the research objectives, both primary and secondary data were considered in this study. Primary data collection was conducted in six villages of Bogale Township at June 2015. The primary survey data were taken from selected respondents through personal interview in Bogale Township. Respondents were women for this study. The household level survey was carried out in six villages which were randomly selected from total villages in Bogale Township. The general descriptions of selected villages are shown in Table 3.2 and 3.3. To obtain the primary data, 83 farm households and 80 landless households from six villages were interviewed.

Secondary data were gathered from various sources such as several books, research literatures, articles, journals, thesis, official records of Ministry of Agriculture, Livestock and Irrigation (MOALI) and other related publications. In addition, data of regional, provincial and community levels were collected which gave precise information for selecting the research areas. It included agricultural areas, rice planted areas, number of farmer households, number of landless households, demographical, social and economic characteristics of household income in this study area.

Table 3.1 Total sample size of the study

Name of villages	Sample households (No.)			Total households (No.)		
	Farmer	Landless	Total	Farmer	Landless	Total
Gon Min Chaung	22	8	30	59	25	84
Wae Gyi	14	16	30	39	66	105
Dar Chaung	18	2	20	27	32	59
Nyi Naung	10	20	30	37	72	109
Mae Taw Su	11	11	22	51	120	171
Min Hla Su	9	22	31	70	30	100

Source: DoA, Bogale (2015)

Table 3.2 Total population of the sample villages

Name of villages	Total population in sample villages (No.)		
	Female	Male	Total
Gon Min Chaung	255	247	502
Wae Gyi	215	236	451
Dar Chaung	135	143	278
Nyi Naung	234	206	440
Mae Taw Su	402	350	752
Min Hla Su	245	258	503

Source: DoA, Bogale (2015)

3.3 Method of Analysis

To analyze the data, Microsoft Excel was used for descriptive analysis and paired samples t-test Statistical Package for Social Science (SPSS) versions 17 Software was used for multiple regression.

3.3.1 Sampling method

A simple random sampling method was used to select households for personal interview. In order to identify the total sample household population, total sample household female population, total sample household male population, the name of household's members were taken from the registration books of the respective villages. After identification of the households, they were numbered and the sample households were determined by using a simple random sampling method.

3.3.2 Statistical methods

Descriptive statistics such as frequency, percentage, mean, minimum and maximum were used to explore income characteristic and women role in household decision making on productions of crop and livestock and income generation laborer in rice farming, regular full time and part time employment, and other non-farm economic activities etc. and decision making of growing crops for household food consumption and marketing, livestock raising and fishing or fishpond culture. Also about attending of training and extension programs such as crop production, processing of agricultural products, livestock production, fisheries or aquaculture, vocational training, home gardening, nutrition and healthy food, household management and others were identified by descriptive methods.

3.3.3 Paired sample t-test

Paired sample t-test was applied to analyze and compare the statistical significant of the mean differences between farm women and landless women conditions of time allocation per day.

3.3.4 Multiple regression analysis

Regression analysis is one of the most commonly used tools in econometric studies. Regression analysis is a statistical tool for the investigation of relationships between variables. Multiple regression models are now a mainstay of statistical analysis

in most fields because of its power and flexibility. Multiple regression is a technique that allows additional factors to enter the analysis separately so that the effect of each can be estimated. It is valuable for quantifying the impact of various simultaneous influences upon a single dependent variable. The general purpose of multiple regression analysis is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable. In the study, a multiple regression model was used to find out the influencing factors on the dependent variables such as annual household income by using some selected socio-economic variables. This model was as follow:

Farm Households' Income Model

$$\text{LnIC}_i = \beta_0 + \beta_1 \text{LnX}_{1i} + \beta_2 \text{LnX}_{2i} + \beta_3 \text{LnX}_{3i} + \beta_4 \text{LnX}_{4i} + \beta_5 \text{LnX}_{5i} + \beta_6 \text{LnX}_{6i} + \beta_7 \text{LnX}_{7i} + \beta_8 \text{LnX}_{8i} + \beta_9 \text{LnX}_{9i} + \beta_{10} \text{LnX}_{10i} + \beta_{11} \text{LnX}_{11i} + b_1 D_{1i} + \mu_i$$

IC_i = Amount of annual income of the farm household in 2014 year (MMK/hh/year)

Independent Variables:

- X_1 = Farm size (ha/hh)
- X_2 = Households head's age (year)
- X_3 = Households head's education (year)
- X_4 = Household size (No./hh)
- X_5 = Number of income source (No./hh)
- X_6 = Women's education (year)
- X_7 = Dependency ratio
- X_8 = Working time of women in housework (min/day)
- X_9 = Women's decision in crop production (%)
- X_{10} = Women's decision in livestock raising (%)
- D_1 = Women participation in training and extension (yes = 1, no = 0)

Landless Households' Income Model

$$\text{LnIC}_i = \beta_0 + \beta_1 \text{LnX}_{1i} + \beta_2 \text{LnX}_{2i} + \beta_3 \text{LnX}_{3i} + \beta_4 \text{LnX}_{4i} + \beta_5 \text{LnX}_{5i} + \beta_6 \text{LnX}_{6i} + \beta_7 \text{LnX}_{7i} + \beta_8 \text{LnX}_{8i} + \beta_9 \text{LnX}_{9i} + \beta_{10} \text{LnX}_{10i} + \beta_{11} \text{LnX}_{11i} + b_1 D_{1i} + \mu_i$$

IC_i = Amount of annual income of the landless household in 2014 year (MMK/hh/year)

Independent Variables:

X_1 = Households head's age (year)

X_2 = Households head's education (year)

X_3 = Household size (No./hh)

X_4 = Credit amount (MMK/hh/year)

X_5 = Number of income source (No./hh)

X_6 = Women's education (year)

X_7 = Dependency ratio

X_8 = Working time of women in business (min/day)

X_9 = Working time of women in housework (min/day)

X_{10} = Working time of women in leisure (min/day)

X_{11} = Women's decision in non-farm activities (%)

D_1 = Women participation in training and extension (yes = 1, no = 0)

CHAPTER IV

RESULTS AND DISCUSSION

The results of the data analysis include the socio economic characteristics of the respondents, comparison between farmer and landless households on household income, role of gender participation in extension and training, gender perspective in decision making of household economic activities and community level and detail time allocation during 24 hours.

4.1 Demographic Characteristics

4.1.1 Education, marital status and ethnic groups of sample women

Findings revealed that 16% of the farm women had primary education, where as 71% of the farm women had secondary education. Secondary education was the highest for the farmer women. The findings show that 49% of landless women had primary education and those with secondary and high school education constituted 45% and 6% respectively. The graduate education was not found in landless women. Generally, farmer women had a higher level of education compared to landless women. This difference is an important because low educational levels hinder access to better job opportunities and hamper more profitable entrepreneurship. It could be deduced from these findings that most of the sample women had primary and secondary education.

Most of the women were married (94%) and among them widows (1%), divorced (2%) and single (6%) were found in the farm households. Marital status in the landless households, 84% of the women were married. This indicates that majority of the women were married in the both households.

The majority of farm women were from Myanmar ethnic group (80%) while the remaining was Rakhine ethnic group (20%). The majority of landless women were from Myanmar ethnic group (98%) while the remaining came from Rakhine ethnic group (2%). Among the total sampled women, most of the women were Myanmar ethnic group in both farmer and landless households (Table 4.1)

Table 4.1 Education, marital status and ethnic group of women in sample households

Items	Farm households (N = 83)		Landless households (N = 80)	
<u>Educational level</u>	No.	Percent	No.	Percent
Primary	13	16	39	49
Secondary	59	71	36	45
High school	10	12	5	6
Graduate	1	1	0	0
<u>Marital status</u>				
Married	75	91	67	84
Single	5	6	5	6
Divorced	2	2	2	2
Widow	1	1	6	8
<u>Ethnic group</u>				
Myanmar	66	80	78	98
Rakhine	17	20	2	2

4.1.2 Age, gender, family size, dependency ratio and type of household in sample households

Age is one of the personal/demographic characteristics that is important to describe about the respondent situations and can give a clue about the condition of those women in the area. According to the result in Table 4.2, the average age of sample women in farm was 40 years and 39 years in landless households respectively. The youngest ages of farm and landless sample women were 20 years and 19years respectively. In this study the oldest age of farm and landless sample women were 65 years and 67 years. It can be summarized that the average, maximum and minimum ages of farm and landless women were not different.

Family size often influenced on the socio-economic condition of households. In farm households, the average total family size was 4 persons ranging from 1 to 9 persons. Those with large family size may participate more in agricultural activities in a day than those with small family size. This is because those with large family size have the advantage of family labor and division of labor at home to do more work on the farm. In landless households, the average total family size was 4 persons that were the same with farm households.

The average age of household head in farm and landless households was 44 years. The youngest ages of farm and landless household head were 25 years and 20years respectively. In this study the oldest ages of farm and landless household head were 80 years and 70 years. The average schooling years of household head in farm was 6 years and 5 years in landless respectively. In this study the maximum schooling years of farm and landless household head were 12 years and 11 years. Average dependency ratio of farm and landless households were 39 and 35 percent.

Gender of the household often influences on the socio-economic condition of households. Table (4.3) shows the gender distribution of households in the study villages. At least one male adult in the household was 95% in farm households and 90% in landless households. No male adult in the household was 5% in farm households and 10% in landless households. No male adult in the farm households was lower than that of sample landless households. The percentages of male and female in both households were not much different in the study but male percentage was lower than female percentage in the sample households.

Table 4.2 Sample women age, family size, household head age, education and dependency ratio in sample households

Items	Av.	Max.	Min.	SD
<u>Farm (N = 83)</u>				
Sample women age	40	65	20	10
Family size	4	9	1	1.5
Household head age	44	80	25	12
Household head education	6	12	0	2.7
Dependency ratio	39	75	0	19
<u>Landless (N = 80)</u>				
Sample women age	39	67	19	11
Family size	4	10	1	1.9
Household head age	44	70	20	11
Household head education	5	11	0	2.7
Dependency ratio	35	78	0	22

Table 4.3 Types of household and gender in the sample households

Types of household	Farm households		Landless	
	(N = 83)		households(N = 80)	
	No.	Percent	No.	Percent
At least one male adult in the household	79	95	72	90
No male adult in the household	4	5	8	10
Total	83	100	80	100
Gender				
Male	177	49	163	46
Female	182	51	193	54
Total	359	100	356	100

4.1.3 Farm size, cultivated areas and yield of rice production of farm households

In the farm households, land owner households were occupied by 85% of the sample households and land rented households were occupied by 25% of the total households. Average farm sizes were 3.3 hectares in land owner households and 2.6 hectares in land rented households. Average irrigated areas were 2.8 hectares in land owner and 2.1 hectares in land rented households. The farmers in the study area cultivated monsoon rice, summer rice and vegetable. Most of sample farmers grew monsoon rice (90%) on average farm size of about 3.5 hectares. About 84% of farmers cultivated summer rice on average farm size of 2.8 hectares. About 73% of farmers grew vegetable on average farm size of 0.7 hectares (Table 4.4). Average yield of rice production was 3.4 ton/hectare in summer season and 2 ton/hectare in monsoon season. Summer rice production was higher than monsoon rice production (Table 4.5).

Table 4.4 Farm size, cultivated areas and yield of farm households

Items	No	Percent	Area (hectare)			
			Av.	Max.	Min.	SD
<u>Farm type</u>						
Land owner households	71	85	3.3	11.3	0.2	2.5
Land rented households	21	25	2.6	8.1	0.4	2.5
Irrigated area in land owner household	71	85	2.8	10.1	0.4	2.1
Irrigated area in land rented household	21	25	2.1	8.1	0.4	2.1
<u>Cultivated crop</u>						
Summer rice	70	84	2.8	10.1	0.4	2.2
Monsoon rice	75	90	3.5	11.3	0.4	2.6
Vegetable	61	73	0.7	2	0.1	0.5
<u>Rice yield (ton/hectare)</u>						
Summer season	70	84	3.4	5	0.4	1.1
Monsoon season	75	90	2	3.8	1	0.6

4.1.4 Household assets possession of the sampled households

Table 4.6 lists the household assets possession of farm households. In this study area, small livestock (chicken, pig and duck) were raised for meat production and extra income by 67% of the sample farmers. For animal power, cattle and buffaloes were reared by 12% of the sample farm households. Fish pond or fishing equipment was also owned by farm households 8% in the study area. Farm equipment (machine) and farm equipment (manual) were possessed by 55% and 23% of the sample farm households respectively. The other land not used for agricultural purpose was owned by 47% of the sample farmers. The farm households (57% and 30%) had cell phone and vehicles respectively. More or less 90% of sample farmers owned the household assets by jointly husbands and wives within the households. Fish pond or fishing equipment was jointly owned by 86% of the households where as 14% of the husbands alone owned fish pond. Hand-phone possession was also higher in husband only (11%).

Table 4.7 presents the household assets of the landless households. In this table, 45% of the sample landless households possessed small livestock (chicken, pig and duck) for meat production and extra income. For animal power, cattle and buffaloes were reared by only 1% of the landless households. Fish pond or fishing equipment was also owned by landless households about 20% in the study area. The other land not used for agricultural purpose was owned by 47% of sample landless. The landless (23% and 19%) possessed cell phone and vehicles respectively. More or less 100% of landless households owned the household asset by jointly within the households, except small livestock and other land. Hand-phone was jointly owned by 94% of the households where as 6% of the women alone owned hand-phone. Other land was jointly owned by 85% of the households where as 10% of the women alone owned fish pond.

Family resources were generally owned by both husband and wife, and decisions about assets were made together. In Myanmar, property such as house and land were usually registered under the husband's name. In this study, household assets were generally owned by jointly in almost all items. The asset possession of most households was livestock specially pigs and ducks. Boats were common among the sample households but bicycles, motorcycles and four-wheel vehicles for transportation were very rare. Comparing different household types, total asset values were the lowest in the landless households, indicating that they belong to the poorest section of the village economy.

Table 4.5 Percentage of household assets owners in the farm households

Items	Percent of owner household assets (N = 83)				
	Owned household s percent	Jointly wife and husband	Women only	Husband only	Family member
1. Small livestock (chicken, pig and duck)	67	86	7	7	0
2. Cell phone	57	83	4	11	2
3. Farm equipment (machine)	55	92	4	4	0
4. Other land not used for agriculture purpose	47	87	8	5	0
5. Vehicles (boats)	30	96	0	0	4
6. Farm equipment (manual)	23	90	5	5	0
7. Cattle and buffaloes	12	80	10	10	0
8. Fish pond or fishing equipment	8	86	0	14	0

Table 4.6 Percentage of household assets owner in the landless households

Items	Percent of owner household assets (N = 80)				
	Owned households percent	Jointly wife and husband	Women only	Husband only	Family member
1. Small livestock (chicken, pig and duck)	45	83	6	8	3
2. Cell phone	23	94	6	0	0
3. Other land not used for agriculture purpose	26	85	10	5	0
4. Vehicles (boats)	19	100	0	0	0
5. Cattle and buffaloes	1	100	0	0	0
6. Fish pond or fishing equipment	20	94	0	0	6

4.2 Income, Indebtedness and Credit of the Selected Households

4.2.1 Income sources and composition of the sample households

In this study, the household income of both households was the sum of the incomes received from all sources. The household income was derived from four main sources; crop income, off-farm income, non-farm income and livestock income. Crop income was the sum of earnings by selling various farm crops from farm. Non-farm income was income from small business, regular full time employment and regular part time employment. Off-farm income included farm labor income. Livestock income was income from sale of products from cow, pigs or other large animals and sale of fish, prawns, crabs, and shell fish. The annual income of the households as depicted in Figure 4.1 shows that most of the farm household's income sources were received from crop 100%, 40% from off-farm, 37% from non-farm and 71% from livestock. Landless households also had four types of income sources. Landless household's incomes were 71% of households from livestock, 63% from off-farm, 55% from non-farm and 13% from crop. Landless households received 71% of households from livestock which was the largest income source. The second largest income sources for landless households were off-farm and non-farm income. Two income sources were the highest in the both households in Figure 4.2. Three income sources were found in 37% of the farmers whereas 20% of the landless had three income sources.

Figure 4.3 presents percent share of the households' income for farm and landless households. In farm households, the main income was crop income which contributes 78% of the household income. About 10% and 7% of the household income were livestock income and non-farm income respectively and only 5% of the household income was off-farm income. In landless households, about 43% of the household income was off-farm income which was the main income. Non-farm income was about 33% of household income and livestock income was 23% of household income. Crop income was only 1% of household income in landless households. In the total households' income, farm households mainly depended on crop income although landless households mainly depended on non-farm and off-farm income. As work on farms was seasonal landless households needed to find other (non-farm) jobs. The predominant working season for non-farm jobs was the summer. The non-farm sectors has become an increasingly important source of employment for landless. More interestingly, non-farm income was a major source of income for all types of households.



Figure 4.1 Income sources of the sample households

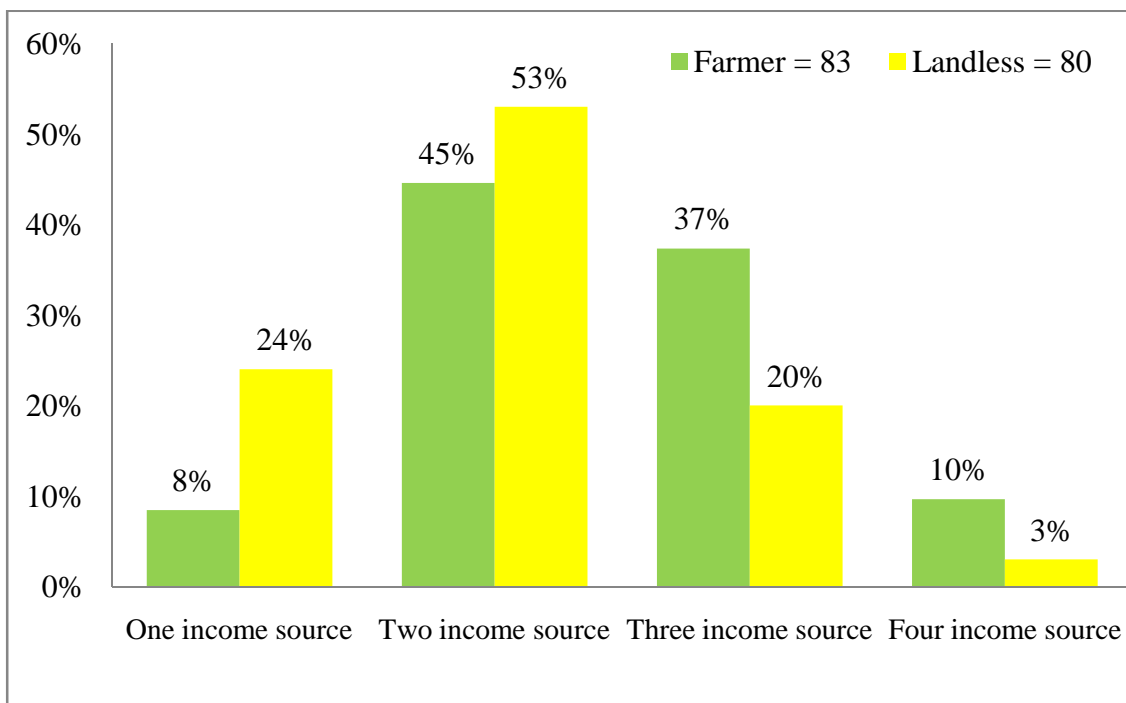


Figure 4.2 Number of income sources of the sample households

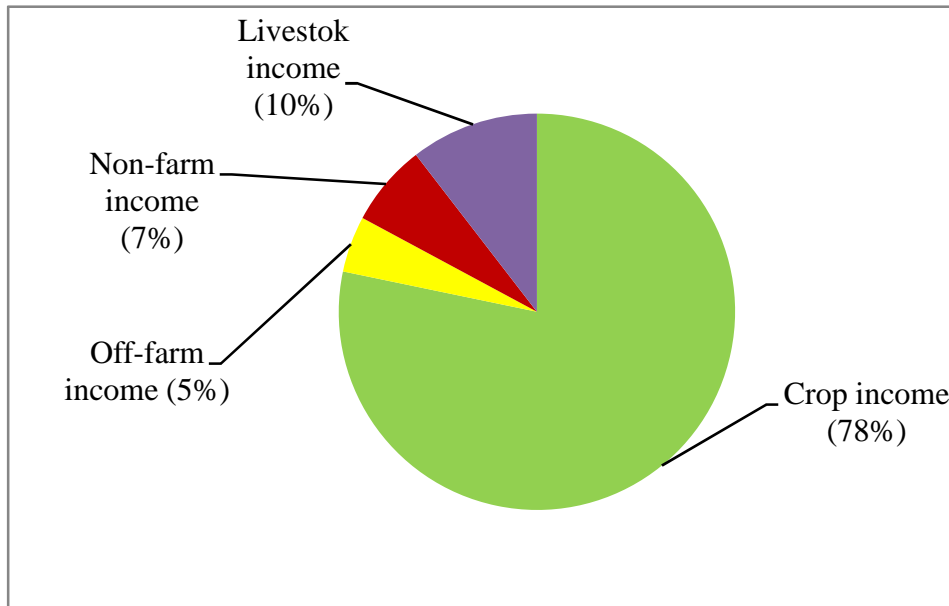


Figure 4.3 (a) Percent share of the household's income for farm households

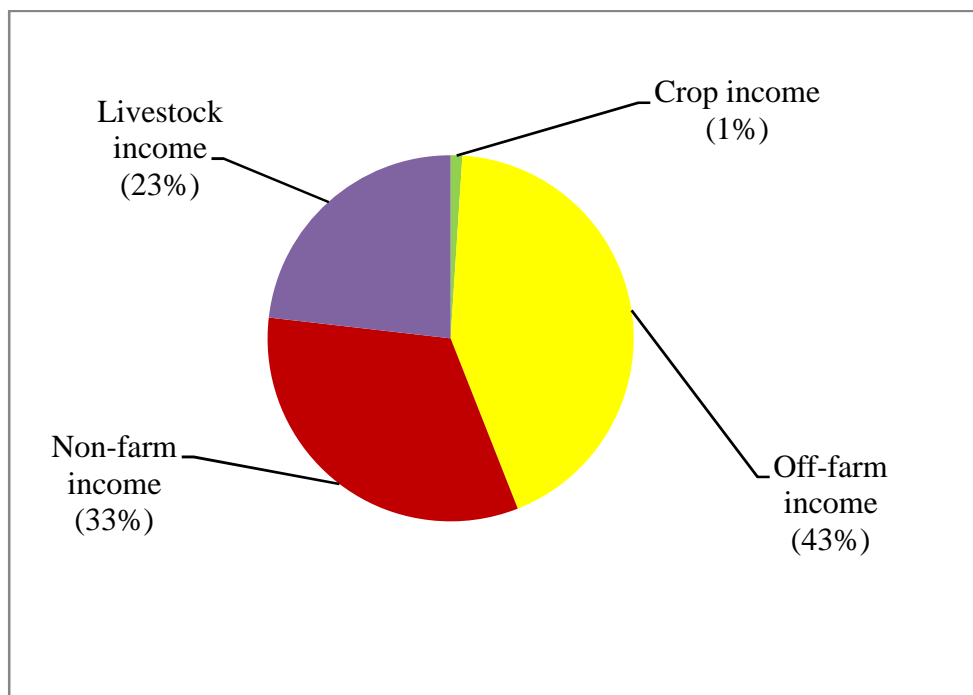


Figure 4.3 (b) Percent share of the household's income for landless households

4.2.2 Amount of income per annum in the sample households

Table 4.8 shows amount of income earned in farm and landless households. The average annual income from crop, off-farm, non-farm and livestock were 2.5, 0.3, 0.6 and 0.4 million kyats respectively. The main income for farm households was crop income. Besides income from crop, most households had additional income from off-farm, non-farm and livestock incomes. For many farmers, wage labor constituted a substantial part of their income and was used to cover the shortfall between two harvests. The average incomes for landless households were earned from crop income (0.07 million kyats), off-farm income (0.5 million kyats), non-farm income (0.5 million kyats) and livestock income (0.3 million kyats) per annum respectively. Off-farm and non-farm incomes were main incomes for landless households. Although incomes were essential, the current off-farm and non-farm income generating activities were insufficient for the landless households in the study area. In the landless households, incomes were combination of therefore numerous sources, complemented with income from livestock and crop, performed by both men and women. Several women mentioned that they were looking for more opportunities to boost their income.

Total income of the farm households was higher than the landless households. Total maximum incomes were 11.1 million kyats per annum in farm households and 2.6 million kyats per annum in landless households. Total minimum incomes were 0.5 million kyats and 0.1 million kyats per annum in farm and landless households respectively. In the study area, livelihoods of farmers and landless are traditionally connected: (a) farmers created employment opportunities for landless; and (b) many farms depended entirely on landless labors to operate their farming. Comparing different household's income activities, farm households were much better-off than landless households.

Table 4.7 Income amount of the sample households in the study area

Types of Income	No. of households	Income (MMK '000 per annum)			
		Av.	Max.	Min.	SD
<u>Farm households (N = 83)</u>					
1. Crop income	83	2,522	9,600	110	2,130
2. Off-farm income	33	371	1,800	12	456
3. Non-farm income	31	662	3,660	80	775
4. Livestock income	59	474	2,870	20	510
Total income	83	3,255	11,190	500	2,290
<u>Landless households (N = 80)</u>					
1. Crop income	10	72	250	10	70
2. Off-farm income	57	529	1,700	60	397
3. Non-farm income	44	522	1,800	30	459
4. Livestock income	50	325	1,740	15	330
Total income	80	876	2,610	100	851

4.2.3 Condition of indebtedness in the sample households

Figure 4.4 explains comparison of current and previous year's indebtedness of sample the households. In this figure, the sample farm and landless households were facing increase level of indebtedness indicated by 44% and 49% of the households compared with the previous year. About 19% and 31% of farm and landless households were at the same level of indebtedness compared with previous year. Farm (37%) and landless (20%) households were in declining level of indebtedness compared with the previous year.

Figure 4.5 presents comparison of current and three years ago indebtedness of sample the households. In this figure, the sample farm and landless households were facing increase level of indebtedness shown by 48% and 60% of the respective households when compared with the three years ago. About 17% and 23% of farm and landless households were at the same level of indebtedness compared with three years ago. Farm (35%) and landless (17%) households were at the declining level of indebtedness compared the three years ago.

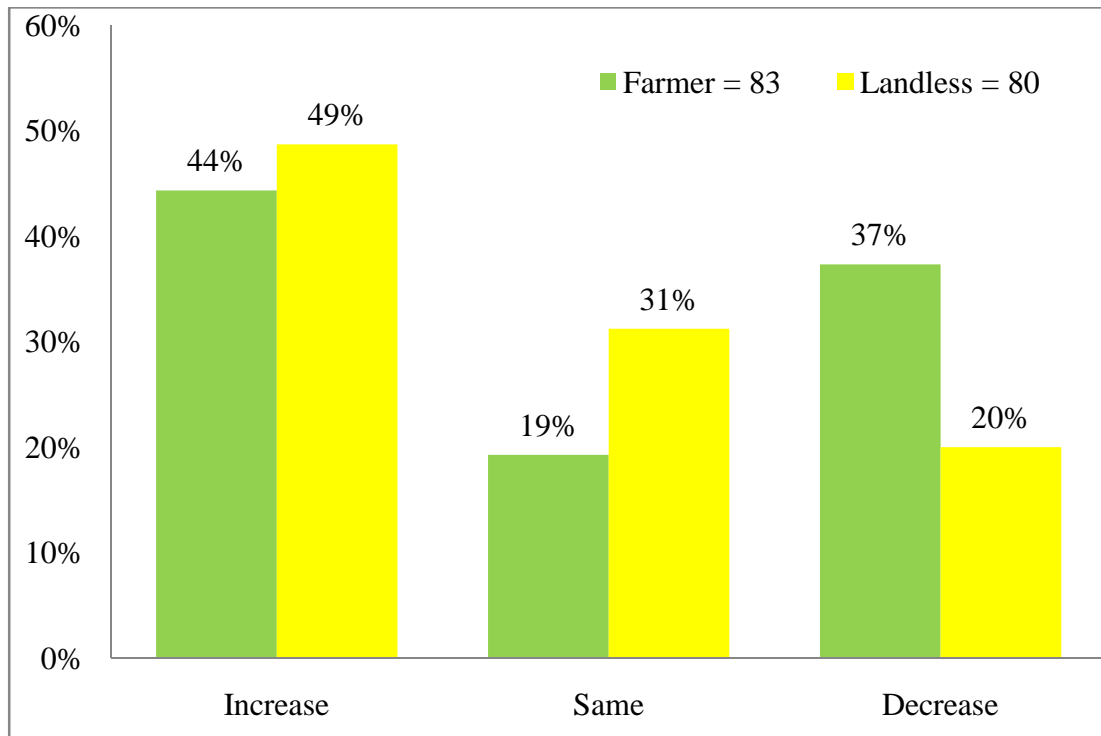


Figure 4.4 Comparison of current and previous year's indebtedness of the sample households

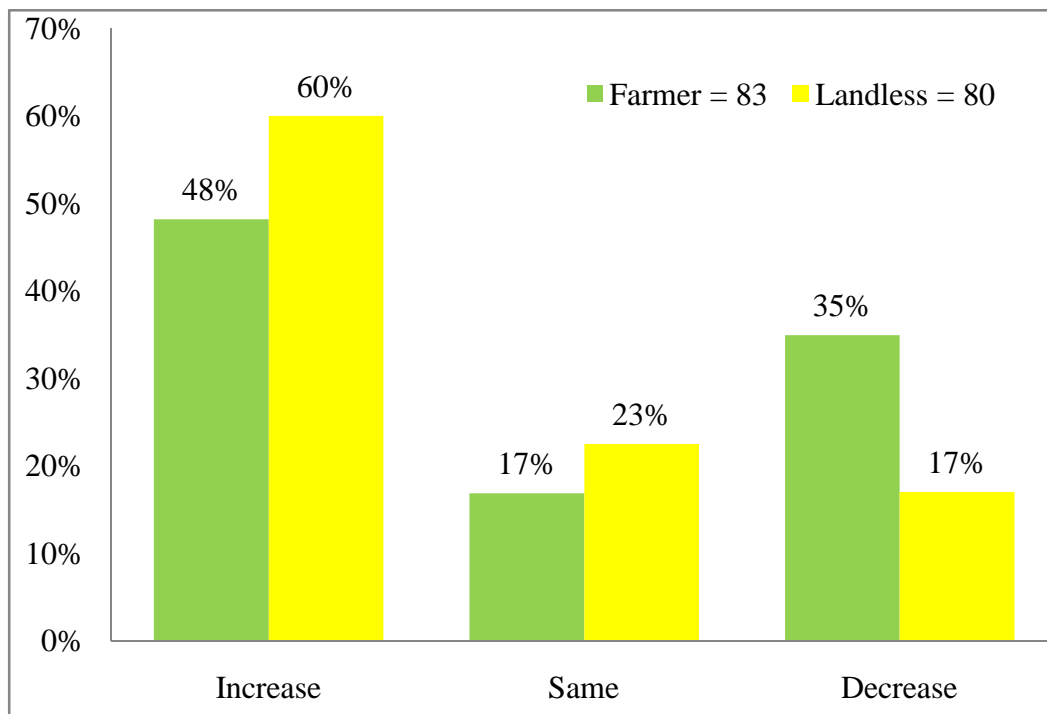


Figure 4.5 Comparison of current and three years ago indebtedness of the sample households

4.2.4 Condition of credit availability in the sample households

In the farm households, the sample households took credit from different sources. There are 7 credit sources namely Myanmar Agricultural Development Bank (MADB), micro-credit provider, money lender, saving and loans association, relative and friend, farmer association and shop-keeper. Among these 7 credit sources, MADB was the formal credit source, while micro-credit provider was semi-formal credit source and the rest five sources were informal credit sources. Farm households (75%) took the credit from MADB. Micro-credit provider, money lender, saving and loans association, relative and friends, farmer association and shop-keeper had (47%), (22%), (17%), (14%), (7%) and (4%) of the customer households respectively (Figure 4.6). Thus majority of the households had access to credit. Access to credit could enable farmers to purchase farm inputs and enjoy economies of scale.

In Figure 4.7, the sample landless households took credit from different sources. There are 5 credit sources namely micro-credit provider, money lender, relative and friends, saving and loans association and shop-keeper. Among these 5 credit sources, landless households (54%) took the credit from micro-credit provider, (18%) from money lender, (16%) from relative and friends, (14%) from saving and loans association and (5%) from shop-keeper. Landless households did not get the credit from MADB and farmer association.

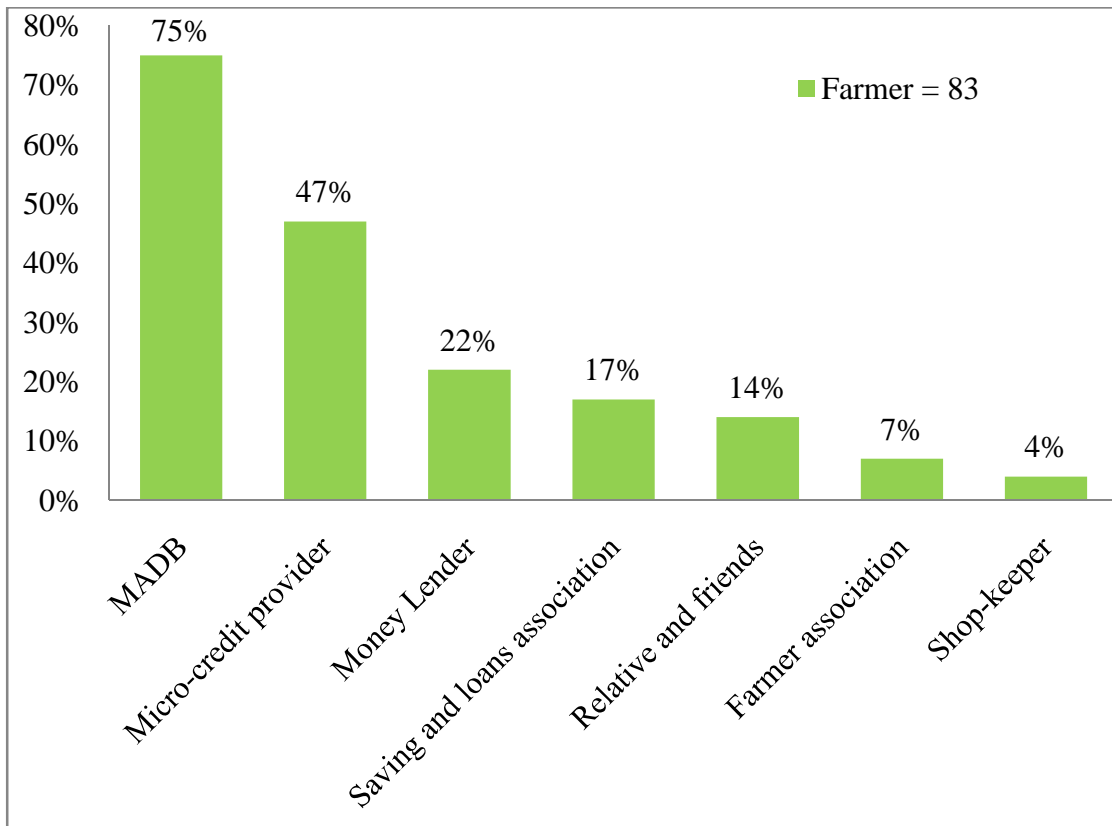


Figure 4.6 Credit availability of the farm households

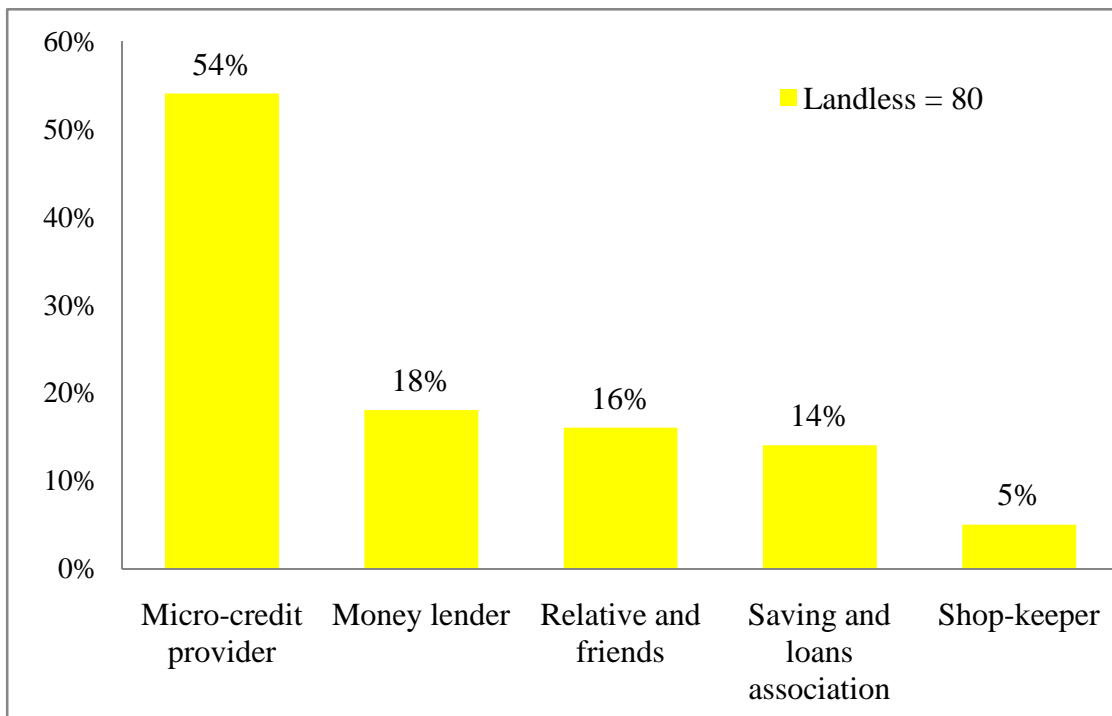


Figure 4.7 Credit availability of the landless households

4.2.5 Amount of credit in the sample households

The amount of credit received from various credit sources by farm households were shown in different average, maximum and minimum (Table 4.9). In the farm households, MADB's average credit amount was 1.2 million kyats which ranged from 5 million kyat to 0.08 million kyats. MADB' credit amount was the maximum for farm households. Saving and loans association' credit amount was the lowest amount. Average amount of saving and loans association was 0.1 million kyats which ranged from 0.03 million kyats to 1.0 million kyats. Decision making about credit was done by mutual agreement between farmers and organizations. The largest part of the credit was mostly used to purchase agricultural inputs but also to fulfill daily household needs in the farm households.

The amount of credit received from various credit sources by the landless households were in Table 4.10. Average amount of Micro-credit provider was 0.2 million kyats, this credit amount was the maximum for the landless households. Saving and loans association credit amount was the lowest amount. Average amount of saving and loans association was 0.07 million kyats which ranged from 0.02 million kyats to 0.13 million kyats. Almost all of the credits were largely used in daily household needs in the landless households.

Table 4.8 Different sources of credit availability of farm households in 2015

Items	Amount of credit ('000 MMK)			
	Ave.	Max.	Min.	SD
1. Myanmar Agricultural Development Bank (MADB)	1,260	5,000	80	856
2. Micro-credit provider	458	1,000	30	301
3. Money Lender	599	2,000	30	533
4. Saving and loans association	175	1,000	33	265
5. Relative and friends	595	2,000	20	580
6. Farmer association	880	2,000	100	820
7. Shop-keeper	210	500	33	202

Table 4.9 Different sources of credit availability of landless households in 2015

Items	Amount of credit ('000 MMK)			
	Ave.	Max.	Min.	SD
1. Micro-credit provider	251	1,000	30	247
2. Money Lender	166	500	20	150
3. Relative and friends	156	400	10	131
4. Saving and loans association	78	130	20	32
5. Shop-keeper	118	200	15	95

4.3 Decision Making in Household Economic Activity and Community Level

4.3.1 Decision making of household on purchasing and selling household and farm assets

The decision-making process is an important segment of every household because the functioning of family resource management depends on the efficiency of decision-making progress. So, women's involvement in decision-making process has been of great importance because women play an important role in every household activities and give excellent performance most of the time. Table 4.11 and 4.12 show that decisions regarding purchase and sale of household assets entirely taken by the family member. For purchasing and sale of all household items, the decisions were made jointly (about 80 to 90%) in the sampled households. Regarding fish pond or fishing equipment in the farm households, the major decisions were made by only women (14%) but this activity was the highest in only women decision making. For purchasing and sale of small livestock, the major decisions were made by only men (13%) in the farm households but this activity was the highest in only men decision making. Regarding the purchase and sale of small cattle and buffaloes in the landless households, the major decisions were made by only men (14%) but this activity was the highest in only men decision making. Decision making on other land not used for agriculture purpose was made by only women (10%) in the landless households but this activity was the highest in only women decision making. Therefore both of them had an equal role in decisions regarding all household items.

Table 4.10 Decision making on household assets by farm households

Items	Percentage of decision making for household assets (N = 83)			
	Jointly	Women	Husband	Family member
1. Small livestock (chicken, pig and duck)	79	8	13	0
2. Cell phone	84	6	6	4
3. Farm equipment (machine)	85	7	7	1
4. Other land not used for agriculture purpose	82	10	5	3
5. Vehicles (boat)	92	0	0	8
6. Farm equipment (manual)	78	11	11	0
7. Cattle and buffaloes	80	10	10	0
8. Fish pond or fishing equipment	86	14	0	0

Table 4.11 Decision making on household assets by landless households

Items	Percentage of decision making for household assets (N = 80)			
	Jointly	Women	Husband	Other member
1. Small livestock (chicken, pig and duck)	81	6	11	2
2. Cell phone	88	6	6	0
3. Other land not used for agriculture purpose	85	10	5	0
4. Vehicles (boat)	93	0	7	0
5. Cattle and buffaloes	77	7	14	2
6. Fish pond or fishing equipment	94	0	0	6

4.3.2 Decision making in household economic activities

Women are the major contributor of household economy. Women participate in all type of household economic activities and do more work as compare to men workers moreover their participation in decision making related to farm and income generating activities is high. Women's active involvement in decision making is considered essential for rapid economic development of the household. Women were generally proud of their important contributions to farming and family income. Men mostly take a lead role in the field. Nonetheless, the participants mentioned that the men listen to the women's opinions and in many cases decisions were jointly made in this study.

Involvement of women in decision making of household economic activities was analyzed and presented in Figure 4.8. In farm households, the proportion of women's participation in decision making was 77% in livestock rising, 75% in growing crops for household food consumption, 72% in growing crops for sale in the market, 41% non-farm economic and 2% in fishing or fishpond culture. Women decision making power were high in livestock raising, growing crops for household food consumption and growing crops for sale in the market in farm households. In landless households, women's decision makings were found in livestock raising (55%), growing crops for household food consumption (11%), growing crops for sale in the market (8%), non-farm economic and fishing or fishpond culture (88%), respectively. Women decision making power was the highest in non-farm economic activities for landless households in the study area. Women's involvements were high in both households when major decisions regarding the household's economic activities were made.

Table 4.13 shows the decision making level in household economic activities participated by women in farm households. There were five different levels in participation of women in decision making on households economic activities. These levels were decisions making for all, most, some, very few and no decisions. In the farm households, decision making was completely made in non-farm economic, wage and salary employment, livestock raising and fishing or fishpond culture 74%, 72%, 53% and 50%, of women respectively. However, women were involved in all decision making related to growing crops for sale and growing crops for household food consumption by only 41% respectively. All decision making in growing crops for sale and growing crops for household food consumption were mostly taken by men because men mostly took a lead role in the field.

For the landless households, livestock raising, non-farm economic, fishing or fishpond culture, wage and salary employment, growing crops for household food consumption and growing crops for sale could influence on all decision making by 50%, 45%, 40%, 37%, 34% and 33%, of women respectively. Table 4.14, women were not given to make decision completely especially when decisions were made regarding growing crops for sale and growing crops for household food consumption in this household.

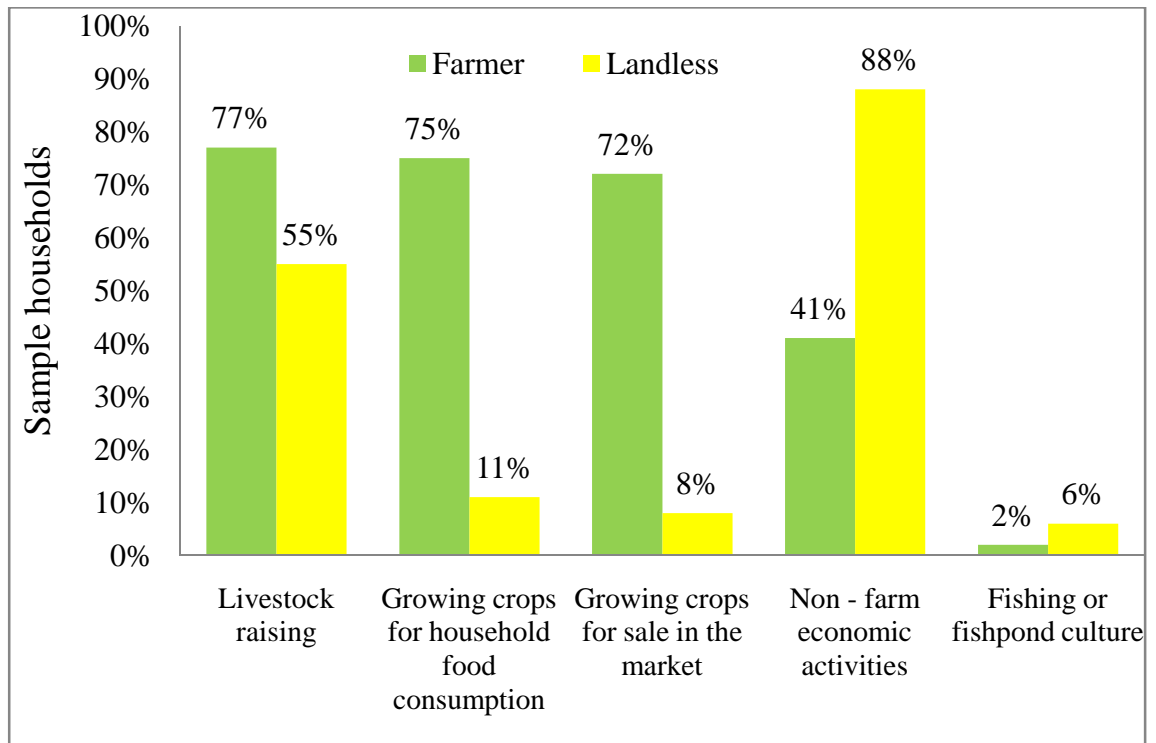


Figure 4.8 Women's decision making for households economic activities in the sample households

Table 4.12 Decision making women level in household economic activities in farm households

Items	Decision making level of women in farm households (N = 83)				
	All	Most	Some	Very few	No
1. Non - farm economic activities	74	22	0	4	0
2. Wage and salary employment	72	14	14	0	0
3. Livestock raising	53	30	8	9	0
4. Fishing or fishpond culture	50	50	0	0	0
5. Growing crops for sale in the market	41	32	7	18	2
6. Growing crops for household food consumption	41	29	10	18	2

Table 4.13 Decision making level of women in household economic activities in landless households

Items	Decision making level of women in landless households (N = 80)				
	All	Most	Some	Very few	No
1. Livestock raising	50	27	7	16	0
2. Non - farm economic activities	45	23	10	20	2
3. Fishing or fishpond culture	40	40	20	0	0
4. Wage and salary employment	37	26	11	26	0
5. Growing crops for household food consumption	34	22	22	22	0
6. Growing crops for sale in the market	33	17	33	17	0

4.3.3 Decision making in household activities

In both households, women emphasized decision making on household activities together with their husband. Joint decision was more the all activities. In the farm households, decision making was mostly taken by women in taking crops to the market (22%), selection of crops to grow (16%), livestock raising (30%), taking wage or salary employment (35%) and minor household expenditures (77%) in Table 4.15. Mostly decision in major household's expenditures getting inputs for crop production (19%) and the types of crops to grow (19%) were taken by men.

Decision-making is not a matter of debate at households. Generally, decisions were made on the basis of consensus. An exception is minor household expenditures, which were nearly always decided upon by the women and it is often considered the domain of women in the study. Therefore, minor household expenditure was decided by women alone in 84% of the landless households. Major household's expenditure, taking wage/salary employment and livestock rising were jointly taking decisions by 60%, 34% and 26% of the landless households. Decisions of women alone on the above decision items were comparatively higher than of men alone.

Table 4.14 Decision making participated in household activities by farm households

Items	Participation of decision making by farm households (N = 83)				
	Jointly	Women	Men	Other member	Don't know
1. Major household expenditures	67	8	13	5	7
2. Getting inputs for crop production	58	14	19	7	2
3. Taking crops to the market	55	22	6	8	9
4. Selection of crops to grow	53	16	19	7	5
5. Livestock raising	40	30	7	5	18
6. Taking wage or salary employment	33	35	0	6	26
7. Minor household expenditures	17	77	2	0	4

Table 4.15 Decision making participated in household activity by landless households

Items	Participation of decision making by landless households (N = 80)				
	Jointly	Women	Husband	Other member	Don't know
1. Major household expenditures	60	21	6	3	10
2. Taking wage or salary employment	34	41	8	4	13
3. Livestock raising	26	16	9	3	46
4. Minor household expenditures	6	84	8	1	1
5. Getting inputs for crop production	4	1	0	0	95
6. Selection of crops to grow	4	1	0	0	95
7. Taking crops to the market	4	3	1	0	92

4.3.3 Participation in the communities affairs by the sample women

Community development can never be achieved without rural women's effort. Women play an important role in communities. Communities at village level are relatively socially cohesive and have strong capacities for collective problem solving and decision-making due to lack of development resources from higher levels, which accentuates the importance of working together at the community level. Communities' affairs are the different interventions in the society which are very crucial to exchange information and to increase the exposure of women to the outside environment. Some of the communities' affairs in which the women are expected to attain in their locality include the following different particulars for both households. Those are microfinance cooperative, farmer's organization, other women's group, Myanmar maternal and child welfare association, charitable group, religious group, women's club and political party. Women participated in all communities but little participation in the both households. Among of these communities, women participation in both households is low even at political party in Table 4.16 and 4.17.

Table 4.16 Farmer Women participation level in the community

Items	Member	Active member	Leader
1. Microfinance cooperative	17 (20%)	16 (19%)	10 (12%)
2. Farmer's organization	10 (12%)	7 (8%)	7 (8%)
3. Other women's group (volunteer)	10 (12%)	10 (12%)	6 (7%)
4. Myanmar Maternal and Child Welfare Association	9 (11%)	8 (10%)	3 (4%)
5. Charitable group	9 (11%)	7 (8%)	2 (2%)
6. Religious group	6 (7%)	5 (6%)	4 (5%)
7. Women's affair association	5 (6%)	4 (5%)	2 (2%)
8. Political party	3 (4%)	3 (4%)	2 (2%)
9. No participation	34 (41%)	-	-

Note: Table in the parentheses represents percentage.

Table 4.17 Sample women landless participation of individual leadership and influence in the community

Items	Member	Active member	Leader
1. Microfinance cooperative	18 (22%)	14 (17%)	9 (11%)
2. Myanmar Maternal and Child Welfare Association	8 (10%)	6 (7%)	4 (5%)
3. Charitable group	8 (10%)	7 (8%)	5 (6%)
4. Other women's group	6 (6%)	6 (7%)	4 (5%)
5. Religious group	5 (6%)	5 (6%)	4 (5%)
6. Women's club	4 (5%)	3 (4%)	2 (2%)
7. Political party	2 (2%)	2 (2%)	0 (0%)
8. Farmer's organization	1 (1%)	1 (1%)	1 (1%)
9. No participation	40 (50%)	-	-

Note: Table in the parentheses represents percentage.

4.4 Attendance and Types of Training

4.4.1 Participation in training and extension programs of sample households

Training and extension programs are one of the main components in the rural development strategies to increase the livelihoods of the rural people. In the study area, there were many kinds of training and extension programs for different purposes with many development aspects. It is good for the village development in the long run. Figure 4.9 demonstrates that the sample household's involvement in training and extension participated condition. These training and extension were rice production, other crop production, rice post-harvest, agricultural products processing, livestock production, fish farming, vocation, home garden, nutrition and healthy food and household management.

The results for participation in training and extension indicate that 54% of farm households and 8% of landless were involved in rice production training. In other crop production training, 29% of farm households and 10% of landless households were integrated. In rice post-harvest practices were not participate by landless households and participated by 16% of farm households. In the farm households, 8%, 20%, 5%, 12%, 22% and 7% were joined in agricultural products processing, livestock production, fish farming, vocational, home garden, and household management training respectively. However, 1%, 6%, 1%, 4%, 9% and 13% of landless households were attended in agricultural products processing, livestock production, fisheries or aquaculture, vocational, home garden, household management training respectively. Large proportion of farm households (59%) and landless households (44%) were involved in nutrition and healthy food training. In this area, nutrition and healthy food training were given as the top priority. This was because there were many non-government organizations related to health and nutrition programs after cyclone Nargis in 2008.

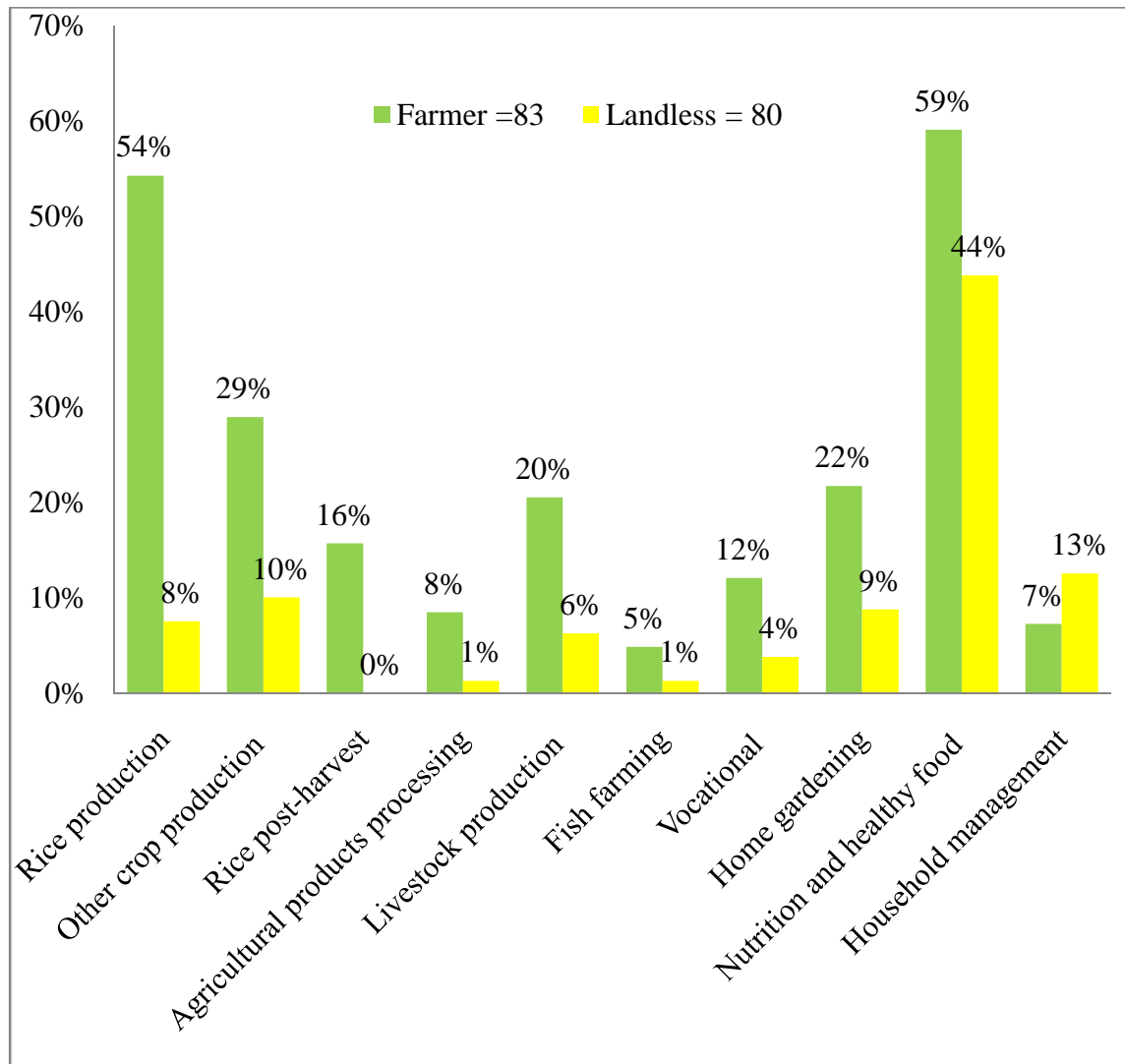


Figure 4.9 Training participation of the sample households

4.4.2 Participation in rice production training by sample households

Table 19 illustrates the invitation for rice production training to the sample households. Rice production training invited focusing on the both women and men (43%) and on the men (57%) in farm households. This training not invited focusing on the women in farm households. In the landless households, 100% of rice production trainings were invited focusing on both women and men as the most.

The extent of participation for the sample households in rice production training was indicated in Table 4.20. About 27% of farm households and 67% of landless households were attended by women in rice production training. In this training, 47% of farm households were attended by men and landless households had no attended by men. Farm households (26%) and landless households (33%) were attended by both women and men in rice production training.

Table 4.21 explains that 6% of farm households received rice production training within the monthly constituted 4, within 4-5 times per year involved 16%, within 2-3 times per year concerned 42%, within once per year participated 16% and only one time included 18%. In this table show that 2% of the farm households don't know any time. In the participant landless households, 17% received rice production training within 4-5 times per year, and those that have training within once per year constituted 50%, within only once time involved 33%.

Table 22 shows the participation of rice production training in the last by sample households. In the farm households, 29% of households attended in rice production training at a few months ago as the most. In the landless households, 49% of households attended in rice production training at a few last years as the large amount. Amount 11% off-farm households did not know when they participated in rice production training. These results indicate that although the presence of extension is well noted by the households of the study area, the level of their participation in extension training sessions is very low. This could have effect on the agricultural development of the households.

Table 4.18 Type of rice production training conducted on gender basic

Items	Farmer		Landless	
	No.	Percent	No.	Percent
Focus on women and men	19	43	6	100
Focus on men	26	57	0	0
Focus on women	0	0	0	0
Total sample size	45	100	6	100

Table 4.19 Usual attending persons in rice production training

Items	Farmer		Landless	
	No.	Percent	No.	Percent
Women	12	27	4	67
Men	21	47	0	0
Women and men	12	26	2	33
Total sample size	45	100	6	100

Table 4.20 Frequency of rice production training attendance in sample households

Items	Farmer		Landless	
	No.	Percent	No.	Percent
Monthly	3	6	0	0
4-5 times per year	7	16	1	17
2-3 times per year	19	42	0	0
Once per year	7	16	3	50
Only 1 time	8	18	2	33
Don't know	1	2	0	0
Total sample size	45	100	6	100

Table 4.21 Participation of rice production training in the last time

Items	Farmer		Landless	
	No.	Percent	No.	Percent
Last month	11	24	1	17
A few month ago	13	29	1	17
More than a half year	3	7	0	0
Last year	6	13	1	17
A few last years	7	16	3	49
Don't know	5	11	0	0
Total sample size	45	100	6	100

4.4.3 Various trainings invitations for sample households

Table 23 explains the training invitations on sample households. In this table, other crop production, livestock production and fisheries or aquaculture trainings were invited for both women and men in farm households as the most representing 88%, 95% and 75%. More or less 70% of the agricultural products processing and vocational trainings were invited for women and men. For men only 46%, 28% and 25% of farm households were invited for rice post-harvest, agricultural products processing and fish farming trainings as the largest invitation. Nutrition and health food training (78%) and household management training (66%) were focused on women only in farm households as the most. In participant farm households, women only were not invited in other crop, rice post-harvest, processing of agricultural products, livestock production and fish farming trainings.

According to the results, other crop trainings (88%), agricultural products processing training (100%), livestock production training (100%) and fish farming training (100%) were invited for both women and men in landless households as the most. In participant landless households, women were invited in vocational training (100%), nutrition and health food training (74%) and household management training (100%). For participant landless households, men only were not invited for all mentioned trainings.

Table 4.22 Type of various trainings invited on gender basic

Items	Farmer (%)			Landless (%)		
	Women and men	Men only	Women only	Women and men	Men only	Women only
Other crop production	88	12	0	88	0	13
Rice post-harvest	54	46	0	0	0	0
Agricultural products processing	72	28	0	100	0	0
Livestock production	95	6	0	100	0	0
Fish farming	75	25	0	100	0	0
Vocational training	70	10	20	0	0	100
Home gardening	61	6	33	71	0	29
Nutrition and health food	20	2	78	26	0	74
Household management	17	17	66	0	0	100

4.4.4 Usual attending in various trainings by sample households

Table 24 explains the percentage of usual attending in various trainings by sample households. The result indicates that both women and men from the sample farm households attended in household management (50%), home gardening (22%) and vocational training (20%). Rice post-harvest training (38%), agricultural products processing training (43%), fish farming (50%), vocational trainings (30%) were attended by men only in farm households as the most. Men only were not involved by men in nutrition and health food and household management trainings. In nutrition and health food, other crop production training, livestock production training and home gardening training were attended by 84%, 71%, 64% and 61% of women as the most.

Only in other crop production training (12%) and household management training (10%) were attended together by both women and men in landless households whereas no attendance was found in other trainings. In landless households men only were attended in vocational training (33%) and nutrition and health food training (6%). Women involved in agricultural products processing training (100%), livestock production training (100%), fish farming training (100%) and home gardening training (100%) as the most.

These results show that women participation in various trainings was comparatively higher than men in both households.

Table 4.23 Usual attending in various trainings by sample households

Items	Farmer (%)			Landless (%)		
	Women and men	Men only	Women only	Women and men	Men only	Women only
Other crop production	4	25	71	12	0	88
Rice post-harvest	16	38	46	0	0	0
Agricultural products processing	0	43	57	0	0	100
Livestock production	12	24	64	0	0	100
Fish farming	0	50	50	0	0	100
Vocational training	20	30	50	0	33	67
Home gardening	22	17	61	0	0	100
Nutrition and health food	16	0	84	0	6	94
Household management	50	0	50	10	0	90

4.4.5 Sample households' participation frequency in various trainings

Frequencies of training attendances were equally distributed among monthly, 2-3 times per year, once per year and only once time of training attending in various trainings. Household was apparent that training attendances in rice post-harvest, agricultural products processing, vocational and nutrition and health food trainings were more frequent than livestock production, fisheries or aquaculture and household management trainings.

Table 25 shows that rice post-harvest training (31%), agricultural products processing training (43%) and nutrition and health food training (37%) were highly received monthly by farm households. More or less 10% of the livestock production training, vocational training and nutrition and health food training were received within 4-5 times per year in farm households. Home gardening training (22%) and household management training (17%) were received 4-5 times per year in farm households as the most. In the farm households, agricultural products processing training, vocational training and nutrition and health food training were attended 2-3 times per year by 29%, 50% and 27% of the respondents. Other crop production training (25%), rice post-harvest training (15%), agricultural products processing training (14%) and livestock production training (18%) were received once per year in farm households. More than 30% of farm households rice post-harvest training, livestock production training and home garden training respectively only one time per year. Among the trainings, fisheries or aquaculture training and household management training have been attended only one time per year by 75% and 65% of the respondents.

Table 26 demonstrates that nutrition and health food training (46%) and household management training (30%) were highly attended by 46% and 30% of the landless households monthly. Agricultural products processing training (100%) and fisheries or aquaculture training (100%) were participating by all respondents 4-5 times per year in landless households as the most. Other crop production training, vocational training and home gardening training were involved 2-3 times per year representing 37%, 33% and 29% of the landless households. Other crop production training (25%), vocational training (33%) and home gardening training (29%) were attended once per year in landless households. Only one training attended by landless household was found in vocational training (34%) and household management training (40%).

Table 4.24 Frequency of training attendances in farm households

Items	Sample farm households (%)					
	Monthly	4-5 times per year	2-3 times per year	Once per year	Only 1 time	Don't know
Other crop production	21	4	21	25	25	4
Rice post-harvest	31	0	23	15	38	0
Agricultural products processing	43	0	29	14	14	0
Livestock production	12	12	18	18	34	6
Fish farming	0	0	0	0	75	25
Vocational training	20	10	50	0	20	0
Home gardening	6	22	11	6	39	16
Nutrition and health food	37	10	27	6	18	2
Household management	0	17	0	0	66	17

Table 4.25 Frequency of training attendances in landless households

Items	Sample landless households (%)					
	Monthly	4-5 times per year	2-3 times per year	Once per year	Only 1 time	Don't know
Other crop production	0	0	37	25	25	13
Rice post-harvest	0	0	0	0	0	0
Agricultural products processing	0	100	0	0	0	0
Livestock production	0	40	20	20	20	0
Fish farming	0	100	0	0	0	0
Vocational training	0	0	33	33	34	0
Home gardening	0	29	29	29	13	0
Nutrition and health food	46	9	17	9	19	0
Household management	30	10	20	0	40	0

4.4.6 The last participation in various trainings by sample households

How often training attendance made by farm households were examined and shown in Table (27). Among the various type of trainings, agricultural products processing, vocational and nutrition and health food trainings were attended not only by 57%, 40% and 53% of farm households during last month but also 29%, 30% and 14% of farm households at a few months ago.

On the other hand, 47%, 25% and 32% of the farm households have respectively attended livestock production, fisheries or aquaculture and household management trainings at a few years. Moreover, 35% and 50% of farm households could participate livestock production and fisheries or aquaculture trainings at last year.

It can be assumed that the majorities of farm households have opportunity to attend crop related trainings such as rice post-harvest, agricultural products processing, other crop production trainings and vocational and nutrition and health food trainings recently.

Among the various types of trainings, agricultural products processing, nutrition and health food and household management trainings were attended not only by 100%, 60% and 50% of landless households during last month but also livestock production 40% and home gardening 43% of landless households at a few months ago. Moreover, 100% of landless households could participation fish farming training at more than a half year in Table (28).

It can be assumed that the majorities of landless households have opportunity to attend crop related trainings such as agricultural products processing, livestock production trainings, fish farming, home gardening, nutrition and health food and household management trainings recently.

Table 4.26 Recently participation in various trainings by farm households

Items	Sample farm households (%)					
	Last month	A few month ago	More than a half year	Last year	A few last years	Don't know
Other crop production	33	8	17	21	4	17
Rice post-harvest	23	23	15	31	0	8
Agricultural products processing	57	29	0	14	0	0
Livestock production	0	0	12	35	47	6
Fish farming	0	0	0	50	25	25
Vocational training	40	30	0	10	10	10
Home gardening	12	17	11	22	17	22
Nutrition and health food	53	14	6	16	6	4
Household management	17	17	0	17	32	17

Table 4.27 Recently participation in various trainings by landless households

Items	Sample landless households (%)					
	Last month	A few month ago	More than a half year	Last year	A few last years	Don't know
Other crop production	39	24	0	0	24	13
Rice post-harvest	0	0	0	0	0	0
Agricultural products processing	100	0	0	0	0	0
Livestock production	0	40	20	20	20	0
Fish farming	0	0	100	0	0	0
Vocational training	33	33	0	0	33	0
Home gardening	0	43	29	14	0	14
Nutrition and health food	60	11	3	9	17	0
Household management	50	10	10	10	0	20

4.5 Time Utilization

4.5.1 Allocation of time per day in the activities by women

Time is one of the most important resources, for individuals but also for the national economy. In depth interview was conducted with all women respondents from farm and landless households so as to know the per capita time utilization for a one day of respondents. One full day's activities of women were monitored on minute basis. The activities were later categorized into four major sets, business work, housework, leisure time and social activities. Figure 4.10 shows that the farm women respondent, were spending 24 hours in business work (8%), housework (36%), leisure time (59%) and social activities (6%) respectively. The landless women respondents were spending in business work (9%), housework (40%), leisure time (46%) and social activities (5%) in one day. Both types of women spent more than five times a day on leisure time if compare with business work. Women respondents spent the lowest percentage in business work. For this reason, women are less likely to be able to take full advantage of economic opportunities and to participate in income-generating activities.

The result of the estimation of the detail time allocation of women in various activities per day activities are described in Table 4.23. It can be seen that farm and landless women were taken more time in term of minutes (595 and 586) for sleeping, (169 and 205) for domestic work and (132 and 139) cooking time. These allocated time for these three items were more or less the same durations. Taking time for eating (75 minutes), personal care (54 and 51 minutes), reading time (14 and 22 minutes), care of children (77 and 89 minutes) and social work (86 minutes) were not different in both households. Farm women more time in farming and livestock work (86 minutes) whereas landless women spent (88 minutes) per day off-farm work. However, time allocations on their major work were not statistically different. Therefore, time spent (minutes) per day on household work and business work of farm women and landless women were not significantly different in the study time.

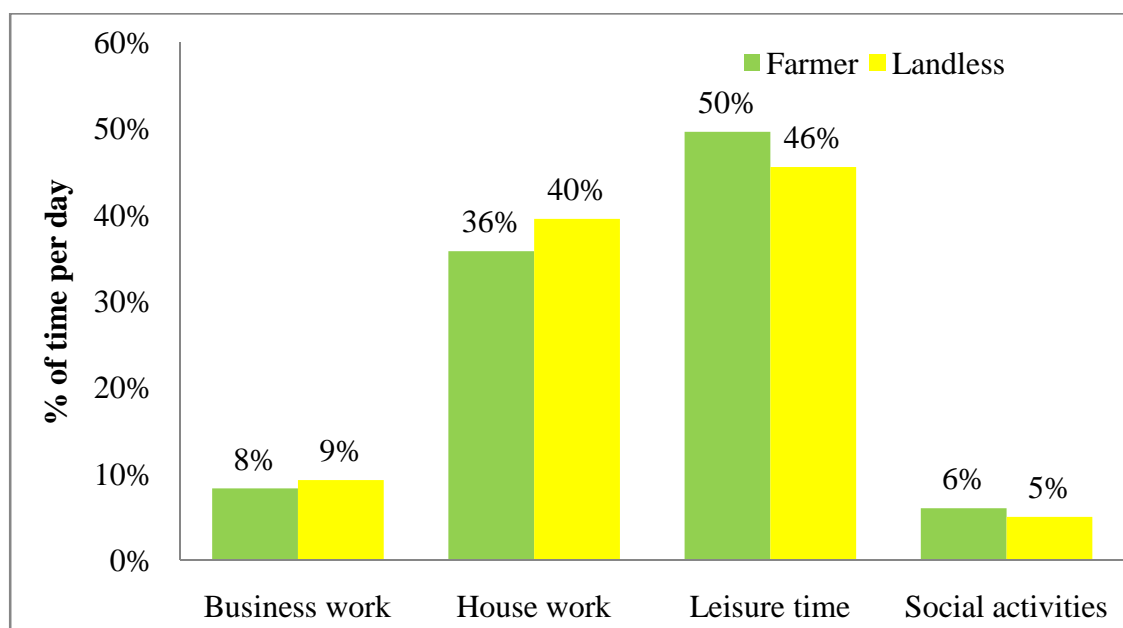


Figure 4.10 Time utilization per day of the sampled women

Table 4.28 Time utilization of women respondents on household and economic work in sample households (minutes/day)

Activities	Time utilization (min/day)		t-test
	Farmer (N = 80)	Landless (N = 80)	
Sleeping time	595 (41)	586 (40)	0.58 ^{ns}
Eating time	75 (5)	75 (5)	0.93 ^{ns}
Personal care	54 (4)	51 (4)	0.49 ^{ns}
Reading time	14 (1)	22 (2)	0.05 [*]
Off-farm work	40 (3)	88 (6)	0.83 ^{ns}
Farming and livestock work	86 (6)	47 (3)	0.45 ^{ns}
Cooking time	132 (9)	139 (10)	0.58 ^{ns}
Domestic work	169 (12)	205 (14)	0.11 ^{ns}
Care of children	77 (5)	89 (6)	0.99 ^{ns}
Leisure time	128 (9)	76 (5)	0.47 ^{ns}
Social work	74 (5)	69 (5)	0.38 ^{ns}

Note: * = Significant at 5%, ^{ns} = not significant,

Figures in the parentheses represent percentage of the minutes per day.

4.6 Factors Influencing the Annual Household Income

In this analysis, some variables which are possible to influence on household income were examined. To find out the determinants of annual household income of sample households, multiple regression models were used with particular dependent variables based on the nature of the data and its expected correlation.

The annual household income of sample households in natural log value was included as the dependent variable in the regression model. The independent variables of the model were land size, households heads' age, households heads' schooling year, family size, amount of credit, number of income source, respondents' schooling year, dependency ratio, working time of women in business, working time of women in housework, working time of women in leisure, women's decision in crop production, women's decision in non-farm activities, women's decision in livestock raising and one dummy variable of women participation in training and extension.

4.6.1 Factors influencing the annual household income for farm households

In the result of descriptive statistics, average annual household income was 3.2 million kyats. Average farm size (3.4 hectare), average household heads' age (43.9 years), average heads' education (6.2 year), average household size (4.3), average respondent's schooling year (5.9 years), number of income sources(4.6) were found as demographic variables. Average working time of women in business (125.1 min./day), average dependency ratio (38.7 percent), average women decision in crop production (56.6 percent), average working time of women in housework (519 min./day) and average women decision in livestock raising (65.8 percent) were shown in Table 4.25.

According to the results, annual household income was negatively associated with household size, women participation in training and extension, working time of women in business and working time of women in housework but not significant. Annual household income was negatively and significantly affected by household heads' education and women's decision in crop production at 5% level and 10% level. It means that household heads' education and women decision making participation in crop production would not lead to high household income.

Annual household income was positively correlated to household head's age, number of income sources and dependency ratio but not statistically significant. Annual household income was positively related to farm size, women's education and women's decision in livestock raising at 1%, 5% and 10%. If farm size increases by 1%, annual

household income will be 1.001% increased. If women's education increases by 1%, annual household income will be increased by 1.855%. If women's decisions in livestock increase by 1%, annual household income will be increased by 1.001%. The result shows that land is one of the most important resources in rural areas. Efficiently used land can earn a higher income. The analysis shows that women play an important role in family income. The finding of the present study reveals that contribution of women decision making in livestock raising as well as in total family income was significant. In addition, the respondents having high education level and women decision making participation in livestock raising could earn more household income.

Table 4.29 Descriptive statistics of dependent and independent variables in farm household's income function

Variables	Units	Av.	Max.	Min.	SD
Total annual household income	MMK	3255891.6	11190000	500000	2290255.9
Farm size	Hectare	3.4	11.3	0.2	2.6
Household head's age	Year	43.9	80.0	25.0	12.0
Household head's education	Year	6.2	12.0	0.0	2.7
Household size	No./hh	4.3	9.0	1.0	1.6
Number of income sources	No./hh	4.6	9.0	1.0	1.7
Working time of women in business	Min./day	125.1	600.0	0.0	161.0
Dependency ratio	Percent	38.7	75.0	0.0	18.6
Women's education	Year	5.9	14.0	0.0	2.6
Women's decision in crop production	Percent	56.6	100.0	0.0	40.9
Working time of women in housework	Min./day	519.1	975.0	45.0	193.0
Women's decision in livestock raising	Percent	65.8	100.0	0.0	39.8

Table 4.30 Income function of the selected farm households (N = 83)

Independent variables	Unstandardized. Coefficient (B)	Standardized Coefficient (β)	T-value	Sig.
(Constant)	6.277 ^{ns}		1.115	.291
Farm size	1.001***	.863	4.420	.001
Household head's age	1.459 ^{ns}	.426	1.770	.107
Household head's education	-1.966**	-.915	-2.768	.020
Household size	-.572 ^{ns}	-.261	-1.190	.262
Number of income sources	.608 ^{ns}	.237	1.123	.288
Women participation in training and extension	-.444 ^{ns}	-.224	-1.187	.263
Working time of women in business	-.075 ^{ns}	-.088	-.395	.701
Dependency ratio	.516 ^{ns}	.211	.802	.441
Women's education	1.855**	.796	3.072	.012
Women's decision in crop production	-.898*	-.437	-1.834	.097
Working time of women in housework	-.575 ^{ns}	-.244	-.914	.382
Women's decision in livestock raising	1.875*	.644	2.208	.052

Note: Adjusted $R^2 = 0.638$, $R^2 = 0.836$

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

***, ** and * are significant at 1%, 5% and 10% level respectively and ns = not significant

Women participation in training and extension yes = 1, no = 2

4.6.1 Factors influencing the annual household income for landless households

Table 4.27 shows that the descriptive statistics of dependent and independent variables of annual household in function. In the result of descriptive statistics, average annual household's income was 0.8 million kyats. Average household heads' age (43.8 years), average household heads' education (5.1 years), average household size (4.4), average respondents' schooling year (4.1 years), average credit amount (225637.5 kyats), number of income sources(3.3) were found as demographics. Average women decision in non-farm (57.3 percent), average working time of women in business (135.1 min./day), average dependency ratio (35.4 percent), average working time of women in housework (574.5 min./day) and average working time of women in leisure time(661.8 min./day) were explained in this table.

The results of the estimation of the annual household income function for landless households in the study areas are described in Table 4.28. Annual household income was positively influenced by household head's age, household size, credit amount and number of income source but not significant. Annual household income was positively and significantly affected by household's head education at 10% level. Other things being equal, 1% increases in household head education will increase annual household income by 1.148%. In the landless households, high education level of household head was related to increase income.

Annual household income was negatively related to women participation in training and extension, women's decision participation in non-farm activities and women's education but not statistically significant. Annual household income was negatively and significantly influenced by working time of women in business, dependency ratio, working time of women in housework and working time of women in leisure time at 5% level and 10% level respectively. It means that if 1% increase in working time of women in business, dependency ratio, working time of women in housework and working time of women in leisure will decrease the annual household income by 1.030%, 3.124%, 1.546% and 2.134% respectively. In addition, working time of women in business, dependency ratio, working time of women in housework and working time of women in leisure time would not lead to high household income.

Table 4.31 Descriptive statistics of dependent and independent variables in landless household's income function

Variables	Units	Av.	Max.	Min.	SD
Total annual household income	MMK	876950	2610000	100000	581984.6
Household head's age	Year	43.8	70	20	11.3
Household head's education	Year	5.1	11	0	2.7
Household size	No./hh	4.4	10	1	1.9
Credit amount	MMK/hh/year	225637.5	1100000	0	275537.1
Number of income sources	No./hh	3.3	7	1	1.4
Women's decision in non-farm activities	Percent	57.3	100	0	39.9
Working time of women in business	Min./day	135.1	690	0	184.9
Dependency ratio	Percent	35.4	77.7	0	22.2
Women's education	Year	4.1	11	0	2.5
Working time of women in housework	Min./day	574.5	975	120	184.0
Working time of women in leisure time	Min./day	661.8	1095	420	136.8

Table 4.32 Income function of the selected landless households (N = 80)

Independent variables	Unstandardized. Coefficient (B)	Standardized Coefficient (β)	T-value	Sig.
(Constant)	52.853***		4.301	.005
Household head's age	.325 ^{ns}	.080	.408	.698
Household head's education	1.148*	.675	2.339	.058
Household size	.157 ^{ns}	.053	.230	.826
Credit amount	.187 ^{ns}	.212	.909	.398
Women participation in training and extension	-.036 ^{ns}	-.019	-.085	.935
Number of income sources	.140 ^{ns}	.076	.374	.721
Women's decision in non-farm activities	-.989 ^{ns}	-.383	-1.870	.111
Working time of women in business	-1.030**	-.859	-3.246	.018
Dependency ratio	-3.124*	-.809	-2.327	.059
Women's education	-.041 ^{ns}	-.026	-.079	.940
Working time of women in housework	-1.546*	-.584	-2.303	.061
Working time of women in leisure time	-2.134*	-.415	-2.072	.084

Note: Adjusted $R^2 = 0.620$, $R^2 = 0.873$

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

***, ** and * are significant at 1%, 5% and 10% level respectively and ns = not significant

Women participation in training and extension yes = 1, no = 2

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings and Conclusions

In the study, average age of sample women was around 40 years and average family size was 4 persons in both households. Most of the sample women were married in both households. In the study, most of the sample women were at the primary education and secondary education level. Meanwhile, education is very important for everyone to be able to adopt new technologies.

Crop income was the largest portion of the total household income in farm households while the largest income for landless households was off-farm and non-farm incomes. In the study area the occurrence of cyclone Nargis affected employment opportunities in many ways. Severe limits to productivity in both agricultural and aquaculture sector depress job opportunities. Land unavailability and destruction of tools deprived farmers to run agriculture and aquaculture with consequent limits in household incomes. The current level of indebtedness in the sample farm and landless households were increased compared with the last year and previous three years. Farm households had more credit sources than landless households. Landless households did not get the credit from MADB and farmer association.

Farm women decision making power was the highest in livestock raising, growing crops for household food consumption and growing crops for sale in the market for the farm households. Women's decision making power was highest in non-farm economic for the landless households but low for all others activities in the study area. Women were largely involved in decision making process when major decisions regarding the household's economic activities were made.

In this area, nutrition and healthy food training were given as the top priority because there were many non-government organizations related to health after happening Cyclone Nargis in 2008. Although extension service provided crop cultivation technology, the farmers were not well understand and not willing to adopt these practices. Both farmer and landless women used more minutes per days for off-farm work for income activities. The farmer with larger land size could get higher income.

Annual farm household income was negatively associated with household size, women participation in training and extension, working time of women in business and

working time of women in housework but not significant. Annual farm household income was negatively significant affected by household's head education and women's decision in crop production at 5% level and 10% level. It means that household's head education and women decision making participation in crop production would not lead to high household income in the farm households.

Annual farm household income was positively correlated to household head's age, number of income source and dependency ratio but not statistically significant. Annual household income was positively related to farm size, women's schooling year and women's decision in livestock raising at 1% level, 5% level and 10% level. The result shows that land was one of the most important resources in rural areas. Efficient land utilization caused to get higher income. In addition, the women having high education level and women decision making participation in livestock raising could earn more farm household income.

In the landless households, annual household income was positively and significantly affected by household's head education at 10% level. High education level of household head was related to increase income. Annual landless household income was negatively related to women participation in training and extension, women's decision participation in non-farm activities and women's education but not statistically significant. Annual landless household income was negatively and significantly influenced by working time of women in business, dependency ratio, working time of women in housework and working time of women in leisure at 5% level and 10% level respectively. It means that if 1% increase in working time of women in business, dependency ratio, working time of women in housework and working time of women in leisure will decrease the annual landless household income by 1.030%, 3.124%, 1.546% and 2.134% respectively. In addition, working time of women in business, dependency ratio, working time of women in housework and working time of women in leisure would not lead to high landless household income.

5.2 Recommendations

Based on the findings, it would be recommended that agricultural extension and other capacity building training needed for rural women should be paid attention to both farm and landless women. Therefore, more educational investment plan in rural areas such as vocational training would be promoted for women and young people to secure

livelihoods and poverty reduction. The role of women in livestock through education should be promoted.

Other income generation activities would be encouraged to conduct for improving living standard of farm and landless women. Moreover, various income generating projects should be introduced in rural areas to improve living standard particularly for women. Similarly, promoting women's participation in farmer organizations and women's groups are necessary to develop women's skills, broaden their networks, and boost their self-confidence. Policy makers should recognize women's active participation in non-agricultural self-employment activities as an opportunity to increase rural employment especially amongst women's groups. Better infrastructure should be provided to create linkage not only between cities and villages as well as between farm and non-farm sectors. Women should be encouraged and empowered to participate more intensively in various development trainings in order to reduce poverty and income inequality. Women should be given experiences in decision-making process, including participatory personnel management and budget management. This study indicates the need of further studies on rural women roles and their essential status in household economic activities depend different on household economic types in rural sector cross the country.

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