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Women's workload and their role in agricultural production in Ambo district, Ethiopia

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The Government of Ethiopia is working towards mainstreaming gender in all sector programmes, including agriculture. Women, despite having key role in advancing agricultural development and food security, their contribution is undervalued and they have been neglected in the making of agricultural policies. With the aim of tackling gender issues in agricultural production this study estimated total hours spent in farm associated tasks, identified activities performed by women and examined the influence of selected socio-economic characteristics of women on their participation in agricultural production. A two-stage random sampling technique was used to select 180 respondents for this study. The research was carried out by the use of well-structured questionnaires to obtain the necessary data. The relationship between selected socio-economic characteristics of the respondents and their total hours spent on agricultural activity was determined using ordinary least square (OLS) regression. The findings reveal that, while women are found with less agricultural resources and low decision making power, they spent 26 h per week in farm activities showing high rate of involvement in agricultural production. It was also found that marital status, income and age had significant impact on women participation in agricultural production. It is recommended that women agricultural productivity should be enhanced by improving their access to agricultural resources and developing policies and technologies targeting women related agricultural activities.

Key words: Women, work load, agriculture, Ethiopia.

INTRODUCTION

Agricultural sector is the principal engine of growth of the Ethiopian economy; it employs 83% of the labour force, contributes about 90% of exports and 45% of gross domestic product (GDP), and provides about 70% of the country's raw material requirement for large-and medium-scale industries (MoARD, 2009).

Around the world, there are at least 1.6 billion women who live in rural areas and depend on agriculture for their livelihoods – more than a quarter of the total world

population. Women farmers produce more than half of all the food that is grown in the world, specifically, up to 80% in Africa and 60% in Asia (http://pdf.usaid.gov/pdf_docs/PNADA958.pdf). In most rural communities in Ethiopia, women work from dawn to dusk and, in contrast with men, have little time for leisure or socializing. Women are not only the major source of labour in the agricultural sector, they are also responsible for the vital tasks of caring for children, the sick and the

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elderly as part of their household responsibilities. Despite their immense contribution to society, women's productive, domestic and community related activities seem to be undervalued, often misunderstood and are rendered invisible from official discourse and national statistics.

Women are increasingly active in virtually every economic sector. In addition to producing much of the world's food, women hold primary responsibility for gathering the water and fuel used daily by their families. Women make up an increasing proportion of the world's formal labour force and heads of households. In most societies men's role in agricultural activities is understood to be directed and clear. However, women's role in agriculture is not clearly recognized. Hence, a clear picture of women's participation in agriculture is needed. Although this is increasing that women are involved in the world agriculture until recently have been difficult to gain a clear picture of where, and under what circumstance women in particular work in the farm (Annabel, 1986).

According to the Food and Agriculture Organization of the United Nations (FAO), women in some African countries spend up to 60% of their time on agricultural activities. Women farmers contribute up to 50% of labour on farms in sub-Saharan Africa. More than 60% of employed women in sub-Saharan Africa work in agriculture. Developing policies that focus on the needs of women is not just a political priority, it is an economic imperative. As the FAO states, there is a significant global gender gap in agriculture, which translates into a costly lost opportunity to improve the quality and quantity of the world's food supply. If women had the same access to, and control over productive resources as men, they could increase yields on their farms by 20 to 30%. This could raise total agricultural output in developing countries by 2.5 to 4%, which could in turn reduce the number of hungry people in the world by 12 to 17%.

Land is not just a productive asset and a source of material wealth, but equally a source of security, status and recognition. Substantive gender equality is both relational and multi-dimensional, cutting across race, class, caste, age, educational and locational hierarchies and can only be achieved if rights are seen as socially legitimate. Sub-Saharan Africa women contribute between 60 and 80% of the labour for food production, both for household consumption and for sale (FAO, 1994). Women's access to and control over land can potentially lead to gender equality alongside addressing material deprivation (Quisumbing et al., 2004). The exclusion of women from access to and control over assets, whether land, technology or credit potentially lowers growth (Evers and Walters, 2000).

Women own only an estimated 1 to 2% of all titled land worldwide and are frequently denied the right to inherit property. There are numerous cultural, social, political, and legal factors that influence women's lack of property and inheritance rights, and specific patterns of ownership and disenfranchisement vary widely. Lack of control over both

productive and non-productive resources in both rural and urban settings places women at a strong disadvantage in terms of securing a place to live, maintaining a basis for survival, and accessing economic opportunities. For instance, the widespread lack of official title to land and property among women means that, they have virtually no collateral with which to obtain loans and credit. These factors exacerbate women's generally low status and high levels of poverty when compared to men. Furthermore, women's lack of property and inheritance rights has been increasingly linked to development-related problems faced by countries across the globe, including low levels of education, hunger, and poor health.

Kotey and Tsikata (1998) have argued that discussions revolving around agricultural productivity are best explained through a land rights analysis using a social relation's approach. The "gender perspective" approach used by the World Bank to analyse growth and poverty in sub-Saharan Africa recognises that women stand at the crossroads between production and reproduction, between economic activities and the care of human beings, and therefore between economic growth and human development. Such an approach takes account of existing discriminatory, unequal and inequitable (power) relationships and practices, and lays the basis for more sustainable development based on legal and social justice. It also provides room for a broader view of social groups.

Clearly, a lack of understanding about the roles that women and men play, activities performed by each and workload of women in a sector as fundamental as agriculture will result in programs falling short of their potential and development. Gender integration is the process by which gender analysis is applied to all steps of development programs and projects. Without proper targeting policies and programs, it may not reach or impact those drivers of agricultural productivity and development. Therefore, the objective of this study was to quantify the level of women participation per each agricultural activity, to identify factors affecting level of women's participation in agricultural production and to investigate women and female-headed households' access to and control over agricultural land.

METHODOLOGY

Data and the study area

The study was conducted in Ambo woreda¹ of West Shewa Zone of Oromia regional state of Ethiopia between astronomical grids of 8°47' _9°21'N and 37°32'E which is located 114 km away from the capital of the country (CSA, 2008). The woreda has the mean annual temperature of ranging between 23 to 28°C and the mean annual rainfall of 1,300 to 1,700 mm (CSA, 2008). The low, mid and

¹Woreda (also spelled wereda) is an administrative division of Ethiopia (managed by a local government), equivalent to a district

Table 1. Description of variables used in OLS regression

Variable	Variable Description
Dependent Variable	
Tothr	Total hours women spent on each agricultural activities in a week.
Independent Variables	
X1	Access to irrigation(dummy)
X2	Land ownership (dummy)
X3	Distance to market
X4	Education
X5	Marital status
X6	Age
X7	Household size (actual number)
X8	Annual income
X9	Extension participation (dummy)
X10	Farming experiance(yers)

high lands cover 17, 60, and 32% of the woreda, respectively. Agriculture is the dominant economic activity engaging 92% of the labour force (CSA, 2008). Crop production is mostly dependent on rainfall and major crops produced in the area are wheat, maize, teff, barely, sorghum, and other crops. Livestock are also reared by most families. Oxen provide traction power for cultivation of agricultural lands, on the other hand livestock are kept as source of income through milk, butter, meat and egg production.

A two stage random sampling technique was used to select the sample women in the study area. The first stage was simple random sampling of 9 kebeles² from 24 rural kebeles found in the woreda. From the list of farm households, provided by the woreda beareu, 20 households were randomly selected from each of the 9 woredas, making a total of 180 farm households for the study.

The standard tools of household interviews, focus group interviews and community meetings were used to collect information. The involvement of rural development practitioners was adopted in order to make them more aware of the need to understand different gender roles in rural communities when planning, thus, increasing efficiency and gender responsiveness in rural development policies and programmes.

Women's workload in agricultural production

Agricultural activities women participated are identified and average total hours allocated for agricultural production is estimated.

Determinants of women's participation in agricultural production

Women participation in agriculture was measured as a continuous variable where respondents were asked to individually indicate how much hours were allotted for agricultural production. To investigate the relationship between socio-economic variables and women participation on agricultural tasks, ordinary least square (OLS) regression was employed containing 10 predictors as specified in Equation 1.

OLS is expressed as:

$$Y = \beta_0 + \beta_i X_i + e_i; \quad (1)$$

Where Y is dependent variable which represent total time women spend on each agricultural activities; β_0 is the intercept; β_i is regression coefficient and e_i is error term

The demographic variables included in the empirical model are given in Table 1.

RESULTS AND DISCUSSION

Descriptive result

Age of women farmers was one of the demographic characteristic hypothesized to influence women's participation in agricultural activities. According to Table 2, the age range distribution of the respondents showed that, 42% are young (15 to 30) age groups and followed by middle age groups (31 to 50) and old age groups (>50), 32 and 26%, respectively showing women participation in agriculture in the study area are in the age of productive labour.

Education is believed to affect productivity at least in two ways. First, education increases the ability to use modern (technology) to produce more output. Second, education enhances the ability of farmers to obtain input and analyses information. Thus, education changes the types and magnitudes of inputs to be used in production. As indicated in Table 2, 60% of sample respondents were illiterates, 24% were able to read and write, 12% had elementary school education and 4% had attend secondary school. The education levels of respondents are low; this is due to family dependence on girl's labour at home.

The respondents are categorized as single, married, divorced, and widowed. The result of collected data shows that most of the respondents (64%) are married

²Kebele is the lowest administrative unit in the structure of Ethiopian government.

Table 2. Socio economic characteristics of the respondents.

Variable	Range	Frequency	Percentage
Age	Young (15 to 30)	75	42
	Middle (31 to 50)	58	32
	Old (>50)	47	26
Education	Illiterate	108	60
	1 to 4 Literate	43	24
	5 to 8 Literate	21	12
	>9	8	4
Marital status	Single	4	2
	Married	115	64
	Divorced	18	10
	Widowed	43	24
Annual income	Below 1500	36	20
	1500 to 3000	33	18
	3000 to 5000	54	30
	Above 5000	57	32
Possession of land	<2hctr	54	30
	2 to 3 ha	47	26
	Above 3 ha	72	40
	Had no land	7	4
	Inheritance	54	30
Means of ownership	Leasing	15	8
	Marriage	61	34
	Sharing	50	28

and living with their husbands, while 24, 10 and 2% were widowed, divorced and single, respectively. This means the proportion of the respondents who are married, was much higher than the other categories.

In the study area, the major reason for divorce was economic problem, personal conflicts and polygamy. The economic problem implies that in most cases when a husband lack resource to sustain a family, the wife opts for separation. Most of the marital status, except married ones observed from the study had negative impact on agricultural production as well as the economic growth of farm household, especially, the marital status like divorce and widow make worse off the property family as well as the life of household. In addition, widow and divorce affects or increase women workload, because women are responsible for all assets and family or acts as head family when there is no father. Result on family annual income shows that majority (32%) of respondents belongs to income group of above 5000 Ethiopian birr followed by (30%) income group of 3000 to 5000 birr,

income group (18%) of 1500 to 3000 and (20%) were below 1500 birr annually. The results indicate that most of the respondents earn above 5000 Ethiopian birr annually from agricultural production.

According to Lindia (2005), the incomes gained from these economic activities were used for household consumptions and family support rather than re-investing it to expand their farm investments. Similarly, being rural women, most are illiterate and have no proper skill for full employment opportunity. On the other hand, information observed from the respondents of women revealed that on average the annual income and expenditure trends give priority to satisfy their household basic necessities; they tend to use fertilizer and improved seed provided by agricultural office on credit.

80% of the women farmers had between 10 to 20 years of farming experience which help them in making rational choice and decision to impact positively on the effective management and organization of their farms and families. On the other side, majority of the women group (75.0%)

were full-time farmers that had contact with their block extension agents and also belonged to different cooperative groups. Around 15% of the women engaged in off-farm activities.

The extent to which a farmer is able to perform the various agricultural tasks depends on the level of knowledge and skill possessed by the individual. It has been demonstrated in agricultural extension that many innovations are not adopted by farmers because they are based on wrong assumption about the women farmers, whose real needs are not actually met or served (Iloka, 2002).

Possession of land

Women across the developing world are disadvantaged relative to men. Under male-dominated social structure and political system, women are denied equal access to land structure and extension services (Okafor et al., 2002). The failure to consult women or to consider their specific capabilities and responsibilities can prevent new agricultural projects or technologies from adopted.

Women's access to and control over land can potentially lead to gender equality alongside addressing material deprivation. Land is not just a productive asset and a source of material wealth, but equally a source of security, status and recognition. Substantive gender equality is both relational and multi-dimensional, cutting across race, class, caste, age, educational and locational hierarchies and can only be achieved if rights are seen as socially legitimate.

Data collected on possession of land of women respondents in the study area, revealed that out of the total respondents having land the majority (40%) owned farm land above 3 ha and 26% owned 2 to 3 ha, 30% had less than 2 ha and 4% had no farm land, respectively. This indicates that 40% or the majorities had land for agricultural production. Having enough land for farm can ensure their family need and achieve food security by having enough production from a given land.

As indicated in Table 2, about 42% of respondents have their own land, while the remaining 58% of the respondents do not have their own land. In relation to means of land ownership 34% accessed land through marriage and 30% of them are through inheritance; 28 and 8% accessed ownership to land through sharing and leasing from others.

According to focus group discussion, most women in study areas or in rural areas were not collecting land either from government or from their parents. Only few women benefited from inheritance; most of them owned land through marriage. Marriage has been primary means of getting access to land under customary system. Unmarried women have little access to land because they are not allowed to inherit property in most matrilineal societies, while wives have better access to their

husband lands.

Correlations among explanatory variables

According to the statistical results as the age of household tends to increase, the level of illiteracy increases. This may be because of the recent expansion of education. Consequently, as the level of education increases for household, participation of women in the agricultural production tends to decrease; this could be that education provides them other opportunities and increase the probability of getting non-agricultural jobs. Also as the level of education for household increases, the income level for them increase because education enables them to easily adopt technologies like land, labour, fertilizer, pesticides and etc. and helps them to efficiently and effectively utilize resources in agricultural production.

A correlation coefficient of marital status and land size shows, women who are married, found having, more land. This is possibly because a split leads to lower land size due to land division.

Another result shows that when the level of income for household increases, then the couple's desire to get children decreases because as the level of income of household increases, then their education access increases; consequently, households are aware of family planning and they tend to use different mechanisms like contraceptives to decrease their number of children.

The land size was positively correlated with access to credit. That means women with larger land size have an opportunity to obtain credit for the implementation of agricultural production. In other word, women who having larger land size need credit support to buy different inputs like fertilizer, pesticides and insecticide. In addition to these, results indicated that the income level of women farmer and their ages were negatively related. This means as age of women goes up their ability to participate in the sector decreases and consequently, their income goes down through time.

Women workload

As earlier discussed, women play a significant role in the agricultural labour force and in agricultural activities, although to a varying degree. They participate in all aspects of rural life-in paid employment, trade, and marketing, as well as tend to crops and animals, collect water and wood for fuel, and care for family members. Consequently, their contribution to agricultural output is undoubtedly extremely significant.

Women have dual responsibility for farm and household production. In this study, total hours spent in agricultural activities livestock raising, land clearing sowing, transplanting, weeding and harvesting, as well as

Table 3. Regression estimates of coefficients associated with agricultural technology adoption.

Variable	Coefficient	Standard error
Access to irrigation(dummy)	1.240367	0.4030926
Land ownership (dummy)	0.7295175	0.3165236
Distance to market	0.2510673	0.3029087
Education	1.448586	0.7088618
Marital status	-0.4482329**	0.3236237
Age	0.3079663***	0.342379
Household size (actual number)	0.0785357	0.3445335
Annual income	0.2689223***	0.0907089
Extension participation (dummy)	-.7803478	0.4799395
Farming experiance(yers)	-1.01143	0.4815043
Cons	-2.822129***	0.9997022
Log likelihood	-141.09847	
LR chi2	78.80	
Prob > chi2	0.0000	
Pseudo R2	0.2183	

*** and **, Significant at 1 and 5%, respectively. Source: Own survey.

in post-harvest operations such as threshing, winnowing, drying, grinding, husking, storage and marketing was estimated and found 26 h per week showing women's heavy workload that could make them less productive.

Regression results

OLS regression was employed to see the relative influence of different personal, demographic, socio-economic, and institutional variables on total hours spent by women on agricultural production. The regression result of the retained variables on women's workload and their role in agricultural productivity using OLS model as indicated in Table 3.

The result in the Table 3 shows age, marital status, and income; and was significant at 10 and 5% significant level, respectively. Moreover, the expected sign of regression coefficients for these explanatory variables were in line with the theoretical expectation.

The coefficient for the ages of respondent's variable is - 0.3079663, which is significant at 10% of the probability indicating women agricultural production involvement decrease when their age increases; this happened as the age of women farmers increases, they lack energy to actively participate in agricultural productivity and they may get kids to assist them at their older ages.

The coefficient of marital status of women farmers' variable is -0.4482329, which is significant at 5% probability implying that women involvement in agricultural production is higher in divorced and widowed women than single and married ones. This shows that divorced and widowed women shall have support either from the community or government.

The coefficient for the income level of women farmers' variable is - 0.2689223, which is significant at 10% of the probability implying that women's hour spent in agricultural production decreases with increase in the income level of women farmers. This can be resulted because as their income level go up their probability of participating in non-agricultural production is high; again as income level of women increases then they have the chance to hire other workers to their production. Consequently, their chance to participate in the sector goes down.

Conclusion

Women are found engaging in activities like food preparation for family consumption, grain grinding, water fetching, fuel wood collection, washing clothes and cleaning barn in addition to their agricultural work.

In the study area, women make important contribution to agricultural economy through the labour they supply in cultivation of cash crops. Although, men perform the initial task of cutting trees and bushes on potentially cultivable plot land, land preparation and ploughing, women are responsible for all subsequent operations including removing and burning felled trees, sowing, planting the plot weeding, harvesting and preparing the crop for the storage or immediate consumption.

Women spend an average of 26.1 h per week in agricultural production. They engage in agriculture at all productive age group. But the level of participation decreases while age increases. Increased workload indicates the need for equipment to assist them in conducting these tasks.

Divorced and widowed women spend more hours on agricultural production which possibly puts them in burden. For women, marriage has been primary means of getting access to land.

Age, marital status and income were found to significantly influence level of participation in agricultural production.

The extent to which a farmer is able to perform the various agricultural tasks depends on the level of knowledge and skill possessed by the individual.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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