

Full Length Research Paper

Survey on women access to agricultural extension services at selected districts of Mid Rift Valley of Ethiopia

Gurmesa Umeta*, Felekech Lemecha and Taha Mume

Adami Tulu Agricultural Research Center, P. O. Box 35, Zeway, Ethiopia.

Accepted 13 March, 2011

The study was conducted at administrative Zone of Oromia Region in Central Rift Valley of Ethiopia namely; Dugda, Boset, Ada'a and Fentale districts during 2009 with two objectives: Assessing women farmers access to agricultural extension services and Identifying problems constraining women farmers' participation in agricultural extension package program. The district was selected purposively based on farming system of the zone. Sampled kebele was selected purposively based on house hold size and suitability of the area for transportation. Respondents were selected based on probability proportionate to sample size (PPS). A total of 201 respondents were selected for interview. Women farmers headed by male (MHHL) and households headed by women (FHHL) were included in the sample for comparison purpose. The data was collected through structured interview schedule. The data was analyzed by using descriptive statistics namely; frequencies, mean, and standard deviation by using SPSS.13 version. Chi-square and t- test were also employed for data analysis. The current study result indicates that participation of FHHL in agricultural extension package program is still very low (44.4%) when compared with MHHLs (75%). The major constraints to access and utilization of extension packages identified by this study includes; low supply related problems, cost of the technology (expensive), delay of inputs (input is not available on time), low awareness about technology recommendations and biasness of extension agents towards progressive farmers can be mentioned. Participation of women farmers in extension events like training, field days and demonstration is also very low (<21%). On the other hand, FHHLs' access to productive resources is low when compared with MHHLs. FHHL farmers owned a mean of 1.43 ha where as MHHLs owned a mean of 2.03ha of farm size and their difference is significant at 1% significant level ($t = 3.28, p = 0.001$). MHHLs are better access to oxen than FHHLs and their difference is significant at 1% probability level ($\chi^2 = 6.88, p = 0.009$). MHHLs are also better access to other productive resources like TLU and credit services than FHHLs. Generally, the study recommends that women farmers /FHHLs/ needs to be encouraged so as to participate in agricultural extension package program. Specifically, strengthening of women participation in extension events like training, field days and visits needs to be re-considered. Also, strengthening of linkages between development agent and women farmers is one of the other critical factors that requires giving due attention. Furthermore, the study recommends that there is a need to diversify women's livelihood options.

Key words: access, male headed households, female headed households.

Back ground and justification

In 2002, three out of four poor people in developing countries lived in rural areas, with the majority of them

relying, either directly or indirectly on agriculture for their livelihoods (World Bank, 2007). Agriculture plays an important role in both poverty reduction and economic growth. Agriculture remains the main source of income for around 2.5 billion people in the developing world (FAO, 2003). Moreover, the poorest half of the population

*Corresponding author. E-mail: gurme2010@yahoo.com.

benefits significantly more from agricultural growth than growth in other sectors of the economy (UN, 2008; World Bank, 2007). Nevertheless, despite evidence that investment in agriculture has beneficial impacts on agricultural growth and poverty reduction (Fan and Rao, 2003), since 1980 there has been a decline or stagnation in public expenditure on agriculture in most developing countries (Akroyd and Smith, 2007). Likewise, the proportion of official development assistance (ODA) going to agriculture has also declined from around 18% in 1979 to 3.5% in 2004 (World Bank, 2007).

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. 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. According to Anderson and Feder (2003) productivity improvements are only possible when there is a gap between actual and potential productivity. They suggest two types of ‘gaps’ contributing to the productivity differential – the technology gap and the management gap.

Extension can contribute to the reduction of the productivity differential by increasing the speed of technology transfer and by increasing farmers’ knowledge and assisting them in improving farm management practices (Birkhaeuser et al., 1991; Feder et al., 2004b). Additionally, extension services also play an important role in improving the information flow from farmers to scientists (Anderson, 2007; Birkhaeuser et al., 1991). The Ethiopian economy depends almost on agriculture. The agricultural sector is dominated by mixed farming where crops and livestock play major roles in serving dual purpose for domestic consumption and foreign currency earnings.

Agriculture contributes about 50% of gross domestic product (GDP) and 90% of the national export earnings. In general, more than 85% labor force is based on “agriculture” (Alene et al., 2000). In the economy of Ethiopia, as many of African countries, women are the back bone of food production system (EARO, 2000). Gender related constraints reflect gender inequalities in access to resources and development opportunities. Although class, poverty, ethnicity and physical location may influence these inequalities, the gender factor tends to make them more severe (Kabeer, 2003).

Access to productive assets is a major issue in the gender empowerment discourse. Despite the significant roles women play in agriculture and food security in many developing countries, they continue to have a poorer command over a range of productive resources, including education, land, information and financial resources (World

Bank, 2001; Odame et al., 2002; Welch et al., 2000). Women’s productivity in agriculture is highly dependent on their opportunity to having access to productive resource such as land, credit fertilizer and to other agricultural technologies. However, many rural women lack access to land or to have insecure land tenure due to customary laws, culture and tradition. According to land utilization survey (CSA, 2000) the total number of private peasant landholders in Oromia was 4.3 million. Out of which the proportion of female landholders was 18%. Concerning farm resources this survey clearly indicated the disparity of access to resource by female and male-headed household that is average farm size, number of oxen and other animals owned by female heads were 0.97, 0.84 and 3.20 ha respectively while the corresponding figure for male heads was 1.34, 0.96 and 3.40 ha, respectively.

Objectives

- i) To assess women access to agricultural extension services.
- ii) To identify and recommend problems constraining women farmer participation in agricultural extension package program and related support services.

METHODOLOGY

The study area and sampling techniques

The study was conducted at administrative zone of Oromia region in Central Rift Valley of Ethiopia namely; Dugda, Boset, Ada’a and Fentale districts during 2009. The districts were selected based on the farming system of the zone/main agro - ecology of the woreda (Figure 1). Kebele was selected purposively based on respondents’ size. Respondents were selected based on probability proportionate to sample size (PPS).

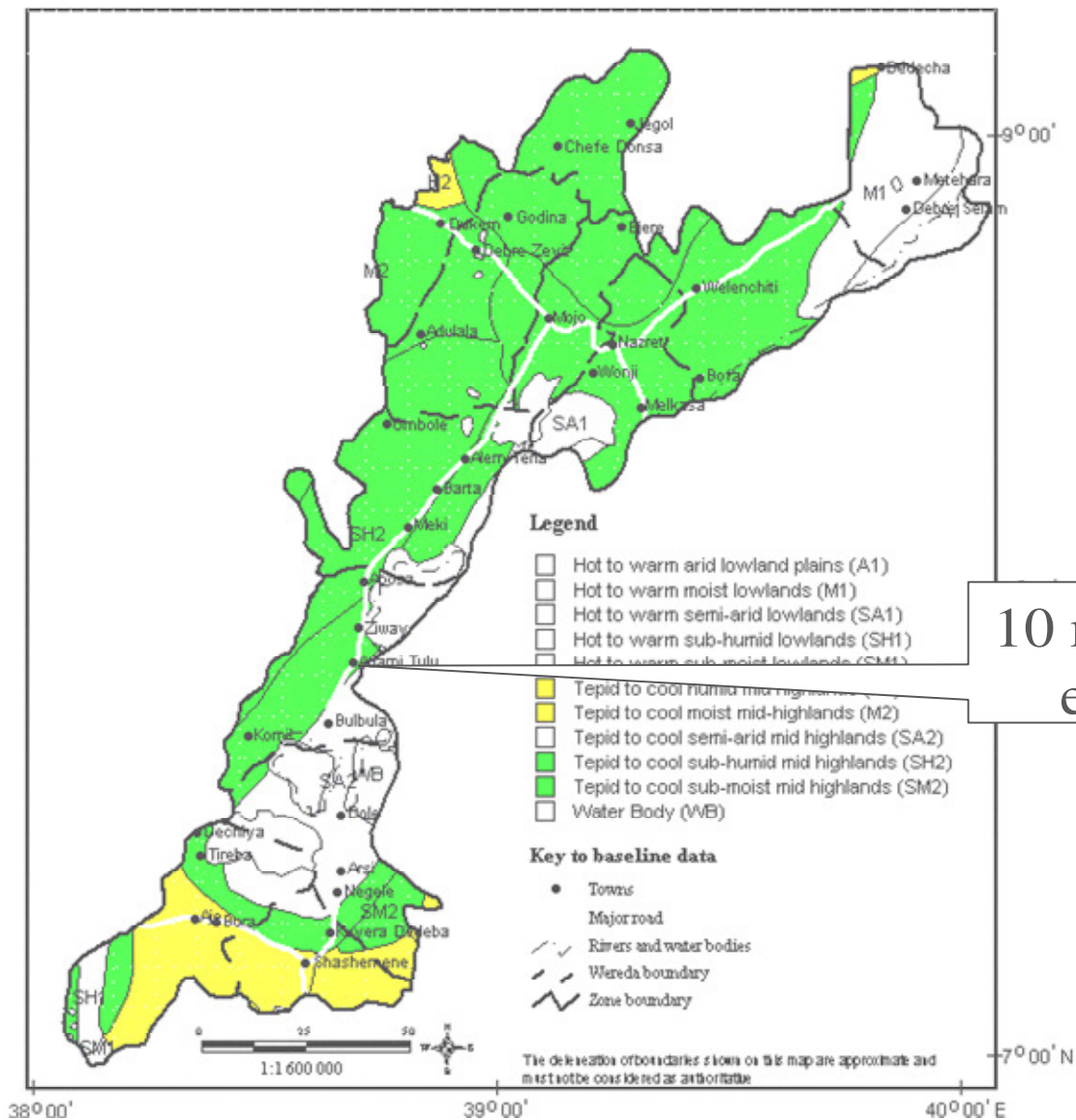
Characteristics of sampled households

A total of 201 respondents were drawn from the four districts and two kebele were selected from respective districts. Two categories of respondent’s namely male headed household and female headed household were selected for an interview. In this context FHHLs are those farmers in which a husband is not present due to divorce and death and MHHLs are those household in which husband is present. For both cases, women farmers were interviewed.

Data collection techniques

Data were collected from both primary and secondary sources. Primary data were collected from respondents through individual interviews, key informant interviews and group discussion where as secondary data were collected from BoARD and literatures. Before collecting of actual data, the questionnaire were pre-tested which is used to re-modify the questionnaire which are either irrelevant or to add missed part.

AGRO ECOLOGICAL ZONES OF EAST SHOA ZONE



10 major agro-ecologies

Source: AEZ, MoA, 2000
Administrative data CSA & WFP, 1998

Figure 1. Major agro-ecology of the zone.

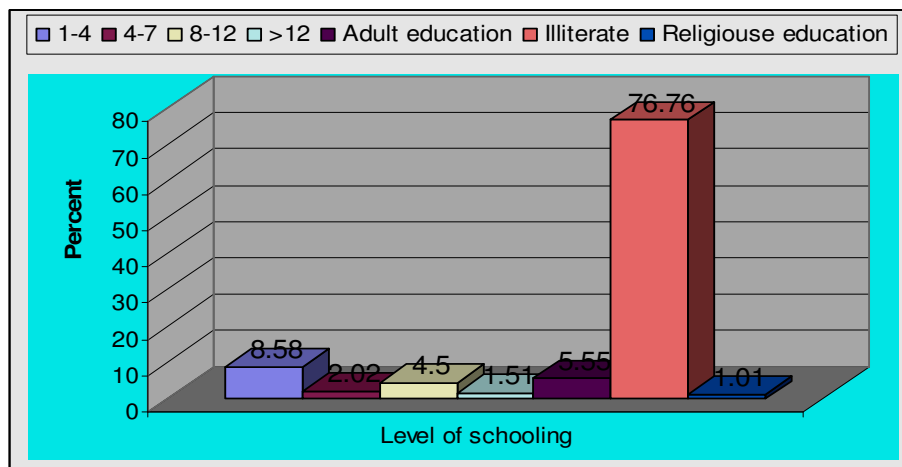


Figure 2. Respondents level of schooling

Analytical procedure

After data collected, it was entered and cleared for analysis. The data was analyzed by SPSS 13 version. The data was analyzed by using descriptive statistics: frequencies, mean, standard deviation, independent sample t- tests and paired sample t – test.

RESULTS AND DISCUSSION

Households' demographic characteristics

Age of respondent

From the sampled households, the majorities (45.9%) have an age category between 21 to 41 years, 40.8% have an age category between 42 to 62 years, and 10.3% have an age greater than 60 and 3.09% of respondents have an age category between 1 to 20 years.

Household size

From the sampled households, 21% of respondents have six household members where as the least percentage of respondents have 12 household members. This might be due to polygamous marriages. The household member reported between the districts is statistically significant at 1, 5 and 10% significance level ($df = 3, F = 4.220$).

Households' level of schooling

As it is explained by Figure 2, around 77% of sampled households are illiterates, 9% have level of schooling ranging from 1 to 4, 2% have level of schooling ranging from 4 to 7, 5% have level of schooling ranging from 8 to 12 and 2% have level of schooling more than 12 level of schooling (Figure 2).

12 and 2% have level of schooling more than 12 level of schooling (Figure 2).

Religion of household

From the sampled households, 71% are protestant, 23% are Muslim and 7% are "wakefeta".

Socio-economic characteristics

Land size owned by household type

The proportion of land size owned by house hold type was also assessed by the current study. To see this variation, land size owned by house hold type was categorized under different sizes (Table 1). Across the different land size indicated by this table, the majority of both households have less than 1ha of land. Even though the majority of both households owned less than 1ha, the proportion of households who owned less than 1 ha is different across house hold type. Accordingly, the proportion of FHHLs who owned less than 1ha is higher (36.7%) than that of MHHLs (29.1%). This finding also indicates that, the proportion of FHHLs who owned 3-4 ha is lower than that of MHHLs. From this result one can also understand that, the number of landless farmers is high at FHHLs. This somehow indicates that FHHLs are less access to productive resource when compared with MHHLs. Generally, respondents' access to different land size is totally different as explained by table 1.

When we come back to the overall mean, MHHL owned a mean of 2.03 ha with a standard deviation of 1.45 whereas FHHL owned a mean of 1.43 ha with a standard deviation of 1.1 and their mean difference is

Table 1. Proportion of land size owned by house hold type during the 2008/9.

Land size owned in ha	Proportion of MHHL D (%) who owned respective land size	Proportion of FHHL D (%) who owned respective land size
Land less	2.8	8.5
<1	29.2	36.7
1-2	14	20.3
2-3	27.8	21.8
3- 4	19.5	14
>4	7	-
Total	100	100

Source: Own survey data, 2009.

Table 2. Significance of land size owned by house hold type.

House hold type	Mean of land size in ha	Standard deviation	t-value
FHHL D	1.43	1.1	
MHHL D	2.03	1.45	3.28*

The mean difference is significant at 1, 5 and 10% respectively
Source: Own computational survey data, 2009.

Table 3. Proportions of households who have oxen during the survey period.

Response of house holds	House hold type		X ²
	MHHL D (%)	FHHL D (%)	
Yes	75	50	6. 88**
No	25	50	
Totals	100	100	

**= The difference is significant at 1%, 5% and 10% probability level.

significant at 1, 5 and 10% respectively (Table 2).

Oxen ownership

Oxen ownership is one of the critical factors for crop production. So the current study was also tried to look into house holds' access to it. Frequency analysis was employed to see the proportion of households accessed to oxen. Chi-square test was also employed to see whether the significance difference exists between the two household types. As indicated by frequency analysis, 50% of female headed household were not owned oxen where as 75% of male headed households are owned either single or a pair of oxen during 2008/9 and the difference in access to oxen is significant at probability level of 1%, 5% and 10% respectively as indicated by chi-square tests (Table 3). This indicates that FHHL Ds are less accessed to oxen when compared with MHHL Ds. This disparity can be one of the factors that hinder

FHHL D from use of agricultural extension packages.

Options available to plow land by house hold type

Respondents have been using different available options in order to plow their land for crop production purpose (Table 4). These options include, using own oxen, borrowing of oxen from relatives, using of local farm tools like hand held hoe, renting in lands and giving of lands to "hitra" which means a person who rent in the land will share large proportion of the yields achieved (the most common one is two third of yields achieved).

Livestock size owned by household type

In the study area live stock production is one of the components of the farming system/livelihood activities for farmers. So this study assessed the number of livestock

Table 4. Options available to plow their land in percentages by house hold type.

No	Option available for plowing their land	Proportion of MHHL D who owned respective land size (%)	Proportion of FHHL Ds who owned respective land size (%)
1	Borrowed oxen from relatives	18.3	24.4
2	Using hand held hoe	1.4	6.7
3	Renting of oxen	-	1.7
4	Giving of their lands to "hirtaa"	4.2	14.3
5	Own ox	74.6	50.3
6	Rent out	-	4.4
7	Others	1.4	-
	Totals	100.00	100.00

Source: Own survey data, 2009

Table 5. Live stock size owned by house hold type in TLU during the survey period

No	Type of live stock owned	House hold type	N	Mean	t-values
1	Number of cows owned currently in TLU	MHHL D	72	1.38	2.294*
		FHHL D	129	0.93	
2	Number of oxen owned currently in TLU	MHHL D	72	0.19	0.416 ^{NS}
		FHHL D	129	0.15	
3	Number of goats owned currently in TLU	MHHL D	72	0.18	0.416 ^{NS}
		FHHL D	129	0.14	
4	Number of sheep owned currently in TLU	MHHL D	72	0.31	0.819*
		FHHL D	129	0.15	
5	Number of poultry owned currently in TLU	MHHL D	72	0.04	0.013 ^{NS}
		FHHL D	128	0.03	
6	Number of donkeys owned currently in TLU	MHHL D	72	0.70	2.27*
		FHHL D	129	0.45	
7	Number of horse owned currently in TLU	MHHL D	72	0.10	1.600 ^{NS}
		FHHL D	129	0.02	
8	Number of camel owned currently in TLU	MHHL D	72	0.09	0.984 ^{NS}
		FHHL D	128	0.02	

Source: Own computational data, 2009, *= the mean difference is significant at 5 & 1%, Ns: Not significant

owned by sampled respondents in TLU by using Storck et al. (1991) conversion factor. The mean of TLU calculated for both household type indicated that MHHL D owned more live stock size than FHHL D indicating that FHHL Ds are less owned livestock than MHHL Ds. From these livestock components, significant difference was found only for cows, sheep and donkeys At 1% significant level (Table 5)

Sources of income for house hold type

The agricultural extension system aims to transfer technologies and capacities that should finally impact on farmer's productivity and hence increasing of farmer's income. So this study tried to assess respondents' major sources of income and level of income as well. Respondents were asked to list up production objectives.

Table 6. Proportion s of respondents participated in off- farm and non- farm activity during 2008/9.

Response	Male headed house hold (%)		Female headed house hold (%)	
	Non-farm	Off-farm	Non-farm	Off-farm
Yes	19.7	27.8	17.3	22.0
No	80.3	72.2	82.7	78.0
Total	100.0	100.0	100.0	100.0

Source: Own survey data.

Table 7. Mean annual income of respondents during the survey period.

Major sources of income	House hold type	N	Mean(EB)	Std. deviation	t-value
Sell of crops	MHHLD	71	3050.95	4758.89	2.334*
	FHHLD	128	1580.39	3955.17	
Sell of livestock	MHHLD	71	926.47	1929.12	1.218 ^{Ns}
	FHHLD	127	623.68	1520.68	
Off-farm activities	MHHLD	71	669.80	1818.56	0.065 ^{Ns}
	FHHLD	127	651.02	2186.56	
Non - farm activities	MHHLD	72	292.36	1177.92	0.166 ^{Ns}
	FHHLD	128	330.75	1749.78	

*= The mean difference is Significant at 5 and 1%, Ns: Not significant.

The major farmers' production objectives mentioned by respondents include both for household consumption and income generation purposes. The major sources of income assessed here include; crop production, livestock production, off farm and non - farm activities. Finally, the amount of crops sold per annual was estimated by respondents in terms of quintals. Then, the mean annual sales of crops by respondents during the survey period were calculated. For livestock; type, number of livestock sold and annual income generated from sale of live stock were assessed.

Also farmers involvement on other income generating activities like off – farm and non- farm activities were assessed. Off-farm activities considered here includes vegetable trading, cattle trading, grain trading, hiring of donkey cart etc where as non-farm activities considered here includes different activities like daily laborer, hand craft and remittance. The result of the study indicates that, participation of both households on non- farm and off farm activities is very low (Table 6). Mean of income generated by both household were also analyzed by this study.

The mean income that has been generated from available sources of income was also assessed by this study. Across the districts, the mean of income generated from sell of crops and live stock by the sampled respondents was calculated. The maximum of income

generated from sell of crops and live stock were \$ 29,840.00 and \$ 14,100.00 EB respectively. The study also assessed the mean of income size achieved by both house hold type. Accordingly, the mean size of income generated from on farm activity like crop production is stronger at MHHLDs than that of FHHLDs and it is slightly similar for the left activities considered for comparison purpose. Paired sample t-test was also employed to see their significant difference. The analysis result showed that, the income generated from sell of crops is significantly different for household type at 1% significant level implying that MHHLD were generated more income than FHHLD from crop production. No significant difference was reported between the other three activities (Table7).

Problems hindering women participation in non - farm and off - farm activities

Different livelihood strategies can help farming households to diversify their income which finally help them to join agricultural extension package program. Diversification of income can also help farming households as a risk mitigation strategy. Respondents have been phasing different problems that inhibit them from participating in both non- farm and off farm activities. The

Table 8. Problems limiting respondents 'from participating in non-farm and off -farm activities.

No	Major constraints	Off farm activities (%)	Non – farm activities (%)
1	Shortage of money	27.6	6.1
2	Lack of knowledge and skills	26.7	50.4
3	Lack of interest	1.7	1.7
4	Lack of time	13.8	11.3
5	No problem	5.2	2.6
6	Shortage of labor	9.5	12.3
7	Age related problem	12.9	13
8	Market related problem	2.6	2.6
Totals		100.00	100.00

Source: Own survey data, 2009.

Table 9. Proportion of house hold who ever received a sort of credit.

House hold type	Ever received (%)	Never received (%)	Totals
MHHL D	52.9	47.1 100	100
FHHL D	39.8	60.2	100

Source: Own survey data, 2009.

Table 10. Percentage of households participated in extension package program during the two years from the survey period.

Response of HHL Ds	House hold type	
	MHHL D (%)	FHHL D (%)
Yes	75	44.4
No	25	55.6
Totals	100	100

Source: Own survey data, 2009

current study tried to look into these problems. According to the current finding shows, lack of knowledge and skills (27.6%), shortage of money (26.7%) and lack of time (13.8%) are the major problems identified by both households (MHHL Ds and FHHL Ds) that have been limiting households from participating in off-farm activities where as lack of knowledge and skills (50.4%), shortage of labor (12.3%) and lack of time (11%) were the major problems identified by both households respectively as first, second and third for non – farm activities. The major problems limiting women farmers' participation in non-farm and off farm activities are explained by Table 8.

Respondents' access to credit services

Access to favorable credit service can encourage farmers to utilize agricultural extension packages. So, the study tried to look into proportion of respondents who ever received any sort of credit from credit providers.

According to this survey result, 52.9 % of MHHL D have received a sort of credit at least for one or more than one times whereas only 47.1% of FHHL D received it (Table 9).

Proportion of respondents' participation in extension package programme

By the current study, proportion of respondents who received a sort of extension packages available in the woreda was assessed based on the two years from the survey time. As indicated by the survey result, 75% of MHHL Ds were received either one or more packages of technologies where as only 44.4% of FHHL Ds received either one or more packages of technologies available in the area (Table 10).

This study result shows that, participation of FHHL D in extension package program is lower than MHHL Ds (Table 10). During the study, respondent were asked the

Table 11. Rank of constraints to access and utilization of improved seeds.

No	Types of problems	Their rank in order of importance	
		MHLD	FHLD
1	Low supply problems	2 nd	2 nd
2	Not timely available	4 th	4 th
3	Poor quality	5 th	6 th
4	Cost of seeds is expensive	1 st	1 st
5	Low level of awareness	3 rd	3 rd
6	Biasness towards progressive farmers	6 th	5 th

Source: Own survey data, 2009.

Table 12. Constraining to access and utilization of fertilizers.

No	Types of problems	n	Yes (%)	No (%)	Total
1	Low supply related problem	175	23.9	76.1	100
2	Fertilizer is not available on time	175	14.3	85.7	100
3	Fertilizer cost is expensive	176	66.5	33.5	100
4	Low level of awareness about its recommendation	176	14.3	85.7	100
5	Biasness towards progressive farmers	176	4.6	95.4	100

Source: Own computation survey data, 2009.

major types of extension packages available in the sampled area.

Accordingly, the major extension packages identified includes: improved crop production technologies (pulses, cereals), horticultural crops (onion bulb production, mango, onion seeds production, tomatoes, potato, carrots, sweet potato production), dairy packages (breed improvement/cross breed dairy cows, management improvement, AI services, veterinary services), fattening extension packages (fattening through concentrate supplementation/industrial byproducts, veterinary services, housing management), improved animal feed technologies (lablab, cowpea, cajanus cajan, rhodes grass, elephant grass) and improvement of market linkages, poultry production packages (improved breeds, feeding, health improvements and housing management), bee keeping packages (improved box hive with its accessories, transitional bee hives), organic (compost) and in organic fertilizers are the major extension services available in the area. The major agents of GOs currently using to disseminate these technologies to farmers is through development agents/extension workers.

According to data taken from East Showa Zonal Rural Development and Agricultural office indicates, 292 FTC were constructed at nearly all kebeles of the woreda of the zone (East Showa Zone, 2010, Research Extension Advisory council second quarter meeting report). At many kebeles, three development agents combined from animal science, plant science and natural resource were assigned to give modular and non modular training, facilitate agricultural input delivery and giving advisory services for farmers.

Constraints to access and utilization of some agricultural inputs

Improved seed and related problems

In the study area different improved crop varieties have been distributed by different actors working in the area. The main sources of improved crop varieties for farmers are oARD, unions and local markets. So, this study assessed problems associated with access to and utilization of available improved crop production inputs by household type. Accordingly, the sampled households mentioned that, problems like low supply related problems, low level of awareness about technology recommendations and costs of improved seed variety (expensive) are the main problems limiting their access and utilization of crop production inputs (Table 11).

Access to and utilization of fertilizer and related problems

Respondents' access to fertilizers was also examined by the current study. The study further tried to look into problems associated with use of fertilizer by household type. Accordingly, the majority of respondents (66.5%) expressed that the higher price for fertilizer is discouraging them to effectively utilize it. About 24% expressed that the present supply system is inadequate while 14.3% have indicated untimely availability of fertilizer and lack of appropriate awareness about the technology recommendation (Table 12). Due to these

Table 13. Rank of constraints to access and utilization of fertilizers by house hold type.

No.	Type of problems	Their rank in order of importance	
		MHLD	FHLD
1	Low supply related problem	2nd	2 nd
2	Not available on time	3rd	4 th
3	Fertilizer is not available on time	1st	1 st
4	Low level of awareness about the technology recommendation	4th	3 rd
5	Biasness towards the rich	5th	5 th

Source: Own survey data, 2009.

Table 14. Major constraints to access and utilization of livestock packages.

No	Problems	Sample	Yes (%)	No (%)	Total
1	Low supply problems	176	34.7	65.3	100.00
2	Cost of technology is not affordable	168	36.9	63.1	100.00
3	Low level of awareness	178	22.0	78.0	100.00
4	Biasness towards the rich	169	5.3	94.7	100.00

Source: Own computation survey data, 2009.

Table 15. Proportion of women farmer access to different sources of information.

No	Types of mass media	Count	Yes (%)	No (%)	Total
1	TV ownership	200	7.0	93.0	100
2	Radio ownership	199	45.2	54.8	100
3	Access to extension materials	200	3.0	97.0	100

Source: Own survey data, 2009.

problems, only 64% of respondents used both UREA and DAP whereas 46% of sampled farmers were not used fertilizers (both UREA and DAP) during the cropping season of 2008/09. Both house hold types were also asked to rank problems associated with use of fertilizers (Table 13).

Constraints to access and utilization of livestock inputs

Different live stock production technologies are available in the zone. According to the result, the survey indicates different livestock technologies like improved fattening practices, improved poultry breeds, improved dairy breeds, improved animal feeds are available and used by the sampled households. So the study assessed major problems constraining access to and utilization of live stock production packaged in general. Accordingly, the majority of respondents expressed that, cost of the technology is not affordable; secondly, supply related problems (low) and thirdly, low level of understanding about the technology recommendations (Table 14).

Sources of agricultural information and women access

One of the means of increasing the effectiveness and efficiency of agricultural extension program is through the application of improved and innovative extension communication methods. The current extension approach (PADETES) employs varies forms of extension and communication methods to achieve its objective. So this study evaluated major sources of agricultural information Agricultural information has also been disseminated to women farmers through different extension methods like mass extension methods (Radio, TV, and printed media), individual extension methods (Office contact, farm visit) and different extension events (training, field days, demonstration).

Hence, this study examined women access to these sources of agricultural information available in their woreda. The current finding indicates that about 45.2% of respondents have radio and 7% have TV. From the sampled respondents, very few of them used extension materials (Table15).

Table 16. Frequency of use of radio, TV by women farmers for agricultural activities.

No	Sources	Never (%)	Rarely (%)	Occasionally (%)	Often (%)	Very often (%)
1	Radio	63.5	12.2	18.8	5.1	0.5
2	TV	91.14	1.5	5.6	1.5	-
3	Extension materials	95.4	2.5	2.0	-	-

Source: Own survey data, 2009

Table 17. Percentage of women participated in extension events during five years from the survey period.

No	Type of events	MHLD		FHLD	
		YES (%)	NO (%)	YES (%)	NO (%)
1	Field day	11.4	88.6	4	96
2	Training	20.8	79.2	14.1	85.9
3	Demonstration	16.9	83.1	7	93

Source: Own computation survey data, 2009.

Frequency of use of radio and TV by women farmers

This study also evaluated the frequency of use of media by women farmers for agricultural related activities. According to frequency analysis result indicated the majority of women farmers were never used agricultural information that has been disseminated through different sources of agricultural information like radio, TV and extension materials. The study figures showed that 63.5%, 91.14% and 95.4% of respondents were never used agricultural information that has been designated through radio, TV and extension materials respectively (Table 16).

Women farmer access to training, field days and demonstration

Farmers ability to use their land more effectively and efficiently is influenced by a variety of factors including personal views, family views, technology, profitability, complex public opinion, research, change agents and marketing (Kotile and Martin, (1998). Some of these factors can be alleviated through provision of adequate training. So this study assessed women access to extension events on the bases of five years from the survey period. From this study it was realized that, participation of women on training, field day and demonstration is very low (Table 17).

Extension contact

Development agent is one of the major sources of agricultural information for farmers and an effective linkage between development agents and farmers is

critical in disseminating of agricultural information. Currently there are about 292 FTCs in the “zone” and many development agents combined from different disciplines are employed there to offer agricultural extension services. The FTCs are constructed with the participation of farmers in the kebele. The FTCs are expected to serve as; centers of extension, places where modular training to farmers for up to six months are given, demonstration of entrepreneurship and sources of advice. So, this study assessed proportion of women farmers receiving advisory services from extension agents during production season of 2008/9. As the result of the survey finding indicates, 57.58% of women farmers had been received advisory services from development agents whereas 42.42% of respondents had been never received any advisory services from DAs during the this period. This indicates that the existing linkage between development agents and women farmer is still very low. Nearly similar findings were reported by Rajak (1990).

Frequency of extension agents' visit

Frequency of visits made by DAs for women farmers was also assessed by this study. The study result indicated that, the majority of women (42.2%) had not been visited by Development workers during the cropping year of 2008/9, 15.2% of women expressed that, “extension agents” contact them on weekly bases, 11.5% expressed that development agents contact them on monthly bases (Table 18).

CONCLUSION AND RECOMMENDATIONS

In the study area different agricultural extension package

Table 18. Frequency of visits made by extension agents for women during 2008/9.

No	Frequency of contact	n	Response (%)
1	Once in a week	29	15.5
2	Fortnightly	18	9.6
3	Monthly	22	11.8
4	Only during plantation	18	9.6
5	During input provision	17	9.1
6	During credit collection	2	1.1
7	Not contacted by DAs at all	79	42.2
8	Any time when technical advice required	2	1.1
	Total	187	100.00

Source: Own computation survey data, 2009.

are available. The study identified that participation of FHHDs in agricultural extension package program is very low when compared with MHHLs. The major constraints to access and utilization of agricultural extension packages are; cost of input related factors (cost of input is expensive), low supply related factors, delay of inputs, lack of giving attention for those farmers who can't afford cost of technology which farmers explained it as 'biasness towards the rich farmers. Women access to productive resources like land, credit, TLU, off-farm and non- farm activities is also very low. In line with these, Participation of women on extension events like training, field day, visits /demonstration is also very low. On the other hand, the existing linkage between development agent and women farmers is very weak. These factors can be the other major constraints to access and utilization of agricultural extension packages.

The study therefore recommends that, female headed households/women needs to be encouraged to participate in agricultural extension package program by stakeholders working in the area. One of the methods used to put this into action can be through encouraging them and strengthening of their participation in extension events like training, field days, visits and arranging of favorable credit services. In addition to this, strengthening of linkages between development agent and women farmers is one of the other critical factors that should be considered. Furthermore, the study recommends that there is a need to diversify women's livelihood options like off-farm and non-farm activities which finally helps them to overcome their financial problems and join agricultural extension package programme.

Abbreviations: **MHHL**, Male headed households; **EARO**, Ethiopian agricultural research organization; **FHHLD**, female headed households; **HA**, hectare; **OARD**, office of agriculture and rural development; **SPSS**, statistical packages for social sciences; **CSA**, central statistical authority; **ZoARD**, zonal office of agriculture and rural development; **FRG**, farmers research group.

REFERENCES

- Akroyd S, Smith L (2007). 'The decline in public spending to agriculture – does it matter?', Briefing Note, No. 2, Oxford Policy Management Institute, Oxford.
- Alene A, Poonyth D, Hassan RM (2000). Determinants of adoption and intensity of improved maize varieties in central high lands of Ethiopia.
- Anderson JR (2007). 'Agricultural Advisory Services', Background Paper for the World Development Report 2008. http://siteresources.worldbank.org/INTWDR2008/Resources/WDR_00_book.pdf 1191427986785/Anderson_AdvisoryServices.pdf
- Anderson JR, Feder G (2003). 'Rural Extension Services', World Bank Policy Research Working Paper 2976, World Bank, Washington D.C. http://econ.worldbank.org/files/24374_wps2976.pdf
- Birkhaeuser D, Evenson RE, Feder G (1991). 'The Economic Impact of Agricultural Extension: A Review', *Econ. Dev. Cultural Change*, 39: 607-650.
- CSA (Central Statistical Agency) (2000). land utilization survey, Ethiopia
- EARO (2000). 'Institutionalizing gender planning in agricultural technology generation and transfer process: Why is gender a development issue? Proceeding of the national workshop from 225-27 Oct., 1999. EARO, Addis Abeba.
- Fan S, Rao N (2003). 'Public Spending in Developing Countries: Trends, Determination, and Impact', EPTD Discussion Paper, No. 99, IFPRI, Washington D.C. <http://ideas.repec.org/p/fpr/eptddp/99.html>
- FAO (2003). 'Statement at the Ministerial Conference of the WTO - Circulated by H.E. Mr. Hartwig de Haen, Assistant Director-General', Fifth Session, Cancun, 10-14 September, Doc No: WT/MIN(03)/ST/61.
- Feder G, Murgai R, Quizon JB (2004b). 'The Acquisition and Diffusion of Knowledge: The Case of Pest Management Training in Farmer Field Schools, Indonesia', *J. Agric. Econ.*, 55 (2): 221-243.
- Kabeer N (2003). *Gender Mainstreaming in Poverty Eradication and the Millennium Development Goals: A Handbook for Policy Makers and Other Stakeholders*. Ottawa: International development Research Centre.
- Kotile DG, Martin RA (1998). 'Farmers' Perspective on Sustainable Farming Systems: A Case Study. Proceeding on the Fourteenth Annual Conference of the Association for International Agriculture and Extension Education, Tucson, Arizona
- Odame HH, Hafkin N, Wesseler G, Boto I (2002). *Gender and Agriculture in the Information Society*. International Service for National Agricultural Research Briefing Paper No.55. The Hague, The Netherlands: ISNAR.
- Rajak TA (1990). 'Improving the relevance and effectiveness of agricultural extension activities. Available at: www.fao.org/docrep/v4805e/v4805e07.htm.
- REAC report (2010): East Showa quarter annual meeting. Research Extension Advisory council. Adama.
- United Nations (2008). *Trends in Sustainable Development – Agriculture, rural development, land, desertification and drought*, Department of Economic and Social Affairs of the United Nations,

New York.

<http://www.un.org/esa/sustdev/publications/trends2008/fullreport.pdf>

Welch CJ, Alemu B, Msaki T, Sengendo M, Kigutha H, Wolff A (2000). Improving Household Food Security: Institutions, Gender, and Integrated Approaches. U.S.A: BASIS Management Entity.

World Bank (2001). Engendering Development through gender equality in Rights, Resources and Voice. World Bank Policy Research Report 21776. Washington, D.C. and London: World Bank and Oxford University Press.

World Bank (2007). World Development Report 2008: Agriculture for Development, World Bank, Washington, D.C.
<http://siteresources.worldbank.org/INTWDR2008/Resources/2795087>