

Proceedings of 9<sup>th</sup> Multi-Disciplinary Seminar



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# **Proceedings of the 9<sup>th</sup> Multi-Disciplinary Seminar**

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**Determinants of Agricultural Information Need and Access of  
Smallholder Farmers  
The Case of Wondo Intaye District West Arsi Zone, Ethiopia**  
Selamawit Fantahun<sup>1</sup>

**Abstract**

To enhance agricultural productivity, farmers should have access to timely, well organized, need based and relevant information. A better understanding of farmers' agricultural information needs and information sources could help guide extension and other agricultural programs to better target specific groups of farmers. Farmers differ in their access to and need of agricultural information. Such diversity among farmers could relate to various personal, social, economic, psychological, situational and institutional factors. Understanding reasons behind such diversity and farmers current level of access and need of agricultural information is paramount importance. This requires some level of investigation through scientific research to provide reliable and concrete information concerning agricultural information need and accessibility. The objectives of this study were to identify agricultural information needs of the smallholder farmers, to assess the extent of agricultural information access and its determinant factors, and to identify the constraints and opportunities in accessing agricultural information by smallholder farmers. A three-stage sampling procedure was used in which both non-probability sampling for the study area and probability sampling procedures were followed to select three kebeles and 151 respondents. Primary data were collected from the respondents through personal interview schedules FGD, key informant interview and secondary data also collected from district Office of Agricultural and Rural Development and by reviewing relevant materials. A structured interview schedule was used for collecting the essential quantitative data from the sampled respondents. To generate qualitative data, field assessment, informal discussion with key informants, and focus groups discussions were conducted. The quantitative data was analyzed using descriptive statistical tools, statistical tests (chi-square, and ANOVA) and the econometric model, namely, ordered logit model. The major output of the study indicates that agricultural information access of smallholder farmers was significantly affected by sex, literacy level,

extension contact, and Cosmo politeness, information seeking behavior, innovation proneness, and livestock ownership. The majority of sample respondents fall in to the low category of information access level. The constraints that hold back farmers from access to agricultural information were poor extension system, lack of quality inputs availability, lack of support of DAs, farmers lack of interest, information not address farmers' interest and lack of electricity. Some of opportunities to access agricultural information where the study area were short proximity to such town as Shashemene and Hawassa, social Media (Shashemene Fana and Hawassa FM radio), most of the DAs were the natives of the study area and it has agricultural institutions (research center, University and NGOs). In conclusion, policy and development interventions in the study area should give emphasis to resolve such constraints and to use opportunities effectively to increase agricultural information accessibility, which will ultimately increase the productivity and income of smallholder farmers.

**Key word:** Agricultural information need, agricultural information access, opportunities and consternates of agricultural information access, ordered logit model

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<sup>1</sup>Msc in Agricultural Information and Communication Management), Woldia University

## **1. Introduction**

### **1.1. Background of the Study**

Nowadays, the agricultural sectors are increasingly becoming knowledge intensive. Researchers from local to global levels continue to generate new information. Yet as agriculture systems become more complex, farmers' access to a reliable, meaningful, timely and relevant information source is critical to farmers' in addition to being packaged and delivered in a way preferred by them (Babu et al., 2012). Knowledge about the information needs of smallholder farmers is vital to successfully satisfy their felt information needs and develop demand-led extension and advisory services. With pertinent agricultural knowledge and information, farmers could improve their work in order to sustain agriculture and to be benefited economically (Lwoga et al., 2011).

Mtega (2012) stated that the type of information needed relate much to the day-to-day activities a person is involved in, the geographical location of the

information seeker, level of education, age, sex, field of study, profession, career stage, difference in economic activities and size of business operation an individual has. The type of information needed for decision-making may vary from one-person to other person. According to Suresh (2011), a better understanding of farmers' agricultural information needs and information sources could help guide extension and other agricultural programs to better target specific groups of farmers. To bring about agricultural development, the provision of agricultural information plays a decisive role. Agricultural information can flow to different farm households from different sources. Currently adjacent to the indigenous farm experience, Government designed programs contribute to provide agricultural information in order to improve the life of rural people. This requires some level of investigation through scientific research to provide reliable and concrete information concerning agricultural information need and accessibility.

## **1.2. Statement of the Problem**

Agricultural information is not static but, instead, needs replenishment through research and development. This is why those agricultural activities can arguably be improved by relevant, reliable and useful information and knowledge. However, information per se cannot increase productivity unless farmers were provided with the right type of information and at the right time, using the right channels and with all other necessary components in place, like telecommunication facilities, good roads, education, and good agricultural policies. Farmers differ in their access to and need of agricultural information. Such diversity among farmers could relate to various personal, social, economic, psychological, situational and institutional factors. Understanding reasons behind such diversity and farmers current level of access and need of agricultural information is paramount importance. To enhance the production and productivity of agriculture, farmers should have access to well organized, need based, relevant information and proper agricultural information (Lawaliro et al., 2014).

Farmers were accessing agriculture information without the considerations of their need that were the gap not to access the right type of information at the right time. In addition to this, no study has been conducted in the study area on agricultural information need and access. Hence, this study aimed to assess need and access of agricultural information among smallholder rural

households and tries to make empirical inferences to help planners and extension administrators as well as future researchers.

### **1.3. Objectives of the Study**

#### **1.3.1. General Objective**

The overall objective of this study is to examine the need and access of agricultural information determinants by smallholder farmers in Wondo area.

#### **1.3.2. Specific Objectives**

To identify agricultural information need of smallholder farmers.

To assess the extent of agricultural information access to smallholder farmers and its determining factors.

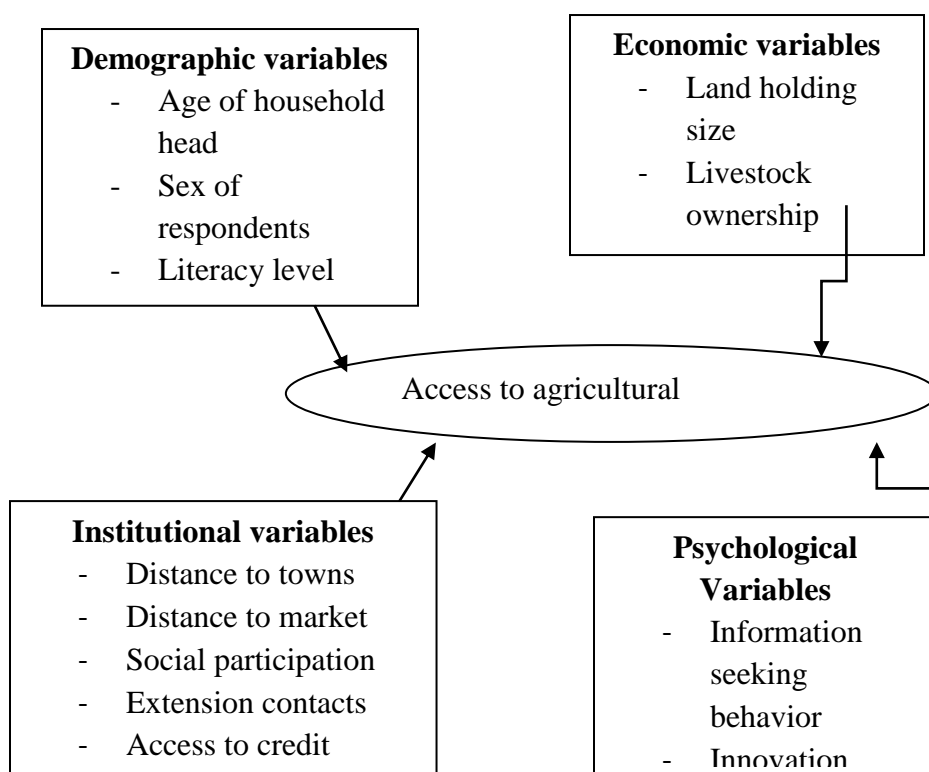
To identify the constraints and opportunities in accessing agricultural information by small holder farmers.

### **1.4. Research Questions**

1. What are smallholder farmer's agricultural information needs?
2. What is the level and determinate factor that affects agricultural information accessibility?
3. What are the opportunity and constraint that hinder access to agricultural information?

### **1.5. Conceptual Framework of the Study**

In this study, efforts were made to identify agricultural information need and the factors affecting access to agricultural information from literature, practical experiences and field observations during the course of conducting this research. The conceptual framework of this study was based on the assumption that the extent of agricultural information accessibility influenced by a number of personal, socio economical, institutional and psychological factors with instance of variations their influence on access to information. The conceptual framework presents in Figure 1;



**Figure 1. Conceptual Framework of the study**

## **2. Research Methodology**

### **2.1. Description of the Study Area**

The study was carried out in Wondo area Ethiopia. Wondo is a resort town in Ethiopia and known for its hot springs and surrounded by primary Ethiopian forests. Wondo is located in the south eastern escarpment of the Ethiopian Great Rift Valley 7°06–07'N, 38°37'–42'E, approximately 260 km south of Addis Ababa. The altitude ranges from 1,800 to 2,580 m ASL The average yearly rainfall is 1,210 mm, with a rainy season during March to September and a relatively dry period from December to February. The average annual temperature is 20°C. Fertile soil, water, forest and wildlife are some of the natural resources Wondo Woreda bestowed with it. The valley plain of Wondo has fertile soil. The loamy sand textured soils, which contain most important nutrients, cover the area (Tola, 2005).

The district has a total 11,995 households 9,338 males and 2,657 female's households. Agricultural production is the main means of livelihoods for the district. The production system are rain fed agriculture, with the main crop of maize, potato, and teff and minor crop of wheat, haricot bean and sweet potato. Irrigation water is also available to households to produce cash crops such as sugarcane, coffee and chat. Enset is the major home garden crop, which also constitutes major subsistence food along with maize and potato. The staple food (kocho) for the majority of farmers is prepared from Enset, and almost every household grows it in the home garden. Cattle, sheep, goats, chicken and donkey dominate livestock husbandry (WDR, 2015).

## 2.2. Sampling Techniques and Sample Size

### 2.2.1. Sampling Procedure

For the purpose of this study, a multi stage sampling technique was applied to select the sample respondents. Wondo district was selected purposefully from west Aris zone Oromiya region. In the second stage, three Kebele were selected randomly from nine Kebeles of Wondo district. Finally, 151 sample respondents were selected randomly by probability proportion to sample size.

### 2.2.2. Sampling Size Determination

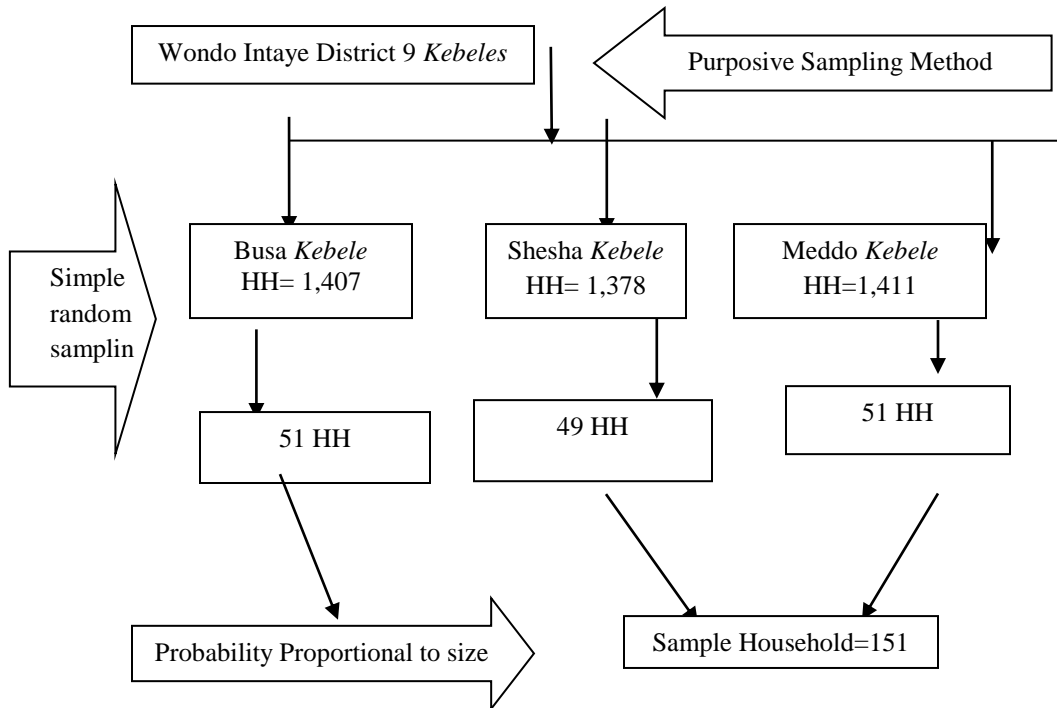
The sample size for this study was determined by using (Slovin's) 2013 formula and it has written as;

$$n = \frac{N}{1 + N(e)^2} \quad (i)$$

Where:

- n        Sample size the research used;
- N        Total number of households;
- e        Maximum variability or margin of error 8%;
- 1        Probability of the event occurring.

$$n = \frac{N}{1 + N(e)^2} \quad n = \frac{4,196}{1 + 4,196 (0.08)^2} = 151HH$$



**Figure 2: Schematic Presentation of the Sampling Procedure**

### 2.3. Type and Sources of Data

Both qualitative and quantitative types of data were collected from primary and secondary sources of information to meet the objectives of the study. Primary data was gathered using structured interview schedule, observation, key informant interview and focus group discussions. Secondary data were collected from published and unpublished documents, from district Office of Agricultural and Rural Development and reviewing relevant materials such as statistical reports, books, journals and web sites.

### 2.4. Methods of Data Collection

A cross-sectional research design was employed in the process of data collection. The data were collected at a single point in time. In this study, multiple data collection tools and analysis methods were employed.

Quantitative data was collected through personal interviews of 151-sample household. The respondents were interviewed using a pre-tested, structured interview schedule. Restructuring was done using sufficient number of non-sample respondents through a pilot study. Based on the nature and extent of responses obtained, necessary modifications were made in the interview



schedule to ensure its clarity and completeness for generating the needed information from the respondents. Finally, the secondary data for the study was collected from district agricultural offices and different literatures.

Qualitative data were used to supplement and to fill gaps during the quantitative data collection process for each objective. It was collected through field visits, observations, and informal interview with key informants, village leaders, DAs and extension officials' discussion with separate focus groups. Eleven focus group discussions were held on in specific topics with small groups of people (that consists 7 and 10 members from each) who have intimate knowledge about the topic under consideration. In addition, key informant interview contacted with district agricultural expertise, NGOs workers, Veterinary expertise and farmers who have intimate knowledge with the topic. Checklist with key questions had been sparked out the discussion to obtain qualitative data from focused-group members, Key-informants, the officials and other functionaries.

## **2.5. Methods of Data analysis**

Depending on the objectives of a given study and nature of the data available, the analysis required different approaches. Quantitative data collected from the survey respondents was analyzed by using Statistical Packages for Social Science (SPSS) version 20 and STATA version 12 software after the data had been edited, verified, and cleaned. Quantitative data was analyzed using descriptive statistics (mean, standard deviation, frequency and percentage) and inferential statistics (ordered logit model). In addition to this ranking and statistical tests like chi-square, cross tabulations, correlation coefficient, and ANOVA were used to evaluate the significance of the relationship between dependent and independent variables. Qualitative data was analyzed by conceptual generalization, integration, and text analysis. Therefore, objective (to identify agricultural information need and constraints and opportunities of access to agricultural information) was attempted by using frequency, percentages, description, SWOT analysis, and by scoring and ranking. To know the influence of explanatory variables on information access ordered logit model was employed in this study.

### 3. Results and Discussion

#### 3.1. The Background Information and the Characteristics of the Respondents

The result of the study reveals that male household heads account for 83.4% and more than half Percent of the respondents followed Protestant Religion. Regarding literacy levels from the total sample household heads, about 71.5% of them were illiterate while about 28.5% were able to read and write. About 73.5% of the households did not have access to credit and most of respondents were married. In the study area, the maximum family sizes were sixteen and the minimum were two. The mean age and land size of the respondents were 50 (age) and 1.2 (hectar) respectively.

#### 3.2. Agricultural Information Need

To identify agricultural information needs of the farmers in the study area, DA suggestions and respondents' recommendations during the pilot study were considered. The respondents were asked to rank their agriculture information needs, and the data from the sample respondents were summarized in Table1.

**Table 1: Agricultural Information Need (N=151)**

Information need	Score	Rank Order
Agriculture Input Information	972	1 <sup>st</sup>
Livestock Information	782	2 <sup>nd</sup>
Market Information	706	3 <sup>rd</sup>
Poultry Information	622	4 <sup>th</sup>
Postharvest Information	407	5 <sup>th</sup>
Credit Information	401	6 <sup>th</sup>
Environmental Information	388	7 <sup>th</sup>

Source: own survey data, 2016

As indicated in Table 1, agricultural input information was the first among other needs. Livestock information, market information, poultry information, postharvest information, credit information and environmental information needs ranked as second, third, fourth, fifth, sixth and seventh respectively. Because of information timeliness, shortage and poor quality of agricultural input provisions in the study area, they needed agricultural input information

as a first priority. Besides this, farmers needed to diversify their income due to the uncertainty and climatic risk of crop production. Due to this, they mostly demanded livestock and poultry information.

Farmers were unable to get market information especially for perishable products that required timely information. In addition to this, farmers were faced by postharvest handling problems of their yield in order to maximize their profit; information which they required from experts. To diversify the income of farmers in the study area, financial support, like credit to purchase hybrid animals and poultry was needed. In addition, to minimize risk and for sustainable production, they needed environmental information.

### **3.3. Agricultural Information Sources**

#### **3.3. 1. Information source and frequency of use**

The results of the survey indicate that most farmers use neighbours and friends (social network) as a source of agricultural information more than they do with other sources. Next to neighbours and friends, the respondents preferred markets (77.5%) and input supplier organizations (7.9%) as sources of agricultural information. More than 94 % of the respondents did not use rural radio programs as agricultural information sources because of lack of electricity. Similarly, the respondents did not use training (90.7 %), Kebele Administration (82.1%), and NGOs (92.7%) as source of agricultural information. Poor extension system, lack of consistency of advisory service, lack of availability of quality input, inappropriate DAs support, lack of addressing farmers' agricultural information interests and lack of electricity hinder farmers from access to agricultural information from development Agents,

Peasant associations, input supplier organizations, training, NGOs and rural radio programs some, or most, of the time. This leads farmers to prefer social networks or social capital to access agricultural information (Neighbors and friends, other farmers and Market) than other sources.

### **3.4. Access to Agricultural Information**

#### **3.4.1. Categorization of the Respondents to the Levels of Access to Agricultural Information**

As can be noted from Table 2, from the total surveyed households, 58%, 31.8% and 9.9% were in the category order of low, medium and high respectively. It is clear from the Table that, the majority of sample respondents fall in the low level category of information access. This implies there was low agricultural information access in the study area. The reasons behind this have been discussed below using descriptive statistics and the econometric model (Ordered Logit).

**Table 2: The Distribution of Respondents by the Categories of Information Accessed (N=151)**

Dependent variable	Category	Frequency	Percent	Score
Access	Low	88	58.3	1-7
	Medium	48	31.8	8-15
	High	15	9.9	16-26

Source: own survey data, 2016

### 3.5. Summary of Descriptive Statistics Results of Explanatory Variables

Before moving on to the Ordered Logit econometric model analysis, it is important to summarize the degree of association between dependent and independent variables. This section covers the analysis on the relationship between dependent and independent variables (nine continuous, four categorical and three dummy). To analyze this relationship among dependent and the independent variables, the one-way ANOVA and Chi-square test were employed for continuous and for the discrete/dummy and categorical variables. The summarized results are present in Tables 3, 4 and 5.

**Table 3: The Relationship of the Dependent Variable and the Continuous Independent Variables (N=151)**

Variables	Mean Across Access Category			F-value
	Low	Medium	High	
Age of Household Head	48.34	51.23	52.07	.98NS
Family Size	7.40	8.42	9.07	3.17**
Extension Contact	5.30	3.69	2.33	67.89***
Distance to district Market	12.76	7.58	7.40	51.41***
Distance to Main Town	8.79	4.82	4.16	63.31***
Cosmopolitans	3.42	3.35	2.47	3.80**
Land Size	0.60	0.82	1.11	13.21**
Off-farm Income	1.84	3.47	5.12	8.28***
Livestock Ownership	1.78	3.19	4.67	63.37***

NS: None Significant Source: own survey data, 2016

Significant at 1% probability level\*\*\*, and 5% probability level\*\*

The mean difference between the access categories and their relationship with the age of household head, family size, extension contact, distance to district market, and distance to main town, cosmopolitans, land size, and livestock ownership were tested by the one-way ANOVA. Accordingly, the result shows that there was no significant mean difference in the age of the household head and agricultural information access categories ( $F=.98$ NS) and their relationship with information access is not significant. It was found that the relationship between extensions contact, distance to district market, and distance to main town, livestock ownership, off-farm income and agricultural information access are highly significant (1%). Therefore, all the above-mentioned independent variables highly affected the agricultural information access of sample respondents. Family size, land size and cosmopolitans indicated a significant mean difference in access categories, their relationship with information access is significant at (5%).

**Table 4: The Relationship of Dependent Variable and the Ordinal and Categorical Independent Variables (N=151)**

Variables	Category	Proportion Across Access Categories			
		Low	Medium	High	$\chi^2$ -Value
Marital Status					
Married		77	45	13	
Separated		1	0	2	13.52*
Widow		10	3	0	
Information Seeking Behavior	Low	74	1	2	
	Medium	1	38	9	140.11**
	High	2	1	12	*
Social Participation	Never	18	16	5	
	Low	12	3	3	5.70NS
	Medium	44	23	5	
	High	14	6	1	
	Never	35	0	0	
Innovation Proneness	After most people accepted it	46	7	0	160.55** *
	After consulting others who are knowledgeable	5	33	1	
	As soon as I come across new idea	2	8	14	

Source: own survey data, 2016

Significant at 1% probability level\*\*\*, and 10% probability level\*

NS: Non significant

The Chi-square tests from the above table show that there is no significant relationship between social participation and access categories. However, there is significant mean difference between marital status and information access categories at 5% significant level. Information seeking behavior and innovation proneness have a significant relationship with agricultural information access at 1% significance level. This implies that the respondents in the study area had different ability to seek information and to prone innovation between the access category.

**5: The Relationship between the Dummy Independent Variables and the Dependent Variable (N=151)**

Variable	Category	Proportion Across Categories			
		Low	High	Medium	$\chi^2$ -Value
Sex of Household	Female	20	3	2	6.22**
	Male	68	45	13	
Literacy Level	Literate	8	25	10	40.11***
	Illiterate	80	23	5	
	No	71	32	8	

Source: own survey data, 2016

Significant at 1% probability level\*\*\*, 5% probability level\*\* and 10% probability level\*The Chi-square tests were employed for the dummy variables. It can be inferred that, there was significant mean difference between literacy levels and information access categories (P=.000). Therefore, their relationship with information access is highly significant at 1% significance level. Sex of households head and access to credit has significant relationship with agricultural information access at 5% significance level.

### 3.6 Analysis Results of the Ordinal Logistic Regression Model

In the previous section, the sample population and tests of the significance between the dependent and explanatory variables to identify the factors affecting access to agricultural information were discussed. However, identification of these factors was not enough for meaningful conclusions. Therefore, the relative influence of each explanatory variable to the dependent variable had known for priority-based interventions. To this end, in this study, the Ordered Logit econometric model was used to see the relative influence of different independent variables on the depended variable. However, before executing the econometric model analysis, multi-collinearity effect was tested.

#### 3.6.1 The Determinants of Access to Agricultural Information

After the multi-collinearity test, the data was analyzed using STATA version 12 software programs. As indicated in Table 6 out of the 16 explanatory variables run, seven were founds significant at different probability levels. These are sex (SEX), literacy level (LL), Extension contact (EC), Cosmo politeness (COSM), information seeking behavior (INSKB), innovation proneness (IPRO) and livestock ownership (LVOW). The ordered model result for agricultural information access was presented as follows.

**Table 6. Maximum Likelihood Estimates of the Ordered Logit Model for Information Access (N=151)**

Access to agricultural information	Coefficient (Robust Std. Err.)	Z	Marginal effect		
			Y=1 (Low)	Y=2 (Medium)	Y=3 (High)
Sex	3.539(1.845)	1.92**	-0.022	0.022	0.073
Age	0.018(.028)	0.67	-0.000	0.000	0.008
Literacy Level	-3.204(1.89)	-1.69*	0.108	-0.108	-0.004
Family Size	-.194(.132)	-1.47	0.002	-0.002	-0.008
Marital Status	.839(.834)	1.01	-0.011	0.011	0.004
Extension Contact	-.965(.303)	-3.19***	0.012	-0.012	-
					0.0004
Access to Credit	1.093(.761)	1.44	-0.018	0.018	0.006
Distance to Towns	-.343(.253)	-1.36	0.004	-0.004	-0.000

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Distance to Market	-0.1410(.133)	-1.06	0.002	-0.002	-0.001
Land Size	.577(.765)	0.75	-0.007	0.007	0.002
Cosmopolitaness	-.943(.306)	-3.08***	0.012	-0.012	-0.0004
Social Participation	-1.226(.799)	-1.53	0.015	-0.015	-0.001
Information Seeking Behavior	-3.814(1.95)	-1.96**	0.081	-0.081	-0.0002
Innovation Proneness	16.286(1.967)	8.28 ***	-0.999	0.930	0.069
Off-farm Income	.756(.474)	1.60	-0.164	0.164	0.000
Livestock Ownership	3.149(1.43)	2.21**	-0.685	0.685	0.086
<hr/>					
	Number of obs	151			
	Wald				chi2(17)
	321.29				
	Prob		>		chi2
	0.0000				
	Log pseudolikelihood				
	-25.297138				
	Pseudo				R2
	0.8156				
	Cut				1
	2.35, 4.98				
	Cut				2
	12.68, 2.55				

Source: Own survey data, model output, 2016

Note: Variables in parentheses are Robust Std. Err

Significant at 1% probability level\*\*\*, 5% probability level\*\* and 10% probability level\*



**Sex of Respondent (SEXR):** The Ordered Logit model output shows that male-headed households were statistically and positively significant at less than 5% level to access agricultural information than the female-headed ones. This implies that being female and male make a significant difference in accessing agricultural information. The result is in line with prior expectations, due to many socio-cultural values and norms, males have greater freedom of mobility and participation in different meetings. Female-headed households have less access to agricultural information and improved technologies, credit, land, and extension services. In the study area, Female-headed households mostly engaged in tedious work that hindered them from participating in meetings, association and organization. All other things being held constant, the probability of agricultural information access of male-headed household in low access categories decreases by 2.2% whereas in medium and high access categories increase by 2.2% and 7.3% respectively, compared to female-headed household. This finding is similar with findings of Berihun et al. (2014).

**Literacy level (LL):** From the model result, this variable was found to be significant at less than 10% significant level and positively related with agricultural information access among rural households in the study area. This implies that being illiterate or literate makes a significant difference in accessing the available agricultural information. The model result indicates that all other factors remaining constant, probability of agricultural information access of literate household head in low access categories increases by 10.8% and decreases that of medium and high groups by 10.8% and 0.4% respectively, compared to illiterate house hold head. This result is similar with Katungi (2006) reveals that, literate farmers have more information access and there is a significant difference between illiterate and literate household heads in accessing agricultural information.

**Extension Contact (EC):** This variable was significant at the 1% significance level and is positively related with the dependent variable. The model result confirms that the households who had frequent contacts with agricultural extension works had more access to agricultural extension services hence more access to agricultural related messages than the households who didn't contact agricultural extension workers. With one unit increase in the frequency of contacts with the development agents, the probability of agricultural information access increases in the low categories by 1.2% while the medium and high categories decreases by about 1.2 %

and 0.04% respectively; holding other factors constant. Farmers categorized in low access category as they increase contact with extension agent, they can access agricultural information more, when compared to the other access categories. The study result shares the empirical study result of Deribe (2007) who found that frequency of contacts or visits of extension agent to farmer is very important to access information, update the knowledge and skill of farmers on farm technologies, practices or activities. Thus, the availability of extension participation and frequency of contacts in the rural areas is of a paramount importance to farmers to access agricultural information. Moreover, frequency of contacts with development agent and extension participation improves the information access, knowledge and increases concern of farmers about agricultural activities.

**Cosmopolitaness (COSMO):** The independent variable cosmopolitaness influenced agricultural information access positively and significantly at less than 1% level of significance. The model result implies that those who move out of their Kebeles have more chance of exposure to external information that enhances access to agricultural information than those not move out of their Kebeles. The marginal effect of the model showed being other things held constant, a unit change in cosmos politeness adds up the probability of accessing agricultural information by farmers in low information access category decrease by 1.2%, while the respondents in medium and high information access categories increases by 1.2 % and 0.04 % respectively. The studies conducted by Katungi (2006) in Uganda and Daniel (2008) reveal that exposure to outside living areas plays an important role for the exchange of agricultural information by helping farmers to have greater access to agricultural information.

**Information Seeking Behavior (INSKB):** The model output reveals that information seeking behavior is significant and has a positive impact on the dependent variable at a less than 5 % level of significance. Households with high information seeking behavior have a greater probability of accessing agricultural information than those with low information seeking behavior. Studies conducted by Asres (2005) provide positive support to this finding. All other factors being held constant, the probability of agricultural information access of respondents with low information seeking behavior reduces by 8.1% whereas that of medium and high information access category increases by about 8.1% and 0.02% respectively compared to those

respondents in low information seeking behavior. Therefore, farmers under low agricultural information categories accessed more agricultural information than other categories.

**Innovation Proneness (IPRO):** Innovation proneness by the household head was found to have a 1 % significant and positive relationship with the dependent variable. The household heads with such behavior access agricultural information due to their tendencies to quickly accepting or adopting new ideas than household head that are lacking in innovation proneness. The model output indicates that, other variables being held constant, the probability of agricultural information access of respondents in innovation proneness decreases by 99.9% in the low category and increases in the medium and high categories by 93% and 6.9% correspondingly. As farmers increase in proneness to innovation, their agricultural information access increases in medium and high categories than in the low category. Nevertheless, as farmers not proneness to innovation, their agricultural information access decreases in low access categories. This result is similar to the empirical studies conducted by Korra (2009).

**Livestock Ownership (LVOW):** The model output shows that, livestock ownership was statistically and positively significant at less than 5% level. This implies that farmers who hold more livestock access agricultural information more. The probable reason for this was farmers with large number of livestock possession were relatively better off thus initiated to receive new information that they have the capacity to purchase and test agricultural technologies that expose them to access agricultural information. According to the model output, by a unit change in livestock possession of farmers, the probability of accessing information by low information access category decreases by 68.5% while the information access by medium and high categories increased by 68.5% and 8.6 %, respectively. Therefore, farmers who had less livestock their agricultural information access decreases in low access categories while, in medium and high categories increase for those who had more livestock. The result of study is in line with finding of (Getahun, 2008).

### **3.7. The Constraints and Opportunities of Smallholder Farmers in Accessing Agricultural Information**

#### **3.7.1. Constraints in accessing agricultural information**

##### **i. Poor extension system**

Poor extension system in the study area was the first constraint reported by respondents. The reasons behind this were lack of facilitation (transportation, office with equipments, stationery), lack of capacity building of DAs (books, internet, training and journals), lack of incentives and encouragement of DAs, lack of linkage with stakeholders, budget allocation, complicated financial procedures and lack of a participatory plan. Alongside this were high staff turnover, unstable leadership system at district level and lack of follow up of DAs.

On the other hand, the ratio of DAs to the households was 1:522. That was not enough to disseminate agricultural information to the framers at the required level and only 23% of DAs were female. Because of this, it was difficult to prepare enough extension events (Demonstration, field visits and field days) which were a great opportunity to disseminate information especially to the low agricultural information accessibility by the female headed household. As presented in Table 6, a few households (15 households) had access to extension events (9.9%). The rest, 136 (90.1%) did not. The reasons behind this were, 74 (54.41%) respondents were not invited to participate, 36 (26.47%) did not have information on best practices and 26 (19.12%) were both not invited and did not have information on best practices. The above-mentioned poor extension system hindered farmers from access to agricultural information in the study area.

#### **ii) Lack of Quality Inputs Availability**

The second constraint described by the respondents was lack of quality inputs availability. As we know, agricultural input is mandatory for farmers to produce even if the respondents did not get timely and quality input information. Beside this, poor quality and sometimes expired inputs provided for the farmers that put them under risk. Quality and appropriate input information is mandatory and primary information for other farming activity to continue and to sustain life.

#### **iii) Lack of Support of DAs**

The third constraint indicated by the respondents was the DAs inappropriate support, even if they were around. The reasons behind this were frequent transfer and change of DAs and lack of record keeping (documentation). For this reason, they were forced to take time to know the area and communicate (enhance familiarity) with farmers to build trust. Besides this, DAs mostly contacted the farmers when they need information for preparing the report as may be required and asked by the district office and in the times of seasonal

activity (meeting, natural resource conservation and urgent orientation) rather than giving support for farmers in need of help. Inconvenient geographical location and lack of facilities (transportation, stationery and office) hinder DAs to give appropriate support and lack motivation to do their work effectively. In addition to this, farmers were not getting information they want in accordance to their demands and problems they encountered since only one DA per specialization (Animal science, Plant science and Natural resource) was assigned in most of the Kebeles that enabled them to offer all the required services.

#### **IV) Farmers Lack of Interest:**

The fourth constraint as revealed by the respondents was lack of interest to access and use agricultural information (information apathy). The respondents did not trust DAs as they did not keep their promises and lacked credibility in the communication they had with them. Furthermore, DAs went to farmers but farmers could not go to them because they did not have a permanent place (no office) to enable them to get the information they wanted on time, which made them to lose interest in the DAs support. Most of the time DAs did not bring new thing to generate interest on them and asked them repeated information (for reports), that made them bored and lose interest.

#### **V) Information is not Address Farmers Interest**

The fifth constraint mentioned by the sample households was that the agricultural information disseminated was not addressing their interests. This problem was somewhat related to the third problem. Most information was disseminated without considering farmers interest because of this, it was not addressing the farmers interest most of the time. As focus group discussants and key informants mentioned, “most of plans were top to down and not participatory in order to meet zone and/or ministry of agriculture plans”. For this reason, they failed to meet information requirement of farmers in accordance to their interests.

#### **VI) Lack of Electricity**

The last constraints revealed by all the respondents were lack of electricity. Near the study area, there were two radio stations (Shashemene and Hawasa FM) which were 25 km away. Nevertheless, because of lack electricity they could not use it even if it was a great opportunity to disseminate agricultural information for many farmers. Beside this, farmers could not communicate with DAs through phone to access information they needed.

### **3.7.2 Opportunity of Smallholder Farmers in Accessing Agricultural Information**

There are many opportunities in the study area to make agricultural information accessible to farmers. These are discussed hereunder.

The area was endowed with natural resources and is very near to Hawassa and Shashemene towns (25 km away). Because of this, it was easy for the DAs as well as to the farmers to access agricultural information from this place. As Wondo district Kebeles are few (nine Kebeles) it was not difficult to made agricultural information accessible to farmers.

Most of DAs are the natives of the study area. Because of this, they were able to speak Afan Oromifa and Sidamign, which are the most spoken language in the study area. Therefore, it was a good opportunity for them to disseminated agricultural information.

There are research center and Wondo Genet College of agriculture under Hawassa University in the study area, and that was another great opportunity to access agricultural information. In addition to this, there are NGOs that mainly focus on agriculture, which was a chance to farmers' to accessed agricultural information. Besides this, most of the area has good road facilities that supported the available information from the above source to be accessed by farmers.

The other opportunity was availability of nearby radio media (Shashemene Fana FM and Hawasa FM) that will help to address the information requirements of many farmers in the study area. Moreover, the Kebeles structures were divided in different groups i.e., one to five group and division of one Kebeles into three zones which is an opportunity to made agricultural information accessible easily.

## **4. Conclusion and Reommendations**

### **4.1. Conclusion**

The result of the study indicates that farmers agricultural information needs were agricultural input, livestock, market , poultry, postharvest, credit and environmental . Nevertheless, from the total surveyed households' the majority of the sample respondents fall in to the low category of information access in that most farmers lacked accessing agricultural information they need.

From the survey outcomes, it is observed that sex of household head, frequency of contact with development agent, information seeking behavior, Cosmopoliteness, innovation proneness, literacy level and livestock

ownership significantly affected farmers' access to agricultural information in the study area. This result shows that participation of female-headed households in extension systems was few and was not gender sensitive. Besides this, because of poor extension system and lack of follow up, DAs were not able to contact farmers in the required manner.

The ranked respondents' constraints that hold back farmers from access to agricultural information in the study area were poor extension facility, inappropriate availability of quality input, DAs inappropriate support, farmers lack of interest, information was not address farmers' interest, and lack of electricity. These constraints required appropriate intervention from concerned stakeholders to make agricultural information accessible and need based.

There were many opportunities in the study area to made agricultural information accessible to farmers. These were: the area is near to town (Shashemene and Hawassa), had radio stations, is endowed with natural resources, few numbers of Kebeles, most DAs were native from the study area, it had research center, Agricultural University, NGOs and Kebeles dived in to different group (structures) that help to made agricultural information accessible. However, they could not use it effectively to make agricultural information accessible and to overcome the challenges they faced.

#### **4.2. Recommendations**

Based on the conclusions mentioned above the following recommendation were given as follows.

The output of this research indicates that more than half of the sampled respondents were at a low scale of agricultural information access and most of them could not meet their agricultural information needs. In order to address the problem the district Agricultural Office has to improve their extension system. To do this they have to improve their finance bureaucracy, capacity building of expertise, bottom up or participatory plan, improving facility, provision of stationery and related material on time, supervisions of DAs work and increasing expert numbers.

DAs work interferences and forcing to do political work should stop to enable them to do their work and not to lose the confidence and trust of farmers. Frequent change of DAs and interrupted education schedule has to solve by assigning DAs in particular work area and by giving full time education scholarship for DAs (avoiding interrupted semester wise courses).

Since it hinders both DAs and farmers not to communicate well and disseminated the information in required manner. Enhancement of incentives and provision of necessary facility (transportation, stationery, trainings and office with equipment) should be improved to disseminate and address information need of farmers. When the above-mentioned things fulfil follow up of DAs can be made otherwise it will be difficult to make.

Gender difference ought to be considered before disseminating agricultural information in order to make the information accessible equally. In addition to this, the opportunities mentioned above were very significant to resolve the constraint faced by farmers in accessing agricultural information. Facilitating and enhancing linkage with potential agricultural information sources (University, Research center and NGOs) are necessary to obtain agricultural information and to fill capacity gap of expertise.

Informing farmers about every related activity and having discussion with farmers about their need and problems to enhance interest of farmers and participation is important. Alongside, employing native DAs around the study area is vital to obtain DAs in difficult geographic locations, which supports accessibility of agricultural information in those areas.

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