Journal of Poverty, Investment and Development
ISSN 2422-846X An International Peer-reviewed Journal
Vol.39, 2017

The Role of Farmers to Farmers Knowlodge Sharing in Improved Sesame Technology Adoption in Case of Meisso District West Hararghe Zone

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Abstract
This journal article analyze and summarize the role of farmer to farmer knowledge sharing in term of providing the most credible and reliable source of information about new technologies for rapid adoption of new technologies and to document the perception of farmers about improved sesame technology attributes. This survey result is based on the cross sectional data collected in 2014 cropping season from 140 households randomly selected from Meisso district. The primary data source for the study was from formal household questionnaire survey and key informant discussion. .In addition, secondary data were collected from relevant sources such as different research institute, zonal and district bureau of agriculture. Descriptive statistics such as mean, standard deviation and percentage were used to describe the sample unit. Furthermore, chi-square test and t-test were used to identify variables that vary significantly between adopters and non-adopter.The result of the survey study indicated that 42.9% of the sample households were adopters of the improved sesame technologies ,while 57.1 % non- adopters. The chi-square analysis showed that adopters were better educated, male headed households, have more access to extension servicesand farmers to farmer's knowledge sharing network and perceived the attributes of improved sesame technologies more advantagous than non-adopters. The results of t-test also showed that adopter farmers have more family labor force, livestock ownership, sesame crop production experience, earned farm income and more near to the market center than non-adopters. In addition to this fact, a farmer to farmers knowledge sharing has significantly contributed to the technologies adoption through facilitating adopters' farmers' access to credible and reliable source of information about new technology and accessed to improved seed. The overall finding of the study underlined the high importance of institutional support in the areas of extension service to insist farmer-to-farmer knowledge sharing, credit and market to enhance adoption of improved sesame technology. This study is also imply due attention to farmers' views during the new technology development, evaluation and dissemination process.
Keywords: Farmers to farmers knowdge sharing, seseame tecchnology adoption, attributes, technologies development and dissemination.

1. Introduction

Farmers constantly share information about things that are important to them. These exchanges have been particularly well documented for seeds of different crops and varieties (Cromwell 1990; Sperling and Loevinsohn 1993). Many innovations have spread from farmer to farmer without the intervention of any formal agricultural extension services, such as the diffusion of the moldboard plow in many parts of Africa.

Information and technology commonly are diffused through a social network, which can be defined as a group of people who share certain bonds, usually as a result of family or traditional social obligations. Social networks may play a fundamental role in the adoption of new technologies, For instance, farmers demand reliable information that enables them to make informed decision regarding technology adoption to improve production and productivity. With regard to this context, the producers may need information about the existence of new varieties, their potential economic benefit and methods of applying them and attributes of the recommended varieties like the maturity period. Early maturing sesame varieties are important in the context of the study area as this help reduce drought risk while also significantly increasing the yield level. The development of these technologies is worthless if farmers do not discover the desirable qualities and use the technologies. Therefore, Adoption and diffusion of improved technologies would be successful with an appropriate mechanism of disseminating the information about the technologies.

In Ethiopia general, in this study district specifically, different government institutions and non-governmental organization were developed and disseminated improved sesame technologies and information to the beneficiary farmer in several ways (e.g. pamphlets, field days, demonstrations, farmers to farmers experience exchange DAs, and association with other farmers) for more than two decades.

However, information about farmers' perception on improved sesame varieties attributes and contribution of farmer to farmer knowledge/ information sharing in adoption decision are found to be insufficient and were not well understood and documented. The relevance, accessibility and credibility of this information may affect farmers' decision to adopt improved technology. According to Feder et al (1986), often smallholder farm households consider other farmers the most important and reliable source of agriculture information.

Therefore, this study identified and summaries the role of farmer to farmer information sharing in term of providing relevant and reliable information to rapid and wide spread adoption of new technologies and to document the perception of farmers about improved sesame technologies attributes.

2. RESEARCH METHODOLOGY

2.1. Description of the Study Area

The study was done in Meisso Wereda of West Hararghe Zone of Oromiya National Regional State (Figure2). It is situated between latitude of 40^0 9"30 E and 8^0 48 12" N and 9^0 19"52" N (IPMS report, 2006). The woreda has shares boundaries with East Doba, north of Chiro & Guba Koricha, northeast of Anchar woredas; and northwest of Somali and south and southwest of Afar Regions. The woreda has a total land area of 196,026 hectares. The altitude of the woreda ranges from 900 to 3106 m.a.s.l. and the wide range of the area has gentle slope and sloppy at the border. The most common and dominating soil type is vertisols. The annual temperature varies between 24 ^oC to 28 ^oC .The mean annual rainfall ranges from 400 to 900 mm with an average of about 700 mm and it is erratic in nature. A small rain occurs between March and April, while the main rainy season occurs between July and September .The woreda has a total of 45 kebeles. Of the total kebeles, 34 belong to agro-pastoral and 11 pure pastoralists [5]. The location of Meisso woreda is shown in Figure 1.

Figure 1.Map of Meisso district

2.2. Sampling Procedure

A three- stage sampling technique was used to select sample respondents. In the first stage, Meisso Woreda was purposively selected for this study because of the fact that improved sesame technology is widely popularized by various governmental and non-governmental organizations in the area. The study covered four randomly sampled PAs namely; Ittisa Roro, Hunde Misoma, Oda roba and Harmero deyima from the wereda. The target population of this study consisted of smallholder farmers.

The second stage was the selection of PAs using a simple random selection method, while the second involved the selection of farm households to be interviewed. Lists of a total of 45 PAs in Meisso Woreda were obtained from the WoAPD. Among a total PAs found in the woreda, 11 PAs belong to pure pastoralist farming system while the remaining 34 PAs are agro pastoral production system. The latter farming system where sesame crop is extensively produced by the farmers and improved sesame technologies have been widely popularized by research centers, WoAPD and others organizations. Four PAs were selected, using simple random sampling technique from the 34 agro-pastoral PAs. The list of sesame producing households in the selected PAs were obtained from the concerned office and 140 sample farm households were randomly selected based on probability proportional to size of sesame producing households in each selected PAs

2.3. Data and Data Collection Methods

Both primary and secondary data were used for this study. Primary data on socioeconomic, demographic, institutional and psychological (perceptions) related factors were collected from sampled farm households and used for this study. Primary data were collected using quantitative approach by means of household survey using a set of pre-tested questionnaires. The household survey was carried out from December to January, 2014. The qualitative method of data collection was also employed. It consisted of in depth open- ended interviews, direct observations and written documents. The interview method was mainly emphasized. Group discussion and individual interviews were held to have reactions of the farmers concerning their detail experiences and their

perceptions of the technology and their experience in sesame knowledge sharing. Discussions were also conducted with experts of Meisso district Pastoralist and Rural Development Office and key informants. On top of the primary data, secondary data were also used for this study obtained from book, journals, IPMS project reports and other published and unpublished documents from Haramaya University, Zone and district agricultural offices, internet and other related sources to supplement primary data.

2.4. Method of Data Analysis

The data were analyzed using stata version 10.0 software. Descriptive statistics such as mean, standard deviation (SD), frequencies, and percentages were used to describes and summarize the characteristics of sample households. Chi-square test and an independent sample t-test were also used to identify variables that vary significantly between adopters and non-adopter. The chi-square test was conducted to compare some qualitative characteristics of the adopters and non-adopters, whereas t-test was run to assess whether statistically significant differences exist in the mean values continuous variables for adopter and non-adopters.

3. RESULTS AND DISCUSSION

As already mentioned in methodology part, this study was based on cross-sectional data collected from a total of 140 farm households randomly selected from Meisso district of West Hararghe Zone during 2014 cropping season. Of the total sampled households, 80(57.1%) were adopters and 60(42.9%) were non-adopters of improved sesame technologies. The socio economic and institutional characteristics of adopters and non-adopters are discussed under in this section.

3.1. Households Socioeconomics and demographic characteristics

The average family size of sample households was 7.1 persons per households and the average family size for adopters was 7.8 persons, while it was 6.6 persons for non-adopters. The mean difference for family size is also significant for the adopters and non –adopters at 5 percent significant level. The effect of family size on adoption is captured in the other variable dealing with household's labor force to indicate the labor availability measured in man equivalent (EM).

The average number of economically active family members (15-65 years of age) was about 2.99 persons per household for total sample .If this result is compared with the average family size (i.e. 7.1), on the average only 42.1% of the family members provides labor force and actively engaged in an economic activity. On average, adopters have more number of economic active labors (3.28) than non- adopters (2.7), with mean difference significant at 5% level (Table3).

The average family labor force supply in man equivalent of the sampled households was 3.7 persons, while for the adopters was 4.38 persons and for non-adopters 3.21 persons. An independent sample t-test shows that the mean difference in family labor force supply of the adopters and non-adopters is significantly different at 1% level (Table1).This implies that large families in man equivalent could provide relatively more of labor force supply for farm operations associated with it use (such as weeding and land preparation, etc).Shortage of labor supply may lead a household not to adopt improved sesame varieties.

On average sample households had 11.48 TLU with standard deviation of 3.75. Adopters owned a large number of livestock compared to non-adopters, with mean difference significant at 5% level. It could indicate that adopters have better access to financial source through sell of livestock which could be used to purchase farm inputs, such as sesame seed and used for minimizing risk.

Table1. Distribution of sampled households by demographic characteristics

Description of Variables	Overall		Adopter		Non-adopter		Test value
	Mean	SD	Mean	SD	Mean	SD	χ^2/t
Households' average family size	7.1	2.3	7.8	2.49	6.6	2.13	3.15**
Average number of economically active members	2.99	1.31	3.28	1.58	2.7	1.02	2.22**
Average labor force (ME)	3.7	1.44	4.3	1.5	3.2	1.1	5.43***
Dependency ratio	1.62	1.05	1.7	1.2	1.55	0.92	0.870
Average landholding (ha)	2.4	1.02	2.4	1.3	2.15	0.98	1.1
Average livestock owned in TLU	11.48	5.1	12.31	5.71	10.48	7.1	2.321**

Note, SD= standard Deviation
***, ** Significant at 1% and 5 % level respectively
Source: Own survey, 2014

Table2. .Distribution of sampled households by the characteristics of household heads

Description of Variables	Overall		Adopter		Non-adopter		Test value
	χ / F	SD/ %	χ / F	SD/%	χ /F	SD/%	χ^2 /t
Age (χ)	52.77	9.48	52	9.29	53.3	9.6	-0.83
Experience in crop production (χ)	25.23	9.4	29.2	8.49	22.43	9.09	4.34***
Duration of participation in crop extension (χ)	13	8.15	12.4	7.5	13.4	8.84	0.719
Experience in sesame production(χ)	18.9	11.54	21.3	11.45	17.12	11.34	2.12**
Sex of household heads(f)							
Male	112	80	58	97.6	54	67.5	18.2***
Female	28	20	2	3.3	26	32.5	
Educational level (f)							
Literate	74	52.9	49	81.7	25	31.3	34.97***
Illiterate	66	47.1	11	18.3	55	68.8	
Cooperative member(f)							
Yes	25	17.5	17	28.3	8	10	7.8*
No	115	82.1	43	71.7	72	90	
Kebele Administration(f)							
Yes	39	65	42	52.5	81	57.9	2.7
No	21	35	38	47.5	59	42.1	

Note, SD= standard Deviation, f= frequency, %= percentage, χ= mean of sample farmers
***, ** Significant at 1% and 5 % level respectively
Source: Own survey, 2014

The average years of crop production experience for the total household heads, adopters and non-adopters was found to be 25.27, 29 and 22.43 years respectively. The mean difference was observed in crop production experience of both groups at 1% of probability level (Table2).The result depicts the fact that technology adoption and years of experience in crop production positive relationship.

The survey result also show that the average years of experience in sesame crop production of the sampled households was 18.9 years with standard deviation of 11.54 years. The mean difference for years of experience in sesame production is also significant for the two groups at 5 percent significant level .This implies that having a longer experience in sesame crop production are in a better position to know how to produce and the potential benefits of new crop than farmers with shorter sesame experience in crop production activities.

The proportion of male-headed sample households was 96.7% for adopters while, 67.5% for non-adopters of improved sesame varieties. The figure shows that the male headed household of adopter is higher than that of the female headed. This could be attributed to various reasons, which could be the problem of economic position of female headed households, including shortage of labor, limited access to information and required inputs due to social position. The chi-square test of sex distribution between the two groups was run and the difference was found to be significant (χ 2= 18.2) at 1 percent of probability level. This implies that situations to use improved sesame are not conducive for females compared to males headed (Table2).

Regard to the farmers' categories, from the total non-adopters 31.3 % was literate and 68.8 % were illiterate. In the case of adopters 81.7% were literates and 18.3 illiterate. In this study, like our prior expectation, the chi square test results showed that there is relationship between adoption of improved sesame varieties and level of education at 1% level (Table 2). This implies that there is a strong positive relationship between education and improved sesame adoption.

Of the total sampled households, 47.1% have participated in cooperative administration while 52.9 % of the sampled HH do not have. When we analyze with in the category, 28.3% of adopter farmers have participated in cooperative memberships, while only 10% of non-adopters have participated cooperatives membership, with the percentage difference significant at 5% level.

3.2. Perceptions about Relative Advantages of Sesame Technology Attributes

In order to get insight on farmers' decisions of new technology use, looking at their perceptions about each attributes of a given technology is of paramount importance. Hence, knowledge of respondent farmers' evaluative criteria as regard to technology attributes is needed. Through literature review and a participatory process, eight most commonly used attributes by farmers while assessing the desirable qualities of improved sesame varieties or seeds in general were identified. These include: yield, drought resistance, seed color, and pod per plants, shattering resistance, disease resistance, marketability and maturity.

Three descriptions, i.e., superior, same and inferior were used to facilitate the comparison by farmers of the recommended improved sesame varieties against their local seed(s). Table3 displays the results of the assessment of the perceived improved sesame verities by both user and non-user groups.

The results show that more than fifty percent of the sample households responded that the traits early

maturity, seed color, drought resistance, disease resistance, marketability, number of pod per plants and yield of the improved sesame varieties are superior to the local ones. However, shattering resistance of the improved sesame varieties was perceived as inferior to the local ones. About 61.4% of the total sample households and 71.6% of the adopters perceived the improved varieties as earlier in maturity compared to the local one. The chi square test results supported that there a statistically significant perception difference between and adopters and non-adopters, implying the association between perception and variety adoption.

The attribute "drought tolerance" is highly associated with the earliness in maturity because those which mature earlier have the possibility to escape drought especially under moisture stress conditions and limits the effects of drought on crop yield, and thus enhances productivity. About, 57.9 % of the total sample households perceived improved sesame varieties to be superior to the one with respect to drought tolerance. It is observed that less than fifty percent from both adopters and non-adopters farmer had the perceived that improved varieties are inferior to the local with this trait. Again there is a statistical significant difference between adopters and non-adopters with respect to the perception of drought resistance at less 5 percent of probability level. Also, 62.1 % of respondents consider the improved sesame Varieties Superior to the local ones in terms of yields. More than 50.7% of sample household perceived the attributes of pod per plant of improved sesame superior as compare to the local. The chi square test results for two attributes show that the difference in perception was significant at 1 percent probability level.

Similarly, 57.1 % of the respondents had the perception that the colors of these varieties are superior in market demand as compared to the color of the local ones. They have strongly underlined that it is very demanded in the domestic and international markets. However, 37.1% of the sample households perceived the improved sesame color it to be inferior in relation to their local ones. This again shows the possible association between perception and the use of the technology.

The perception of farmers with regard to the attributes of shattering, marketability and disease resistance of the varieties indicates that 19.4, 76.4 and 57.1 % of the sample households had the perceived improved varieties as superior in comparison to the local cultivars in terms of shattering resistance, marketability and disease resistances, However, 22.9, 17.9 and 35.7 % of sample households perceived as inferior with respect to these attributes. In the comparison between adopters and non-adopters with respect to three attributes, chi-square test result shows that there are no statistically significant differences in perception.

The overall survey results show that farmers' perception of advantages of improved sesame varieties attributes shows a high degree of variation. This may be due to differential access to information and differences in information processing capacity may lead to variations in perceptions .This has the potential to affect the eventual adoption of these technologies.

Table3..Farmers' perceptions on improved sesame varieties attributes as compared to the local

Technology Attributes	Description	Farmers Category						
		Adopters		Non Adopters		Total		X^2- value
		N	%	N	%	N	%	
Yield	Superior	48	80	39	48.8	87	62.1	
	Same	8	13.3	25	31.3	31	23.6	14.3*
	Inferior	4	6.71	16	20	20	14.3	
Maturity	Superior	43	71.7	43	53.8	86	61.4	
	Same	8	13.3	25	31.3	33	23.6	6.46**
	Inferior	9	15	12	15	21	15	
Pod per plant	Superior	30	50	41	51.3	71	50.7	
	Same	0	0	11	13.8	11	7.9	10.12*
	Inferior	30	50	28	35	58	41.4	
Drought resistance	Superior	43	71.1	38	47.5	81	57.9	
	Same	4	6.7	4	5	8	5.7	9.9*
	Inferior	13	21.7	38	47.5	51	36.4	
Disease resistance	Superior	38	63.3	42	52.5	80	57.1	
	Same	2	3.3	8	10	10	7.1	
	Inferior	20	33.3	30	37.5	50	35.7	
Marketability	Superior	47	78.3	60	75.3	107	76.4	
	Same	3	5	5	6.3	8	5.7	
	Inferior	10	16.7	15	18.8	25	17.9	
	Inferior	15	25	17	21.3	32	22.9	
Shattering resistance	Superior	26	43.3	35	43.8	61	43.6	
	Same	17	28.3	30	37.5	47	33.6	
	Inferior	17	28.3	15	18.8	32	22.9	
Color	Superior	40	66.7	40	50	80	57.1	
	Same	1	1.7	7	8.8	8	6.1	5.5***
	Inferior	19	31.7	33	41.3	52	37.1	

**, * significant at 5 and 10 % level respectively
Source: own survey 2014

3.3. Farmers to farmers' knowledge sharing enhancing technology adoption

3.3.1. Mechanisms of knowledge sharing

This sub section reports on the finding of the exploration of farmer-to-farmer knowledge sharing mechanisms. As displayed in Table4, majority of the sampled farmers shared the knowledge on improved sesame technology during khat chewing sessions/breaks and/or while working together in the field. Meeting and discussion at market and religious place, and discussion at cooperative meetings are the other important venues and mechanisms for information sharing.

Table4..Distribution of Sample respondents by methods in knowledge sharing

Knowledge sharing methods	Frequency of contact						Score	Rank
	Mostly		Some time		None			
	No	%	No	%	No	%		
At chat chewing place	80	61	19	15	41	29.3	319	1
Farmers at work	70	50	29	20.7	41	29.3	309	2
Cooperative meeting	45	35	57	44	38	27.1	287	4
Interpersonal discussion	66	51	27	21	47	33.5	299	3
During seed giving out	9	7	24	18	107	76.4	158	5

Source: Own survey, 2014

3.3.2. Contribution of farmer-to farmer knowledge/seed sharing to adoption

Decision-making is the most crucial undertaken by the farmers to adopt improved technology. The basic input required to make decision is information/knowledge (Burger *et al.,* 1996).The effectiveness of the decision made depends among others on the quality of the information. Here knowledge/information defined as the data for decision making or a resource that must be acquired and used in order to make informed decision.

The contribution of farmer to farmer seed/ or knowledge exchange for the adoption and diffusion of improved sesame varieties are discussed in the following subsection. Their contributions are discussed as source of improved seed and providing quality attributes (relevant, correctness, right frequently) information/ knowledge on the technological package for the adoption decision of the households.

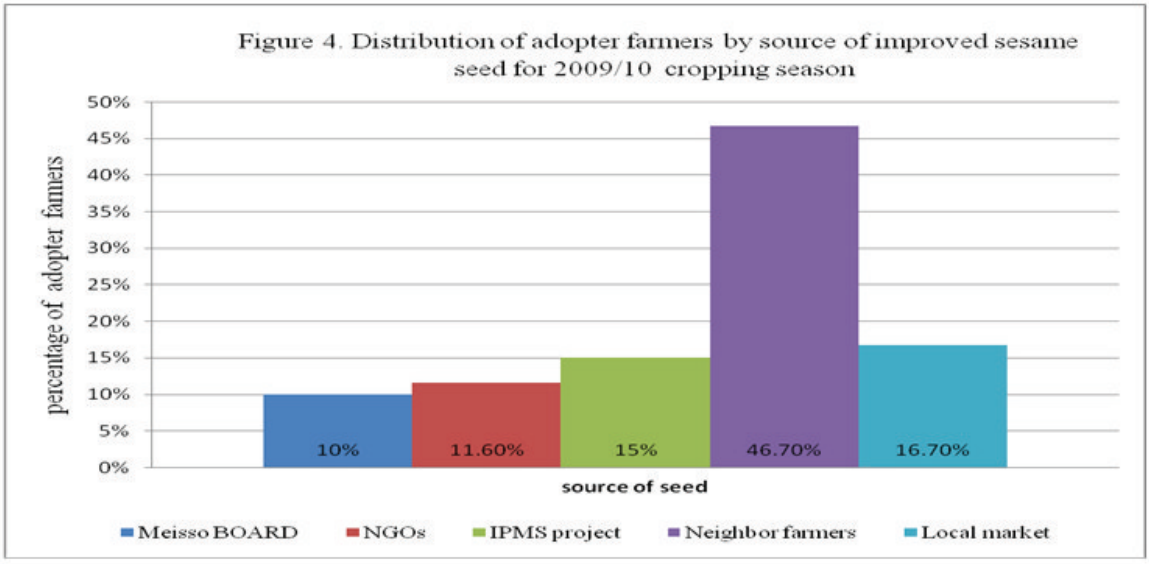
3.3.2.1. As source of improved seed

Two recognized seed system exist in the study area- formal and informal. Formal seed sources involve agricultural development offices, IPMS project and NGOs as major agent. However, these formal seed systems in Meisso are still not well established, and hence, as discussed earlier, among major constraints in improved sesame varieties adoption. Existing limited private seed suppliers focus on cereals like sorghum; and extension technical assistance and input supply specifically targeted the same crop, cereals.

Often, gaps exist in the technology development and adoption chain, between technology developers, adopters, and even between technology leaders and followers. Where a technology has to be adapted to farmers' circumstances and local conditions, there is narrower gap with the farmer-to-farmer technology transfer process. This is because farmers are involved in testing, watching and circulating information and therefore a greater chance of adoption is ensured

In the effort to bridge the gap between technology generation and adoption, several institutions like research centers ,woreda office of pastoralists and rural development , NGOs and IPMS project were involved in the distribution of short seasoned improved sesame varieties namely, Adi (83-100 maturity days) and Tate (110 -130 maturity days) to the few innovative farmers. On-farm result demonstration method is commonly used to show and convince farmers about the advantages of improved sesame varieties, particularly Tate and Adi. It was assumed that gradually the number of farmers growing the varieties and sharing knowledge and exchanging seeds via sale or gift increased significantly.

The current analysis shows the farmer- to- farmer seed exchange has contributed to the adoption and wider varieties diffusion. This conclusion is justified by the fact that a number of innovative (model /early adopting) farmers shared their knowledge and also gave out some seeds to other fellow farmers (Figure-2) via sale or as a gift to about 47% of the varieties user farmers at the time of the survey. The others 16.7%, 10%, 11.6% and 15% of sesame grower farmers obtained improved sesame varieties directly from local market, office of Agricultural development, NGOs and, IPMS Project through, purchased gift and loan mechanism during survey time. This implies that farmer to farmer seed exchange mechanisms are mostly based on traditional social networks and family relations and can be very effective in the diffusion of technology in the study area.



Source: Own survey, 2014

3.3.2. As Knowledge/information sources

Information sources were analyzed to assess the strengths and weaknesses of information source. The Information/ knowledge about innovations which come from relevant source will have differential impact on individual farmer's adoption. This information may come from farmers own experience and/ or external sources of formal institutions. In this study, pamphlets, field days, participation on training, mass media and researchers were considered as the external sources of information for sample households' farmers. Whereas farmers experience visits, farmers to farmer's knowledge sharing network and relatives were informal source of mechanisms. Distribution of respondents on the basis of improved sesame technology information source is described in Table 5.

Table5..Information source to the respondents in terms of their frequency of use

Information Source	Frequency of access						Score	Rank
	Always		Sometimes		Never			
	N	%	N	%	N	%		
Participation on extension events	45	32.1	30	21.4	65	46.4	260	5
Radio programmes	30	21.6	70	50	40	28.5	270	4
Farmers to farmers	80	57.1	60	42.8	0	0	360	1
Researchers	4	2.8	3	2.1	133	95	155	6
Development agent	40	28.57	80	57.1	20	14.28	300	3
Farmers experience visit	70	50	60	42.8	10	7.1	340	2

Source: Own survey, 2010

There are six main information sources in the area. As explicitly indicated in the Table5, among the six identified information source, farmer to farmer' knowledge sharing and farmers experience sharing visit which organized by different institutions were perceived as most frequent information sources for sample farmers in the area in their rank order of first and second. Development Agents and rural radio programmes were the third and fourth major sources of knowledge for sample respondents on sesame production managements. As showed in Table 20, the least used information sources were researchers and Participation on formal extension events like training, demonstration and field day which organized by different formal institution found in the area. This is probably because they never had access to them.

Regards to the contribution of farmer to farmer knowledge sharing in the adoption of the improved sesame technology, among the total adopters, 35 (68.2%) of the farmers reported that they used only knowledge/information obtained from fellow farmers. This implies that farmer to farmers sharing information source has a positive effect on farmer decision to adopt improved sesame varieties.

3.3.2.1. Perceived importance of information sources

All the identified information sources were not equally important for the sample household, because all of these actors may not give timely related to sesame technology production information. Under this subsection, importance of information sources as perceived by farmers to obtain information on sesame technology was explored and ranked based on their score. Distribution of household respondents based relative importance information source is presented in Table 21.

Table6.Frequency distribution of knowledge sources in terms of their importance

Source	Importance of knowledge/information sources							
	Very important		Important		Low		score	Rank
	N	%	N	%	N	%		
Participation on Extension events	50	35.7	20	14.3	70	50	260	5
Radio programmes	60	42.9	70	50	10	7.1	330	4
Farmers knowledge sharing network	100	71.4	30	21.4	10	7.1	370	1
Researchers	5	3.5	2	1.4	133	95	155	6
Development agent	40	28.5	80	57.1	20	14.2	300	3
Farmers experience visit	70	50	60	42.8	10	7.1	340	2

Source: Own survey, 2014

As the observation summarized in Table 6 suggests, farmers to farmers' knowledge sharing and farmers experience sharing visits are the most important sources of improved sesame technology. Farmer to farmers knowledge sharing was used most frequently, and that the source could be trusted, reliable, and accessible with minimum transaction costs. The survey result clearly indicates the importance of the relationship among neighbors as source of agricultural information and farmer- to- farmer experience sharing visit is another equally important improved sesame technology information source in the study area. DA and Rural radio programs are the next important improved sesame technology information sources in their order of importance. Further, the respondents perceived that participation on events organized by extension and research were the least important as sources of information on sesame production practices (Table 21.).Agricultural extension often focus on progressive farmers rather than poor farmers; and low level of literacy among the producers and inaccessibility of on-farm research trails/ demonstration might also be the reasons for the limited role of extension and research as sources of information in sesame production.

The finding reported here implies that information received from other farmers including through experience sharing visits has more influenced the farmers to adopt the technology. This finding is consistency with other empirical research evidence (Feder, 1985). The latter found that even in areas were social organization and infrastructure exists, farmers prefer their fellow farmers as their primary information source and Feder and Slade (1985) study India shows farmers without access to formal extension service use farmer-to-farmer communication; and most farmers in India preferred fellow farmers as their major source of information despite the existence of Training and Visit Extension System at the time of the study.

According to the result of Deriebe(2007), women farmers in the Dale Woreda put high preference on Neighbors/ friends as first choice followed by other farmers and Das as a third; while the study result of Bekele (2008) in Metu showed that maize package farmers preferred WARDO, neighbors and Das and Kebele Administration as the important sources of information. Thus, the result of this study showed similarity with Deribe's (2007) outcome while there is a slight difference with Bekele's (2008) result whereby WARDO was ranked first.

3.3.2.2 Trustworthiness of sources

As Table22 indicates, the information from farmers to farmers' knowledge sharing network, farmers experience sharing visit, development agents, and from rural radio programs, respectively, is the first, second, third and fourth in trustworthiness. The respondent farmers' perceived knowledge obtained from fellow farmers as the most trusted. This is probably because of a strong social capital that exists among neighboring farm households than between farmers and outsiders.

Hence, strengthening farmer-to-farmer knowledge/information sharing mechanisms deserve due attention in extension as it has a profound influence on individuals in the process of adoption and diffusion of agricultural technologies. This finding is agreements with other empirical research evidence (Dessalegn,2008) found that Neighbors, relatives and friends are the crucial networks to influence adoption and diffusion of technologies are because most people trust their social networks than outsiders (they consider DAs or experts as outsiders) who share the same goals and operate the same context. This is also in line with the findings of Bandiera and Rasul (2003) in Mozambique where farmers were more likely to adopt if other people in their network also adopted.

Table7..Sampled households Perceived trust of information sources of sesame technology

Actors	Perceived trust of knowledge source							
	Highly trusted		Moderate		low			
	N	%	N	%	N	%	score	Rank
Participation extension events	32	22.9	48	34.3	60	42.8	252	5
Farmers experience visit	65	46.4	52	37.1	23	16.4	322	2
Farmers to farmers knowledge Sharing network	120	85.7	20	14.3	0	0	400	1
Researchers/on-farm trial	20	14.3	2	1.4	118	84.3	182	6
Development agent	50	35.7	57	40.7	33	23.5	297	3
Radio programmes	60	42.3	28	20	52	37.1	288	4

3.4. Conclusion and policy implcation

Generally this study show that adopters of improved sesame varieties were better educated, male headed households, have more access to farmers to farmer's knowledge sharing network and perceived the attributes of improved sesame varieties more advantagous than the non-adopters of improved sesame varieties and have more access to extension services and more involved in local administration than non-adopters. Moreover, they have more family labor force, livestock ownership, sesame crop production experience, earned farm income and more near to the market center than non-adopters. The study also reveals that, more than fifty percent of the sample households perceived that the traits early maturity, drought resistance, disease resistance, marketability and yield of the improved sesame varieties are superior to the local ones. Whereas, shattering resistance of the improved sesame varieties were perceived as inferior to the local varieties by most of the sample farm households.

In the study area, majority of sesame growing farmers perceived that knowledge obtained from farmers through farmers to farmers knowledge sharing is highly trusted, relevant and more accessible .This is probably that, most people trust their social networks than outsiders (they consider DAs or experts as outsiders) who share the same goals and operate in the same context. Therefore farmers to farmers' knowledge sharing networks may exert powerful influence on individuals in the process of adoption and diffusion of agricultural technologies.

3.5. Policy Implications

On the basis of the results of this study, the following policy implications are suggested as to be considered in the future intervention strategies which are aimed at promotion of sesame production technologies.

Farmers to farmers knowledge sharing were found to have a positive and statistically significant influence on adoption of improved sesame varieties. Therefore, farmers to farmers' knowledge sharing networks should be strengthening for a wide dissemination and adoption of the varieties.

The survry results revealed that the livestock ownership positively influenced doption decision of improved sesame varieties becuase of additional inocme.Therefore, promotion of improved animal breeds and husbandary would enhance adoption of new technologies and improvement of standard of living of farm families.

The study revealed that famers'perception on the sesame technology attributes superiority has significantly and positively affected adoption of improved sesame varieties.Therefore, research approaches that incorporate farmers' preferences for various characteristics of sesame in breeding programs and extension strategies that are geared towards providing accurate information for efficient revision of farmer perceptions are needed to raise the adoption rate.

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