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INFORMATION NEEDS AND INFORMATION SEEKING BEHAVIOR OF AGRICULTURAL RESEARCHERS OF FADIS AND MECHARA AGRICULTURAL RESEARCH CENTERS, ETHIOPIA

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ABSTRACT: *This study was conducted to examine the information needs and information seeking behavior of agricultural researchers of Fadis and Mechara agricultural research centres in East and West Hararghe Zones. The study went further to establish the preferred sources of information and problems faced when seeking information. No study has been done on this topic in these study areas. Questionnaire was used as a data collection tool along with observation checklist and focus group discussion guide. Questionnaire was distributed to entire (63) agricultural researchers of the two research centers for data collection. The collected data was analyzed using descriptive statistics and content analysis. The findings of this study revealed that agricultural researchers need information on climate change strategies, soil fertility, farming system characterization, horticulture, plant breeding and soil and water management. The preferred source of information for agricultural researchers is electronic source. Consulting with experts in subject field, browsing shelves in Library/internet and discussion with development agent and farmers were the major ways Agricultural researchers seek information. The major problems facing agricultural researchers of two particular research centers in seeking information are absence of information and communication technology professionals in Centers, low or slow internet connectivity and erratic electricity disruptions, lack of training on information literacy and less use of the available information sources. Hence, information service providers and agricultural research centers should conduct regular studies on information needs and information seeking behavior of agricultural researchers to deliver relevant information, usable information sources in order to meet the disparate needs of agricultural researchers.*

KEY WORDS: information needs, information seeking behavior, agricultural research center

INTRODUCTION

Information ranks next to the basic human needs as air, water, food and shelter (Satyabati and Dlamini, 2014). According to Vidanapathirana (2012) agricultural information is considered as an essential input to agricultural education, research and development and extension activities. The collection, transfer and use are all pervasive and universal activities. Information needs of individual researcher and educational institution in agricultural sector where information is an essential ingredient for development had not so far been the subject of serious discussion in African countries (Satyabati and Dlamini, 2014). In Ethiopia the research gap on information needs and information seeking behavior

of agricultural researchers exists as it can be understood by the absence of at least a single professional literature report on this issue.

An improved information and knowledge flow to, from, and within the agricultural sector is a key component in improving small-scale agricultural production and linking increased production to remunerative markets, thus leading to improved rural livelihoods, improving quality and yield, food security and national economies (Asaba *et al.,* 2006). Information needs is a factual situation in which there exists an inseparable interconnection with information and need. Nwobasi *et al*. (2013) defined information needs as the amount of positive information an individual or group of users need to have for their work, recreation and other like satisfaction.

Savolainen (2005) defined everyday life information seeking (ELIS) as "the process of acquisition of various informational (both cognitive and expressive) elements, which people employ to orient themselves in daily life or to solve problems not directly connected with the performance of professional tasks or full-time study". Study done by Mostofa (2013) defines the term information explosion as rapidly increasing amount of published information and the effects of this abundance of data. As the amount of available data grows, the problem of managing the information becomes more difficult, which can lead to information overload. Information overload refers to the state of having too much information to make a decision or remain informed about a topic. This information explosion and information overload gave the birth to the concept of studying the information needs and seeking behaviors of different groups of users.

In Ethiopia, various institutions and organizations are engaged in the creation, collection, storing, and dissemination of agricultural knowledge and information. The most notable ones, in terms of having direct linkage with the farmers, are Institutes of Agricultural Research and the Ministry of Agriculture. Agricultural Research Institutes are the prime source for the creation of agricultural knowledge and information in the country and the creation of information and knowledge management by these institutes begins with identification of information and knowledge needs or gaps, and the capturing, storage, and sharing/dissemination of the knowledge to the users (UNDP, 2012). Knowledge of the information needs and information seeking behavior of users is vital for developing library collections, upgrading facilities, and improving services to effectively meet the information needs of users (Tahir *et al*., 2008). Agricultural researchers' information needs and information seeking behavior has been identified through this study. As it is stated by Bitso (2012) information behavior studies have the potential to inform the design of effective information services that incorporate the information needs, information-seeking and preferences for information sources of target users.

Appreciating the importance of studying information behavior, Anyaogu (2014) brought forward that adequate knowledge about the information needs and seeking behavior of users is vital for developing library resources, services and facilities to meet their information needs effectively. Information needs and seeking activity differs from one profession to another. Thus, adequate knowledge of the information needs and seeking behavior of agricultural researchers was imperative for research institutes to support their research activity. Such an understanding will help Agricultural Research Institutes to develop information systems and services that are more likely to satisfy users' information

needs. Researchers and extension workers operate as facilitators and communicators helping farmers in their decision making and ensuring that appropriate knowledge is implemented in order to obtain the best results in terms of sustainable production and general rural development and the private sector (support and input services, traders) to harness knowledge and information from various sources for better farming and improved livelihoods (FAO, 2005).

Statement of the Problem

Today, information technology has developed rapidly and has had a huge impact on information seeking behavior. According to Agbonlahor (2005) a number of factors such as ease of use of system, and users' beliefs, perceptions and training, have been cited as contributing to user acceptance and effective usage of a computer based information systems. It therefore becomes pertinent that adequate knowledge about the information seeking behavior of this users' group is vital for developing library collections, services and facilities to meet their information needs effectively.

However, anecdotal evidences show that understanding agricultural researchers' information needs and seeking behavior is crucial to the effective and efficient provision of timely and relevant information and the design of information systems. According to Cutrell and Guan (2007) understanding how users search for information has enormous practical implications for both commercial and academic endeavours.

Information has to be captured and made available to those who need it at the appropriate time in order to avoid unwanted duplication and repetition of endeavours, which leads to wastage of resources. Slavoljub (2014) brought forward that there is no doubt that improved information flow has positive effect on the agricultural sector and individual producers, but gathering and distribution of information is difficult and expensive activity. Information is a vital resource needed by research staffs to perform well in their research activities. However, Fadis and Mechara Agricultural Research Centers were established few years back, no user studies have been conducted earlier to establish information needs and seeking behavior of agricultural researchers.

If the information needs and seeking behavior of agricultural researchers not known, information providers may not understand the information requirements and the problems agricultural researchers face, thereby denying them the relevant information needed to carry out their research activities. Information system designers may not develop systems that will meet the needs of these researchers. In light of these recognized gaps, the study was conducted on information needs and information seeking behavior of agricultural researchers of Fadis and Mechara Agricultural Research Centers.

Objectives of the Study

General objective

The general objective of the study was to examine information needs and information seeking behavior of agricultural researchers in the study area.

Specific objectives

1. To investigate information needs of agricultural researchers.
2. To identify preferred sources of information for agricultural researchers.

3. To explore information seeking behavior of agricultural researchers.
4. To find out the problems agricultural researchers face in seeking information.

RESEARCH METHODOLOGY

Description of the Study area

Fadis and Mechara Agricultural Research Centers are two among seventeen research centers currently operating under Oromia Agricultural Research Institute (OARI). Fadis and Mechara Agricultural Research Centers found in Eastern Hararghe and Western Hararghe zones respectively in the Eastern part of Ethiopia. Fadis Agricultural Research Center is located in East Hararghe zone at 38 Kilometre from Haramaya University. It was established in the year 2008. There are 32 researchers in Fadis Agricultural Research Center. Currently the centre consisted of all the five research processes, namely agricultural engineering, crop, livestock, natural resource and socioeconomics and agricultural extension research programs with addition of the major support processes((Information bulletin of Fadis Agricultural Research Center,2016).

Mechara Agricultural Research Center is also located in West Haraghe Zone at 343 KM from Haramaya University. It was established in the year 2005. The center is playing its role in short time life history of establishment by generating, adapting and disseminating of improved agricultural technologies and information under four main research processes; crop, livestock, natural resource and Socio-economic and agricultural extension (became independent research process by 2012/13) (Information bulletin of Mechara Agricultural Research Center, 2015). There are 31 researchers in this research center.

Sampling Method

Census method (the procedure of systematically acquiring and recording information about the members of a given population) was used. All agricultural researchers those who were working in Fadis and Mechara Agricultural Research Centers were study population. Census method was preferred for this study since no other method is accurate like census when the universe is small. A total of 63 researchers were study population and all questionnaires completed and returned with 100% response rate.

Data Type and Collection Method

Before starting the actual data collection, pretesting of the questionnaire was undertaken so that appropriate refinements were made in the questionnaire. The sample for the pre-test was drawn from agricultural researchers who were on study leave, who did not form part of the main study. The sample size for the pre-test was 9 agricultural researchers. The data collection was conducted from mid December 2015 to late January 2016 using both English language and the local language (*Afan oromo*) for focus group discussion session.
Closed ended and open ended questions were used to develop personal profile of the respondents. Total of two focus group discussion (FGD) were used which contained seven participants for easy moderation of discussion.

Data Analysis Method

Statistical Package for Social Sciences (SPSS) software version 20 was used for data analysis to generate percentage, frequency distribution. Categorization of themes contained in data, linking of themes and ideas and exploring new ideas were involved. Data collected

on information needs of respondents was analyzed by descriptive statistics using frequency, percentage count. In addition, narration; explanation and summarization of concepts were employed. Triangulation means using multiple methods of data collection or using multiple sources of data to confirm emerging findings (Pamela, 2011). For this purpose the current study used multiple methods of data collection (FGD, observation and questionnaire). This research study followed the Creswell's (2009) six steps during qualitative data analysis process and although the steps are described in linear order, Creswell described "an interactive practice" to analysis. That is there is a recursive element to follow these steps.

RESULTS AND DISCUSSION

Demographic Features

First section of the questionnaire dealt with the personal information about respondents. Of the 63 respondents, 61(96.8%) were male and 2(3.2%) were female. The acquired data confirmed that a large number of respondents 46(73%) were below 30 years old. Out of the total respondents almost 14(22%) were 31-40 years old. Majority of the respondents 40(63.5%) had a bachelor degree and 23(36.5%) of them had a masters degree. A large number of respondents 32(50.8%) were assistant researchers-I, 14(22.2%) junior researcher-I, 8(12.7%) were assistant researcher-II, 6(9.5%) were associate researcher-I, 2(3.2%) were researcher-II and 1(1.6%) of the respondents was senior researcher. This indicates that majority of respondents were young with 2-5 years of work experience as agricultural researchers and there is male dominance.

Of the total respondents, 21(33.3%) belonged to Crop research process, while 15(23.8%) belonged to Socioeconomic and Agricultural Extension research process and 11(17.5%) of respondents belonged to Natural Resource research process. Livestock research process was staffed by 10(15.9%) persons, and 6(9.5%) of the respondents belonged to Agricultural Engineering research process. In terms of agricultural research experience, majority of the respondents (66.7%) had 2-5 years of experience, followed by those who had 6-9 years of experience (17.5%). The rest categories, those who have less than 2, 10-13 and above 14 years of work experience as a researcher have similar percentages of 7.9. Overall, Crop research process has the largest staff since it has many research teams such as coffee research team, pulse research team, cereal and oil crop research team.

Information Needs of Agricultural Researchers

Information is extremely important for the performance of all agricultural research activities. For instance Lwoga *et al.* (2010) indicate that information and knowledge is needed for farming activities. During focus group discussions, the respondents revealed that obtaining information is basic for agricultural research activities. The respondents need information for their research work. The type of information needed by agricultural researchers are information on farmers' needs for improvement of production and productivities, agricultural technologies, choosing model of analysis for research, gender issues, weather forecast related information, soil fertility, rural livelihood, problem prioritization, social norm and eating habit of society.

The participants also revealed that agricultural researchers' information needs are different as they belonged to different research processes. This is in line with the findings of Saleh (2011) which indicated that information needs varied even though the population was homogeneous; and Mugwisi *et al.* (2012) found that information needs were numerous within agricultural discipline. Similarly, Yusuf *et al.* (2013) argued that information needs are determined by the type of farming activities. Table 1 presents summary of information needs of agricultural researchers.

The most required information by agricultural researchers at Fadis and Mechara Research Centers are information on plant breeding (30.2%), horticulture (30.2%), climate change/ environmental conservation (55.6%), soil fertility (42.9%), farming system characterization (41.3%), and water and soil management (38.1%). The required information by agricultural researchers are information on crop protection (39.1%), agronomy (31.7%), policy development (42.9%), advisory/extension (49.2%), irrigation (38.1%), post harvest technology (46%), agricultural commodity prices/marketing (39.7%), gender issues (31.7%), cooperatives (41.3%), technology adoption (46%) and coffee production (30.2%). Majority of respondents (95.2%) remember the last time when they found themselves in difficult situation and needed information to make decision/solve problem. The information needs varied according to whether the respondents belonged to crop, livestock, natural resource, agricultural engineering or socio economics and agricultural extension research process.

For instance, information on range land improvement and management and dairy farming was top rated among livestock researchers, while information on plant breeding, crop protection and horticulture was less required. Information on plant breeding, crop protection and horticulture was highly rated among crop researchers, while information on agricultural engineering, dairy farming and range land improvement and management was at the bottom end of the scale. Overall, information needs of agricultural researchers were numerous within research process and covered major areas of plant science, animal science, natural resource, extension/advisory services, gender and climate change/environmental conservation.

Table 1. Subject categories on which agricultural researchers need information.

Information on (Subject)	Scale				
	1	2	3	4	5
	N (%)	N (%)	N (%)	N (%)	N (%)
Range land improvement	7(11.1)	12(19)	15(23.8)	14(22.2)	15(23.8)
Agricultural engineering	11(17.5)	15(23.8)	15(23.8)	8(12.7)	14(22.2)
Dairy farming	10(15.9)	13(20.6)	14(22.2)	7(11.1)	19(30.2)
Plant breeding	19(30.2)	18(28.6)	9(14.3)	8(12.7)	9(14.3)
Crop protection	17(27)	25(39.7)	8(12.7)	8(12.7)	5(7.9)
Horticulture	19(30.2)	19(30.2)	11(17.5)	7(11.1)	7(11.1)
Climate change strategies	35(55.6)	26(41.3)	1(1.6)	0(0)	1(1.6)
Soil fertility	27(42.9)	22(34.9)	8(12.7)	3(4.8)	3(4.8)
Agronomy	19(30.2)	20(31.7)	11(17.5)	8(12.7)	5(7.9)
Policy development	17(27)	27(42.9)	9(14.3)	4(6.3)	6(9.5)
Advisory/extension	17(27)	31(49.2)	8(12.7)	3(4.8)	3(4.8)
Agro forestry	13(20.6)	31(49.2)	10(15.9)	3(4.8)	6(9.5)
Irrigation practices	23(36.5)	24(38.1)	5(7.9)	5(7.9)	6(9.5)
post harvest technology	17(27)	29(46)	9(14.3)	4(6.3)	4(6.3)
Agricultural marketing	21(33.3)	25(39.7)	8(12.7)	5(7.9)	4(6.3)
Gender research	19(30.2)	20(31.7)	15(23.8)	4(6.3)	5(7.9)
Farming system characterization	26(41.3)	22(34.9)	6(9.5)	5(7.9)	4(6.3)
Cooperatives formation	6 (9.5)	26(41.3)	15(23.8)	7(11.1)	9(14.3)
Technology adoption	22(34.9)	29(46)	5(7.9)	2(3.2)	5(7.9)
Water and soil management	24(38.1)	21(33.3)	14(22.2)	1(1.6)	3(4.8)
Coffee production techniques	17(27)	19(30.2)	16(25.4)	5(7.9)	6(9.5)

Source: Field survey, 2016

Preferred Sources of Information

After identifying the information needs of agricultural researchers, the study attempted to establish what information sources/formats agricultural researchers prefer to use. The focus group participants opined that electronic sources/formats of information are preferred for many reasons. The second preferred format is printed sources because most of the time electricity and internet connections/ network are disrupted at their research centers. Ayalu (2015), similarly reported that electronic sources are preferred, followed by printed sources. Supporting this, the finding of Barik *et al.* (2007) indicates that electronic sources are the most preferred source for gathering information by the scientists and researchers.

In addition to these challenges, even the available number of internet cables in office and the number of agricultural researchers demand to browse internet did not match as there was only one internet cable per office. Table 3 indicates that a large number of respondents (65.1%) prefer to use electronic format followed by print and interpersonal, while mass media was the least preferred format (1.6%) as they were less accessible and least usable to get information agricultural researchers need. This result is in agreement with the finding of Mostofa (2013) which indicated maximum number of faculty members prefer internet for finding general information.

Moreover, the results of Donkor and Dzandu (2015) also revealed that crop research scientists preferred electronic format to other types of information materials. This suggests

respondents go online when they require information and the use of print sources are relevant.

Table 2. Preferred sources of information

Sources	Rank 1		Rank 2		Rank 3		Rank 4		Rank 5	
	N	%	N	%	N	%	N	%	N	%
Electronic	41	65.1	15	23.8	6	9.5	0	0	1	1.6
Printed	12	19.0	24	38.1	19	30.2	8	12.7	0	0
Interpersonal	8	12.7	15	23.8	24	38.1	16	25.4	0	0
Mass media	1	1.6	11	17.5	10	15.9	21	33.3	20	31.7

Source: field survey, 2016

Information Seeking Behavior of Agricultural Researchers

The Purpose of Seeking Information

Focus group discussion results revealed that agricultural researchers seek information primarily for their research work. In addition, they seek information for general knowledge, for improving their skills and for developing business. Previous study by Kumar (2013) also revealed that 85% of the respondents seek information for their research work.

Table 3. Purpose for which information sought

Purpose	N	%
Professional interest	30	47.6
General awareness for new knowledge	18	28.6
writing books/Articles	13	20.6
Promotional activities	2	3.2

Source: Field Survey, 2016

Table 3 indicates that the purposes of information seeking were for professional interest (47.6%), for general awareness (28.6%) and for writing books/articles (20.6%) and only 2(3.2%) respondents responded as they seek information for promotional opportunities. This study is related to the study of Kumar (2010) who found that majority of agricultural scientists seek information for general awareness and new knowledge. The present study also indicates that the second purpose of seeking information was for general awareness. This implies that agricultural researchers seek information for many different purposes other than research activities.

Methods of Seeking Information

During focus group discussion, the participants stated that they went to the place where they could get the needed information and seek information, they contact their senior researchers, share experience from other researchers those who they perceived as knowledgeable about the subjects they are in need of. The table result showed that agricultural researchers employed several methods such as consulting with experts in subject fields (92.1%), browsing shelves in library/internet (92.1%), discussion with development agents and farmers (92.1%), reading latest books/ newsletters (88.9%), attending conferences, seminars, workshops, field days (88.9%)and discussion with colleagues (87.3%) for seeking information. This implies that information seeking

behavior of agricultural researchers is both formal and informal way as it is determined by the sources of information used. This confirms the findings of Mugwisi *et al.* (2012) which revealed that information seeking behavior is determined by the information sources and their availability (proximity and format). Media was relatively less important as respondents prefer to use internet for seeking more relevant and up-to- information for their research activities.

Table 4**.** Methods of information seeking

Methods	Used		Not used	
	N	%	N	%
Consulting with experts in subject fields	58	92.1	5	7.9
Browsing shelves in library/internet	58	92.1	5	7.9
Discussion with development agents and farmers	58	92.1	5	7.9
Attending conferences, seminars ,workshops ,field days	56	88.9	7	11.1
Reading latest books/ newsletters	56	88.9	7	11.1
Discussion with colleagues	55	87.3	8	12.7
Scanning current issues of print and electronic journals	47	74.6	16	25.4
Following media: TV and radio	36	57.1	27	42.9

Source: Field Survey, 2016

This shows that researchers most frequently used face-to-face/ personal communication channel for seeking information for research activities, since they conduct research within community.

Problems Agricultural Researchers Face in Seeking Information

A question on problems agricultural researchers faced in seeking information was asked during focus group discussion as well as in the questionnaire. During focus group discussion, the group participants revealed that they faced several problems in seeking information. The major ones were lack of up-to-date information, low internet capacity-bandwidth- (which cannot download the required information), interruption of electricity and network, lack of ICT professionals at the centers, lack of know how to use modern ICTs, inability to use relevant software, limited availability of latest software, absence of Google account as the centers even as institute.

Group discussion participants at Fadis Agricultural Research Centre revealed that lack of books was a major problem, particularly in areas related to livestock research. In the questionnaire, respondents were asked to rank thirteen problems as “always faced”, “usually faced”, “sometimes faced”, “rarely faced” and “never faced”. Table 18 showed agricultural researchers’ responses from the questionnaire with regard to problems faced in seeking information.

The result (table 5) indicated that a large number of respondents indicated the following as major problems faced in seeking information: No ICT professionals at centre (77.8%) and lack of training on information literacy (30.2%) as always faced problems followed by Development Agents (DAs) lack awareness on linking researchers to farmers (36.5%), information from farmers lack quality (31.6%), lack of facilities (particularly vehicles) to contact farmers timely (33.3%) and farmers’ awareness on research is poor (34.9%) as

usually faced problems. This implies that these problems need to be solved for researchers to seek appropriate information so as to carry out their research activities effectively.

Table 5. Problems faced in seeking information. **(**N=frequency, %= percentages**)**

Problems	Always faced N/ (%)	Usually faced N/ (%)	Sometimes faced N/ (%)	Rarely faced N/ (%)	Never faced N/ (%)
DAs lack awareness on linking researcher to farmers	4 (6.3)	23(36.5)	30(47)	5(7.9)	1(1.6)
Lack of quality of information from Farmers	4 (6.3)	20(31.7)	21(33.3)	14(22.2)	4(6.3)
Lack of facilities/vehicles to contact farmers timely	18 (28.6)	21(33.3)	19(30.2)	4(6.3)	1(1.6)
Lack of experience sharing among researchers	6 (9.5)	14(22.2)	23(36.5)	15(23.8)	5(7.9)
Lack of training on information literacy	19 (30.2)	18(28.6)	20(31.7)	5(7.9)	1(1.6)
Farmers' awareness on research is poor	16 (25.4)	22(34.9)	16(25.4)	6(9.5)	3(4.8)
Low internet availability	14 (22.2)	12(19)	23(36.5)	10(15.9)	4(6.3)
Lack of computer access	4 (6.3)	5(7.9)	12(19)	19(30.2)	23(36.5)
Lack of skill in using ICT	7 (11.1)	9(14.3)	26(41.3)	11(17.5)	10(15.9)
No ICT professionals at centre	49 (77.8)	5(7.9)	3(4.8)	2(3.2)	4(6.3)
Lack of technical support in searching information	14 (22.2)	14 (22.2)	24(38.1)	7(11.1)	4(6.3)
Lack of technical skill	4 (6.3)	10 (15.9)	31(49.2)	13(20.6)	5(7.9)

Source: Field survey, 2016

The limiting factors that hinder effective use are such as low internet connectivity, disruption of electricity, poor library facility (particularly at mechara research center), lack of books (particularly at fadis research center for livestock researchers) and low availability of printed sources.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the above findings, the following conclusions were made:-
Major information sources that agricultural researchers used included research paper, internet, mobile SMS, textbooks, farmers, friends, computer, CD-ROMs, newspaper, Television programs, Radio programs. Electronic information sources were the most preferred sources.

Information was sought using several methods like consulting with experts in subject field, browsing shelves in library/internet, discussion with DAs and farmers, attending

conferences, seminars, workshops and field days, discussion with colleagues, reading latest books/ newsletters and following media.

Purpose of seeking information was professional interest, general awareness for new knowledge, writing books/articles and promotional activities next to their research activities. Face-to-face communication channel was the most frequently used channel by agricultural researchers.

Information needs of agricultural researchers are diverse and they mostly rely on electronic and printed sources of information followed by interpersonal sources. It was observed that agricultural researchers of Fadis and Mechara Agricultural Research Centers seek information both formally and informally because they used both formal and informal sources of information for seeking required information.

Lack of up-to-date information, low internet capacity, disruption of electricity and network, lack of technical skills, absence of information and communication (ICTs) professionals at centers, absence of Google account as center, lack of facilities/vehicles to contact farmers timely, lack of experience sharing among researchers, and lack of training were the major problems agricultural researchers of Fadis and Mechara Agricultural Research Centers faced when seeking information.

Recommendations

Understanding information needs and information seeking behavior of agricultural researchers has enormous practical implications for research performance. Based on the findings, the researcher makes some recommendations that attempt to address the current problems in agricultural information service provision in Fadis and Mechara Agricultural Research Centers.

Agricultural information services providers and Agricultural Research Centers need to repeatedly examine and identify the information needs and seeking behavior of agricultural researchers for relevant provision of information sources and effective design of information systems and services.

Usable information sources should be availed to researchers and others clienteles. Internet and electricity need to be maintained. Regular training needs to be arranged to upgrade computer and information and communication technologies (ICTs) skills of Fadis and Mechara Agricultural Researchers. In addition information professionals with specific subject areas should be employed and equipped with the right skill. Agricultural researchers should also be trained on information literacy.

Research centers should provide enabling working environment by facilitating library in order to make the available information readily accessible for utilization. There is a need to organize experience sharing among researchers in the Centers.

Library and information centre should conduct need assessment to identify the level of information literacy skill of each user and based on the result information literacy training manual and policy should be prepared in order to narrow meet the users need.

Library need to equip itself with the necessary human and infrastructural facilities and provide the service to the most possible. Following this, increasing the awareness of Center community about their services is very useful. The library image to those respondents was not good, and needs to be improved; it is alarming that some respondents would prefer not to visit them simply because they are not cool or the library environment is deemed old fashioned.

Agricultural Research Centers should develop coordination with other agricultural information providers like Agricultural universities. For instance need to work in cooperation with Haramaya University to effectively assess information needs and information seeking behavior of information user so as to provide relevant information and information services that can satisfy users' needs.
Further research should be done on this topic that can bring higher learning culture and strengthen research institutions in Ethiopia, so that result can scale up information needs and seeking behavior at national agricultural research system level.

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APPENDICES

Appendix A. Appendix table

Appendix table 1. Sex, age, marital status, educational level and rank of respondents

Variables		Frequency	Percentage
Sex	Male	61	96.8
	Female	2	3.2
Age	Under30	46	73
	31-40	14	22.2
	41-50	2	3.2
	51-60	1	1.6
	>60	0	0
Marital Status	Married	27	42.9
	Single	36	57.1
Educational Level	Bachelor Degree	40	63.5
	Masters Degree	23	36.5
Rank of Respondent	junior researcher	14	22.2
	Assistant researcher-I	32	50.8
	Assistant researcher-II	8	12.7
	Associate researcher-I	6	9.5
	Associate researcher-II	0	0
	Researcher -I	0	0
	Researcher-II	2	3.2
	Senior researcher	1	1.6
	lead researcher	0	0

Source: Field Survey, 2016

Appendix table 2. Research center, experience and research process of respondents

Items		Frequency	Percentage
Research Center	Fadis	32	50.8
	Mechara	31	49.2
Work experience as researcher	>2	5	7.9
	2-5	42	66.7
	6-9	11	17.5
	10-13	5	7.9
	>14	5	7.9
Research process	Agricultural Engineering	6	9.5
	Natural Resource	11	17.5
	Socio economic and Agricultural Extension	15	23.8
	Livestock	10	15.9
	Crop	21	33.3

Source: own computation results, 2016