Agricultural information needs of Pakistani farmers

Muhammad Asif Naveed[1] and **Mumtaz A. Anwar**[2]
[1]Learning Resource Centre, University of Management & Technology,
Lahore, PAKISTAN.
[2]Department of Library & Information Science,
University of the Punjab, Lahore, PAKISTAN.
e-mail: masifnaveed@yahoo.com; gombak_98@yahoo.com

ABSTRACT

This study aims to identify information needs of 84 Pakistani farmers. The study uses face-to-face structured interviews of men, between the ages of 25 and 65 years, actively participating in farming. Their information needs were centered on: soil preparation, seeds, taking care of crops, harvesting activities, and animal husbandry. They depended mainly on interpersonal relationships in meeting their information needs. The role of mass media and printed materials as sources of information was found to be very low. Lack of timely access, low level of education and language barrier were the main problems that these farmers faced while getting the required information. The findings of this study would be helpful in planning and designing need-based information infrastructure for rural farmers. This will add to the existing literature on the topic and will be of help to researchers in developing countries of Asia and Africa.

Keywords: Information needs; Agricultural information; Farmers in developing countries; Rural areas; Pakistan.

INTRODUCTION

The rural farmers, in their day to day agricultural concerns, take decisions to solve problems. In taking decisions, they are greatly aided by the amount of information available to them. They however take, quite often, wrong decisions and make mistakes due to the non-availability of relevant and sufficient information. As a result, they produce low yield of crops per acre and the gap between actual yield and attainable potential yield is increased. It leads to slow rural development, and the rural farmers, despite having fertile land, huge and hard-working labour force, and other resources, cannot make proper contribution to the national development of the country. Agriculture is the largest sector of Pakistan's economy as it contributes 21 percent share in the Gross Domestic Product (GDP) and directly supports three quarters of the total population. It is also a leading sector that absorbs 45 percent of the total workforce of the country directly or indirectly, and provides food for populace and raw materials for Agro-allied industries (Government of Pakistan 2009-10).

For consistent growth in agricultural production, it is essential to equip rural farmers with need-based, accurate, reliable, and timely information. The dream of advancement in agricultural production cannot become true until farmer's timely

access to the required information is not assured. Consideration of users' information needs is a very vital element in the provision of need-based and relevant information to them (Anwar and Supaat 1998). The lack of knowledge of information needs of a particular community is a major obstacle in the design of need-based information services that can provide more relevant information to its users (Rosenberg 1993). Banmeke and Olowu (2005) state that specific information needs of a particular community should be identified in order to meet their needs and aspirations. It has been pointed out that "in order to achieve relevance, the information needs of communities must be assessed and the correct stocks and services put in place" (Zaverdinos-Kockott 2004, p. 13).

Understanding farmers' information needs and seeking behaviour is an important first step in designing focused, need-based, and user-oriented information infrastructure in the agricultural sector. An extensive search of published literature has confirmed that no such study appears to have been conducted in Pakistan, of which farming is the country's largest economic activity. That is why, there is a need to conduct research on the information needs assessment and information seeking behaviour of the rural farmers in Pakistan. This study attempts to investigate information needs of adult male farmers of a village in Punjab. The findings of this study can be used as a guide in designing an information delivery system which will be compatible with, and result in the satisfaction of farmers' information needs. The results will not only be significant for Pakistani agricultural officials to develop agricultural policy and programmes but also for agricultural officials of other developing countries, especially in South Asia, because they share similar characteristics. The results of this study may also open the way for more detailed inquiries into the broad farming industry in Pakistan as well as other countries of similar background.

RELATED LITERATURE

The research examining information needs of people living in rural settings is scanty. Most of the studies focused only on the identification of areas (agriculture, health, finance, politics, education, religion, and community development) in which information was needed (e.g. Anwar and Supaat 1998; Momodu 2002; Mooko 2005; Vavrek 1995). A few studies have investigated agricultural information and health related information needs in the rural areas.

Zhang and Yu (2009), in a review article, identified that the rural Chinese required information on new agro-technologies, market, income-generation, rural development policies, education, and training opportunities. Interpersonal relationships were their reliable sources of information. Dutta (2009) provided an analytical overview of research on information behaviour of indigenous people in developing countries. The rural people in these countries needed information for their basic survival and day-to-day concerns. Informal networks were considered as main sources of information by the rural dwellers. Illiteracy and ignorance were the major barriers in seeking information, which was very crucial to their development.

Nwagha (1992) focused on the factors that contribute to low living standard of rural population particularly rural women in Nigeria. Kalusopa (2005) found that the small scale Zambian farmers required agro-technological information in the areas of farm land maintenance, farm water supply, forestry machinery, farm buildings and land drainage. They obtained the required information from informal networks such as family friends and colleagues. Stefano et al. (2005) discovered that "intermediaries such as NGOs and church-based development facilitators, university researchers and the KwaZulu-Natal Department of Agriculture and Environmental Affairs' extension officers" (p. 59) were the main information channels to obtain new research-based agricultural information. Despite having these informational channels, farmers needed and valued printed material as sources of information because they got information from intermediaries irregularly and only occasionally. The female farmers in Delta State, Nigeria did not have access to the required agricultural information. Community leaders and children of farmers were their main sources of agricultural information (Irivwieri 2007).

The women farmers in Nigeria needed agricultural information on weather, soil management, credit availability, and farm management, besides awareness on improved seedlings, fertilizer application, insecticides availability, agricultural insurance, animal health, future market prices, land tenure, child immunization, and vaccination for animals (Sabo 2007). Ayoade (2010) determined that the Nigerian cowpea farmers perceived friends, village head, television and radio as the most effective sources of information on cowpea production. Low level of income, followed by inadequate transport facility, high input cost, harvesting problems, pest and diseases, weather conditions, storage problems, and lack of awareness were the major problems faced by farmers in cowpea production.

Musib (1989) identified that the farmers in the West Bengal, India, relied on their personal experience, friends, neighbours, relatives, family members, fellow professionals and persons in agricultural offices. Meitei and Devi (2009) assessed the information needs of farmers' community in rural Manipur, India, and highlighted the sources of information that they used, and means through which information could be disseminated. In inner Mongolia, the rural small dairy farmers perceived that they needed information on dairy policies, market conditions, and new technologies. They obtained information mainly from television, followed by government officials, neighbours and milk stations. Radio, newspapers, books and the Internet were the information sources by which they received very little information (Zhao and Zhang 2009).

The Pakistani studies focused only on agricultural information sources available to rural farmers (Abbas, Hassan and Lodhi 2009; Abbas et al. 2003; Chaudhry et al. 2008; Muhammad and Garforth 1999; Nosheen, Ali and Ahmad 2010; Sadaf, Javed and Luqman 2006; Sadaf, Muhammad and Lodhi 2005). The findings of these studies confirmed that farmers relied mainly on interpersonal relationships with friends, neighbours, relatives, and co-workers and mass media such as radio and television. The use of formal information sources was very low for obtaining agricultural advice.

RESEARCH OBJECTIVES

The objective of this study is to investigate the information needs of adult male farmers in Pakistan. The following research questions drive this research:

a) What type of agricultural information do adult male farmers need?
b) What sources of information do they consult in order to obtain this information?
c) To what extent are they satisfied with the sources of information they use?
d) What are the barriers that they face while getting this information?
e) Would these farmers use a public library if it was provided?

THE RESEARCH SETTING

This study was conducted in Saleempur village of Toba Tek Singh district of the Punjab, Pakistan. It has about 2000 acres of canal irrigated agricultural land with about 200 hundred families. The majority of the population is engaged, directly or indirectly, in the farming activities and is concerned mainly with crop, livestock, and poultry production in order to earn their living. The average educational level of the residents is middle to high school. The village has many facilities such as electricity, water supply system, access to telephone with DSL Internet facility, cable television and FM-95 radio channel. It has no hospital and proper information support system. Most villages in Pakistan, except in the mountainous areas of the north, are similar in farming activities and are also similar to those in most of South Asian region. This village was purposely selected for the study because it provided adequate sample and was convenient since one of the researchers resided in this village and the sample was close to hand.

METHOD

This study adopted a structured interview schedule because it was considered as the most appropriate in view of the nature of population. The schedule was designed after examining the earlier literature. It was reviewed by a library and information science faculty and a researcher familiar with such studies and pre-tested using five farmers who were not part of the sample. It was decided to select only adult farmers for data collection. The male head of each family, between the ages of 25 to 65 years and actively participating in farming activities, was selected for interview because he was assumed to be the most influential family member involved in decision making. Face to face structured interviews of 84 out of 87 farmers in the village were conducted by visiting their farms or homes. Interviews were conducted in the Punjabi language. The collected data were then analyzed using descriptive statistics.

Participants' Demographics

a) Age: Most of the research participants (57, 67.8%) are within the age bracket of 36–55 years. Nineteen (22.6%) respondents are below 36 years old. Those between 56 and 65 years of age are small in number (n=8, 9.5%).

b) Educational background: Only 7 (8.3%) participants have no formal education but they can read and write. A majority of these farmers (n=62, 73.8%) completed middle to secondary school level, followed by primary education (n=12, 14.2%). Only 3 (3.6%) of them have bachelor's degrees. This indicates that a large majority of the farmers have had formal education. This implies that this village has a high literacy rate which is very encouraging.

c) Farm size: The majority of the participants (n=37, 44%) have a farm size of less than 12 acres. Thirty-four (40.5%) farmers own more than 12 acres, and 13 (15.5%) hold bigger size farms (i.e. more than 25 acres).

d) Animal holding size: Eleven (13.1%) farmers do not own any farm animals. Twenty-three (27.4%) own 11-15 animals, followed by 21 (25%) with 16-20 animals. Fifteen (17.9%) farmers possess 6–10 animals while only 5 (6%) have more than 20 animals. Most of the animals are milk giving than working.

e) Available free time: The farmers were asked when, during the day, they had free time for leisure activities. Sixty-five (77.4%) participants mentioned that they were free in the evenings while 11 (13.1%) were free in the afternoons. Only 8 (9.5%) of them had free time during the mornings and afternoons.

f) Leisure activities: The majority of the respondents (n=71, 84.5%) watch T.V., followed by chit-chatting (a casual talk) (n=62, 73.8%), and playing (n=24, 28.6%). Eighteen (n=18, 21.4%) respondents did some reading while 11 (13.1%) listened to radio. The low involvement in reading might be due to the non-availability of reading materials. Only five (5.9%) respondents were engaged in Internet surfing. This low use of the Internet seems to be due to financial ability, awareness and felt-need for information, and lack of computer literacy. None of the respondents visited a library because none was available in the village or in the close-by area.

g) Available reading materials: The respondents were asked to identify the type of reading material that was available to them for reading. Forty-nine (58.3%) of the respondents had books at their homes, which were mainly Islamic and 31 (36.9%) had brochures. Only 13 (15.5%) and nine (10.7%) of these farmers had access to newspapers and popular magazines respectively. A majority (n=71, 84.5%) of the respondents did not have access to newspapers. This finding should be kept in mind in relation to the effectiveness of agricultural information published in the newspapers by the government agencies.

RESULTS

Types of Agricultural Information Needs and Sources Consulted

a) Soil / Plot Preparation

Table 1 shows that a majority of the respondents (n=59, 70.2%) did not need information for soil/plot preparation. The rest of the farmers mentioned that they required information on insecticides (n=23, 27.3%), herbicides (n=18, 21.4%), planting techniques (n=8, 9.5%), and weather (n=5, 5.9%). The respondents were asked whether they got their soil tested before sowing. A large majority (n=79, 94.0%)) responded negatively. Only five (6.0%) responded positively and they obtained this information from the sales agents of different pesticides companies and other farmers. This was an indication that the majority of the farmers (n=79, 94.0%) used fertilizers without considering the nature of the soil. So, we can infer

that they needed information on soil testing, treatment of the soil and nature of the soil to be used for growing different crops.

Table 1: Information Needs on Soil/plot preparation (multiple responses)

Type of Information	Frequency	Percentage
No need	59	70.2
Insecticide	23	27.4
Herbicide	18	21.4
Planting techniques	8	9.5
Weather information	5	5.9

The sources of information normally consulted when looking for information relating to soil/plot preparation are presented in Table 2. A majority of the respondents (n=68, 80.9%) depended upon their personal experience related to soil / plot preparation activities. Some of them consulted other farmers, friends, and neighbours (n=23, 27.4%). Only eleven (13.1%) consulted the really knowledgeable people, i.e., the sales agents / field officers.

Table 2: Information Sources Used for Soil/plot Preparation (multiple responses)

Type of sources used	Frequency	Percentage
Prior experience	68	80.9
Co-workers/friends/neighbours	23	27.4
Sales agent/Field officers	11	13.1

b) Selection and Preparation of Seeds

The nature of information that these farmers needed regarding seeds included better varieties (n=82, 97.6%) and seed preservation (n=69, 82.1%). The sources used for this information are presented in Table 3. The majority of the farmers (n=77, 91.7%) relied on friends, neighbours, and co-farmers, followed by sales agents / field offices (n=39, 46.4%) and pesticide dealers (n=18, 21.4%). Only a few respondents (n=7, 8.3%) obtained this information from television and radio. The respondents were asked if they read newspaper advertisements regarding seeds. All the farmers responded negatively because they did not have access to the newspapers. If this was true for other villages it indicated that all the efforts of the agricultural department regarding advertisements about agricultural information were useless and scarce resources were being wasted on advertisements that were not being read by the farmers.

Table 3: Information Sources Used for Seeds (multiple responses)

Type of sources used	Frequency	Percentage
Co-workers/friends/neighbours	77	91.7
Sales agent/Field officers	39	46.4
Pesticide dealers	18	21.4
Television/radio	7	8.3

c) Taking Care of the Crops

A majority of the respondents required information on pesticide applications (n=81, 96.4%), fertilizer applications (n=73, 86.9%), and weedcides (n=56, 66.7%). Other areas where the farmers needed information included pests and crop diseases (n=22, 26.2%), weather conditions (n=8, 9.5%), and new irrigation techniques (n=3, 3.6%). Table 4 shows the information sources that the respondents consulted in order to obtain information related to crop care. The figures show that a majority (n=74, 88.1%) of these farmers relied on co-workers, friends, and neighbours, followed by sales agents/field officers (n= 61, 72.6%), in meeting their information needs. Other sources of information mentioned by a good number of respondents include pesticide dealers (n=26, 30.9%), broachers, leaflets, etc. (n=21, 25%), and television/radio (n=16, 19%). Only eight (9.5%) farmers indicated agricultural extension agents and three (3.6%) magazines as sources of information. Some respondents mentioned that the agricultural extension agents visited only twice a year.

Table 4: Information Sources Used for Taking Care of the Crops
(multiple responses)

Type of sources used	Frequency	Percentage
Co-workers/friends/neighbours	74	88.1
Sales agent/field officers	61	72.6
Pesticide dealers	26	30.9
Brochures/leaflets	21	25.0
Television/radio	16	19.0
Agricultural extension agents	8	9.5
Magazines	3	3.6

d) Pre and Post Harvesting Activities

The data related to pre and post harvesting activities are presented in Table 5. The majority of the farmers mentioned that they needed information on the pricing of agricultural products (n= 79, 94%), which was followed by crop storage (n=58, 69%), market situations (n=32, 38.1%), new agro-techniques (n=11, 13.1%) and time and techniques for harvesting (n=11, 13.1%). The prior personal experience (n=71, 84.5%) and other farmers, friends, and neighbours (n=56, 66.7%) were the most consulted sources of information used by these farmers for getting information on pre and post harvesting activities. The least consulted sources of information were small businessmen (26.2%) and television/ radio (20.2%).

Table 5: Information Needs on Pre and Post Harvesting Activities
(multiple responses)

Type of Information	Frequency	Percentage
Pricing	79	94.0
Crop storage	58	69.0
Market situations	32	38.1
New Agro-techniques	11	13.1
Time & techniques	11	13.1
New suitable crops	8	9.5
Weather conditions	4	4.8
Intercropping	3	3.6

e) Animal Husbandry Related Information Needs and Information Sources

The data related to the animal husbandry related information needs of 73 respondents who possessed animals are presented below. A majority of the respondents (n=71, 97.3%) required information on feeding, vaccinations against viral and bacterial diseases and their time intervals (n=60, 82.2%), treatment of sick animals (n=53, 71.2%), and disease control (n=42, 57.5%). Some respondents mentioned that they also needed information on pricing of animals (n=26, 35.6), housing environment (n=12, 16.4%) and market information (n=3, 4.1%).

The sources from which these 73 farmers obtained information related to animal husbandry are mostly informal. A majority of the respondents (n=69, 94.5%) rely on friends, neighbours and other farmers in meeting their information needs. This is followed by personal experience (n=34, 46.5%), live stock health workers (n=25, 34.2%), and veterinary doctors (n=21, 28.7%). Other sources of information mentioned by a small number of the respondents include small businessmen (n=12, 16.4%) and television and radio (n=4, 5.4%). This is an indication that informal information networks were their preferred sources of information. The role of mass media such as television, radio, newspapers and printed materials was very low. It seems that oral communication was the preferred channel of information among these farmers.

Respondents' Level of Satisfaction with Agricultural Information Sources

The respondents were asked to indicate their level of satisfaction with the agricultural information sources that they used. Twenty-two (26.1%) of the respondents were highly satisfied whereas the majority of the respondents (n=49, 58.3%) were somewhat satisfied. Thirteen (15.5%) farmers were dissatisfied with these sources of information. A majority of the farmers complained that sometimes they failed to get information from these sources and most of the time they did not get information in time. It is interesting to note that all of the farmers expressed their opinion either positive or negative which meant that they were aware of their need for information.

Ten (13.6 %) of the 73 respondents were highly satisfied and 44 (60.2%) were somewhat satisfied with the sources of information related to animal husbandry. The remaining 19 (26.0%) were somewhat dissatisfied while none was highly dissatisfied. Although the number of satisfied respondents (n=54, 74%) was quite large, their level of satisfaction seemed to be low.

Problems Respondents Face when Seeking Information

A large majority of the respondents (n=61, 72.6%) mentioned that they failed to access their required information in time (Table 6). This was not surprising because rural farmers relied mainly on informal information sources and they preferred oral communication channels. Low level of education (n=35, 41.7%), language barrier (n=28, 33.3%) and no access to the information (n=26, 30.9%) also restricted them in meeting their information needs. Some respondents (n=11, 13.1%) also mentioned lack of awareness about where to get the required information. The least mentioned problems include shortage of electricity supply, bad timings of programs and infrequent visit of extension staff in the village.

Table 6: Problems in Information Seeking (multiple responses)

Problems	Frequency	Percentage
Lack of timely access to the required information	61	72.6
Low level of education	35	41.7
Language barrier	28	33.3
No access	26	30.9
Lack of awareness about where to get required information	11	13.1
Electricity load-shedding and bad timings of programmes	6	7.1
Infrequent visit of extension staff in the village	2	2.4

Intention to Use Public Library

The concept of public library was explained to the farmers so that they might reply correctly. All the respondents showed their intention to use the public library if it was made available in the village. A significant number of respondents expressed their view that it would be a great place for meeting their information needs. Some of them were of the view that it would not only be a great place for learning to them but also to their school going children. However, their availability of free time during the day has very serious implications for the timings of library service hours because normal office hours would not be suitable for 90.5% of these respondents. These findings completely agree with those for the Malaysian farmers (Anwar and Supaat 1998).

DISCUSSION AND CONCLUSION

There seems to be a very weak interaction between the farmers and agricultural extension workers because the farmers, in some cases, did not feel that they had a need for information. For example, in case of soil preparation, a high majority of the farmers expressed no need for information. Most of the farmers never got their soil tested because they did not know about soil testing. It meant that they actually had a need for information regarding soil testing and its treatment. As a result, these farmers used fertilizers without considering the nature of the soil. This might result in decreasing their agricultural production.

There was low role of mass media, especially the newspapers, as source of information. The Punjab Agriculture Department spent a lot of money on advertising agricultural information regarding recommended seeds, taking care of crops and credit facilities in newspapers but these farmers were unaware of this information because they did not have access to newspapers. If the situation in other villages was the same then a lot of precious resources were being wasted on the sources of information that were not fit for the rural community.

Given the situation in Saleempur village, supplying need-based and accessible information to the farmers requires innovative channels of information. It was found that the farmers relied mainly on informal sources of information and they consulted with one another for advice. Obtaining information through interpersonal relationships and informal information networks raises questions about accuracy, relevancy, and currency of information. These sources of

information could not always provide timely, accurate, relevant, and current information. The results of this study indicate the need for redesigning the existing information support system for farmers. In spite of the enormous role of information in agricultural development, a variety of problems hinder farmers from having access to required information. The farmers' limited access to and the use of the required information was a major contributing factor to their low socio-economic status.

This information gap keeps rural people stagnant and they cannot participate actively in the process of national development. The findings of this study will be helpful in planning and designing need-based information infrastructure for rural farmers. The government authorities could use these findings to make adjustments in their information support system for the farmers. This study is a worthwhile addition to the existing literature on the topic. It will be of help to agricultural authorities and research scholars in developing countries of Asia and Africa.

REFERENCES

Abbas, M., Hassan, S.H. and Lodhi, T.E. 2009. Role of extension services in promoting agroforestry in district Bahawalpur. *Journal of Agricultural Research,* Vol. 47, no.2: 211 – 219.

Abbas, M., Muhammad, S., Nabi, I. and Kashif, M. 2003. Farmers' information sources, their awareness and adoption of recommended sugarcane production technologies in the central Punjab. *Pakistan Journal of Agricultural Sciences,* Vol. 40, nos.3-4: 202-206.

Anwar, M.A. and Supaat H.I. 1998. Information needs of rural Malaysians: An exploratory study of a cluster of three villages with no library service. *International Information & Library Review*, Vol. 30, no. 1: 23-36.

Ayoade, A.R. 2010. Effectiveness of information sources on improved farm practices among cowpea farmers in Oyo State. *Global Journal of Human Social Science*, Vol. 10, no.4: 39 - 45.

Banmeke T.O.A. and Olowu, T.A. 2005. Agricultural information needs of women farmers in Southwestern states of Nigeria: lessons for effective extension delivery. *Journal of Agricultural Extension*, Vol. 8: 32-40.

Chaudhry, K.M., Muhammad, S., Saghir, A. and Ashraf, I. 2008. Rural women's access to various sources of information. *Journal of Animal & Plant Sciences*, Vol. 18, no.2-3: 99-101.

Dutta, R. 2009. Information needs and information seeking-behavior in developing countries: A review of the research. *International Information & Library Review,* Vol. 41, no.1: 44-51.

Government of Pakistan. 2009-10. Economic Survey of Pakistan, Economic Advisor's Wing, Finance Division, Ministry of Finance Islamabad, Pakistan. Available at: http://www.finance.gov.pk/survey/chapter_10/02_ Agriculture.pdf.

Irivwieri, J.W. 2007. Information Needs of Illiterate Female Farmers in Ethiope East Local Government Area of Delta State, *Library Hi Tech News*, Vol. 24, nos. 9/10: 38 – 42.

Kalusopa, T. 2005. The challenges of utilizing information communication technologies (ICTs) for the small scale farmers in Zambia. *Library Hi Tech*, Vol. 23, no.3: 414-424.

Meitei, L.S. and Devi, T.P. (2009).Farmers information needs in rural Manipur: An assessment. *Annals of Library & Information Studies*, Vol. 56, no.1: 35-40.

Momodu, M.O. 2002. Information needs and information seeking behaviour of rural dwellers in Nigeria: a case study of Ekpoma in Esan West local government area of Edo State, Nigeria. *Library Review*, Vol. 51, no.8: 406-410.

Mooko, N.P. 2005. The information behaviors of rural women in Botswana. *Library and Information Science Research*, Vol. 27, no.1: 115-127.

Muhammad, S. and Garforth, C. 1999. Farmers' information sources and their relative effectiveness. *International Journal of Agriculture & Biology,* Vol. 1, no.4: 222 – 226.

Musib, S.K. 1989. Information needs and sources of information of the rural agriculturalists. *Annals of Library Science and Documentation*, Vol. 36, nos.1-2: 63-70.

Nosheen, F., Ali, T. and Ahmad, M. 2010. Analysis of gender specific sources of information regarding home and farm practices in Potohar region: A case study. *Journal of Animal & Plant Sciences,* Vol. 20, no.1: 56 – 59.

Nwagha, G.K.N. 1992. Information needs of rural women in Nigeria. *Information Development*, Vol. 8, no.2: 20-22.

Rosenberg, D. 1993. Rural community resource centres: a sustainable option for Africa? *Information development*, Vol. 9, no. 1-2: 29-35.

Sabo, E. 2007. Agricultural information needs of women farmers in Mubi region, Adamawa State. *Journal of Tropical Agriculture*, Vol. 45, nos.1-2: 69-71.

Sadaf, S., Javed, A. and Luqman, M. 2006. Preferences of rural women for agricultural information sources: a case study of District Faisalabad-Pakistan. *Journal of Agriculture & Social Sciences*, Vol. 2, no.3: 145-149.

Sadaf, S., Muhammad, S. and Lodhi, T.E. 2005. Need for agricultural extension services for rural women in Tehsil Faisalabad-Pakistan. *Journal of Agriculture & Social Sciences*, Vol. 3, no.1: 248-251.

Stefano, L.A., Hendriks, S.L., Stilwell, C. and Morris, C. 2005. Printed information needs of small-scale organic farmers in KwaZulu- Natal. *Libri*, Vol. 55, no.1: 56-66.

Vavrek, B. 1995. Rural information needs and the role of the public library. *Library Trends*, Vol. 44, no.1: 21-48.

Zaverdinos-Kockott, A. 2004. An information needs assessment in Oribi Village, Pietermaritzburg. *Innovation*, 29, 13-23.

Zhang, Y. and Yu, L. 2009. Information for social and economic participation: A review of related research on the information needs and acquisition of rural Chinese. *International Information & Library Review*, Vol. 41, no.2: 63-70.

Zhao, Y. and Zhang, R. 2009. Perceived information needs and availability: results of a survey of small dairy farmers in Inner Mongolia. *Information Research*, Vol. 14, no.3. Available at: http://informationr.net/ir/14-3/paper411.html.