Understanding Cotton Growers' Information Needs from Rural Bahawalpur

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This study investigated the information needs of cotton growers residing in two villages in the district of Bahawalpur. Face-to-face interviews were conducted by visiting farms or homes using a semi-structured interview schedule. Data were analyzed by applying descriptive statistics. The results indicated that cotton growers required information, in general, in the areas of soil management and plot preparation, cotton seeds, crop care, and pre- and post- harvesting activities. Moreover, these farmers relied very much upon informal networks (progressive farmers, sales agents, and pesticides dealers) while looking for the needed information. Lack of timely access, illiteracy, infrequent visits of extension staff, and language barrier were the major problems that these farmers faced while getting needed information. The results of this research indicated the need for an integrated agricultural information delivery system for farmers. This research has made a significant contribution in cotton growers' information behavior research.

Keywords Information needs; Information seeking; Information Behaviour; farmers; Cotton; Agriculture; Pakistan

Introduction

Cotton, a lifeline of textile industry, is an important cash crop that makes a significant contribution to the national economy of Pakistan. It accounts for 7.8 percent of the value added in the agriculture sector and about 2.0 percent to GDP. It is cultivated on over three million hectares, about 15.0 per cent of the cultivable area in Pakistan. A large majority of the labour force is directly or indirectly linked with cotton cultivation, its harvesting, sale of lint, and cotton value-chain. Therefore, livelihood of millions of farmers and of those engaged in the cotton value chain is dependent on this single crop. Government of Pakistan has an ambitious plan for the expansion of textile industry. To do this, there is a need to boost cotton production so that it may be used as raw material. According to an estimate, an increase of one million bales in cotton production will mean 0.5 percent increase in the GDP (Government of Pakistan, 2011-2012).

Increase in cotton production can be achieved either by increasing cotton crop area or enhancing per acre lint yield, or both. But, the option to increase cotton cultivation area cannot be exercised due to shortage of irrigation water supply and also because the cotton cultivation areas are already at their maximum level in Pakistan (SMEDA, 2010). In addition, cotton crop is also in competition with other crops which is a major constraint in bringing more area under this crop. Therefore, the only option is to improve per acre lint yield by applying modern cotton growing technologies and using ways and means to improve cotton production.

For consistent growth in cotton production or increasing per acre lint yield, it is essential to equip cotton growers with need-based, accurate, reliable, and timely information. Naveed and Anwar (2013) argued that "the dream of advancement in agricultural production cannot come true until farmers' timely access to their required information is not assured" (p. 2). Anwar and Supaat (1998) were of the view that consideration of users' information needs is essential in the provision of need based and relevant information. The lack of knowledge of users' information needs is a major obstacle in the design of need-based information delivery system that can provide more relevant information to users (Rosenberg (1995). Banmeke and Olowu (2005) stated that specific information needs of a particular

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community should be identified in order to meet their needs and aspirations.

Understanding what cotton growers need to know and from whom they receive their needed information will be helpful in designing focused and need-based information delivery system for them. An extensive search of published literature has confirmed that no such study appears to have been conducted in Pakistan. Therefore, there is a need to conduct research on assessing cotton growers' information needs. The purpose of this study is to explore the information needs of adult male farmers involved in cotton production in two villages of Bahawalpur. This study focuses only on the investigation of farming related information needs. The results of this study will be helpful 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 for cotton production but also those of other developing countries, especially of South Asia and parts of Africa, because they share similar characteristics. These may also open the way for more detailed inquiries into the broad farming industry in Pakistan as well as other countries of similar background. This study will be a worthwhile contribution to the existing literature on the topic and be of help to academicians and agricultural authorities.

Research Objectives

This study will achieve its objectives by addressing the following questions:

1. What type of agricultural information do the adult male cotton growers residing in villages need?
2. What sources of information do they consult in order to obtain this information and why?
3. What type of contact do they have with government agricultural officials?
4. To what extent are they satisfied with the sources of information they use?
5. What are the barriers that they face while getting this information?

Literature Review

There is a sizeable research focusing on information needs and information seeking behaviour of rural people. By and large, these studies centred on general information needs while the research examining particular areas, such as agriculture, health, etc. is limited. Of these studies, Nwagha (1992) discovered that the rural women were predominantly illiterate and ignorant of using modern methods for improving agricultural production. The Nigerian farmers' information needs were centred on weather, soil management, credit availability, and farm management, besides awareness on improved seedlings, insecticides availability, pesticide and fertilizer application, improved farm implements, improved marketing system, improved agricultural technologies, agricultural insurance, animal health, future market prices, land tenure, and vaccination for animals (Elizabeth, 2007; Okwu & Umoru, 2009). Kalusopa's (2005) study found that the Zambian small scale farmers needed agro-technological information in the areas of farmland maintenance, farm water supply, forestry machinery, farm building, land drainage, etc. Zhang and Yu (2009), in a review article, indicated that the information needs of rural Chinese were centred on new agro-technologies, market conditions, income generation, rural development policies, education and training opportunities for which they depended mainly on interpersonal relationships.

The African farmers rely mainly on Interpersonal relationships and mass media for meeting their agricultural information needs (Ayoade, 2010; Elizabeth, 2007; Irivwieri, 2007; Kalusopa, 2005; Ozowa, 1995; Okwu & Umoru, 2009). Stefano, Hendriks, Stilwell, and Morris (2005) ascertained that "intermediaries such as NGOs and church-based development facilitators, university researchers and the KwaZulu-Natal Department of Agriculture and Environmental Affairs' extension officers" were the major information channels to obtain new research-based agricultural information (p. 59). Despite having these information channels, these farmers needed and valued printed information sources because they got information from intermediaries irregularly and only occasionally.

On the Asian side, Musib (1989) found that the Indian farmers depended on their personal experience and consulted friends, neighbours, relatives, family members, fellow professionals and persons in agricultural offices in meeting their information needs. Moreover, the farmers' community used information sources such as radio, T.V., and newspapers (Meitei & Devi, 2009). The Philippino rural farmers required information for modern trends of rice and sugarcane culture, new and improved seeds varieties, and how to improve production (Belonia, 1986). Zhao and Zhang (2009) assessed perceived information needs of small dairy farmers in Inner Mongolia. These farmers required information on dairy policies, market conditions, and new technologies. They consulted television, followed by government officials, neighbours, and milk stations in meeting their information requirements. Radio,

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newspapers, books, and the Internet were the information sources through which they received very little information.

The results of Pakistani studies, investigating farmers' information sources, overwhelmingly indicated that they depended very much upon interpersonal contacts with fellow farmers, friends, relatives and neighbours in addressing agricultural information needs. The role of mass-media and extension agents as agricultural information sources was found much lower than expected. The findings also indicated the need for farmer oriented information delivery system in Pakistan (Abbas, Hassan, & Lodhi, 2009; Abbas, Muhammad, Nabi, & Kashif, 2003; Chaudhry, Muhammad, Saghir, & Ashraf, 2008; Muhammad & Garforth, 1999; Naveed, Anwar & Bano, 2012; Naveed & Anwar, 2013; Nosheen, Ali & Ahmad, 2010; Sadaf, Sher Muhammad, & Lodhi, 2005; Sadaf, Javed, & Luqman, 2006). Lack of timely access, low level of education, and language barrier were the major problems that these farmers faced while obtaining needed information (Naveed, 2013; Naveed & Anwar, 2013).

The reviewed literature indicated that research focusing on farmers' agricultural information needs is limited. There are only a limited number of studies that have investigated this phenomenon. Moreover, the research investigating farmers' information needs, in particular with a single crop perspective, is almost non-existent. This research is a signifant contribution in this regard and opens the ways for more detailed and in-depth inquiries for other single crops and in other geographical settings having agriculture as the backbone of their economy, especially in South-Asia and parts of Africa.

Materials and Methods

Survey method was used to conduct this investigation using quantitative research design. The population of the proposed study was cotton growers in the two villages (32/B.C and 33/B.C) of Bahawalpur district. Male adult farmers, aged between 25–65 years and actively participating in decision making and cotton growing activities, were selected for interview. Face-to-face interviews of 79 cotton growers, selected through convenient sampling, were conducted by visiting their farms or homes. These farmers were recruited with the help of the relatives and friends of the researcher because the researcher himself used to live in one of these villages some years ago. All the interviews were conducted in the local language using semi-structured interview schedule. The interview schedule was developed after examining existing literature and reviewed by researchers who were expert and familiar with such studies. It was then revised and pilot-tested with a few farmers that were not part of the sample. The average time taken during interviews was about 30 minutes. The questions were addressed to the respondents and their responses were recorded. Afterward, the collected data were analyzed using descriptive statistics such as frequencies and percentages.

Results

Demographic Information

Table 1, which presents the demographic composition of the respondents, shows that 58(73.4%) of the respondents are within the age bracket of 36–55 years, which is followed by those who are below 35 years of age (15.1%). A large majority (n=70, 88.6%) of these farmers is still in the middle and hence active age of life. The respondents between 56 – 65 years of age are small in number (n=9, 11.3%). The table also shows that a little more than half (52%) of the respondents have their educational level from primary to middle, followed by matriculation (16.4%) indicating that most of the respondents (n=63, 79.7%) have some formal education. Only 16 (20.3%) of them have no formal education but 9 of them can still read and write. This implies that these villages have a good literacy rate which is quite unusual and encouraging. The figures in Table 1 also show that a majority of the respondents (n=57, 72.1%) have their cotton farm size of more than 12 acres. Only 22 (27.8%) respondents hold farms of 12 acres or less. Therefore, the farm size for most of the respondents is quite reasonable.

Table 1: Demographic composition of respondents (N = 79)

Item	F	%
1. Age (in years)		
Under 35	12	15.1
36 – 45	31	39.2
46 – 55	27	34.1
56 – 65	9	11.3
2. Education		
Illiterate	7	8.9
Can read & right	9	11.4
Primary	16	20.3
Middle	25	31.6
Matriculation	13	16.4
Intermediate	5	6.3
Bachelor	3	3.8
Master	1	1.3

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3. Farm size (acres)		
Up to 12	22	27.8
13 – 24	29	36.7
25 – 35	15	19.0
36 – 45	8	10.1
Above 45	5	6.3

Information Needs and Information Sources

Soil management and plot preparation

The farmers were asked to specify the nature of information they need for soil management and plot preparation. Table 2 presents the data which show that the cotton growers required information on insecticides (64.5%), herbicides (58.2%), which fertilizer to use (40%), planting methods (36.7%), weather (27.8%), soil fertility (10.1%), and water management (2.5%). Did they get their soil tested before sowing? A large majority (n=77, 97.5%) responded negatively while only two (5.9%) responded positively who obtained this information from the agricultural extension agents. In addition, these respondents were also asked whether they got their tube-well water tested. All the respondents gave a negative response. However, they were of the view that their tube-well water was not good for crops as well as for soil but they had to use it because the canal water did not fulfill their needs.

Table 2: Information needs on soil management and plot preparation (multiple response)

Type of information	F	%
Insects management	51	64.5
Herbs management	46	58.2
Fertilizer to use	34	43.0
Planting methods	29	36.7
Weather conditions	22	27.8
Soil fertility	8	10.1
Water management	2	2.5

The respondents were asked to specify the sources that they consulted in order to obtain information regarding soil management and plot preparation activities. A majority of the respondents (n=63, 79.7%) relied on their personal experience, followed by co-farmers (n=47, 59.5%), sales agents (n= 47, 59.5%), and pesticides dealers (n=32, 40.5%). Only 13 respondents (16.4%) used television for this information.

Selection and preparation of cotton seeds

The information needs regarding cotton seeds include better varieties (n= 71, 89.9%), cotton seeds properties (n=69, 87.3%), seeds preservation (n=38, 48.1%), and low water consuming varieties (n=19, 24.1%). These results support the findings of Naveed and Anwar (2013). The respondents were asked a direct question whether they were aware of the properties of cotton varieties that they had sowed. A large majority (n= 71, 90%) responded negatively while only a few farmers had this awareness which is quite interesting. The information channels that they normally consulted when looking for information on cotton seeds are: personal experience (n=61, 77.2%), progressive farmers (n=58, 73.4%), sales agents (n=55, 69.6%) and pesticides dealers (n=19, 24.1%).

Crop caretaking

In taking care of the cotton crop, a majority of the respondents, as shown in Table 3, required information on disease control (93.7%), fertilizer applications (87.3%), pesticide applications (74.7%), weed control (64.5%) and pest counting techniques (60.7%). Other areas, mentioned by a good number of respondents, included weather (46.8%), pests and crop diseases (32.9%), and irrigation plan (19%). Only eleven farmers mentioned that they required information on low water consuming irrigation methods which may be due to their awareness about low river water resources and poor quality of tube-well water.

Table 3: Information needs on crop caretaking (multiple response)

Type of information	F	%
Disease control	74	93.7
Fertilizer applications	69	87.3
Pesticides application	59	74.7
Weedicides	51	64.5
Pest counting techniques	48	60.7
Weather conditions	37	46.8
Pests & crop diseases	11	13.9
Irrigation plan	26	32.9
Low water consuming irrigation methods	15	19.0

The figures in Table 4, which presents the information sources consulted in order to obtain information on taking care of the cotton crop, show that a majority of

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the farmers depended upon sales agents (97.4%), pesticide dealers (94.9%), and progressive farmers (86%) in meeting their information needs. Other sources of information mentioned by a good number of respondents included television (30.9%) and broachers distributed by pesticide companies (27.8%). Only seven (8.9%) farmers indicated agricultural extension agents as sources of agricultural information which may be due to low visits of extension staff in these villages.

Table 4: Information sources used for taking care of the crops (multiple response)

Information sources	F	%
Sales agents	77	97.4
Pesticide dealers	75	94.9
Progressive farmers	68	86.0
Television	27	34.1
Brochures by pesticides companies	22	27.8
Agriculture extension agents	7	8.9

Pre- and post- harvesting activities

In dealing with the pre- and post- harvesting activities, a majority of the farmers required information on cotton pricing (n=75, 94.9%) and crop storage (n=64, 81%), followed by market situation (n=25, 31.6%). Only 14(17.7%) respondents indicated the need for information on precautions for cotton picking. The information sources such as prior personal experience (n=71, 89.8%) and co-farmers (n= 56, 70.9%) were the most consulted sources of information for getting information on pre- and post-harvesting activities. The least consulted channels were small businessmen (n=22, 27.8%) and television (n=7, 8.9%).

Reasons for choosing or not choosing various information sources

The respondents were asked as to why they chose the information sources used by them. For most of the respondents (71%), these were the only available information sources which could be accessed easily. Some were of the view that they had no choice except consulting these information channels. These farmers were also asked as to why they did not select sources such as agricultural helplines, books, newspapers, magazines, crop production guides, leaflets, internet, agricultural services by cellular network companies (e.g. Telenor, Mobilink, Ufone, etc.), and agricultural extension agents. The reasons given by them included lack of access (65.8%), lack of awareness about these sources (57.1%), illiteracy (41%), and low level of education (29.5%).

Respondents' satisfaction or dissatisfaction with the information they receive

They were asked whether the received information or advice from different sources had been satisfactory or not. Forty-one (51.9%) out of 79 participants felt that their information needs were not fulfilled and their situation remained unchanged whereas the rest were satisfied. These respondents were further probed as to why they were satisfied or dissatisfied with the information they received. The farmers, who were dissatisfied, complained that they got information from those sources irregularly and occasionally. Sometimes they even failed to get information from those sources and most of the time they did not get information on time. Further, some were of the view that they got promotional information rather than actual advice from the sales agents or dealers of pesticide companies and they got confused while making decisions. The 38(48.1%) satisfied respondents felt so because their problems were solved. It is quite interesting to note that, whatever their response, all of these farmers were aware of their need for information.

Contact with government agricultural officials

The data for the type of contact with government agricultural officials are presented in Table 5. The farmers were asked whether they had any contact (e.g. oral, written, or any other type) with government agricultural officials. Nearly, all the respondents responded negatively. They were asked if they read newspaper advertisements regarding cotton production. All responded negatively simply because they did not have access to the newspapers. If this was true even for most villages, all the efforts made and scarce financial resources used by the agricultural department for disseminating advice and information were useless and wasteful. It can be safely said that the agricultural official had a very weak contact with the farmers.

Table 5: Respondents' contact with agricultural officials (N = 79)

Contact type	Yes	No
Visit of extension staff in village	22 (27.9%)	57 (72.1%)
Personal contact with extension staff	15 (18.9%)	64 (81.0%)
Provision of written information	6 (7.6%)	73 (92.4%)

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Reading agricultural advertisement in newspapers	4 (5.0%)	75 (94.9%)
Development & maintenance of demonstration plot	0	79 (100%)
Training attended organized by agricultural officials	0	79 (100%)

Problems in information seeking

The data for most common problems faced while information seeking are presented in Table 6. It shows that a majority of the farmers (73.4%) failed to get their needed information on time which was not surprising because these farmers relied mainly on interpersonal relationships and preferred oral communication (as shown in Tables 3, 5, 7, and 9). Illiteracy (65.8%) and infrequent visits of extension staff in the village (51.9%), and language barrier were also the major barriers that restricted most of the respondents to fulfill their information needs. The least mentioned problem was no access to required information (15.2%) which seemed to be a reaction to a dissatisfactory information environment.

Table 6: Problems of respondents in information seeking (multiple response)

Problems	**F**	**%**
Lack of timely access	58	73.4
Illiteracy	52	65.8
Infrequent visits of extension staff	41	51.9
Language barrier	16	20.2
No access	12	15.2

Respondents' suggestions to improve their information acquisition

Finally, respondents were asked for suggestions to improve the ways in which they acquired and used information. Table 7 presents their responses.

Table 7: Suggestions to improve information acquisition (multiple responses)

Suggestions	**F**	**%**
Establishment of an agricultural information cell	17	21.5
Increased visits of agricultural extension staff for advice	14	17.7
Wall chalking	12	15.2
Seminars, training and workshops	12	15.2
Broachers/leaflets	9	11.4
Provision of crops guide plan	3	3.8

Discussion and Conclusion

There was a very week interaction between government agricultural officials and the cotton farmers because the results revealed that a large majority of cotton growers were not aware of modern trends in cotton farming. For instance, these cotton farmers never got their soil and tube-well water tested due to lack of awareness. The farmer's decisions about which fertilizer to use in soil preparation for cotton crop seems to be based on trial and error. This is also an indication that a large majority of the farmers are using fertilizers without considering the nature of the soil which might be causing low yield per acre and a wastage of fertilizer resources. Also, these farmers were unaware about soil testing and its treatment and the nature of the soil to be used for growing cotton crop. These results seem to agree with those of Naveed and Anwar (2013) who also found farmers' lack of awareness with soil testing and the nature of the soil to be used for particular crops. Moreover, the results indicated that these farmers were also not aware of production potential of their sowed cotton varieties and required temperature, nature of soil, number of plants per acre, distance between plants, irrigation plan, and possible disease attack on these varieties. This ignorance might have very serious implications on crop production, crop caretaking and ultimately on yield per acre. In addition, the cotton farmers' information needs regarding crop care (Table 3) seem to be fully in line with the findings of Naveed and Anwar (2013) and partially in line with the findings of Elizabeth (2007) and Okwu and Umoru 2009).

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The results of this study indicate an overwhelming reliance of cotton farmers on interpersonal relationships and informal networks in addressing their information needs. The role of mass-media, both electronic and print, government extension agents, and printed materials as sources of information was almost non-existent among these cotton cultivators. These results were fully consistent with that of Naveed and Anwar, (2013) and Naveed, Anwar and Bano, (2012) and partially in line with the findings of previous studies (Abbas, Hassan, & Lodhi, 2009; Abbas, Muhammad, Nabi, & Kashif, 2003; Chaudhry, Muhammad, Saghir, & Ashraf, 2008; Muhammad & Garforth, 1999; Nosheen, Ali & Ahmad, 2010; Sadaf, Sher Muhammad, & Lodhi, 2005; Sadaf, Javed, & Luqman, 2006). It seems that these farmers had compromised with whatever information sources were available to them due to non-availability of printed information channels and non-accessibility of government agricultural officials for advice. Moreover, obtaining information through interpersonal relationships and informal information networks raises questions about the accuracy, relevancy, and currency of information. These sources of information could not always provide timely, accurate, relevant, and current information. Also, getting information from interpersonal relationships also depended upon the level of contacts between the two parties and the reliability of messages through the informal sources might not be guaranteed.

In conclusion, the results exemplify the need for redesigning the existing agricultural information support system for farmers. The lack of timely access to the needed information keeps rural farmers stagnant with conventional farming. That is why the rural farmers cannot contribute actively in the national economy. The results of this study can be used as a guide by the government authorities in policy formulation with regard to need-based agricultural information infrastructure. Such a system will make rural farmers better informed and lead to improved agricultural production. This research has a major contribution to the existing research because very little attention has been given to farmers' information behavior research in Pakistan. Moreover, it will be of help to policy makers and academicians in Asian and African developing countries especially in South-Asian countries because these countries share similar characteristics.

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