

Prioritization of Farmers' Information Channels: A Case Study of Isfahan Province, Iran

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ABSTRACT

Diversity, accessibility and reliability are the three main factors governing the adoption of information sources by farmers in rural areas. Based on the research hypothesis, the existing knowledge and information delivery system in the agricultural sector, functions far below the ever changing nature and tangible needs of existing farming systems. The main objective in this study is to determine and prioritize farmers' information channels and their communication networks within rural areas of 19 townships of Isfahan Province – the central part of Iran. After exploratory field visits of several villages, a questionnaire was designed and pre-tested for its validity and reliability (Alpha= 82%). The statistical society included all farmers who had regular contacts with the local extension offices. The sample population was 228 farmers who were selected through a two-step random sampling method from the villages with an extension office. The results showed that extension system disregarded farmers' local media and did not meet their actual needs. The extension system failed to build trust among the local communities. Moreover, farmers' trust in one information source had a synergic effect on the others. The sources were categorized in three groups based on the farmers' preferences. The printed materials did not play any significant role in the knowledge and information processes. There was also a significant correlation between dependent variables (determination of information source by farmers) and the independent variables (for example: farming land size and farmers educational level). Finally, most farmers claimed that visiting 'local extension service offices' was mainly in response to their urgent needs to acquire subsidized agricultural input such as fertilizer, rather than acquisition of information and were yet disappointed.

Keywords: Agricultural extension, Farmers network, Information channel, Iran.

INTRODUCTION

Communication in agriculture bridges up the farms with the communities in a holistic way. Traditionally, there are places in rural areas such as tea houses and mosques, which connect work to home and function as information channels and forums. Most traditional societies have a legacy of interpersonal communication through which they exchange information, and share knowledge, perspectives and attitudes. Yet modern institutions and media neglect this powerful tool and are far from their success.

According to Zumalt (2007) "agricultural communications, as considered here, encompass all kinds of human communication in relation to agriculture, food, natural resources and rural interests. It obviously involves two wide streams of endeavor: communications and agriculture. As a discipline, agricultural communications seek to connect these two well-established streams effectively—somewhat akin to the role of a lubricant, integral and vital to an operating engine." Recognition and prioritization of farmers' channels of communication facilitate the process of effective investment on the most popular

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channels and also highlights the urgent needs for more development.

Local media in developing rural contexts compete with modern media in knowledge exchange. Information channels include several sources through which people gain certain information and interact with their surrounding environment. In Iran's transitional society, new institutions were established in parallel to change peoples' old practices. These institutions, among which agricultural extension system was a clear example, not only disregarded local media but also challenged them (Khatoon-Abadi, 1994a).

In response to inadequacy of 'information transfer model', several agricultural communities and the related academia focused on acquisition of the most appropriate and practical information, as a crucial issue (Fear *et al.*, 2006; Chambers, 1990; Bertwan, 1991; Roling, 1991; Garforth, 2001). Rogers (1995) and Rees (2000) pointed out that diffusion of innovations among farmers, depended on their own priorities and their trust in communication channels. Consequently, meeting the audiences' urgent needs through feedback mechanism was the main challenge of mass media and other information channels. Based on these principles, the agricultural extension/education system directed its programs towards short-term training, publication of technical pamphlets, broadcasting farmers-oriented radio and TV programs, and on-farm training visits by extension agents.

The major constraints toward an effective agricultural extension in Iran have been considered as: the vertical method of communication; on-going administrative structural change; fragmented policy and ambiguous objectives; frequent division of agricultural lands, resources' degradation; an implicit shift in orientation of agricultural extension from information dissemination toward distribution of input commodities and inappropriate methodology to fulfill the requirements of sustainable farming practices (Khatoon-Abadi, 1994a; 2006).

One of the main reasons of communication breakdown, as Maturana and Varella (1987) pointed out in the Tree of Knowledge, stems from the false metaphoric analogy of the communication process.

The situation was exacerbated since the integration of the two former parallel agricultural ministries in 2001, through which the extension staffs, holding with them contradictory backgrounds, opposed one another's values. As a result, in Isfahan Province (with one of the largest farming communities in Iran), there was not any actual linkage between the research and extension sections within the Department of Agriculture. The extension agents (during their involvement in a number of workshops, facilitated by the author) repeatedly described the research staffs as arrogant, and were generally frustrated, without motivation to build trust with farmers. In lack of a dynamic extension system, farmers acquired information from the most trustworthy channels, and extended their own informal networks (Khatoon-Abadi, 2006). Rationally, it is important to identify usefulness of selected channels for communicating agricultural technologies, and to determine if the traditional farmers were aware of the selected channels for communicating agricultural technologies.

Theoretical/Conceptual Framework

Top-down methods of communication have been accepted as the 'magic charms' of extension and rural development in most countries; the concept of development being seen not in a human context but from the mechanistic angle of economic growth and technological advancement. Yet new concerns are now emerging from a number of different sources. Does agricultural extension need a non-prescriptive format to acknowledge a farmer's own personal preferences? Has the conventional extension system prevented a majority of powerless adults from active involvement in their learning programs?

Since the 1970s, conventional extension methods have been challenged for their non-participatory approach to fulfill the tangible needs of small farmers. Freire (1972) criticized the nature and methods of conventional extension services which mismatched with the concept of 'extension', and focused on dialogue as the most effective medium. Chambers (1990) put his focus on local knowledge through participatory rural rapid appraisal (PRA). Roling (1991) concentrated on 'information networks', 'information pool' and 'knowledge information systems' (KIS), and Bawden (1995) considered 'farms as learning organizations'. Khatoonabadi (1995) in an extensive review, concentrated on the contribution of local media (story-telling, popular drama and puppet theatre) in family planning, literacy and extension programs in Asia, Africa and Latin America (with emphasis on the works of Kidd (1980, 1985) within literacy education in Botswana; Freire (1972) and Boal (1989), in Brazil/Peru in libratory adult education.)

Ramirez (1997) in the study of farmers' communication networks in five rural regions of the Philippines showed that there was insufficient agricultural information for farmers in all villages.

In his work 'neighbors' were among the first to whom farmers had referred for information, whereas the agricultural technicians in general and extension agents in particular did not meet the farmers' information needs. In contrast, private sector played an effective complementary role. Garforth (2001) studied the sources of information among the Eritrean farmers in two villages of Glass and Ashera. He showed that in Glass the farmers had more connections and accessibility to 23 several information sources, but farmers in Ashera did not have access to actual sources for information and enjoyed merely the potential channels. At the same time, farmers in both villages had established informal inter and between-village communications. Garforth (1993) also indicated three combinations of

people/authenticity: (1) Farmers-trusted local networks among the relatives and the rural neighborhoods with considerable contacts, but less authentic information; (2) Agricultural extension practitioners with less accessibility and contacts, but more authentic information (women had more infrequent contacts with the agricultural practitioners); and (3) Agricultural merchants with frequent contacts were considered the most contacted information sources, but the least trusted among the farmers.

The literature highlighted an urgent need to increase the quality of information acquired by farmers as well as to facilitate their efforts to develop information networks. In most developing countries, the method of transmitting knowledge to recipients especially the farmers has greatly changed (Omokore *et al.*, 1998). Nonetheless, each method demonstrates relative preference within each different context. For example, T and V System of Extension despite its failure in India, has proved successful elsewhere (Ilevbaaje, 1998), and the same is true with PRA in other contexts (Raditloaneng, 1988), as well as Rogers' model of adopter Categories (Nithya, 1988).

There are several studies which highlight the fact that farmers' preference for information delivery depended on different factors such as: educational level, age, literacy, scale of farming, ethnicity, languages, gender, indigenous knowledge, and individualistic goal structure (Khatoon-Abadi, 1994b, 1995; Agili, 2003; Farbod *et al.*, 2003; Prathap and Ponnusamy, 2006; Efa *et al.*, 2005). Squire (1998) in his research found out that the most useful channels for communicating agricultural technology identified by the farmers were the male and female technical assistants and most farmers were aware of a great majority of the channels for communicating agricultural technologies in Botswana.

Ogunwale *et al.* (1988) reported that village extension workers constituted the most used source of farm information and



technologies. Other sources used by farmers included fortnightly training meetings, agricultural radio programs, friends and neighbors, demonstration sites, and program contact farmers. Specifically, no farmer mentioned the use of agricultural film, show, mobile open broadcast and television broadcast in the two programs. It was statistically established that there was no significant relationship between age of farmer and the number of sources of farm information and technologies used by farmers. The use of combinations of extension methods was recommended to facilitate extension service and adoption of farm technologies in the programs.

Also, Chambers (1990) argued that, 'the depravation trap' of poverty, vulnerability, illiteracy, powerlessness and isolation, played a negative role among disadvantaged farmers and prevented them from using different channels. Roling *et al.* (2003) suggested that agricultural extension had to explore and develop the information channels and knowledge networks among rural entrepreneurs, communication experts, and individuals in connection with different institutions, organizers and consultants. On the other hand, as McElwee *et al.* (2006) have pointed out, "Farmers operate in an arena of extreme and rapid change, clearly evidenced by the shifts from a subsidized environment to a market-driven environment, suggesting that there is a greater entrepreneurial role for the farmer; in particular the ability to market the product." These studies demonstrated a positive relationship between farmers' socialization/educational levels, and their interest in both printed materials and the pre-planned, in-person contact with the extension program. Moreover, the literature shows that the farmers' access to information sources and their technical knowledge would affect their sustainable agricultural practices (Sadighi *et al.* 2002). Also Alibaigi *et al.* (2000) to increase effective communication and to foster more adoption by farmers, have focused on the needs of extension agents (such as: instructional technology,

innovation and adoption process, adult education, and extension methods). Furthermore, Rasouli *et al.* (2009) have concentrated on farmers' income, total farming land and land holdings under cultivation, as effective factors of agricultural mechanization.

These studies revealed that more emphasis was placed on individual channels of communication than mass media methods. Therefore, a liaison between extension and farmer is more actualized through locally accepted information channels that are capable of setting new and just-in-case agendas. This is a process which helps the extension to move forward, from 'advice-giving' and 'out-reaching' toward what Fear *et al.* (2006) have considered as 'critical engagement'. The theory of critical engagement urges new communication strategies from vertical to horizontal and from being passive or reactive recipient into active and critical discourse.

The General Objectives

This paper aims at assessing and prioritizing the farmers' information sources within the rural areas of 19 Townships in Isfahan Province of Iran. The major research hypothesis is that the national agricultural extension program and its' information channels within the existing advice-giving framework is not useful for farmers within the context of rural Iran. A majority of poor farmers suffer from illiteracy and lack interest in printed media as well as other information sources. The farmers' trust in one source would have a synergic effect on the others. Also, the relationship between independent variables (such as land size and literacy) and the farmers' tendency to the information source will be examined.

The specific objectives of the study were: (1) identification of farmers-trusted information sources to increase the effectiveness of extension training programs through locally accepted channels; (2) lowering the parallel extension costs and

increasing efficiency of the programs. The specific objectives were: (1) determination of farmers' characteristics such as their farming scale, educational level, and their perspective toward extension; (2) identification and prioritization of the farmers' information channels; (3) determination of the correlation between the income and the farmers' information channel. Some of the dependent variables included: Satisfaction from the local extension offices, amount of time farmers spend on various information sources, and the trustworthiness of various information sources. Independent variables included items such as: crops, educational level, usefulness of rural radio program, and accessibility of information sources.

MATERIALS AND METHODS

The study was carried out during 2003-2005. A field survey through direct interviewing by the means of questionnaires was conducted. As a co-relational survey (cross sectional study), two variable correlation analyses were used to determine the correlation between the variables. The Spearman correlation technique was applied for the analyses. The research geographical domain included all villages under the coverage of a locally established extension office in the 19 townships within Isfahan Province. The sample included 228 farmers who were selected through a two-step clustered random sampling from farmers' population that had regular contacts with the extension offices during 2004-2006 in their own regions.

The structured questionnaire was designed to collect the data. Consequently, a pilot test was organized among 24 agricultural practitioners and experts to achieve external validity (the average value for KMO= 84.5%) and among 15% of the sample population for the reliability (Alpha value= 82%). Questionnaires in the survey were completed through direct interviewing. The interviews with farmers were organized

in each township within the local extension offices. The designated farmers were invited and the invitation was repeated for those who had not attended three times which resulted in 100% participation of the sample population in the interviews. To make a prioritization on farmers' information sources, the related data for each of the six sources were transposed and through statistical operation, the new variable of 'farmers tendency towards information acquisition' was created. The data were categorized into two categories: descriptive and analytical. The SPSS software was used for the analysis.

Due to the nature of interpretative/analytical method and their measurement levels, the data were analyzed through two-variable correlation, and also Chi square formula as follows:

$$\chi^2 = \sum \frac{(o_i - e_i)^2}{e_i} \quad (1)$$

In the above formula, o_i involves research observations and e_i includes the expected amounts. Ultimately, a qualitative analysis based on the non structured interviews and field observations will be incorporated in the results.

RESULTS

The Descriptive Data

The size of farmers' farming lands ranged between 0.2 to 110 hectares (on average 8 hectares per farmer). Among 228 sample population, there were 58 (25.4%) subsistence farmers; 152 (66.7%) semi-subsistence, whereas 18 (7.9%) farmers owned mechanized modern farms. On the other hand, 52 farmers (22.8%) were illiterate; 130 (57%) were with elementary education; and 20 (8.8%) were with middle school certificates. Also, 17 (7.5%) had high school diplomas and 9 farmers (3.9%) were beyond high school level. The farmers' satisfaction with the local extension service offices was ranked as follows: 27.2%



demonstrated high level of satisfaction and 22.8% were totally unsatisfied. Based on the field observations, the most privileged farmers were among the most satisfied, whilst the vulnerable farmers complained of the unfair distribution of subsidized agricultural inputs and machineries and obtained their inputs from the black market. The reasons for their dissatisfaction were specified as follows: 71 (31.1%) of farmers focused on unfair distribution of agricultural inputs; 46 (20.2%) referred to discriminatory services for agricultural machinery; 48 (21.1%) pointed to both the input and the machinery services, and 63 (27.6%) focused on unsatisfactory extension and training services. Only 92 (40%) of the farmers responded that the extension agent is ever present in the local extension office. Also 145 (63.55%) of farmers said that extension agents from the main extension office visited their farms. The number of farmers' visits to the local extension offices varied from 1 to 20 times per year and the average annual contact counted more than 6. The main reasons for the farmers' contacts with the local extension offices were specified as follows: 204 (89.5%) focused on receiving subsidized agricultural input; 15 (6.6%) pointed to acquiring technical advice; and 9 (3.9%) were interested in general information. On the other hand, 41 (61.8%) of farmers said that they did not have access to magazines and newspapers; 40 (17.5%): rarely had access; 34 (14.9%): sometimes; 12 (5.3%) most of the time, and only one (0.4%) individual said he always had access to this resource. Due to illiteracy and rural people's oral communication pattern, the investment on agricultural newspaper or magazines for rural audiences was close to zero point.

Similarly, out of 228 individuals in the sample, with respect to reading books, 121 (53.1%) said never; 40 (17.5%) said rarely and; 49 (21.5%) said occasionally; whilst 15 (6.6%) read books when felt in-case necessary and 3 farmers (1.3%) read books most of the time. This corresponds to the data on reading newspapers: 140(61.4%) never; 37 (16.2%) rarely; 38 (16.7%) occasionally;

10 (4.4%) when felt in-case necessary; and 3 (1.3%) most of the time. Despite the coverage of TV channels in remote rural areas, the farmers' orientation towards TV programs was respectively: low: 23 (10.1%); never: 68 (29.8%); rarely: 96 (42.1%); occasionally: 34 (14.9%), and 7 (3.1%) most of the time. Due to the high price of TV sets, poor farmers could not afford it. At the same time, the adult video CDs filled the spare time of most young rural population in the sample villages.

Although the radio programs enjoyed less popularity than the TV's, there was not a significant difference between the farmers' orientation toward the radio and or the TV programs as specified by them: 76 (33.3%) never; 74 (32.5%) rarely; 57 (25%) occasionally; 17 (7.5%) when have nothing else to do and 4 (1.6%) most of the time. Due to the fact that the radio programmers rarely made a needs assessment among their audiences and there was not any feedback mechanism, the usefulness of rural radio programs was expressed to be at a low level. In this respect, 71 (31.1%) said never useful; 36 (15.8%) said rarely; 66 (28.9%) said occasionally; 45 (19.7%) expressed sometimes and 10 (4.4%) said most of the time. On the other hand, the farmers expressed more interest in their neighbors, and the elderly/elites, and demonstrated more orientation toward the informal channels of information (Table 1).

The analytical statistics (Chi Square) of the above table shows that the expected figure of Chi Square is lower than the calculated figure:

(2)

$$x_2^2 > x_i^2 (df = 8, \alpha = 0.01) \Rightarrow 38.8 > 21.67$$

The above analysis shows that statistically, the farmers' orientation toward their neighbors, the elderly and elites (local leaders) and to their children is not equal. This can be related meaningfully to the quality of the information acquired from different mentioned sources. The above table highlights the important role of investment on training local leaders as the

Table 1. The frequency of farmers' references to different sources of information (neighbors/relatives, the elderly/elites, children as information source), Isfahan Province, Iran, (2006, N= 228).

The Level	Neighbors and relatives		The elderly and elites		Children	
	Frequency	%	Frequency	%	Frequency	%
Never	43	18.9	29	12.7	63	27.6
Rarely	36	15.8	46	20.2	21	9.2
Occasional	93	40.8	66	28.9	67	29.4
Sometimes	47	20.6	61	26.8	56	9.2
Mostly	9	3.9	26	11.4	21	24.6
Total	228	100	228	100	228	100

most reliable information sources for farmers.

As noted below in Table 2, another prioritization of the information sources by the sample population was respectively: extension agents, agricultural practitioners, and finally the village teachers. Based on the comparison between the calculated Chi Square and the value in Table 2, ($\alpha = 1\%$ and $df = 8$) it can be concluded that there is a significant difference between the quality of information among the three groups mentioned in the above table and that the village teachers lack sufficient technical knowledge. This highlights the need for more investment on orientation training for the village teachers and the need for selection criteria in selecting them.

Among 228 respondents, 148 (64.8%) of the farmers demonstrated a positive view toward private extension service whereas 80 (32.2%) showed a negative perspective. The most important subject as perceived by farmers was pest control (60.8%), and 22% of the responses were allocated to the marketing issues during the harvest. On the

other hand, 15.9% of the responses were related to the farmers willingness to pay for advice in the cases of unprecedented or natural disasters, but the rest of respondents, 35.2%, reported themselves as being unwilling to pay for advice on any subject.

Prioritization of the farmers' information sources: Due to the fact that every individual farmer had parallel contacts with the six mentioned sources of information, it was not possible to prioritize the sources on the basis of the number of contacts with each source. Therefore, through statistical operation of the data in the questionnaire (about all farmers' information sources), and by determination of the mean figure for all variables, the amount of the farmers' references to the sources of information was determined (through a newly defined nominal (in Farsi: ESMI) variable that was, 'the different sources of information acquisition (with 5 value levels). Of the six information sources: printed media, children, radio/TV, neighbors, aged/well-known elites, and extension agents; most of

Table 2. Comparison of Usefulness of Information Received from Village Teachers, Extension Agents, and Agricultural Practitioners as perceived by Farmers, Isfahan Province, Iran (N= 228).

	Extension agent		Agricultural practitioners		The village teacher	
	Percent	Frequency	Percent	Frequency	Percent	Frequency
Never	20.6	47	21.9	50	25	57
Rarely	8.8	20	6.6	15	19.3	44
Occasional	11	25	7.5	17	28.1	64
Sometimes	34.2	78	33.3	76	22.4	51
Mostly	25.4	58	30.7	70	5.2	12
Total	100	228	100	228	100	228

**Table 3.** Correlations between the Independent Variables, and the Dependent Variable of Farmers' Tendency toward Information Acquisition, Isfahan Province, Iran, 2006 (N= 228)

Variables	Farming Land-size	Literacy level	Farm product	Usefulness of Rural radio programs'
Information acquisition	$R= 0.198^*$	$R= 0.293^*$	$R= 0.359^*$	$R= 0.484^*$
Tendency	$Sig= 0.003$	$Sig= 0.000$	$Sig= 0.000$	$Sig= 0.000$

the sample population had a higher preference for the last three as: neighbors, the elderly/elites, and the extension agents.

The Analytical Data

To determine correlation between the variables, the nonparametric Spearman correlation coefficient was used. In Table 3, the correlations between 'the farmers' tendency towards information acquisition' (i.e., the average value of farmers' references to the eight designated information sources) with the research independent variables are presented. As a result, there was a correlation (99% sig. level) between the independent variables, and the farmers' tendency toward information acquisition. Consequently, there was also a correlation (99%) between 'information acquisition tendency' and each of the formerly discussed information sources.

Table 4, demonstrates the significant correlations between different variables. Also according to Table 4, generally, the farmers' trust in one information source had a synergic effect on the other sources which by itself highlighted the systemic nature of knowledge processes in actual contexts. The extension can improve the authenticity and effectiveness of the farmers' local channels through critical engagement and interactive communication with farmers.

DISCUSSION

About 90% of the sample population, were the small farmers and more than 70% were

illiterates or with elementary education. Consequently, about 70% rejected reading books and newspapers. The data regarding correlations in Tables 3 and 4 correspond with the findings of Ajili, 2003; Farbod, 2003; Prathap *et al.*, 2006; Efa *et al.*, 2005. There was a correlation between 'the farmers' tendency towards information acquisition' (i.e., the average of farmers' references to the eight designated information sources) and the research independent variables such as: cultivated farm land/income, literacy levels, crops produced, and the trustworthiness of the information sources for the farmers themselves. It is concluded that the farmers' tendency towards information acquisition and the number of their references/visits to these sources is derived from their urgent needs and will be also affected by the quality/trustworthiness as well as accessibility of the sources themselves. It could be commented that the farmers referred primarily to their neighbors, relatives, the elderly and local elites, and the extension agents in their villages. This was similar to the findings of Ogunwale *et al.* (1988). As the secondary sources, they listened to or watched the rural radio and TV programs. The third source of information for farmers was their children. The farmers rarely referred to printed materials, such as newspaper, magazine and books (reading materials) due to low educational levels. Some of the interested farmers had complaints about inaccessibility of agricultural newspapers and magazines, some others could not afford to buy TV.

The noticeable fact is that even the farmers' interest in the first priority of resources was at the intermediate level,

Table 4. The Significant Correlations and the R Values for the research variables, Isfahan Province, Iran, 2006 (N= 228).

Independent variable	Dependent variable	R	Sig= (%)
Farming land size	Reading newspaper	0.146	95
Farming land size	Watching TV	0.165	99
Farming land size	Children as information	0.177	99
Farming land size	Farmers' satisfaction with the extension services	0.151	95
Farmers' satisfaction with the extension services	Farmers' tendency to information acquisition (&sources,)	0.383	99
The rural radio usefulness	Farmers' tendency to information acquisition	0.484	99
The rural radio usefulness	Reading	0.236	99
The rural radio usefulness	Watching T.V.	0.306	99
The rural radio usefulness	Listening to radio	0.59	99
The rural radio usefulness	Referring to children as information source	0.48	99
The rural radio usefulness	Visiting the elderly and elites	0.374	99
Educational level	Reading newspaper	0.482	99
Educational level	Reading book	0.49	99
Educational level	Watching TV	0.257	99
Educational level	Listening to radio	0.132	99
Farmers' visits of the local extension offices	Referring to children as information source	-0.079	99
Farmers' visits of the local extension offices	Visiting the elderly and elites	-0.092	99
Farmers' visits of the local extension offices	Watching TV	-0.113	99

mainly due to inappropriate information delivery systems, as well as the inter-dependent issues of poverty, poor product marketing, illiteracy, deficiency of national agricultural input distribution, and inequity in general. There was a positive significant correlation between the area of farming land and the farmers' tendency toward knowledge acquisition. It is concluded that small farmers do not have a tendency for information acquisition which confirms the claim of Chambers (1990) in the literature. This denotes that the lower the level of land ownership/income the lower the tendency of farmers to acquire certain technical knowledge.

It is also concluded that, the greater the farmers' income, the greater they express interest in technical information. Therefore, at least in Isfahan Province, Iran, small farmers owning an average of 2.8 hectares of land, as does the main farming population in Iran, do not benefit extension services in equal terms. It can be further commented

that the main focus of the extension organization within the Ministry of Agriculture, which has been on the progressive type of farmers in the last two decades, has neglected the majority of disadvantaged rural communities.

There was a positive correlation between the farmers' educational level and their tendency to acquire technical knowledge through reading newspapers, books and watching TV. Also, the results showed that there was a negative relationship between the farmers' educational level and their references to the elderly and well-known local elites. It shows that the most educated farmers seek for more authentic knowledge (Garforth, 2001). The average contact with the local extension offices by each of the farmers in the sample population was 6 to 7 contacts per year (there was a variation of the annual contacts ranging between 1 to 20 farmers). Based on the farmers' statements and the acquired data, 90% of the contacts were made only for purchasing agricultural



inputs (such as fertilizer, pesticides, and seeds) and only 11% of the farmers' contacts were for information acquisition.

Sixty percent (60%) of the respondents were unsatisfied with the local extension offices or showed very little satisfaction. The most dissatisfaction (out of the three: agricultural inputs, machinery and extension services) was directed towards the unfair distribution of agricultural inputs (52%), inefficiency of extension services (48%), and agricultural machineries (41%). Most of the farmers' contacts with extension agents were in relation to information regarding pest management and animal diseases. Among the farmers willing to pay for the extension services, 60.8% highlighted the need for pest management. On the basis of the data presented in Table 5, if the extension services attracted the farmers' attention, they would rarely refer to the elderly and elites in the village. This denotes the fact that extension did not satisfy the urgent needs of rural farmers for plants' diseases. As such, it may be concluded that the major problems of farmers were broader than the existing extension topics. These methods require that the roles and responsibilities of research/extension in general as well as information channels, and the local people be revitalized. In this research, the farming land size represents the amount of owned land by the farmers including their income. The farmers based their decisions of information sources primarily on trust in the source of information or trust in the deliverer of information, disregarding of the authenticity of knowledge they gained through the local channels.

Implications

Farmers' developed their networks among their neighbors and the other trusted channels through a naturally and well-established working relationship. Therefore, based on Maturana and Varella's theory, knowledge is communicated through deliberate intentions

and within an engaging process. Obviously as Fear *et al.* (2006) pointed out, there is a crucial difference between 'extending' 'out-reaching' and 'engaging through critical conversation'. One useful implication for research – extension - farmers' liaison is the development of good working relationships. In the ideal situation, all participants will develop these relationships and will begin to use each other to help identify and work through significant problems in some aspects of their work. These types of liaison benefits are only likely to come when groups of people 'team up' to try to solve both meaningful and important problems to all participants. It is important to expect that someone (such as the extension agent) will have to act as catalyst-facilitator. Conventional extension theory based on the research >extension> adoption model must deal with these critical issues: compatibility of communication channels, information/technology adaptability, contextual appropriateness, and the equal information flow within rural society.

As long as extension services are based on just-in-case and routine activities without any orientation towards future plans, they continue to stay in the margin of farmers' communication network. Moreover, if agricultural extension is to achieve a real impact on sustainable farm productivity and livelihoods, new methodologies and media for sharing and dissemination of information, will have to be developed or adopted. The main shift of agricultural extension should be made towards learning rather than teaching paradigm. This learning approach should incorporate new methodologies and approaches that are demand-driven and increase the real, interactive participation of different stakeholders (researchers, extension agents, local governmental and nongovernmental organizations, and local people themselves) at all levels in an extension delivery network. These methods require redefining the roles and responsibilities of research/extension and the information channels on the one hand, and local people themselves on the other.

Based on the observations in the period of this research, farmers created their own network to satisfy their urgent needs regarding market information, inputs' distribution, loan and credits. This research highlights the fact that although an urgent need for a flexible and participatory approach to 'extension' in developing rural communities exists; it is not yet fully implemented in many rural contexts. One of the main reasons is neglecting the systemic nature of the problem and focusing merely on one aspect such as 'increasing productivity'. For example, farmers in most developing countries suffer from the lack of supporting federations or unions to voice and empower them on the cases of unfair marketing affairs or to save their energies in the droughts by directing them toward more efficient solutions. As a result, complexity of the problem itself systemically affected their capability and prevented their active involvement in appropriate knowledge processes.

Recommendations

Due to the negative perspective of farmers toward fair distribution of subsidies, it is recommended that extension organizations differentiate their role and keep far from that of input delivery. It is also recommended that the extension system deal with those issues that have oppressed farmers and employ tactics and methods of empowering disadvantaged groups within rural communities. It is strongly recommended that extension facilitate formation and accessibility of several authentic information channels (such as farmers' unions, and alternative extension service) to satisfy the needs of a non-homogenous audience. It is also very important for agricultural extension to revitalize the farmers' networks and their local channels (as knowledge and information systems: KIS) and to make contributions to their development, as had been highlighted earlier in the works of Roling and Garforth (2001), and Bawden (1995). Extension is

potentially capable of improving its engagement through facilitating interactions between farmers and several related institutions with the aim of creating conversations among them and through their networks.

It is also suggested that to become capable of meeting the problems of rural development (which consist of a combination of issues such as environmental degradation, moral and ethical concerns, as well as economic, health, educational and the social welfare issues) the extension system improve its trust among farmers. Also, the extension along with other related organizations has to make substantial changes in its delivery system by working on flexible services such as the private advisory, and ICT facilities. Group-oriented communication method is encouraged to create good working relationships among farmers and other different stakeholders. Instead of focusing on the conventional model of knowledge transfer, extension can shift its focus toward upgrading the quality and effectiveness of the existing information channels, and to reinforce the synergic effect among these channels. It is suggested that the extension system provide a context for the flow of authentic knowledge through authentic media among farming communities on an equal basis.

Also, due to inefficiency of extrusion services, it is recommended that the agricultural colleges commit their major role and redirect their focus toward their original work on farms and with the farmers themselves. Finally extension needs to establish more trust among farmers, and to restructure and remodel itself into a flexible organization which is capable of setting new agendas through a number of relevant forms and options in a dynamic sense, with consideration of farmers' inter-personal communication networks.

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تعیین اولویت کانال‌های ارتباطی کشاورزان: مطالعه موردی استان اصفهان - ایران

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چکیده

تنوع، دسترسی و قابلیت اعتماد سه ویژگی عمده برای پذیرش منابع یا کانال‌های ارتباطی توسط کشاورزان در نواحی روستایی است. براساس فرضیه این پژوهش، نظام اطلاع‌رسانی ترویجی در بخش کشاورزی بسیار پایین تراز ماهیت تحول آمیز و نیازهای محسوس نظامهای زراعی موجود فعالیت دارد. هدف اصلی این پژوهش تعیین اولویت کانال‌ها و شبکه ارتباطی کشاورزان در ۱۹ شهرستان (استان اصفهان) واقع در فلات مرکزی ایران می‌باشد. پس از بازدیدهای اکتشافی صحرائی از روستاهای متعدد، پرسشنامه‌ای طراحی و برای تعیین روائی و پایایی آن پیش‌آزمون گردید (ضریب آلفای کرونباخ ۰/۸۲). جامعه آماری شامل تمامی کشاورزانی است که به طور معمول به مراکز خدمات روستایی (ترویجی) مراجعه می‌کنند. جامعه نمونه در برگرفته ۲۲۸ کشاورز است که از طریق نمونه‌گیری تصادفی طی دو مرحله انتخاب شدند. نتایج پژوهش بیانگر آن است که نظام ترویجی با نادیده گرفتن کانال‌های محلی ارتباطی کشاورزان به نیازهای واقعی آنها توجهی نداشته و نتوانسته در آنان حس اعتماد ایجاد نماید. از سوی دیگر اعتماد کشاورزان به یک کانال ارتباطی اثر هم‌افزایی بر پذیرش دیگر منابع اطلاع‌رسانی داشته است. این کانال‌ها یا منابع براساس نظریه کشاورزان به سه دسته عمده طبقه‌بندی شدند. منابع مکتوب یا نوشتاری نقش قابل توجهی نداشتند. همچنین ارتباط معنی‌داری بین متغیر وابسته «انتخاب کانال ارتباطی توسط کشاورزان» و متغیرهای مستقلی (مانند اندازه مزرعه و سطح سواد)، مشاهده گردید و سرانجام مراجعه کشاورزان به مراکز ترویج عمدتاً به منظور تامین نهاده‌های زراعی صورت گرفته و به منظور کسب اطلاعات ترویجی نبوده است.