

Agriculture Related Information Needs and their Fulfillment as Perceived by the Farmers in Bihar

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ABSTRACT

The present study was conducted in Muzaffarpur and Madhubani districts of Bihar that included a random sample of 120 farmers, 60 each from both the districts. The farmers of Muzaffarpur and Madhubani districts were having varied perceptions on information needs for most of the aspects in agriculture. However, farmers of both the districts perceived maximum information needs for their capacity building/ training on different aspects of their farming. The farmers in Muzaffarpur district attached importance to information needs in a decreasing order with agricultural inputs, agricultural production technologies, agricultural finance, livelihood diversification options, agricultural marketing and post-harvest management. While farmers of Madhubani district felt comparatively higher information needs for agricultural finance followed by agricultural production technologies, agricultural inputs, livelihood diversification options, agricultural marketing and post-harvest management. Farmers of Madhubani district have perceived five out of seven broad aspects of agriculture at a less than average level on a 4-point continuum scale that may be attributed to the facts of poor socio-demographic situation, agricultural backwardness as well as lack of adequate communication infrastructure in Madhubani district. The step wise multiple regression models revealed that mass media use, education, family size and household expenditure together have explained 53 per cent variation in farmers' perception on information needs. While, mass media use, education, annual income, family size and personal localite sources use together have determined 61 per cent variation in fulfillment of information needs with respect to various aspects of agriculture.

Keywords: Farmers' perceptions, Agricultural Information, Need Perception, Need Fulfillment

INTRODUCTION

Information is basic component in any development activity and is useful only if it is available and user has the access to it. Information use in agriculture has increasingly become important for effective decision making by the farming community (Galloway & Mochrie, 2005; Opara, 2008; Taragola & Van Lierde, 2010). Rapid technological advancements and changing agricultural systems have significantly highlighted the need for efficient transfer of advanced and real-time information and knowledge to farmers through various media (Birkhaeuser et al., 1991). There have been limited studies about the agricultural information systems and especially communication networks for farmers. Thus, there is a need for substantial information about these issues, including the mechanisms of the information systems, interactions between components in the system, and their activity. Specifically, the information requirements of farmers, the structure of the organizations involved in these activities are issues that need to be explored (Demiryurek, 2010). Even after continuous

efforts of extension organisations, 60 per cent of the farmers do not access any source of information for advanced agricultural technological information, resulting in a huge adoption gap (NSSO, 2005). Patterns of information demand are different now; users often require advice and interpretation of information rather than the information itself emphasizing the importance of information management in farmers (Prashanth, 2012). During last decade, large numbers of ICT innovations were deployed for facilitating agro advisory services for small holders in many developing countries, including India for overall development of agriculture and allied sector. However, only few projects were scaled-up and sustained. On this background, the present study was conducted to assess the agricultural related information needs of the farmers and their fulfillment in selected regions of Bihar.

METHODOLOGY

The state of Bihar was purposively selected for present study because of wide and uneven distribution of

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information sources across the districts in the state. The Muzaffarpur and Madhubani districts were intentionally selected. The district Muzaffarpur has high and frequent access to almost all types of information sources whereas Madhubani being very remotely located has limited access to the resources. This difference creates the basis of comparison between these districts in particular and whole of Bihar in general. Based on random sampling procedure, two blocks from each of two districts, one village from each of the four selected blocks and 30 farmers from each of the four selected villages were chosen as respondents of present study that covered a total of 120 farmers as respondents.

Needs related to agricultural inputs considered needs with respect to labours, seeds, fertilisers, irrigation, plant protection and implements & equipments. Agricultural finance needs concerned to loans/ credits, subsidies and insurance. Needs of the farmers related to agricultural production included information on soil, weather and climate, land preparation, sowing and transplantation, weed management, nutrient management, pest and disease management and harvesting. Farmers' needs with respect to post-harvest management concerned with processing, value addition, storing, grading and packaging. Market related information needs were pertaining to market survey, marketing channels and marketing prices. Information needs for livelihood diversification of farmers took into consideration of information related to agricultural diversification, crop diversification (high value crops), integrated farming system, agri-entrepreneurship, income generation activities, etc. Needs for capacity building or training was also evaluated on the basis of farmers perceptions with respect to i) efficient use of agricultural inputs like labours, seeds, fertilisers, irrigation, plant protection and implements & equipments, ii) agricultural finance related issues such as Kisan Credit Card (KCC), crop insurance and subsidies, iii) crop production technology and management aspects viz. soil health management, land preparation, sowing and transplantation, nutrient management, weed management, pest and disease management and techniques and methods for harvesting, iv) post harvest activities like processing, value addition, storing, grading and packaging, v) marketing aspects, and vi) livelihood diversification options. Assessment of the agriculture related needs and needs for capacity building /training of the farmers was done on the basis of needs perceived and needs fulfilled, both on a 4-point continuum scale. The perceived needs related to farming was scored as rare (1), sometimes (2), often (3) and most often (4); while the needs fulfilled was scored as rarely (1), somewhat/partially (2), almost (3) and full extent (4).

RESULTS AND DISCUSSION

The farmers use to feel the needs of information and communication support from the agricultural extension systems for their farming that includes the various types of needs related to agricultural inputs, agricultural finance, agricultural production, post-harvest management, marketing of agricultural produce, diversification of livelihood options, capacity building or training on different aspects of farming, etc. Therefore, present study was aimed to assess such needs of the farmers and the extent of fulfillment of those needs based on the perceptions of a random sample of 60 farmers each in Muzaffarpur and Madhubani district of Bihar.

Table 1: Information needs related to agricultural inputs and extent of their fulfillment as perceived by the farmers in Muzaffarpur and Madhubani districts of Bihar

Information needs related to agricultural inputs	Mean perception score (SD)			
	Muzaffarpur district (n=60)		Madhubani district (n=60)	
	Need perceived	Need fulfilled	Need perceived	Need fulfilled
Labours	3.97 (0.18)	3.97 (0.18)	1.00 (0.00)	1.00 (0.00)
Seeds	3.93 (0.25)	3.93 (0.25)	2.00 (0.00)	2.00 (0.00)
Fertilizers	3.75 (0.44)	3.75 (0.44)	2.63 (0.49)	2.63 (0.49)
Irrigation	3.32 (0.47)	3.32 (0.47)	2.97 (0.18)	2.97 (0.18)
Plant protection materials	3.63 (0.49)	3.63 (0.49)	2.20 (0.80)	2.20 (0.80)
Implements and equipment	4.00 (0.00)	4.00 (0.00)	3.00 (0.00)	3.00 (0.00)

Note: SD stands for standard deviation value; minimum and maximum possible scores are 1 and 4, respectively

It is evident from the Table 1 that farmers in Muzaffarpur and Madhubani districts varied in their perceptions towards the information and communication needs related to various agricultural inputs measured on a 4-point continuum scale. In Muzaffarpur district, perception of the farmers with respect to information needs on implements and equipments was maximum (mean perception score of 4.0) followed by labours, seeds, fertilizers, plant protection materials and irrigation. The farmers' perceptions was relatively more varied as observed from higher standard deviation value in case of information needs on plant protection materials (0.49) followed by irrigation, fertilizers, seeds and labours. The need perceptions of all sampled farmers were same in case of farm machinery (implements and equipments) leading to standard deviation value 0. All the farmers opined that their perceived needs for all aforesaid agricultural inputs fully fulfilled from the existing information and communication sources in the district.

Farmers in Madhubani district perceived the information and communication needs with respect to implements and equipments most with mean perception

score of 3 followed irrigation, fertilizers, plant protection materials, seeds and labours. The farmers varied in their need perceptions more for the plant protection materials with relatively higher standard deviation value (0.80), while perceptions were similar with respect to three inputs with standard deviation value 0 (implements and equipments, seeds and labours). According to sampled farmers' opinions all their perceived needs were fulfilled (Table 1).

It is evident that farmers in Muzaffarpur district perceived the information and communication needs related to various agricultural inputs relatively more as compared to the farmers in Madhubani district. It is worth mentioning here that farmers' need perceptions for three important agricultural inputs like plant protection, seeds and labours found to be less than average level (<2.5) on a 4-point scale, which may be attributed to the subsistence farming scenario in the district.

Table 2: Information needs related to agricultural finance and extent of their fulfillment as perceived by the farmers in Muzaffarpur and Madhubani districts of Bihar

Information needs related to agricultural finance	Mean perception score (SD)			
	Muzaffarpur district (n=60)		Madhubani district (n=60)	
	Need perceived	Need fulfilled	Need perceived	Need fulfilled
Loans/ Credit	2.53 (1.03)	1.60 (0.49)	3.28 (0.94)	1.38 (0.49)
Subsidies	3.70 (0.59)	1.23 (0.43)	4.00 (0.00)	1.00 (0.00)
Insurance	3.00 (0.86)	1.63 (0.49)	4.00 (0.00)	1.00 (0.00)

Note: SD stands for standard deviation value; minimum and maximum possible scores are 1 and 4, respectively

As far as information needs related to agricultural finance is concerned, farmers of both Muzaffarpur and Madhubani districts perceived the needs related to insurance highly with mean perception score of 3.00 and 4.00, respectively, where the farmers in Muzaffarpur district varied in their perceptions (standard deviation of 0.86) but farmers in Madhubani district perceived similarly (Table 2). Farmers of Madhubani district felt the information on subsidies equally important to them (mean perception score of 4.00). The farmers of both the districts also expressed their needs with respect to information on loans/ credit available for farming but with diverse opinions as the standard deviation values observed to be quite high. It is interesting to note here that farmers of Madhubani district felt relatively more information and communication needs related to all three aspect of agricultural finance as compared to that of the farmers in Muzaffarpur district. This may be attributed to the fact lo relatively poor socio-demographic attributes of the farmers of Madhubani district practicing subsistence agriculture. They expressed their needs for more financial

support for their agricultural practices. Without required financial condition, farmers often sacrifice their felt needs on other aspects of farming.

Table 3: Information needs related to agricultural production and extent of their fulfillment as perceived by the farmers in Muzaffarpur and Madhubani districts of Bihar

Information needs related to agricultural production	Mean perception score (SD)			
	Muzaffarpur district (n=60)		Madhubani district (n=60)	
	Need perceived	Need fulfilled	Need perceived	Need fulfilled
Soil testing	3.78 (0.52)	1.00 (0.00)	4.00 (0.00)	1.00 (0.00)
Weather and climate	2.23 (0.50)	2.13 (0.43)	2.00 (0.00)	2.00 (0.00)
Land preparation	3.97 (0.18)	3.97 (0.18)	3.00 (0.00)	3.00 (0.00)
Sowing and transplantation	3.95 (0.22)	3.95 (0.22)	3.00 (0.00)	3.00 (0.00)
Weed management	3.38 (0.49)	3.38 (0.49)	3.00 (0.00)	3.00 (0.00)
Nutrient management	3.90 (0.30)	3.90 (0.30)	1.98 (0.13)	1.98 (0.13)
Pest and disease management	3.30 (0.46)	3.30 (0.46)	3.00 (0.00)	3.00 (0.00)
Harvesting	1.42 (0.50)	1.42 (0.50)	1.00 (0.00)	1.00 (0.00)

Note: SD stands for standard deviation value; minimum and maximum possible scores are 1 and 4, respectively

Information needs related to eight aspects of agricultural production and extent of their fulfillment as perceived by the farmers in Muzaffarpur and Madhubani districts of Bihar are presented in Table 3. According to the perceptions of sampled farmers (60) in Muzaffarpur district, the most needed aspect was information on land preparation (mean perception score 3.97) followed by sowing and transplanting, nutrient management and soil testing, in all of which mean perception score was >3.50 on a 4-point continuum scale. Other aspects like weed management and pest and disease management were felt important for having related information on those. However, it is quite surprising that information needs on harvesting and weather were perceived lowly with mean perception score of 2.23 and 1.42, respectively. Perceived needs are completely fulfilled in all the aspects except in case of soil testing (mean need fulfillment score 1.00 against need perceived score of 3.78) and weather information (mean need fulfillment score 2.13 against need perceived score of 2.23).

In Madhubani district, a sample of 60 farmers felt the information needs on soil testing maximum and equally for four aspects of agricultural production such as land preparation, sowing and transplantation, weed management and pest and disease management with mean perception score of 3.00 in each. Contrastingly, mean perception scores were less than average (<2.50) in case of weather information, nutrient management and harvesting. The diversity in farmers responses were more among the farmers of Muzaffarpur district while farmers of Madhubani district were more unified in expression of

their needs as evident from standard deviation values. Farmers expressed complete fulfillment of the needs on all aspect except soil testing, for which farmers of Madhubani district attached highest importance and more as compared to farmers of Muzaffarpur district. However, farmers of Muzaffarpur district perceived the needs on other seven aspects of farming comparatively more than the farmers of Madhubani district.

Post-harvest management of agricultural produce was assessed on different aspects such as processing, value addition, storing, grading and packaging. It is quite important to note that none of the aspects of post-harvest management perceived highly (mean perception scores < 2.5) by the famers of both Muzaffarpur and Madhubani districts in Bihar with respect to their information and communication needs. Among the five aspects, storing is felt relatively highly needed by the farmers in Muzaffarpur district. Farmers' perceptions were more diversified in Muzaffarpur district and completely similar in Madhubani district as indicated through standard deviation values.

All the perceived needs were completely fulfilled as opined by the farmers in both districts. The low perception of felt needs of the farmers on post-harvest management reiterates the facts of farmers' unwillingness and ignorance on value addition, quality control, etc of agricultural produce and preference of marketing the farm produce as quickly as possible after the harvest. However, there is a paradigm shift in Indian agriculture especially in new economic era, which should influence the farmers to change their mindset from traditional agriculture towards agri-business. In this context, post-harvest management of agricultural produce would be of paramount importance. Although perceived needs were found at less than average level, but comparatively more in case of farmers in Muzaffarpur district as compared to Madhubani district in Bihar.

Table 4: Information needs related to post-harvest management and extent of their fulfillment as perceived by the farmers in Muzaffarpur and Madhubani districts of Bihar

Information needs related to post-harvest management	Mean perception score (SD)			
	Muzaffarpur district (n=60)		Madhubani district (n=60)	
	Need perceived	Need fulfilled	Need perceived	Need fulfilled
Processing	1.35 (0.55)	1.35 (0.55)	1 (0)	1 (0)
Value addition	1.47 (0.65)	1.47 (0.65)	1 (0)	1 (0)
Storing	2.15 (0.94)	2.15 (0.94)	1 (0)	1 (0)
Grading	1.47 (0.62)	1.47 (0.62)	1 (0)	1 (0)
Packaging	1.77 (0.87)	1.77 (0.87)	1 (0)	1 (0)

Note: SD stands for standard deviation value; minimum and maximum possible scores are 1 and 4, respectively

The farmers of Muzaffarpur as well as Madhubani district perceived the needs for information on marketing prices of agricultural produces/ commodities with mean need perception score of 3.42 and 3.00, respectively (Table 5). Farmers of both districts also felt information needs on marketing channels and market survey with mean perception score less than average (<2.5) on 4-point continuum scale. Farmers in Muzaffarpur district responded differently while those of Madhubani district in a similar manner as observed from standard deviation values. The fulfillment of perceived needs was also mentioned by the farmers. Overall, it is evident that the farmers of Madhubani district perceived the information needs on marketing aspects comparatively lowly. This finding clearly indicates the necessity of market led extension approach instead of production led extension approach. Most of the initiatives in the field on information and communication technologies (ICT) have focused on the providing information on marketing of agricultural produce; however, lower need perception of the farmers underline the facts of lower uses of ICTs by many of the farmers. Still, majority of the farming communities follow the age-old practice of marketing the produce through middlemen at a lower farm gate price. In this context capacity building of the farmers is inevitable in time to come for the extension organisations working in the field of agriculture.

Table 5: Information needs related to marketing and extent of their fulfillment as perceived by the farmers in Muzaffarpur and Madhubani districts of Bihar

Information needs related to marketing	Mean perception score (SD)			
	Muzaffarpur district (n=60)		Madhubani district (n=60)	
	Need perceived	Need fulfilled	Need perceived	Need fulfilled
Market survey	1.30 (0.46)	1.30 (0.46)	1 (0)	1 (0)
Marketing channels	1.58 (0.70)	1.58 (0.70)	1 (0)	1 (0)
Market prices	3.42 (0.50)	3.42 (0.50)	3 (0)	3 (0)

Note: SD stands for standard deviation value; minimum and maximum possible scores are 1 and 4, respectively

The farmers perceive information and communication needs to diversify their livelihoods through various options *viz.* agricultural diversification, crop diversification by growing high value crops, integrated farming, agri-entrepreneurship and income generating activities (Table 6). In Muzaffarpur district, farmers mostly perceive the information needs on income generating activities (mean perception score 3.78), followed by agri-entrepreneurship and crop diversification. However, the need perception is less in case of agricultural diversification and integrated farming that may be attributed to the fact of predominance of crop farming as compared to other agricultural enterprises like

livestock farming, fish farming, etc. Farmers have given diversified perceptions but most of the needs were fulfilled completely except that of income generating activities.

The farmers in Madhubani district also perceived the needs on income generating activities highly with mean need perception score 4.0 followed by crop diversification (2.57). Other aspects of livelihood diversification were perceived at below average level in decreasing order for agri-entrepreneurship, agricultural diversification and integrated farming. Needs were not completely fulfilled for income generating activities and agri-entrepreneurship as opined by the farmers in Madhubani district. The variations in farmers' opinions are observed from the standard deviation values Table 6.

Table 6: Information needs related to livelihood diversification and extent of their fulfillment as perceived by the farmers in Muzaffarpur and Madhubani districts of Bihar

Information needs related to livelihood diversification	Mean perception score (SD)			
	Muzaffarpur district (n=60)		Madhubani district (n=60)	
	Need perceived	Need fulfilled	Need perceived	Need fulfilled
Agricultural diversification	1.83 (0.91)	1.83 (0.91)	2.23 (0.93)	2.23 (0.93)
Crop diversification (high value crops)	2.68 (0.65)	2.68 (0.65)	2.57 (0.83)	2.57 (0.83)
Integrated farming	1.77 (0.50)	1.77 (0.50)	1.60 (0.67)	1.60 (0.67)
Agri-entrepreneurship	3.20 (0.92)	1.47 (0.50)	2.42 (1.03)	2.07 (0.94)
Income generating activities	3.78 (0.49)	1.18 (0.39)	4.00 (0.00)	1.00 (0.00)

Note: SD stands for standard deviation value; minimum and maximum possible scores are 1 and 4, respectively

The farmers in Madhubani district perceived the needs on income generating activities and agricultural diversification more than the farmers of Muzaffarpur district, who perceived rest three aspects of livelihood diversification comparatively highly. It may be due to the poor socio-demographic as well as subsistence agricultural scenario in Madhubani district as compared to Muzaffarpur district.

A perusal of the Table 7 indicates that farmers of both Muzaffarpur and Madhubani districts perceived the needs for information and communication on capacity building/training on different aspects of agriculture at a maximum level (mean need perception score 4.0), which were fulfilled to minimum level (mean perception score 1.0) leaving a gap in the capacity building of farmers with respect to efficient use of agricultural inputs, agricultural finance related issues, crop production technology and management aspects, post-harvest activities, marketing aspects and livelihood diversification options.

Table 7: Information needs related to capacity building / training and extent of their fulfillment as perceived by the farmers in Muzaffarpur and Madhubani districts of Bihar

Information needs related to capacity building / training	Mean perception score (SD)			
	Muzaffarpur district (n=60)		Madhubani district (n=60)	
	Need perceived	Need fulfilled	Need perceived	Need fulfilled
Training on efficient use of agricultural inputs	4 (0.00)	1 (0.00)	4 (0.00)	1 (0.00)
Training on agricultural finance related issues	4 (0.00)	1 (0.00)	4 (0.00)	1 (0.00)
Training on crop production technology and management aspects	4 (0.00)	1 (0.00)	4 (0.00)	1 (0.00)
Training on post-harvest activities	4 (0.00)	1 (0.00)	4 (0.00)	1 (0.00)
Training on marketing aspects	4 (0.00)	1 (0.00)	4 (0.00)	1 (0.00)
Training on livelihood diversification options	4 (0.00)	1 (0.00)	4 (0.00)	1 (0.00)

Note: SD stands for standard deviation value; minimum and maximum possible scores are 1 and 4, respectively

The farmers of Muzaffarpur and Madhubani districts were having varied perceptions on information and communication needs for most of the aspects in agriculture as depicted in Fig. 1. However, farmers of both the districts perceived maximum information and communication needs for their capacity building/ training on different aspects of their farming.

The farmers in Muzaffarpur district attached importance to information needs in a decreasing order with agricultural inputs, agricultural production technologies, agricultural finance, livelihood diversification options, agricultural marketing and post-harvest management. While farmers of Madhubani district felt comparatively higher information and communication needs for agricultural finance followed by agricultural production technologies, agricultural inputs, livelihood diversification options, agricultural marketing and post-harvest management.

It is a concern that farmers of both districts perceived the information needs related to agricultural marketing and post-harvest management at less than average level. Farmers of Madhubani district have perceived five out of seven broad aspects of agriculture considered in present study at a less than average level on a 4-point continuum scale. That may be attributed to the facts of poor socio-demographic situation, agricultural backwardness as well as lack of adequate information and communication infrastructure in Madhubani district.

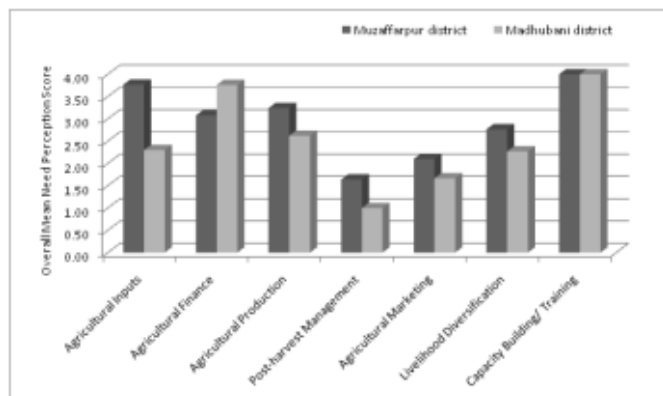


Fig. 1 Differential perceptions of farmers on information and communication needs with respect to various aspects of agriculture in Muzaffarpur and Madhubani districts of Bihar

Finding of present study revealing the lower perceptions of the farmers related to needs for different aspects of agriculture in Madhubani district reiterates the paradox with information needs lies in the fact that, as Belkin et al. (1982) noted, an information need is not a need in itself but originates as an output of a more basic need. Hence, a consideration of human basic needs is necessary before examining the genesis of information needs. Derr (1983) also argued that information needs emerge as the result of a person's willingness to achieve an information purpose. Lioutas (2014) reported that information needs are derivative needs, which originate from primary (physiological or psychological) needs.

Present study reports the farmers need perceptions mainly dominating with respect to capacity building, production, inputs and financial aspects while marketing and post-harvest management aspects were perceived at a below average level. This finding is similar to the NSSO (2005) report which mentions about 40 per cent of households access information on agricultural practices in India. In India, most farmers use information on production-related activities such as improved seed, fertilizer application, and crop protection, while information on harvesting and marketing is being used by only 8 per cent of households. The dominance of production-related information does not mean that farmers do not require information on agricultural processing, prices, and market linkages; rather, it may be due to the supply constraints of agricultural extension services. It is reported that information on certifying agencies and potential economic benefit of GAP (Good Agricultural Practices) ranked first as perceived information need of the farmers while use of chemicals and sources of credit ranked second and third, respectively. The other stakeholders perceived selection of variety to be the most vital information to be disseminated to farmers followed by procedure of certification and criteria of GAP.

Thus prevalence of production led agricultural extension system has a bearing on the felt needs of the farmers that demand a paradigm shift toward market led agricultural context in the new economic era of reforms to keep the Indian agriculture competitive at global level.

Correlation between the attributes of farmers and information needs perception and extent of needs fulfillment were worked out (Table 8). It is observed that farmers' attributes like caste, education, occupation, household status, economic status, wealth ranking, land holding, assets holding, annual income, annual household expenditure, mass media use, personal cosmopolite sources use, personal localite sources use were significantly and positively correlated with farmers' information need perceptions related to agriculture. Except occupation all the aforementioned attributes also showed positive and significant association with extent of farmers' needs fulfillment as well as perceived communication sources effectiveness.

Table 8: Correlation between attributes of the farmers, information needs and effectiveness of the communication sources in Muzaffarpur and Madhubani districts of Bihar

Attributes of farmers	Correlation Coefficient (r)	
	Information needs perception	Information needs fulfillment
Age	-0.025	0.010
Caste	0.245**	0.249**
Education	0.335**	0.408**
Family size	-0.077	-0.047
No. of earning persons in family	0.128	0.136
Occupation	0.182*	0.139
Household status	0.211*	0.274**
Economic status	0.453**	0.509**
Wealth ranking	0.462**	0.533**
Land holding	0.315**	0.332**
Assets holding	0.367**	0.444**
Annual Income	0.539**	0.603**
Average household expenditure	0.504**	0.559**
Mass media use	0.626**	0.692**
Personal cosmopolite sources use	0.385**	0.476**
Personal localite sources use	0.320**	0.378**

* significant at 5% level; ** significant at 1% level; n=120

To delineate the factors significantly associating as well as explaining or determining the variations in farmers' information needs perception, extent of needs fulfillment and farmers' perceptions on effectiveness of communication sources, step wise multiple regression analyses carried out considering each of the above variables as dependent variable and attributes of the farmers as independent variables.

It is evident from Table 9 that mass media use, education, family size and household expenditure together have explained 53 per cent ($R^2=0.526$) variation in farmers perception on information needs with respect

to various aspect of agriculture. The regression coefficients (beta coefficients) of mass media use, education and household expenditure were having significant and positive functional relationship; while that of family size was having significant and negative functional relationship. Therefore, farmers' information needs perceptions would increase with the increase of mass media use, level of education and household expenditure and smaller family size.

Table 9: Step wise multiple regression between attributes of the farmers (independent variables) and information needs perceptions of the farmers (dependent variable) in Muzzafarpur and Madhubani districts of Bihar

Variables	Beta Coefficient	Standard Error	't' value	'F' value	R ²
Step I					
Constant	2.275	0.040	56.241**	76.127**	0.392
Mass media use	0.626	0.010	8.725**		
Step II					
Constant	2.386	0.047	51.130**	51.649**	0.469
Mass media use	0.997	0.015	8.860**		
Education	0.463	0.022	4.112*		
Step III					
Constant	2.458	0.057	43.358**	37.076**	0.490
Mass media use	1.001	0.015	9.032**		
Education	0.443	0.022	3.986**		
Family size	-0.145	0.005	-2.164*		
Step IV					
Constant	2.503	0.057	44.022**	31.911**	0.526
Mass media use	0.725	0.019	5.124**		
Education	0.349	0.022	3.117*		
Family size	-0.294	0.006	-3.587**		
Household expenditure	0.330	0.000	2.978*		

* significant at 5% level; ** significant at 1% level; n=120

The step wise multiple regression models revealed that mass media use, education, annual income, family size and personal localite sources use together have determined 61 per cent (R²=0.608) variation in fulfillment of information needs with respect to various aspect of agriculture (Table 10). Regression coefficients (beta coefficients) of mass media use, education, annual income and personal localite sources use were having significant and positive functional relationship; while that of family size was having significant and negative functional relationship. Therefore, fulfillment of information needs would increase with the increase of mass media use, education, annual income and personal localite sources use and smallness of family.

Table 10: Step wise multiple regression between attributes of the farmers (independent variables) and information needs fulfillment (dependent variable) in Muzzafarpur and Madhubani districts of Bihar

Variables	Beta Coefficient	Standard Error	't' value	'F' value	R ²
Step I					
Constant	1.759	0.040	41.126**	108.406**	0.479
Mass media use	0.692	0.010	10.412**		
Step II					
Constant	1.871	0.047	37.645**	68.166**	0.538
Mass media use	1.018	0.015	9.701**		
Education	0.407	0.022	3.877**		

Step III					
Constant	1.873	0.057	38.647**	50.185**	0.565
Mass media use	0.849	0.015	7.060**		
Education	0.384	0.022	3.746**		
Annual income	0.223	0.005	2.666*		
Step IV					
Constant	1.973	0.057	33.580**	41.968**	0.593
Mass media use	0.810	0.019	6.889**		
Education	0.355	0.022	3.542*		
Annual income	0.281	0.006	3.357**		
Family size	-0.177	0.000	-2.846*		
Step V					
Constant	1.827		19.874**	35.346**	0.608
Mass media use	0.756		6.352**		
Education	0.344		3.479**		
Annual income	0.273		3.308**		
Family size	-0.202		-3.237**		
Personal localite sources use	0.135		2.048*		

* significant at 5% level; ** significant at 1% level; n=120

CONCLUSION

The present study revealed information needs of the farmers representing from contrasting socio demographic situations in the state of Bihar. It is worth mentioning that the information needs were mostly fulfilled; however need perception of farmers of a less progressive district (Madhubani) was relatively low as compared to resourceful farmers from a progressive district (Muzaffarpur). Thus socio demography influences the perception of the farmers. Similarly, use of communication sources also depends on the availability and accessibility, especially in the context of mass media sources of information, which is used to better in case of farmers representing from a district with better infrastructure. This is quite natural because higher socio-economic status of a farmer is characterized by higher education, larger farm size, higher income, etc., which determines the source of information preferred by farmers. Remote location used to limit the reach of communication sources to the farmers.

The poor farmers have indeed very limited access to ICTs and they mostly rely on information from informal networks of personal localite sources, which do not adequately satisfy their information needs. Moreover, it remains very difficult for people with low levels of education and income to reap the full benefits of ICTs. Therefore, following the findings of present study, the emphasis is to be given for improving education and income of the farmers leading to improved use of mass media sources of information to bring about overall improvement in the perception of agricultural information needs and their fulfillment.

Paper received on : January 09, 2017

Accepted on : January 17, 2017

REFERENCES

- Belkin, N. J., Oddy, R. N. & Brooks, H. M. 1982. ASK for information retrieval: Background and theory (Part I). *Journal of Documentation*, 38(2), 61–71.
- Birkhaeuser, D., Evenson, R. E., & Feder, G. 1991. The economic impact of agricultural extension: A review. *Economic Development and Cultural Change*, 39, 607–650.
- Demiryürek, K. 2010. Information systems and communication networks for agriculture and rural people. *Agric. Econ. – Czech*, 56(5), 209–214.
- Derr, R. L. 1983. A conceptual analysis of information need. *Information Processing & Management*, 19(5), 273–278.
- Galloway, L., & Mochrie, R. 2005. The use of ICT in rural firms: A policy-orientated literature review. *The Journal of Policy, Regulation and Strategy for Telecommunications*, 7, 33–46.
- Lioutas, E.D. 2014. Food consumer information behavior: Need arousal, seeking behavior, and information use. *Journal of Agricultural & Food Information*, 15: (2), 81-108.
- National Sample Survey Organization (NSSO). 2005. Situation assessment survey of farmers: *Access to modern technology for farming* (Report No. 499[59/33/2]), National Sample Survey Organization, Ministry of Statistics and Program Implementation, Government of India. New Delhi.
- Opara, U.N. 2008. Agricultural information sources used by farmers in Imo State, Nigeria. *Information Development*, 24(4), 289–295.
- Prashanth P., Kumar N.K., Reddy M.J.M. 2012. Usage of personal-localite channels for acquiring the agriculture information by the tribal farmers. *Indian Research Journal of Extension Education*, Special Issue (Volume II), 107-110.
- Taragola, N. M., & Van Lierde, D. F. 2010. Factors affecting the internet behaviour of horticultural growers in Flanders, Belgium. *Computers and Electronics in Agriculture*, 70, 369–379.