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Farmers Information Needs on Organic Vegetable Farming in Two Agro-climatic Zones of Assam

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Authors' contributions

This work was carried out in collaboration among all authors. Author SB designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors PKD and SDD managed the analyses of the study. Authors IB and DS managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Most farmers are not aware of the various aspects of organic farming of vegetables despite the fact that the state of Assam is "naturally organic by default". Besides having tremendous potential to grow crops organically, organic farming is yet to taste success in the state of Assam. Information is currently seen by many as the main limiting factor to growth in the organic sector in the state. Hence, there is need to equip the farmers with the necessary information related to the organic cultivation and certification process with respect to important vegetable crops The study was undertaken in North Bank Plains Zone and Central Brahmaputra Valley Zone of Assam, primarily to understand farmers' information needs in relation to organic vegetable production. The study also identified the factors influencing the information needs and constraints as perceived by the farmers in meeting their information needs. A multi-stage, purposive cum proportionate random sampling design was adopted for the study in order to select 120 respondents. The study revealed that majority of the respondents (95.83%) expressed that they need information on inspection and

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certification process on organic vegetable production, followed by the need for information on soil treatment for organic vegetable production, and on the variety/planting material suitable for organic vegetable production. Findings of correlation analysis indicated that among the 10 independent variables, 6 variables showed significant and positive relationship and 4 variables showed significant and negative relationship with the information needs of farmers in relation to organic vegetable production at 0.01 level of probability. Findings revealed that "**l**ack of knowledge about inspection and certification process of organic vegetable production" was the major constraint faced by the respondents with the highest score (PCI-296) and hence was ranked 1st followed by "Lack of knowledge about market linkages' (PCI-280) and 'Lack of access to credit facilities' (PCI-278) which were ranked 2nd and 3rd important constraints faced by them in meeting their information needs. It implies that NGOs, KVKs, various development workers and extension agencies should put more efforts to modify and channel the information needs of organic vegetable farmers in the desirable direction through their preferred medium.

Keywords: Information needs; organic vegetable; PCI; Assam.

1. INTRODUCTION

Information is an essential and basic need of mankind. Information is required for problem-solving and decision making. Information is a random collection of data until it is used or manipulated or interpreted by someone to serve a certain purpose. For anything and everything, information is required. Information can be obtained or retrieved from a variety of sources. [1]. Availability of information in agriculture is necessary towards increasing production, improving marketing, and distribution of agricultural produce. Information is also regarded as an important input in agriculture. The economics of most developing countries are agriculture-based and hence availability of information can play a vital role in the improvement of this section [2]. The information usually provided is reported to be focused mainly on students, researchers, policymakers, and those who manage policy decisions with little or no consideration to the information needs of farmers who are the targeted beneficiaries of the policy decisions [3]. The Indian agricultural sector accounts for 13.5% of India's gross domestic product (GDP) and employs about 54.6% of the country's workforce [4]. Information is a powerful tool in addressing the agricultural needs of the farmers and if it is utilized properly it could change a nation's economy [5]. In agriculture, relevant, accurate, and timely information helps farmers to make the right decision towards its sustainable growth. The use of relevant information in the agricultural sector is enhancing farm productivity in ample of ways. Information on weather trends, cropping pattern, package of cultivation, integrated management of pests and diseases, market linkages, etc. helps the farmer to make correct decisions about what crops to grow, when to grow, how to grow, where and when to sell their produce.

The concept of organic farming is not new as it was the only way of agriculture of ancient people Due to burgeoning population, agricultural production should not only be stabilized but also increased by taking a sustainable approach. Green revolution in the 1960s though helped India to be a food exporter; it is now sustained with diminishing return of falling dividends [6]. More and more conventional farmers opting out of farming and the mouths to be fed are exponentially increasing day by day. Therefore it has become crucial that more individuals should take up farming that avoids the use of synthetically produced fertilizers, pesticides, growth regulators and livestock additives. It is the ecological production management system that promotes and enhances biodiversity, biological cycles and biological activity of the soil. Assam is home to some niche crops that include Assam lemon, *joha* rice, passion fruits, ginger, turmeric and *bhoot jolokia* which have high market demands. Assam is "naturally organic by default" which can be gauged from the extremely low consumption of chemical fertilizers in the region. The state uses 0.040 kg of chemical pesticides per hectare against the all-India average of 0.448 kg. Farmers in these areas often use organic manure obtained either from own farm or in their locality. Presently, Assam has an area of about 28234.66 ha under organic certification [6] and ranks third position among the northeastern states under organic farming after Sikkim and Meghalaya. Therefore Assam has potential area for production and supplier of organic products for local and global markets [7]. Assam tea which is famous worldwide is grown organically in most parts of the state.

Besides having tremendous potential to grow crops organically, organic farming have not been fully explored in the state of Assam. Most farmers are not aware of the various aspects of organic cultivation of various crops. Scarcity of information on organic farming among farmers hinders adoption of organic farming in the state. Hence, there is need to equip the farmers with the necessary information related to the organic cultivation and certification process with respect to important crops. It is against this backdrop that the present study was undertaken to understand farmers' information needs in relation to organic vegetable production, identify the factors influencing the information needs and identify the constraints as perceived by the farmers in meeting their information needs.

2. METHODOLOGY

The study was conducted in the state of Assam, one of the state in North-Eastern region of India, lying between 24° to 28°18' north latitudes and 89°50' to 97°4′ east longitude. Assam have been broadly delineated into six agro-climatic zones from which the North Bank Plains Zone and Central Brahmaputra Valley Zone of Assam were selected purposively for the study. Sonitpur district located in North Bank Plains Zone and Nagaon on the Central Brahmaputra Valley Zone were selected randomly for the study. Sonitpur district consists of two sub-divisions, *viz.,* Tezpur and Dhekiajuli and Nagaon district consists of two sub-divisions, namely Nagaon and Kaliabor. Out of these, one sub-division from each of the two districts, *viz.,* Tezpur from Sonitpur district and Nagaon from Nagaon district were selected at random for the present investigation. From each of the selected subdivisions four numbers of villages were selected at random. Thus, a total of eight villages, namely, Nonoideori village, Gomariati village, Kothiatali Lalung Village, and Deodhar Pakhimoria village from Nagaon sub-division were selected and likewise, Noghoria village, Araliloga village, Bharalisaporia village, and Murhadol village were selected at random from Tezpur sub-division. A list of farmers of each of the selected villages was prepared with the help of the concerned Agricultural Extension Assistants (AEAs). Then from each village, farmers were selected by adopting proportionate-cum-random sampling method (probability proportionate to size) to obtain a sample size of 120 respondents. The data for the study were collected by the personal interview method with the help of a structured research schedule.

Keeping in view the objectives of the study a set of 15 independent variables and 1 dependent variables were included in the study. The dependent variables selected for the study was information needs of organic vegetable production. Data on Information needs were collected with the help of structured schedule .The independent variables included in the study were age, educational level, family type, family size, occupational status, social participation, experience as organic vegetable grower, area under organic vegetable production, annual net income from organic vegetable production, exposure to training on organic vegetable production, working capital availability for organic vegetable production, economic motivation, management orientation, risk bearing ability and scientific orientation.

Data on age, family type, family size, experience as organic vegetable grower, area under organic vegetable production, annual net income from organic vegetable production, exposure to training on organic vegetable production, working capital availability for organic vegetable production and degree of information needs were collected with the help of structured schedule. The data on educational level and social participation were collected with the help of Socio Economic Status (SES) scale (Rural) developed by Trivedi and Pareek [8]. Occupational status was measured by using the scale developed by Salim [9]. Management orientation was measured by using the Scale developed by [10]. Economic motivation, risk bearing ability and scientific orientation were measured by using the scale developed by Supe [11]. The statistical techniques and tests used in the study for analysis and interpretation of the data were frequency, percentage, mean, standard deviation, co-efficient of variation, multiple correlations, multiple regression and t-test.

To identify the constraints perceived by farmers in meeting their information needs the Problem Confrontation Index (PCI) was used which was computed by a 3-point rating Likert type scale. The farmers were asked to mention the major problems faced by him/her while meeting their information needs pertaining to organic vegetable production and were also asked to mention the degree or intensity of seriousness of each problem against which scores of 3, 2 and 1 were assigned for highly serious, moderately serious and less serious constraints, respectively.

3. FINDINGS AND DISCUSSIONS

3.1 Information Needs of Farmers in Relation to Organic Vegetable Production

Information need in the present study refers to the gap of facts or information between what a respondent perceives he possesses or knows and what he considers he ought to have or ought to know. For measuring the information needs of a respondent first he/she was asked to indicate the area on which the respondent had need for information relating to organic vegetable production. Then he/she was asked to indicate the degree of information needs of each area against 3 response categories *viz.,* most needed, needed and not needed, which were assigned scores of 2, 1 and 0 respectively. The information needs score of respondent was the sum of scores for all the need areas indicated by him/her. Based on the mean and standard deviation of the obtained information needs scores, respondents were classified into 3 categories, viz., low, medium and high degree of information needs. Moreover, the frequency and percentage of respondent reporting each need area was also calculated out against 3 response categories.

Among 'mostly needed' areas of information, majority of the respondents (95.83%) expressed that they needed information on inspection and certification process on organic vegetable production, followed by 95.00 per cent of respondents with the need for information on soil treatment for organic vegetable production, 91.60 per cent of respondents required information on the variety/planting material suitable for organic vegetable, 90.83 per cent of respondents needed information on marketing of organic vegetables, 81.60 per cent of respondents with the need for information on package of practices for organic vegetable production and 77.50 per cent of respondents with the need for information on doses of organic manure. A sizeable proportion of respondents (69.10%) expressed that they needed information on selection of site for organic vegetables, followed by 66.66 per cent of respondents with the use of information on use of ITK for disease management and 63.33 per cent of respondents with the need for information on use of bio-pesticides. A little more than 50 per cent (51.66%) of the respondents with the need for information on method of application of organic manure in organic crop production.

Among 'needed' areas of information 33.33 per cent of respondents needed information on use of ITK for disease management, followed by another 33.33 per cent with the method of application of organic manure in organic vegetable production and 30.83 percent of the respondents with the need of information on selection of site for organic crop. A proportion of about 27.50 percent of respondents with the need for information on use of ITK for pest management, followed by another 27.50 per cent of the respondents with the need for information on use of bio-pesticides and 23.33 per cent of respondents with the need for information on irrigation facilities.

Majority of the respondents (73.33%) had medium degree of information needs followed by 14.16 per cent of respondents with high degree of information needs. The rest 12.50 per cent of respondents had low degree of information needs. The mean value of 23.36 indicated that on an average the respondents had medium degree of information needs with standard deviation of 2.70.The value of co-efficient of variation (11.55) indicated that the respondents were highly homogeneous with respect to their degree of information needs in relation to organic vegetable production.

3.2 Factors Influencing the Information Needs and Information Seeking Behaviour of Farmers in Relation to Organic Vegetable Production

In order to identify the factors influencing information needs of farmers in relation to organic vegetable production, the correlation of the selected independent variables with information needs was found out with the help of Pearson Product- Moment Correlation Co-efficient(r). Independent variables were significantly correlated with the information needs of farmers in relation to organic vegetable production. Among the 10 independent variables, 6 variables, *viz.,* educational level, area under organic vegetable production, economic motivation, management orientation, risk bearing ability and scientific orientation showed significant and positive relationship with the information needs of farmers in relation to organic vegetable production at 0.01 level of probability. The other 4 variables, *viz.,*age, social participation, experience as organic vegetable grower and exposure to training on organic vegetable production showed significant and negative relationship with the information needs

of farmers in relation to organic vegetable production at 0.01 level of probability. Hence the corresponding null hypotheses stating that these independent variables have no significant relationship with the information needs of farmers in relation to organic vegetable production were rejected and alternative hypothesis were tentatively accepted.

A total of 7 variables, *viz.,* age, educational level, social participation, area under organic vegetable production, exposure to training on organic vegetable production, risk bearing ability and scientific orientation on organic vegetable production practices were found to contribute significantly towards the variation in the information needs of farmers in relation to organic vegetable production. The value of R^2 (0.795) indicated that 10 independent variables selected for the study were efficient in predicting the information needs of farmers in relation to organic vegetable production. The 10 independent variables fitted in the regression analysis could predict 79.50 per cent of the variation in the information needs of farmers in relation to organic vegetable production. The adjusted R^2 (0.776) indicated the actual measure of R^2 which meant that all the variables included in the regression equation was not equally efficient in explaining the variation in the dependent variable. The value of adjusted R^2, thus, indicated that the independent variables fitted in the regression equation could actually explain 77.76 per cent of the variation is seen in the information needs of farmers in relation to organic vegetable production.

Table 1. Frequency distributions of respondents according to various information need areas

SL.NO	Information need areas	Frequency distribution of farmers (%)		
		Mostly needed	Needed	Not needed
1.	Variety/Planting material for Organic vegetable production	110 (91.60)	10 (8.30)	-
2.	Package of practices for organic vegetable production	98 (81.60)	22 (18.33)	-
3.	Different types of organic manure used in organic vegetable production	89 (74.16)	21 (17.50)	10 (8.30)
4.	Doses of organic manure used in organic vegetable production	93 (77.50)	20 (16.66)	7 (5.83)
5.	Method of application of organic manure in organic vegetable production	62 (51.66)	40 (33.33)	18 (15.00)
6.	Use of ITK for pest management	87 (72.50)	33 (27.50)	-
7.	Use of ITK for disease management	80 (66.66)	40 (33.33)	-
8.	Use of bio-pesticides	76 (63.33)	33 (27.50)	11 (9.16)
9.	Irrigation facilities	92 (76.66)	28 (23.33)	-
10.	Selection of site for Organic vegetable production	83 (69.10)	37 (30.83)	-
11.	Soil treatment for organic vegetable production	114 (95.00)	6 (5.00)	-
12.	Inspection and certification process for organic vegetable production	115 (95.83)	5 (4.16)	-
13.	Marketing of organic vegetables	109 (90.83)	11 (9.16)	-
14.	Different standards for organic manure	37 (30.83)	6 (5.00)	77 (64.16)

Table 2. Distribution of respondents according to degree of information needs

Category (Score range)	Frequency	Percentage	Mean	S.D	C.V
Low degree of information needs (0-21)	15	12.50			
Medium degree of information needs (22-26)	88	73.33	23.36	2.70	11.55
High degree of information needs (27-28)	17	14.16			
Total	**120**	**100.00**			

Table 3. Correlation co-efficient between information needs and selected independent variables

Sl. No.	Independent variables	Correlation coefficient (r)	t-value
$X_{1.}$	Age	-0.816**	11.681
X_2	Educational level	0.723**	9.461
X_3	Family type	0.049	0.538
X_4	Family size	0.090	0.990
X_5	Occupational status	0.080	0.871
X_6	Social participation	-0.606**	7.390
X_7	Experience as organic vegetable grower	-0.743**	9.873
X_8	Area under organic vegetable production	0.657**	8.227
X_9	Net annual income	0.128	1.349
X_{10}	Exposure to training on organic vegetable production	-0.730**	9.611
X_{11}	Working capital availability for organic vegetable cultivation	0.097	1.060
X_{12}	Economic motivation	0.602**	7.325
X_{13}	Management orientation	0.603**	7.344
X_{14}	Risk bearing ability	0.818**	11.734
X_{15}	Scientific orientation	0.626**	7.700

** indicates Significant at 5% level of probability≥1.96(118d.f.)*
*** indicates Significant at 1% level of probability≥ 2.57 (118d.f.)*
Degrees of freedom= (n-2) for all cases

Table 4. Relative contribution of selected independent variables towards information needs of farmers in relation to organic vegetable production

Sl. No.	Independent variables	Regression coefficient (b_i)	Standard error of b_i	t-value	R^2	Adjusted R^2
$X_{1.}$	Age	-0.222**	0.048	4.621		
X_2	Educational level	-1.504**	0.522	2.879		
X_6	Social participation	-1.482**	0.552	2.681		
X_7	Experience as organic vegetable grower	-0.173	0.282	0.613		
X_8	Area under organic vegetable production	1.457**	0.412	3.536		
X_{10}	Exposure to training on organic vegetable production	-2.450**	0.602	4.065	0.795	0.776
X_{12}	Economic motivation	0.405	0.630	0.643		
X_{13}	Management orientation	0.445	0.636	0.699		
X_{14}	Risk bearing ability	0.284**	0.107	2.654		
X_{15}	Scientific orientation	0.386**	0.144	2.664		

** indicates Significant at 5% level of probability≥1.96 (118d.f.)*
*** indicates Significant at 1% level of probability≥ 2.57 (118d.f.)*
Degrees of freedom= (n-k) for all cases

Table 5. Constraints, as perceived by the farmers in meeting their information needs for organic vegetable production

Sl. No	Constraints	Extent of Confrontation			PCI	Rank
		Highly serious	Moderately serious	Less serious		
1.	Lack of knowledge about inspection and certification process of organic vegetable production	75	26	19	296	I
2.	Lack of knowledge about market linkages	72	25	14	280	II
3.	Lack of access to credit facilities	62	38	16	278	III
4.	Lack of awareness about existence of different sources of information	68	28	17	277	IV
5.	Lack of awareness and knowledge on different market information regarding organic vegetable production	65	29	21	274	V
6.	Lack of access to credit facilities	72	25	14	270	VI
7.	Lack of adequate training facilities on organic vegetable production	67	26	17	262	VII
8.	Inability to attend the meeting due to distance	35	41	44	231	VIII
9.	Lack of irrigation facilities	45	20	55	230	IX
10.	Poor economic condition of the farmers to buy modern information tool such as computer and internet facility	20	37	55	189	X

3.3 Constraints, as Perceived by the Farmers in Meeting their Information Needs for Organic Vegetable Production

"Lack of knowledge about inspection and certification process of organic vegetable production" got the highest score (PCI-296) and hence was the 1st ranked constraint of the majority of the respondents. Followed by "Lack of knowledge about market linkages" got the 2nd highest score (PCI-280) and hence ranked as the 2nd major constraint. 'Lack of access to credit facilities' was another constraint faced by the farmers while meeting their information needs which was ranked third on the basis of the 3rd highest score (PCI-278). 'Lack of awareness about existence of different sources of information' was ranked 4th among the constraints faced by the respondents while meeting their information needs for organic vegetable production with a PCI score-277. 'Lack of awareness and knowledge on different market information regarding organic vegetable production' got the 5th rank among the constraints based on the score of PCI- 274 as mentioned by the farmers. The other constraints faced by farmers in order of score of PCI were 'Lack of access to agricultural extension personnel (PCI-270)', 'Lack of adequate training facilities on organic vegetable production (PCI-262)', 'Lack of irrigation facilities (PCI-231)' and' Inability to attend the meeting due to distance (PCI-230)' were ranked from 6th to 9th respectively. Poor economic condition of the farmers to buy modern information tool such as computer and internet facility was ranked 10th with PCI-189 score among the constraints faced by farmers in meeting the information needs regarding organic vegetable production.

4. CONCLUSIONS

The major findings of the present have a number of implications for policy makers, NGOs, KVKs, various development workers and extension agencies. These concerned agencies/ departments and extension functionaries should put more efforts to modify the information needs of organic vegetable farmers in the desirable direction.

Massive training/capacity building programmes should be undertaken in the study area to develop and enhance the knowledge and skills of farmers on different aspects of organic vegetable production practices. The information needs of the farmers regarding organic vegetable production should be channeled through their preferred medium by the concerned agencies/

departments and extension functionaries. Since organic cultivation is popular and eco-friendly, therefore, emphasis may also be laid on popularizing the role of organic cultivation among the vegetable growers. Adequate training cum capacity building programmes should be undertaken to develop their knowledge along with timely and reliable delivery of information which is important to improve their information search strategies. The information needs of the farmers should be targeted and channeled through their preferred medium. The findings of correlation analysis revealed that variables *viz.,* age, educational level, area under organic vegetable production, social participation, economic motivation, management orientation, risk bearing ability, scientific orientation, experience as organic vegetable grower and exposure to training on organic vegetable production showed significant relationship with the information needs of farmers in relation to organic vegetable production. These attributes should be taken into consideration while undertaking any programmes to fulfill growers' information needs in relation to organic vegetable production.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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