Knowledge of Extension Agent's about Organic Farming in Vaishali District of Bihar

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ABSTRACT

This study investigated four aspects of organic farming in Vaishali District of Bihar: Extension agents' knowledge Information sources, Knowledge-characteristic association , Barriers to adoption. The study involved 100 Extension Agents. Analysis revealed that over half (56.00%) had low knowledge of organic agriculture, while information source utilization stood at a moderate level (54.00%). Interestingly, a positive correlation was found between agents' knowledge level and specific personal characteristics (e.g., age, education). Additionally, the study identified distinct obstacles faced by agents in spreading organic farming practices.

INTRODUCTION

With a projected population of 9.4 billion by 2050, the pressure to produce enough food intensifies. This has driven rapid growth in agricultural technologies, often at the expense of traditional methods and the environment. Chemical fertilizers and pesticides, while boosting yields, can degrade soil, pollute water, and harm human health. Countries are caught in a race to expand production, either horizontally through land acquisition or vertically through cutting-edge technology. Yet, consumer awareness is shifting towards healthier, more sustainable food choices. This has sparked interest in organic agriculture, an ancient practice predating synthetic fertilizers.

Modern agriculture's reliance on chemical inputs has triggered widespread environmental issues: reduced biodiversity, soil erosion, water pollution, resource depletion, and declining food quality. These concerns, along with the displacement of small farmers and unsustainable practices, highlight the need for a transformative approach. Enter organic agriculture, promising not just increased food production but also protection against potential health risks. It eschews artificial chemicals, opting for natural methods that promote soil health, biodiversity, and environmental resilience. Food safety concerns have become a global priority, pushing the international community towards finding solutions for sustainable agricultural systems. Organic agriculture represents a promising path towards a healthier planet and a more nourishing future

Organic Agriculture in the World

Practiced in over 187 countries, with over 72 million hectares of land under organic management globally. Europe has the largest area under organic farming, followed by Asia and Latin America. The global organic food and drink market reached over 106 billion euros in 2019 and is expected to continue growing rapidly.

India ranks fifth in the world in terms of total area under organic cultivation, with over 2.6 million hectares. The Indian government has launched several initiatives to promote organic farming, such as the Paramparagat Krishi Vikas Yojna (PKVY) and the National Programme for Organic Production (NPOP). Strong domestic demand for organic products, driven by increasing health awareness and disposable incomes.

Organic agriculture has the potential to play

a significant role in building a more sustainable and equitable food system. By addressing the challenges faced by the sector, both globally and in India, we can unlock its full potential to benefit farmers, consumers, and the environment. The role of technology in organic agriculture, such as the use of drones for pest control and precision agriculture techniques. Effective agricultural extension services are crucial for both rural development and the transition to organic agriculture. They empower farmers by providing timely and relevant information to tackle farming challenges and make informed decisions. Beyond information exchange, extension acts as a connector, facilitating networking between farmers and various players in the agricultural market .It also fosters collective action in rural communities, aiding farmers in forming groups that enhance their competitiveness in local and global markets. In many nations, extension agents serve as a vital source of knowledge and play a key role in persuading farmers to adopt agricultural innovations, including organic practices .Educating extension agents on the principles, practices, and certification processes of organic agriculture is therefore a crucial first step in promoting its adoption .

Several factors influence farmer adoption of organic practices, including access to adequate information and the effectiveness of extension services in providing it .This effectiveness, in turn, hinges on the extension agents' own perceptions and attitudes towards organic agriculture. Therefore, understanding extension agents' knowledge is essential for designing successful organic education programs and encouraging farmer adoption. Their influence and effectiveness ultimately depend on their expertise and ability to communicate effectively with farmers, sharing the latest knowledge and innovations. The success of extension and education programs in promoting organic agriculture rests heavily on this foundation.

MATERIALS AND METHODS

Vaishali District of Bihar was randomly selected for conducting research. The study was conducted on 100 respondents. Data were collected by questionnaire forms during January and February 2022. Frequencies, percentages, and Spearman rank-order correlation coefficient were used for data presentation and analysis.

RESULTS AND DISCUSSION

4. 1. Profile of the agricultural extension agents:

From table 1 it was observed that more than of one half of the agricultural extension agents' (55.00 per cent) belonged to >50 years category, 59.00 per cent studied "intermediate" level, about half of them belonged to "general" category, two third of them (65.00%) belonged to "agricultural administration" category, 47.0 percentage"change agent", sixty percent<12 years work in agricultural extension, majority of them (60.00%) exposed into 1 to 12 training sessions in agricultural extension, more than of two fifths of them (44.00%) had high benefit from training sessions in agricultural extension, three quarters of them (75.00%) exposed into 1 to 5 training sessions in organic farming, two fifths of them (42.00%) had high benefit from training sessions in organic farming and more than of one half of the respondents (58.00%) had medium attitudes toward organic agriculture.

Table 1
Profile of the agricultural extension workers (n= 100).

SI NO.	Variables	Categories	Number	Percentage
01.	Age	<40 years	19	19.00
		40 to 50 years	26	26.00
		>50 years	55	55.00
02.	Academicachievement	Intermediate	59	59.00
		Higher institute for cooperation and agricultural extension	12	12.00
		University	29	29.00
03.	Specialization	Agricultural extension	30	30.00
		General	50	50.00
		Other	20	20.00
04.	Workplace	Agricultural association	36	36.00
		Agricultural Administration	65	65.00
		Agriculture directorate	09	09.00
05.	Career status	Supervisor	21	21.00
		Specialist	32	32.00
		Agricultural guide	47	47.00
06.	A number of work years in agricultural extension	<12 years	60	60.00
		12 to 21 years	23	23.00
		>21 years	17	17.00
07.	A number oftrainingsessions in Agriculturalextension:	Never 14	16	16.00
		1 to 12 sessions	70	70.00
		13 to 24 sessions	10	10.00
		>24 sessions	04	04.00
08.	Benefitfromtrainingsessio ns in Agriculturalextension	Never benefit	13	13.00
		Low benefit	06	06.00
		Medium benefit	37	37.00
		High benefit	44	44.00
09.	Number oftraining sessions inorganic agriculture	Never	10	10.00
		1 to 5 sessions	75	75.00
		6 to 10 sessions	04	04.00
		>10 sessions	11	11.00
10.	Benefit fromtrainingsessions in Organicagriculture	Never benefit	19	19.00
		Low benefit	07	07.00
		Medium benefit	32	32.00
		High benefit	42	42.00
11.	Attitudestoward Organicagriculture	Low attitudes	25	25.00
		medium attitudes	58	58.00
		High attitudes	17	17.00

4.2. Agricultural extension agents' knowledge of organic agriculture:

Table (2) presents distribution of the respondents according their knowledge of organic agriculture. It came to clear that four-fifths of the respondents (81.0%) have low knowledge level of general information about organic agriculture, while 16.0% of them have medium level, and 3.0% of them have high level of knowledge. It also revealed that 47.0% of the respondents have low knowledge level of conversion practices into organic agriculture, while 43.0% of them have medium knowledge level, and 10.0% have high knowledge level. It came to clear from the same table that the majority (88.0%) of the respondents have low knowledge level of organic agriculture's environmental benefits, while 9.0% and 3.0% of the respondents have medium and high knowledge levels respectively. It came to light that more than three-fifths (63.0%) of the respondents have low knowledge level of prohibited manufactured

materials in organic agriculture, while 32.0% of them have medium knowledge level, and only 5.0% have high knowledge level. It became clear from the same table that 46.0% of the respondents have low knowledge level of permissible manufactured materials in organic agriculture, while 27.0% of them have medium knowledge level, and the same percentage have high knowledge level. It also came out from table (2) that more than half (53.0%) of the respondents have low total knowledge level organic agriculture, while more than two-fifths of them (45.0%) have medium knowledge level and only 2.0% have high total knowledge level. According to the previous results, it emerged a big percent of the agricultural extension agents were not aware of general information on organic agriculture, environmental benefits of organic agriculture, prohibited manufactured materials in organic agriculture, practices of conversion into organic agriculture, permissible manufactured materials in organic agriculture and that overall knowledge level about organic agriculture is low for the majority of the respondents. This may be due to a lack of training courses they have, and information sources they exposed to about organic agriculture.

Table 2
Distribution of the respondents according to their knowledge of organic Farming (n = 100)

Knowledge categories	Complete Knowledge		No Knowledge	
	Frequency	Percentage	Frequency	Percentage
General information on organic agriculture	100	100.00	-	-
Practices of conversion into organic agriculture	53	53.00	47	47.00
Environmental benefits of organic agriculture	19	19.00	81	81.00
Prohibited manufactured materials in organic agriculture	37	37.00	63	63.00
Permissible manufactured materials in organic agriculture	54	54.00	46	46.00

Table 2.1
Distribution of respondent according to their knowledge about Organic Farming

Knowledge level	No.	%
Low level knowledge	56	56.00
Medium level knowledge	40	40.00
High level knowledge	04	04.00
Total	100	100.00

4.3 Information sources utilization among the respondents about organic agriculture:

Information sources utilized by the respondents about organic agriculture are presented in table 3. It revealed that: 63.00 percentage of the respondent expose to television's agricultural programs occasionally, 36.00 percentage of them browse websites regularly, 35.00 percentage of them resort to researchers occasionally, 49.00 percentage of the them refuge to co-agents regularly, more than half of them reads agricultural newspaper occasionally, around fifty percent of them reads extension bulletins occasionally, 48.00 percentage of them never listen to agricultural programs in radio, 35.00 percentage of them never read books about organic agriculture.

Table 3
Information sources utilization among the respondents about organic agriculture (n = 100).

Information sources	Regular		Occasional		Rarely		Never	
	No.	%	No.	%	No.	%	No.	%
Agricultural programs in television	21	21.00	63	63.00	05	05.00	11	11.00
Websites	36	36.00	32	32.00	15	15.00	17	17.00
Researchers at agricultural research station	25	25.00	35	35.00	31	31.00	09	09.00
Co-agents	49	49.00	30	30.00	12	12.00	09	09.00
Training courses	33	33.00	46	46.00	15	15.00	06	06.00
Farm magazine, agricultural newspaper	29	29.00	52	52.00	08	08.00	11	11.00
Extension bulletins from the ministry of agriculture	22	22.00	46	46.00	23	23.00	09	09.00
Agricultural programs in radio	09	09.00	17	17.00	26	26.00	48	48.00
Studies on organic agriculture	17	17.00	23	23.00	17	17.00	43	43.00
Books on organic agriculture	14	14.00	33	33.00	18	18.00	35	35.00

Table 4 shows distribution of the respondents according to their information sources utilization about organic agriculture, it can be noticed that 54.00 percentage of the respondents have medium information sources utilization level, 27.00 percent of them have high utilization level, whereas 19.00 percent of them have low information sources utilization level. Utilization of sources of information increases level of information and develop self-confidence and an individual gains variety and more amount of knowledge if he has an opportunity to expose with more number of sources of information. According to the results, it emerged that majority of the agricultural extension agents don't listen to agricultural programs in radio, don't read studies and books about organic agriculture and majority of respondents have medium information sources utilization level about organic agriculture.

Table 4
Distribution of the respondents according to their information sources utilization about organic agriculture (n = 100)

Category	Frequency	Percentage
Low level	19	19.00
Medium level	54	54.00
High level	27	27.00
Total	100	100.00

4.4. The relationship between the agricultural extension agents' knowledge of organic agriculture and their personal characteristics:

Table 5 presents the relationship between the agricultural extension agents' knowledge of organic agriculture and their personal characteristics. It emerged that there's a positive significant relationship between the respondents' knowledge of organic agriculture and the next characteristics: workplace, number of work years in agricultural extension, number of training courses in organic agriculture, benefit from training courses in organic agriculture, attitudes towards organic agriculture, and information sources utilization. On the other hand, there's no significant relationship

between the respondents' knowledge of organic agriculture and the next characteristics: age, academic achievement, specialization, career status, number of training courses in agricultural extension, and benefit from training courses in agricultural extension.

Table 5
Spearman rank-order correlation coefficients between the respondents' knowledge of organic agriculture and their personal characteristics:

SI NO.	Variables	Spearman values
01.	Age	0.129NS
02.	Academicachievement	0.027NS
03.	Specialization	0.008NS
04.	Workplace	O.183*
05.	Career status	0.034NS
06.	A number of work years in agricultural extension	0.389*
07.	A number of Trainingsessions inagriculturalextension	0.176NS
08.	Benefit fromtrainingsessions inagricultural extension	0.145NS
09.	Number of training courses in organic agriculture	0.415**
10.	Benefit fromtrainingsessions inorganicagriculture	0.316**
11.	Attitudestowardorganicagriculture	0.454**
12.	Information sources utilization	0.262**

4. 5. Constraints faced by the agricultural extension agents in diffusing organic agriculture

Table 6 shows various constraints faced by the respondents in the diffusion of organic agriculture. Regarding constraints related to agricultural extension, the respondents pointed to many constraints like: shortage of extension agents, non-availability of adequate expertise of extension agents in organic agriculture, shortage of training courses, lack of extension symposiums to raise farmers' awareness about organic agriculture practices, shortage of audio and visual extension programs, absence of extension fields to diffuse organic agriculture, and non-availability of extension publications on organic agriculture.

Table 6
Constraints faced by the agricultural extension agents in diffusing organic agriculture (n = 100)

S.no	Constraints	Frequency	%
01	Non-availability of adequate expertise of extension agents in organic agriculture	88	88.00
02	Shortage of agricultural agents	93	93.00
03	Lack of extension symposiums to raise farmers' awareness of organic agriculture practices	77	77.00
04	Shortage of audio and visual extension programs	73	73.00
05	Non availability of extension publications about organic agriculture	68	68.00
06	Farmers' desire to increase production more than their desire for production quality	83	83.00
07	Difficulty of implementing certain organic agriculture practices	64	64.00
08	Lack of governmental institutions that grant certificates of organic production	67	67.00
09	Lack of consumers' knowledge about the benefits of organic agriculture products	77	77.00

5. Conclusion and Recommendations:

Despite organic agriculture's potential to improve soil, environment, human health, and farmer income, agricultural extension agents often lack sufficient knowledge about it. This research suggests several recommendations:

Boost training programs: Increase efforts to train extension agents on organic agriculture's environmental benefits, general principles, prohibited materials, conversion practices, and permitted materials.

Motivate and empower agents: Providing training and emphasizing organic agriculture can motivate agents, enhance their skills, and expand their knowledge base. This enables them to transfer their knowledge more effectively.

Ministry intensifies efforts: The agriculture ministry should actively increase extension agents' awareness of organic agriculture.

Overcoming barriers: The ministry should intensify efforts to remove any obstacles hindering the spread of organic farming practices.

Tailored training: Use the research findings to develop a specific training program for Vaishali's district extension agents. This program should help them gain deeper knowledge and confidence in providing organic agriculture information.

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