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Knowledge of farmers toward organic farming in Haryana

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Abstract

Organic farming is more than just avoiding the use of agrochemicals in agriculture; it is a technique for establishing a healthy agro-ecosystem on a farm. Organic agriculture arose from the purposeful efforts of inspired people, who wanted to build the finest possible relationship between man and the land. Its goal is to maintain and increase productivity through improving soil health and the agro-ecosystem as a whole. The study was conducted in Karnal and Sirsa districts of Haryana, with an aim to analyse the association between socio-personal characteristics of farmers with their knowledge level towards organic farming. The data were collected personally from 120 respondents comprising 60 farmers from eight villages through a well-structured interview schedule. Findings revealed that 58.30 per cent of organic farmers had medium level of knowledge regarding organic farming followed by 31.70 per cent had high level and 10 per cent had low level of knowledge. Further, analysis of the association between knowledge & profile of farmers revealed that, age, education, class, family type, landholding, subsidiary occupation, socio-economic status were positively correlated with knowledge regarding organic farming. The paper recommends building of proper channels of communication for the farmers regarding information about organic farming.

Keywords: Knowledge, organic farming, association

Introduction

In our country India majority of the total population is living in the villages and mainly dependent on agriculture and its allied activities. The Indian economy's main industry is agriculture. It is true that the increase in the use of fertilizers and pesticides at high doses has boosted agricultural production and economy of the country. But it has also affected the soil, water as well as environment adversely. Use of chemical fertilisers at high rates for an extended period of time has a negative impact on the physical, chemical, and biological characteristics of the soil (Pratap, 2019) [11]. Scientists have finally concluded that the green revolution, which relied heavily on inputs, has plateaued and is now being sustained with decreasing rewards and returns. Reintroducing organic farming with no compromise to agricultural output would be the logical choice for that (Jaganathan, 2009) [6]. Organic farming is helpful in maintaining the biological cycle and genetic diversity of the agricultural system and its surroundings including the protection of plant and wildlife habitats. It allows agricultural procedures, adequate returns and satisfaction from their work including a safe working environment and wider social and ecological impact of the farming system (IFOAM). Organic farming is more than just avoiding the use of agrochemicals in agriculture; it is a technique for establishing a healthy agro-ecosystem on a farm. Organic agriculture arose from the purposeful efforts of inspired people, who wanted to build the finest possible relationship between man and the land. Its goal is to maintain and increase productivity through improving soil health and the agro-ecosystem as a whole. Organic farming is centered on using external inputs as few as possible, such as fertilizers, insecticides and pesticides (Morshedi *et al.* 2017) [8]. A study conducted on the current status of organic farming in India revealed that such farming can contribute to sustainable food security by improving nutrition intake, supporting livelihoods in rural areas and enhancing biodiversity and also reduce vulnerability to climate change. They also concluded that, on an average organic farming would sustain 30 percent higher biodiversity than conventional farming (Shukla *et al.* 2013) [15]. Organic farming was not a new practice in Indian agriculture; it has been practiced from the dawn of civilization, long before the green revolution. Basic organic techniques were used in traditional Indian agriculture, with fertilizers, insecticides and other chemicals derived from plant and animal sources.

Farmers in India are returning to their roots and practicing traditional organic farming methods. The damage created by excessive use of synthetic chemicals on soil will have a long-term effect, requiring a longer recovery time, indicating the greater time-period required for obtaining an organic farming certificate.

According to available data, India ranks eighth in the world in terms of organic agricultural area and first in terms of total number of producers in 2020 (FrickandBonn, 2020) [4]. Among the 172 countries that practice organic agriculture, India is unique in that it has 6,50,000 organic producers, 699 processors, 699 exporters and 7,20,000 hectares under cultivation (Barik, 2017) [1]. Our country has over 44,926 certified organic farms making it one of the most major exporters of organic food to developed countries, according to the International Fund for Agriculture and Development (IFAD). India has converted 6.0 million ha of cultivated land into organic and another 1.17 million ha are under conversion (Singh *et al.* 2018) [16].

When it comes to agriculture and related activities, Haryana is one of the most productive states in India. Haryana is self-sufficient in matter of food production and contributes the second-highest amount of food grains to India's grain pool. The state has certified organic farming practising on 5,303 hectares, including 4,903 hectares under the National Program for Organic Production and 400 hectares under the Participatory Guarantee System. Presently, the main focus of the current government is to promote organic farming in a big way to enhance the living standards of farmers. The government of Haryana has planned to cover seven lakh acres of land under organic farming. Organic farming would be supported in the state, and it will be started on 1 lakh acres of land. This step will enable Haryana farmers to sell their goods in overseas markets, since organic food consumption has surpassed \$50 billion globally (Sharma, 2020) [13].

Methodology

The study was conducted in two agro-climatic zones i.e., dry zone representing south- western region and wet zone representing eastern regions of Haryana state. Further, Sirsa and Karnal districts were selected purposively from dry and wet zones respectively. Sixty farmers from each district who were practicing organic farming were identified. Further, from each district a cluster of villages were selected purposely i.e., villages in which farmers were adopting organic farming (Kharian, Dhottar, Alipur titukhera and Rishalia khera villages from Sirsa district and Sangohi, Churni, Barsat, Khanpur, Sambhali, Khera Chapra, Baragaon, Kunjpura and Landora villages from Karnal district). Thus, 60 respondents were selected from each district and a whole 120 respondents were selected from the 2 districts. The data were collected with a well-structured interview schedule and were analysed using MS Excel, OP STAT and Statistical Package for Social Sciences (SPSS) for computing frequency, percentage, Chi-Square and coefficient of contingency. For measuring the profiles of the respondents fourteen variables were selected *viz.* Age, education, caste, subsidiary occupation, income, type and size of family, land-holding, social participation, extension contact, mass-media exposure, social expectations,

food preferences, inheritance. Scores were given for all these independent variables to assess their relationship with knowledge (dependent variable). Also, in order to measure the farmers' knowledge level towards organic farming, they were given statements regarding the practices adopted in organic farming and the responses were obtained in three categories i.e., full knowledge, partial knowledge, and no knowledge with a score 2, 1 and 0 respectively. The scores for all the statements were added and the respondents were categorized into low, medium and high level of knowledge based on the total score by dividing the range into three equal parts.

Results and Discussion

Level of knowledge towards organic farming

The result given in Table 1 revealed that more than half of the respondents (58.30%) had medium level of knowledge regarding organic farming followed by high (31.70%) and low (10%) level of knowledge.

Table 1: Distribution of the respondents on the basis on their level of knowledge towards organic farming

S. No.	Level of knowledge	Percentage
1.	Low (79-88)	10.00
2.	Medium (89-98)	58.30
3.	High (99-108)	31.70

Further the statement wise analysis of knowledge of farmers toward organic farming revealed that an overwhelming majority of the respondents had full knowledge about various aspects of organic farming and were also aware that organic farming generates more revenue and job opportunities, reduces the harmful impacts of chemicals, more profitable than conventional farming, labour intensive and expensive organic fertilizers and pesticides. Preservation of soil fertility is must for the better yield in future. Findings further revealed that cent percent (100%) of the respondents had full knowledge about tillage method and an overwhelming majority (90%) had full knowledge about fertilization, crop rotation and intercropping method.

Regarding organic fertilizers, findings revealed that an overwhelming majority of the respondents had full knowledge about livestock manure and vermicompost whereas majority of the respondents had full knowledge about poultry manure, green manure and biofertilizers which was supported by the study of Naik *et al.* (2009) [9]. Regarding bio fertilizers, findings revealed that 82 per cent of the respondents had full knowledge about the statements that reduces the need of chemical fertilizers and do not pollute the environment and positive impact on the environment as supported by the study of Baskaur *et al.* (2021) [2].

Regarding weed control, crop rotation, grazing through animals, shallow ploughing helpful in reduction of weed population was reported by 85.00 percent respondents who had full knowledge about it. Likewise, regarding the statement that manual weeding is one of the main solutions of weed control 98.40 percent respondents reported of full knowledge about it which is supported by the findings of Baskaur *et al.* (2021) [2].

Table 2: Distribution of the respondents according to their knowledge level about organic farming

Sr. No	Statements	Full knowledge (2)	Partial knowledge (1)	No knowledge (0)
1	Organic farming			
	Aspects of organic farming	116(96.70)	3(2.50)	1(0.80)
	Generates more revenue and job opportunities	102(85.00)	16(13.40)	2(01.60)
	Reduce the harmful impacts of chemicals	117(97.60)	2(01.60)	1(0.80)
	More profitable than conventional farming	115(95.80)	1(00.80)	4(3.40)
	Labour intensive	116(96.70)	3(2.50)	1(0.80)
	Products are healthier	118(98.40)	1(00.80)	1(00.80)
	Organic fertilizers and pesticides are costly	117(97.60)	2(1.60)	1(00.80)
2	Soil fertility preservation			
	Know about fertilization method	110(91.70)	6(5.00)	4(3.30)
	Crop rotation	112(93.40)	6(5.00)	2(01.60)
	Intercropping method	115(95.80)	1(00.80)	4(3.40)
	Tillage method	120(100)	-	-
3	Organic fertilizers			
	Livestock manure	116(96.70)	3(2.50)	1(00.80)
	Poultry manure	62(51.70)	48(40.00)	10(8.30)
	Green manure	90(75.00)	21(17.50)	9(7.50)
	Bio fertilizer	56(46.70)	51(42.50)	13(10.80)
	Vermicompost	105(87.50)	10(8.40)	5(4.10)
4	Green manure			
	Know about green manure	112(93.40)	5(4.16)	3(2.50)
	Crops used for green manuring			
	Pigeon pea	65(54.20)	40(33.30)	15(12.50)
	Chick pea	76(63.30)	39(32.60)	5(4.10)
	Common bean	72(60.00)	40(33.30)	8(6.70)
	Soya bean	78(65.00)	30(25.00)	12(10.00)
	Groundnut	89(74.20)	27(22.50)	4(3.30)
	Dhaincha	114(95.10)	4(3.30)	2(1.60)
	Planting time	118(98.40)	01(00.80)	01(00.80)
	Field incorporation time	116(96.70)	3(2.50)	1(00.80)
5	Bio fertilizers			
	Know the names of bio fertilizers	29(24.20)	63(52.50)	28(23.30)
	Boosts agricultural yield	54(45.00)	58(48.30)	08(06.70)
	Less expensive than chemical fertilizers	56(46.70)	62(51.70)	2(1.60)
	Used on every soil type	61(50.80)	50(41.60)	09(07.60)
	Reduces the need of chemical fertilizers	102(85.00)	10(08.30)	08(06.70)
	Not polluting the environment	100(83.30)	14(11.70)	06(5.00)
	Positive impact on the environment	99(82.50)	17(14.20)	4(3.30)
	Increases soil fertility	70(58.30)	42(35.00)	08(06.70)
	Loses effectiveness after expiry date	56(46.70)	46(38.30)	18(15.00)
6	Vermicompost			
	Know about vermicompost application	116(96.70)	03(2.50)	1(00.80)
	Right way of vermicompost preparation	58(48.40)	60(50.00)	02(01.60)
	Experience with vermiwash	49(40.80)	69(57.60)	02(01.60)
7	Pest and disease control			
	Biological and organic control methods	113(94.30)	02(01.60)	5(4.10)
	Integrated pest management (IPM) methods	47(39.20)	70(58.30)	03(2.50)
	Physical and pheromone traps	04(03.30)	100(83.30)	16(13.40)
	Biological enemies of pests	06(05.00)	107(89.20)	07(05.80)
8	Weed control			
	Shallow ploughing in summer	102(85.00)	12(10.00)	6(5.00)
	Grazing through animals	102(85.00)	16(13.40)	2(1.60)
	Mechanical weeding	116(96.70)	3(2.50)	1(0.80)
	Crop rotation and/or intercropping	100(83.40)	15(12.50)	5(4.10)
	Chemical herbicides	50(41.70)	36(30.00)	34(28.30)
	Mulching	118(98.40)	1(0.80)	1(0.80)
	Tillage	120(100)	-	-
	Flooding	117(97.60)	1(0.80)	2(1.60)
	Biological (pathogen) method	94(78.40)	20(16.60)	6(5.00)
	Manual weeding	118(98.40)	1(0.80)	1(0.80)
9	Crop residue management			
	Managing crop residue after harvesting	116(96.70)	3(2.50)	1(0.80)
	Burning plant residues after harvesting	120(100)	-	-
	Residue incorporation in the soil	80(66.70)	30(25.00)	10(8.30)

Relationship between profile of the farmers with their knowledge towards organic farming

The results of the study showed that independent variables viz age, size of land holding and subsidiary were found highly significant with the level of knowledge towards organic farming, this could be inferred from the reason that farmers gain knowledge as they grow older and obtain education, yet middle-aged and younger farmers are more energetic and adapt faster than their elders. While education, family type and socio- economic status were found significantly associated with the level of knowledge and family size, annual income, size of organic land holding, family size, social participation, extension contacts and food preference were found insignificant with the level of knowledge of the respondents towards organic farming.

The findings were partially supported by Baskaur *et al.* (2021)

[2] who revealed that significant association was found between size of land holding, age, family type, subsidiary occupation and level of knowledge regarding organic farming. The majority of the members (52.08%) belonged to a medium level of knowledge of healthcare management, followed by low level (37.50%) and high level (10.42%). Patel *et al.* (2022) [10] concluded that majority of the farmers had medium extension contact, medium material possession, medium economic motivation, medium scientific orientation and medium level of knowledge regarding recommended wheat production technology (Jat *et al.* 2022) [7]. (Raju *et al.* 2022) [12] revealed that education, extension contact, market orientation, income orientation, mass media exposure, risk orientation and social participation were found significant with the level of knowledge towards e-NAM.

Table 3: Association between profile of respondents with their knowledge towards organic farming

Socio -economic variables	Level of knowledge of organic farming			
	Low (79-88)	Medium (89-98)	High (99-108)	Total (n=120)
Age				
Up to 35 years	1(10.00)	6(60.00)	3(30.00)	10(8.40)
36-50 years	5(6.80)	37(50.70)	31(42.50)	73(60.80)
Above 50 years	6(16.20)	27(73.00)	4(10.80)	37(30.80)
Total	12(10.00)	70(58.30)	38(31.70)	120(100)
$\chi^2=12.03^{**}$				
Education				
Illiterate	0	6(75.00)	2(25.00)	8(6.70)
Upto middle school	3(25.00)	8(66.70)	1(8.30)	12(10.00)
Secondary school	6(12.50)	31(64.60)	11(22.90)	48(40.00)
Senior Secondary and above	3(5.80)	25(48.10)	24(46.20)	52(43.30)
$\chi^2=13.30^{\dagger}$				
Caste				
General	7(8.20)	44(51.80)	34(40.00)	85(70.80)
Backward	5(14.30)	26(74.30)	4(11.40)	35(29.20)
$\chi^2=9.45^*$				
Family type				
Nuclear	3(6.00)	24(48.00)	23(46.00)	50(41.70)
Joint	9(12.90)	46(65.70)	15(21.40)	70(58.30)
$\chi^2=8.50^*$				
Family size				
Up to 4 members	4(33.30)	20(28.60)	17(44.70)	41(34.20)
Between 5-8 members	6(50.00)	37(52.90)	15(39.50)	58(48.30)
Above 8 members	2(16.70)	13(18.6)	6(15.80)	21(17.50)
$\chi^2=2.92$				
Size of Land holding				
Marginal (Up to 1 ha)	-	5(7.10)	-	5(4.20)
Small (>1-2 ha)	6(50.00)	12(17.10)	6(15.80)	24(20.00)
Semi Medium (>2-4 ha)	4(33.30)	24(34.30)	13(34.20)	41(34.20)
Medium (>4-10 ha)	1(8.30)	21(30.00)	17(44.70)	39(32.40)
Above 10ha	1(8.30)	8(11.40)	2(5.30)	11(9.20)
$\chi^2=14.67^*$				
Size of Organic land holding				
Up to 1 ha	7(58.3)	37(52.90)	20(52.60)	64(53.30)
>1-2 ha	5(41.70)	27(38.60)	15(39.50)	47(39.20)
>2-4 ha	0	6(8.60)	3(7.90)	9(7.50)
$\chi^2=1.14$				
Annual income (in Rs.)				
Up to 1,50,000	6(50.00)	26(37.1)	9(23.70)	41(34.20)
Between 1,50,000 - 3,00,000	5(41.70)	33(47.10)	25(65.80)	63(52.50)
Above 3,00,000	1(8.30)	11(15.70)	4(10.50)	16(13.30)
$\chi^2=4.96$				
Subsidiary Occupation				

Nil	6(7.50)	41(51.30)	33(41.30)	80(66.60)
Service	2(28.60)	5(71.40)	0	7(5.80)
Small scale enterprises	4(12.1)	24(72.70)	5(15.20)	33(27.60)
$\chi^2=12.50^{**}$				
Social Participation				
Not member of any organization	9(9.20)	54(55.10)	35(35.70)	98(81.70)
Member of one organization	3(13.60)	16(72.70)	3(13.60)	22(18.30)
$\chi^2=4.07$				
Mass media exposure				
Low (7-10)	3(6.30)	23(47.90)	22(45.80)	48(40.00)
Medium (11-13)	6(13.00)	29(63.00)	11(23.90)	46(38.30)
High (14-16)	3(11.50)	18(69.20)	5(19.20)	26(21.70)
$\chi^2=7.94$				
Extension contacts				
Low (5-7)	4(33.30)	6(50.00)	2(16.70)	12(10.00)
Medium (8-10)	15(21.40)	47(67.10)	8(11.40)	70(58.30)
High (11-13)	5(13.20)	28(73.70)	5(13.20)	38(31.70)
$\chi^2=3.03$				
Socio -economic status				
Low (8-11)	5(20.00)	18(72.20)	2(8.00)	25(20.8)
Medium (12-15)	4(6.30)	34(54.00)	25(39.70)	63(52.50)
High (16-19)	3(9.40)	18(56.30)	11(34.40)	32(26.70)
$\chi^2=10.15^*$				

Figures in the parenthesis denote percentage

*Significant at 5 per cent level of significance

**Highly significant at 1 per cent level of significance

Conclusion

It was concluded that more than half of the respondents (58.30%) had medium level of knowledge regarding organic farming followed by high (31.70%) and low (10%) level of knowledge. The analysis of relationship between profile of respondents with knowledge towards organic farming revealed that age and size of land holding were found highly significant with the level of knowledge towards organic farming. The study recommends building of proper channels of communication for the farmers regarding information about organic farming. This will help farmers in increase in their knowledge level and they can also realize the true potential of mass media. Additionally, the farmers expressed scepticism about how difficult it is to access information about different organic farming practises. It is urgent that more extension contacts be made with farmers in order to provide them with accurate information that will be of actual assistance.

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