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Organic Farming: Awareness and Beliefs of Farmers in Uttarakhand, India

Surabhi Singh and Rachel George*

Department of Resource Management, Gujarat Agricultural, University Dantiwada, Gujarat, India
**College of Home Science, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, Uttaranchal, India*

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ABSTRACT Agriculture sector contributes a major portion in gross production of India. In spite of this, agriculture today is finding itself in increasing difficulties. The adverse impact of agriculture based on synthetic fertilizers and herbicides is visible in the degradation of soil fertility, quality of food, taste of food and so on. Organic agriculture may prove to be a boon to curb these adverse effects. There is dearth of information on organic farming in India in general and in Uttarakhand in particular. Hence, the present study was conceived with the broad objective of building authentic database on demographic profile of farmers pursuing organic farming, their belief and awareness regarding organic farming in this hill state of North India. Purposive random sampling was adapted to select districts, blocks and villages. A sample of 72 farmers pursuing organic farming was selected randomly for the study. The study was conducted in plain and hills regions of Uttarakhand. The results showed that the farmers carried out organic farming in a relatively smaller proportion of their land holding. While the respondents were cognizant about some basic facts of organic farming, they were not aware of all the aspects related to certification and standards given by different agencies. Respondents of the study were inclined to have favorable beliefs towards organic farming. The respondents, by and large, revealed good faith in organic farming. To promote organic farming, government should make policies and plan training and educational modules for farmers.

INTRODUCTION

The idea of organic agriculture has been independently created about 80 years ago by two pioneers namely, Sir Howard who developed a scientific approach to composting as an alternative method to chemical fertilization, a research basically done in India and England; and Steiner who initiated the holistic, biodynamic farming methods in his writings and notably the book in 1940, "An Agriculture Testament" which influenced many scientists and farmers of the day (Paull 2006). Some decades later the movement had been further developed, substantiated and farmers got organized and started to market their products. They created labels for their natural product; they grouped into associations in order to join forces in marketing, public relations and research. They formulated definitions and standards on organic farming. In 1972, the International Federation of Organic Agriculture Movement, (IFOAM) was founded as a common platform of understanding and interaction.

It is a lot easier to say what organic agriculture is not, rather than what it is. This is partly because it is often perceived only as farming without fertilizers or sprays, and partly because any definition of it tends to be long and complex. A basic issue is defining what exactly is meant by organic farming. Among the more stringent definition is that of the US Department of Agriculture, which has defined it as follows: organic farming is a system that is designed to produce agricultural products by the use of methods and substances that maintain the integrity of organic agricultural products until they reach the consumer. This is accomplished by using, where possible cultural, biological and mechanical methods as opposed to using substances, to fulfill any specific fluctuation within the system so as to

Address for correspondence:
Dr. Surabhi Singh
New Hostel Warden House,
Behind Gils Hostel,
Dantiwada Gujarat Agricultural University,
District Banaskantha,
Gujarat, India
Telephone/Mobile: 09429429169
E-mail: surabhi1882@yahoo.co.in

maintain long-term soil biological activity; ensure effective peak management; recycle wastes to return nutrients to the land; provide alternative care for farm animals; and handle the agricultural products without use of extraneous synthetic additives or processing in accordance with the act and regulations.

In other words, organic agriculture is a crop production method respecting rules of nature. It aims at sustainable farming system that preserves the environment and the mother earth for coming generations. The farm is maintained as a holistic unit, biologically complete, balanced and dynamic, and ecologically stable and sustainable. In view of the life sustaining methods adopted in organic farming, Long Ashton Research Station, UK, calls it Less Intensive Farming Environment (LIFE) (George 2004).

Organic agriculture aims to be in harmony rather than in conflict with natural system. This idea pervades all aspects of farm, from how pests and diseases are controlled, and the integration of the farm with labor relations and health. The powers of nature are harnessed and developed to their fullest extent, rather than dominated. Some researchers think that organic agriculture adopts an approach that minimizes the use of non-renewable forms of energy (Poincelot 1986).

Today, organic farming is the focus of much public attention and agricultural industry debate. To date, the rise of organic farming has been driven by small, independent producers and consumers (Encyclopedia-Organic Farming 2005).

The prospective organic farmer must be aware of this to an even greater degree because his work is likely to involve even longer hours, his knowledge must be deeper and his skills sound as these play a critical part in steering the venture to success. In spite of taking cognizance, a change in attitude and thinking about organic farming is prerequisite, in order to feel confident and positive about this new direction so that the farmer can carry it through even in the difficult times and against the barracking of neighbors. Skills and knowledge must require to run the organic farm effectively including those of a businessman and salesman to veterinary specialist, weather forecasting, scientist, agronomist and many more.

The present investigation was carried out to study belief of farmers regarding organic farming and awareness of farmers regarding various aspects of organic farming. Many farmers are switching over to organic farming. Are they aware about standards of organic farming? What are their beliefs regarding organic farming? Is there any suggestion to promote organic farming? To seek answers to some of these questions the present study was planned with the following objectives:

1. To determine the demographic profile of farmers and to assess, land holding and coverage in organic farming, duration of organic farming and type of organic crops produced.
2. To study belief and awareness of farmers regarding organic farming.

Review of Literature

Kelsey Hall has studied on Ohio's Grain Farmers attitude towards organic and non-organic farming. Respondents in the study reported a positive attitude toward using non-organic farming methods, while a more negative attitude towards using organic farming was reported. Ohio grain farmers in this study believed that organic farming would have more negative outcomes and identified barriers toward adoption. The researcher suggested that extension professionals could use the findings about Ohio grain farmers' attitudes toward organic farming and their barriers toward adoption to help farmers understand agricultural innovations.

Previous studies have revealed possible economic, health, and technical barriers that influenced non-organic farmers' attitudes about adopting organic farming practices (Hattam 2006). Such studies explained why non-organic farmers did not consider organic production as economically feasible (Darnhofer and Schneeberger 2005). Austrian farmers, for example, did not adopt organic practices for the following reasons: no compensation payments for organics and no willingness to forego net income for benefits of environmentally friendly farming (Darnhofer et al. 2005). The loss of return on organic products would have affected British farmers' ability to pay their mortgages (Fairweather 1999). Large-scale, non-organic farmers in South Africa considered fewer

marketing opportunities, no premium prices, and the lack of subsidies as economic factors keeping them from adopting organic practices (Niemeyer and Lombard 2003).

RESEARCH METHODOLOGY

For the present study, descriptive research design was formulated to achieve the objectives. The present study was conducted in plain and hill regions of Uttarakhand. In view of the assumption that in hills regions organic farming was more popular, two districts (Nainital and Dehradun) were selected from hills region and one district (U. S. Nagar) was selected from plains region through purposive random sampling. From each district two blocks were purposively selected and from each block two villages were selected. The blocks selected were such that they contained the villages earmarked as biovillages. In the selection of villages, purposive random sampling was used as they were selected from the list of biovillages of the selected districts obtained from Uttaranchal Diversified Agriculture Support Project (UTDASP) and NOCB (National Organic Commodity Board), Dehradun.

A sampling frame was developed through census survey in the villages. This sampling frame contained 32 farmers from plain region and 65 farmers from hill region. Thereafter, the farm families were selected randomly through fish bowl method, from the total farm families, which were growing organic crops either in part or total of their farmland. From each group about 73 per cent, that is, 24 and 48 from plains and hills respectively were selected for the study. An interview schedule entitled "Organic Farmers Survey Schedule" was used in the study to elicit information about farmers' personal and demographic profile. Belief scale and awareness scale were prepared to assess belief and awareness of farmers regarding organic farming. A two- point continuum was used to measure the beliefs of farmers regarding various aspects of organic farming. The respondents were asked to respond on the continuum marked "Agree" and "Disagree". The response "agree" on a statement reflecting positive belief in organic farming earned a score of 2 and "disagree" earned a score of 1. Scoring pattern was reversed on these responses if the statement reflected a negative belief.

A three point descriptive rating scale–Awareness scale was constructed to know the awareness of farmers regarding various aspects of organic farming. The respondents were asked to indicate their agreement/disagreement on categories such as "Agree", "Undecided" and "Disagree" against each of the items in the scale. Responses such as "Agree", "Undecided" and "Disagree" on each of the items in the scale were scored from 3 down to 1 respectively in the case of those that were factually correct, reflecting awareness and scoring pattern was reversed in those cases where the items were incorrect, thereby reflecting a lack of awareness towards the specific item on organic farming.

RESULT AND DISCUSSION

Baseline Profile of Sample of Farmers in Organic Farming

Insight into personal characteristics of respondents was gained through analysis of data collected and the findings are presented in the ensuing paragraphs. Selected farmers' background characteristics were also studied. The findings are presented in sequence to those of personal characteristics.

Personal Profile of Farmers

Age

The analysis of data pertaining to age of respondents revealed that it ranged from 18-85 years. The respondents were classified by age into three groups, that is, $\leq$35 years, 36-50 years and >50 years.

It was observed that nearly 50 per cent of the respondents in plains region belonged to the middle age group (36-50 years). Other half of the respondents were distributed in both the groups of $\leq$35 years and >50 years with about 33 per cent and 17 per cent respondents respectively. On the other hand, in the hill region the respondents were somewhat equally distributed in the young and old categories of age, that is, $\leq$35 years, >50 years (27 per cent each) with the largest proportion (43.75 per cent) being in the middle age (36-50 years) category (Table 1).

The analysis of total respondents revealed that a little less than half of them were in the middle age group and more or less comparable proportions were in the young and old age groups through the younger farmers outnumbered the older ones. In other words, farmers of all ages, from young to very old were seen to be involved in organic farming.

Table 1: Distribution of farmers by their age, gender, education, caste and religion

Baseline characteristics %	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
Age						
<35 years	8	33.3	14	29.16	22	30.5
36-50 years	12	50.04	21	43.75	33	45.83
>50 years	4	16.68	13	27.04	17	23.60
Total	24	100	48	100	72	100
Mean	42.54		40.87		43.71	
Gender						
Male	24	100	41	85.44	65	90.27
Female	-	-	7	14.56	7	9.72
Total	24	100	48	100	72	100
Education						
Illiterate	4	16.68	5	10.4	9	12.49
Primary	2	8.34	8	16.64	10	13.88
Secondary	7	29.19	4	8.32	11	15.26
High School	4	16.68	21	43.68	25	34.7
Inter-mediate	4	16.68	6	12.48	10	13.88
College	3	12.51	4	8.32	7	9.72
Total	24	100	48	100	72	100
Caste						
Schedule caste	2	8.34	4	8.32	6	8.32
Backward	12	50	4	8.32	16	22.20
Forward	10	41.7	40	83.2	50	69.4
Total	24	100	48	100	72	100
Religion						
Hindu	24	100	33	68.64	57	79.11
Muslim	-	-	7	14.56	7	9.72
Sikh	-	-	8	16.64	8	11.10
Total	24	100	48	100	72	100

A close look at the findings showed that those in hill regions were better educated than their counterparts in the plains, that is, 64 per cent of the farmers had high school or more education against 45 per cent of the latter having the same level of education.

Of the total respondents, largest percentage (35 per cent) was high school educated and a few (10 per cent) were college educated. On the other hand, nearly 12 per cent respondents were illiterate.

Demographic Profile of Farmers

Caste and Religion

The respondents were categorized into three groups by caste, viz., schedule, backward and forward. Those under study in the plain regions of Uttarakhand were found to belong in large proportions to backward (50 per cent) and forward (41.7 per cent) groups. On the contrary, majority of the respondents (83 per cent) were from forward castes in hill regions. A scrutiny of the total sample showed that a few respondents (8 per cent) belonged to schedule caste, while about one-fifth belonged to backward caste with the majority being in the forward caste. All respondents of plain regions were Hindus. In hill region, nearly 69 per cent pursued Hindu religion. On the other hand, a little more than three-fourth of the total sample was Hindus while only a few, that is, nearly 10 and 11 per cent belonged to Muslim and Sikh community respectively (Table 1).

Occupation

The occupation was categorized into four groups- Agriculture, Business, Service and others. In the 'others' category, those respondents who depended on any other occupation other than agriculture, business and service to generate income were included. It was observed that the secondary earnings of the farmers under study were seen to be from other occupations.

All the respondents had agriculture as main occupation in the plains and two respondents each had petty business and service as secondary occupation. In hill region, the majority of the respondents had agriculture as the main occupation (nearly 96 per cent) and two per cent respondents each had petty business and service as their main occupation. Nearly half of the hill respondents had a secondary occupation (Table 2). Amongst the service employees mostly were class IV employees. Milk selling or a small general store was popular amongst the respondents who had petty business as their occupation.

Annual Income

The respondents were asked to report their monthly income from all sources to the closest

approximate hundred possible. The analysis of data showed that the average annual income of farmers from main occupation was Rs. 42791.6 in plains region while their average annual income in hill region was less than half of plain region. On the other hand, out of the total, a few farmers, that is, 15 per cent earned more than Rs. 40000 annually from their main occupation of farming. Very few respondents, that is, 4 per cent earned more than Rs. 40000 annual income from organic farming and the average annual income of total farmers was Rs. 30262 (Table 3).

Table 2: Distribution of farmers by their main occupation and their secondary household occupation

Main occupation	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
Agriculture	24	100	46	95.94	69	95.77
Business	-	-	1	2.08	1	1.38
Service	-	-	1	2.08	2	2.77
Other	-	-	-	-	-	-
Total	24	100	48	100	72	100

The farmers, who found their income insufficient, took loans for different heads of expenditure. The average amount of loan was higher in plains region than the hills. Here it is important to say that the earning from organic farming was relatively low in both plains and hill regions and the farmers were mostly in conversion period.

Domicile Status

Half of the plain farmers were original inhabitants of the village (>50 years) and the other half of the farmers were migrants. The Keeratpur village is the village of freedom fighters who got the land from government. These farmers migrated to this village from different places. On the other hand, in the hills all the farmers were original inhabitants of the locations studied (Table 4).

Household Size

There was very much variation in household size of the farmers studied. It was observed to range from 2-57. Those with the highest and lowest household size were found in hill region. The analysis of the data showed that the majority of farmers belonged to the medium size families, that is, 5 to 10 members in both plain and hill regions, the percentage of the same being nearly 75 and 73 in plain and hill regions respectively (Table 5). The mean household size was 6.94 for total farmers, while in plain and hill region it was 5.8 and 7.5 respectively which was observed to be higher than the national average.

Table 3: Distribution of farmers by their annual income from main occupation, organic farming and conventional farming

Variables	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
Annual Income from Main Occupation (Rs.)						
20,000-40,000	11	45.87	17	35.36	28	38.86
>40,000	7	29.19	4	8.32	11	15.27
Mean	42791.6		24335		30262.5	
Annual Income From Organic Farming						
Nil	9	37.53	14	29.12	23	31.92
<20,000	6	25.02	22	45.76	28	38.86
20,000-40,000	7	29.19	11	22.88	18	24.98
>40,000	2	8.34	1	2.08	3	4.16
Mean	32500		12360.25		22420	
Annual Income From Modern Farming						
Nil	3	12.51	11	22.88	7	9.72
<20,000	9	37.53	24	49.92	40	55.52
20,000-40,000	8	33.36	11	22.88	19	26.37
>40,000	4	16.68	2	4.16	6	8.33
Mean	53280.56		38240		43760.28	

Table 4: Distribution of farmers according to their domicile status

Domicile status	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
Original inhabitants of the village (>50 years)	12	50	48	100	60	83.28
Migrant and living in this village (<50 years)	12	50	-	-	12	16.65
Total	24	100	48	100	72	100

Table 5: Distribution of farmers by household size

Household size	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
<5	5	20.85	7	14.56	11	15.27
5-10	18	75.06	35	72.8	54	75
>10	1	4.17	6	12.48	7	9.7
Total	24	100	48	100	72	100
Mean	5.8		7.5		6.94	

Socio-economic Status

The socio-economic status of the respondents was ascertained using Venkataramaihair Scale on which they could earn any score between 3 to 40 depending on their SES. Those who earned 33-40, 26-32, 17-25 and 12-18 were rated as upper SES, lower middle SES and lower SES respectively.

The analysis of data showed that in plains region, majority of the farmers belonged to middle SES, that is, nearly 63 per cent while one-fourth of the farmers belonged to upper middle SES. Nearly half of the respondents in hill region belonged to middle SES while 2 and 8 per cent belonged to upper SES and lower middle SES respectively.

Table 6: Distribution of farmers by SES scale of farmers

SES category	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
Upper SES (33-40)	1	4.17	1	2.08	2	2.78
Upper Middle SES (26-32)	6	25	19	39.52	25	34.72
Middle SES (19-25)	15	62.55	24	49.92	39	54.16
Lower Middle SES (12-18)	2	8.34	4	8.32	6	8.33
Lower SES (3-11)	-	-	-	-	-	-
Total	24	100	48	100	72	100

Out of the total farmers, nearly 54 per cent farmers belonged to upper middle SES and 35 per cent belonged to upper middle SES. It was observed that no respondent belonged to lower SES (Table 6).

Land Holding Size

The respondents reported on their land holding size. The analyzed data showed that the mean holding size of respondents in plains (11.93 acres) was a little more than two times the land holding size of respondents in hill regions (4.9 acres). The land size ranged from 0.25 to 85 acres, in which minimum belonged to a respondent in hill region and maximum belonged to one in plain region (Table 7).

Table 7: Distribution of farmers by their land holding

Land size	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
<1	-	-	8	16.64	8	11.04
1-5	7	29.19	26	54.08	33	45.54
6-10	9	37.53	10	20.8	19	26.2
11-15	4	16.68	2	4.16	6	8.28
16-20	1	4.17	1	2.08	2	2.76
>20	3	12.51	1	2.08	4	5.4
Total	24	100	48	100	72	100
Mean	11.93		4.9		7.2	
Mode	10		5		5	
Range	1.5-85		.25-50		.25-85	

Majority of the respondents owned less than 10 acres and belonged to medium and small farmers' group. The small land holding size is an important factor, which might act as a constraint in the adoption of organic farming. A small farmer may find it difficult to afford loss of production in the first three years of organic farming due to conversion and also he may find it formidable to afford the high cost of organic certification. Another researcher, Miranowski (1982), found a positive correlation between larger farm size and adoption of conservation practices for organic farming.

Land under Organic Farming

The investigator was curious to gain insight into the land area under organic farming in the

case of the sample studied. It was found that the majority of the respondents (62.4 per cent) in plain region pursued organic farming on 2 to 5 acres of land (Table 8).

Table 8: Distribution of farmers by their land under organic farming

Land under organic farming (acres)	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
<2	4	16.6	27	56.25	31	43.05
2-5	15	62.4	20	41.6	35	48.6
>5	5	20.8	1	2.08	6	8.33
Total	24	100	48	100	72	100
Mean	2.7		2.04		2.33	

On the contrary, in the hill region a little more than half of the respondents carried on with organic farming under less than 2 acres of land while a little less than half of them persisted organic farming in 2 to 5 acres of land. The proportion of farmers pursuing organic farming on more than five acres was remarkably more, nearly ten times, in plain than in hills of Uttarakhand. A few, that is, 8.33 per cent out of the total respondents did organic management on more than 5 acres of land while 48.6 and 43 per cent had 2-5 acres and <2 acres of farm land respectively under organic farming. The results showed that the farmers carried out organic farming on relatively smaller proportion of their land holding.

Experience of Farmers in Organic Farming

It was thought pertinent to find out respondents' experience in organic farming in terms of their years of involvement. The findings in this regard are summarized in Table 9. It was found that the majority of the respondents, that is, 62.5 per cent, in the plain region were involved in organic farming since one year. On the other hand, about equal number of respondents in hill region, that is, one- third of respondents each were involved in organic farming since 1, 2 and 3 years.

Out of the total respondents', largest percentage of respondents, that is, 43 per cent had an experience of one year in organic farming followed by 3 years and 2 years in declining order. This depicts that most of the farmers under study started organic farming recently and they did not have much experience in it and their farms were not yet certified organic farms.

Table 9: Distribution of farmers by their years of experience in organic farming

Experience in organic farming (in years)	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
1	15	62.5	16	33.3	33	43
2	3	12.5	13	27.08	16	22.2
3	4	16.6	18	37.5	22	30.5
4	2	8.3	1	2.08	3	4.16
Total	24	100	48	100	72	100

One more study was conducted in Bangladesh showing the experience of farmers in organic farming. Sarkar and Itohara (2008) found out that mean organic farming experience was 2.93 years and 50% of them had been farming organically for 3-5 years. Whereas only 4.2% of the farmers had been farming organically for more than 5 years in Bangladesh.

Beliefs of Farmers Regarding Organic Farming

The investigator was interested to gain an insight into the beliefs of farmers regarding organic farming. A descriptive rating scale was constructed for this purpose. Respondents were asked to respond on a two point scale with "agree" and "disagree".

Item-wise Belief of Farmers Regarding Organic Farming

Analysis of data was carried out by computing the total score and mean score earned by respondents on each item in the belief scale and the total scale. The findings of the study revealed that the highest total score, that is, 144 was earned by the statement 'organic farming is environmental friendly'. In other words, all the respondents believed that organic farming is environmental friendly. A study conducted by Wheeler (2008) in Australia revealed that around half of all respondents believed that conventional farming in Australia was generally not environmentally sustainable. The most significant influence on attitudes towards the

conventional sustainability of agriculture was believing that organic farming was environmentally superior to conventional agriculture.

'Organic farming would be more popular' scored the second highest total and mean score thereby reflecting the fact that the respondents believed in the potential of organic farming to emerge more popular in future. About 81 per cent disagreed with the item that 'farmers in large numbers would not adopt organic farming in future' though 20 per cent agreed to it, thereby reflecting the faith in organic farming as a future system of growing crops. The mean score on this item was computed to be 1.81. The respondents, by and large, believed that 'organic farmers will earn more' (56 per cent) implying their belief that the demand for organic foods will increase and it would earn premium price. Majority of the respondents believed that 'The organic products are good for export' and this item earned a mean score of 1.56. Nearly 54 per cent of the respondents agreed to the item that organic farming would benefit large farmers while 46 per cent disagreed. Thus, it was evident that there was a mixed response to this item. The mean score of 1.56 showed that the respondents revealed a divided belief in this regard (Table 10). Favorable belief in organic farming is imperative for farmers to carry it through even in difficult times. Fairweather et al. (2001) in his study found that only one per cent of farmers in the sample were certified as organic producers, there were another nine per cent of the sample who were highly sympathetic to organic ideas, had adopted many practices on their farms that might be considered organic, and would see themselves as organic rather than conventional. Organic farmers (+1.84, sd 1.48) had a very favorable view about the use of organic methods.

Distribution of Farmers by Their Score on Belief Scale

The total score earned by each farmer under study on Belief scale was computed to assess their position in regard to belief in organic farming. The findings summarized in the Table 11 revealed that a little more than half of the respondents in plain region (54.16 per cent) scored between the range of 11-13 and 33 per cent earned > 13 scores respectively.

Table 11: Distribution of respondents by their scores on belief scale

Range of score	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
8-10	3	12.5	5	10.41	8	11.1
11-13	13	54.16	22	45.83	35	48.6
>13	8	33.33	21	43.75	29	40.27
Total	24	100	48	100	72	100
Mean	12.63		12.88		12.79	

Out of the total, half of the respondents scored between 11-13. More hill farmers (44 per cent) than plain farmers (33 per cent) earned > 13 scores thereby indicating the fact that they were inclined to have favorable beliefs towards organic farming. The respondents, by and large, revealed good faith in organic farming. Most British farmers interviewed by Carr and Tait (1991) had favorable attitudes toward conservation in general terms.

Table 10: Distribution of farmers by scores on each item of belief scale

S. No.	*Beliefs*	*Agree*		*Disagree*		*Total score*	*Mean score*
		No.	*%*	*No.*	*%*		
1.	OF would be more popular	58	80.5	14	19.4	130	1.81
2.	OF will earn more	40	55.5	32	44.4	112	1.56
3.	Difficult to sell in domestic (Indian) market	64	88.9	8	11.1	80	1.1
4.	Farmers are in large numbers would not adopt organic farming in future	14	19.4	58	80.5	130	1.81
5.	OF benefits large farmers	39	54.2	33	45.8	111	1.54
6.	OF is environment friendly	72	100	-	-	144	2
7.	Yield is better than conventional farming	11	15.2	61	84.7	83	1.15
8.	Organic products are good for export	40	55.5	32	44.4	112	1.56

OF = Organic Farming

Table 12: Distribution of farmers by scores on each item of awareness scale

S. No.	Statement	Agree		Undecided		Disagree		Total Score	Mean Score
		No.	%	No.-	%	No.	%		
1.	OF is not a sustainable agricultural system	-	-	-	-	72	100	216	3
2.	OF increases soil fertility	72	100	-	-	-	-	216	3
3.	National Programmes for Organic Farming guidelines formed to promote OF	64	88.8	8	11.5	-	-	208	2.9
4.	Chemical fertilizers are allowed in OF	-	-	-	-	72	100	216	3
5.	Synthetic herbicides, fungicides, insecticides and other pesticides are allowed in organic farming	-	-	-	-	72	100	216	3
6.	Genetically modified seeds and plant materials are allowed in OF	63	87.4	8	11.1	1	1.38	82	1.13
7.	Chemical processing aids are allowed in processing of organic foods	60	83.3	12	16.6	-	-	84	1.16
8.	Crop rotation with legumes reduces soil fertility	-	-	14	19.4	58	80.55	202	2.8
9.	OF needs more irrigation	46	63.8	-	-	26	36.08	124	1.7
10.	OF causes more health hazards than conventional farming	-	-	-	-	72	100	216	3
11.	Conversion period is the time between the start of organic management and certification of crops	2	2.77	70	97.2	-	-	146	2.02
12.	The time limit of conversion period is minimum 3 years	2	2.77	70	97.2	-	-	146	2.02
13.	Organic products refer to that product produced or processed under conditions required by national standards for organic production	2	2.77	8	11.1	62	86.06	84	1.16
14.	Agencies like INDOCERT provide certification to the product	2	2.77	-	-	70	97.2	76	1.05
15.	National Organic Commodities Board in Dehradun promotes organic farming in Uttaranchal	16	2.02	-	-	56	77.7	104	1.4
16.	Every year reinspection of farm is not necessary to maintain certification status	72	100	-	-	-	-	72	1

OF = Organic Farming

Awareness Regarding Organic Farming

To find out the awareness of respondent regarding organic farming, a three point descriptive rating scale with 'Agree', 'Undecided' and 'Disagree' response categories was constructed. The items were scored such that those items that reflected awareness were ascribed 3 to 1 for response categories 'agree', 'undecided' and 'disagree' respectively and scoring pattern was reversed in the case of those items that reflected lack of awareness towards organic farming. The data were analyzed to arrive at total and mean score on each of the 16 items of the scale as well as total score of each respondent on the entire scale.

Item-wise Awareness of Farmers Regarding Organic Farming

The findings related to each item on the awareness scale are summarized in Table 12. The

prominent items on which the respondents earned highest total score were observed to be 'Organic farming (OF) is not a sustainable agriculture system' and 'Organic farming increases soil fertility'. This means that respondents were aware that organic farming is a sustainable agriculture system and they were aware of the fact that organic farming increases soil fertility.

Similarly, as in the case of the item that 'Organic farming is not a sustainable agriculture system', other all respondents disagreed with the items 'chemical fertilizers are allowed in organic farming, 'Synthetic herbicides, fungicides, insecticides and other pesticides' are allowed in organic farming' and 'organic farming causes more health hazards than conventional farming'.

The total score on these items were 216 with mean score being 3. 'National Programme for Organic Production guidelines are framed for organic farming' and 'crop rotation with legumes reduces the soil fertility ' were the next most commonly shared statements of the respondents with the total score of 208 and 202 and mean scores of 2.9 and 2.8. In other words, the awareness of respondents in these aspects revealed a tendency to be higher than the midpoint in the continuum of the response categories, thereby showing awareness regarding these aspects revealed fairly low awareness regarding conversion period as evidenced through their mean scores of 2.02 (Table 12). 'Organic farming needs more irrigation' and 'agencies like INDOCERT provide certification to the products' earned total score of 124 and 104 with the mean score being 1.7 and 1.4 thereby reflecting relatively low awareness about these.

The mean score of the remaining items ranged from 1.0 to 1.4. These items were related to specified inputs allowed in organic farming and certification. It could be said that respondents were not much cognizant about these specific items.

Four important factors were identified in a research accomplished by Sarker and Itohara (2008) which could significantly influence the extent of practice of organic farming by the farmers in Bangladesh. These factors were: development of knowledge and awareness among the farmers regarding environmental issues; creation of health awareness; availability of simple organic farming technologies; and availability of resources. The study revealed that majority (89.1%) of the farmers had low to medium level environmental awareness while only 10.9% of the farmers had high environmental awareness.

The findings of the present study should be an eye opener to the government and other organizations related to organic farming. There should be an intense effort to train and educate people about organic farming, its standards, certification, marketing and so on.

Distribution of Farmers by Their Score on Awareness Scale

The scores on the entire scale of each respondent were totaled to gain insight into the relative position of respondents amongst themselves. The sample farmers were grouped under three categories by their scores, namely, those with <25, 25 to 35 and >35 scores. The findings summarized in Table 13 showed that majority of the respondents earned scores between 25 and 35 in plains and hills regions, i.e., 87.5 per cent and 79.16 per cent respectively. Out of the total; respondents a good number of respondents, i.e., about 82 percent belonged to similar category.

Table 13: Distribution of respondents by their scores on awareness scale

Range of score	*Plain (N=24)*		*Hills (N=48)*		*Total (N=72)*	
	No.	*%*	*No.*	*%*	*No.*	*%*
<25	-	-	-	-	-	-
25-35	21	87.5	38	79.16	59	81.9
>35	3	12.5	10	20.8	13	
Total	24	100	48	100	72	100
Mean	33.25		33.54		33.44	

On the contrary, relatively smaller proportion revealed higher level of awareness, that is, >35 scores. These results indicated that while the respondents were cognizant about some facts of organic farming, they were not aware of all the aspects under study.

CONCLUSION

Organic agriculture was found to be encouraged by government of Uttarakhand state. Organic farming was pursued in the

districts of Uttarakhand in its plains and hills regions. Farmers of all age groups with various levels of education were involved in organic farming. The farms were in conversion period. A few females were also involved in organic farming.

Scores earned by respondents on majority of the items of belief scale were found to be comparable ranging from 111 to 130 with the mean scores of 1.54 to 1.81. In other words, the beliefs of the farmers were positive towards organic farming. The results showed that around 40 per cent of the respondents had favorable beliefs towards organic farming. The present findings showed that respondents were aware about some basic facts of organic farming such as its sustainability, health benefits and non-permissibility of chemical fertilizers and herbicides.

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