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## **Present Status and Economics of Organic Farming in the District of Udham Singh Nagar in Uttaranchal**

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### **Abstract**

The study has reported the present scenario about adoption and awareness of organic farming as well as costs and returns of major crops grown under organic farming vis-à-vis non-organic farming on a sample of 90 farmers (45 organic and 45 non-organic) selected from the Kashipur block of Udham Singh Nagar district of Uttaranchal during the year 2004-05. The study has revealed a fairly good adoption status with 36.51 per cent of sample farmers engaged in organic farming. Cost of cultivation for organic paddy over cost  $A_1$  and cost  $C_3$  has been found as Rs 18786/ha and Rs 31651/ha and for non-organic paddy as Rs 19106/ha and Rs 35947/ha. The yields from organic and non-organic paddy have been found as 26.86 q/ha and 32.74 q/ha, respectively. However, farmers could realize relatively higher prices for organic (Rs 1380/q) than non-organic (Rs 1161/q) paddy. Net returns over cost  $A_1$  and cost  $C_3$  from organic and non-organic paddy have been found as Rs 20144/ha and Rs 7279/ha and Rs 21323/ha and Rs 4483/ha, respectively. For organic and non-organic wheat, cost over  $A_1$  and  $C_3$  have been recorded as Rs 8653/ha and 17752/ha and Rs 12220/ha and Rs 22932/ha, respectively. The wheat yield has been found to be lower for organic (19.85 q/ha) than non-organic (28.12 q/ha) farming. The difference between prices of organic (Rs 875.16/q) and non-organic (Rs 780.24/q) wheat has not been much wide. Hence, organic paddy has been found more profitable than organic wheat. The study has suggested organization of training programmes to generate awareness regarding organic farming. Lack of inputs being a general problem among producers, government should ensure timely delivery of quality inputs at reasonable costs. Also, to encourage organic farming, market support system need be strengthened.

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*Note:* Details of costs and returns of paddy and wheat cultivation under organic and non-organic farming can be obtained from authors.

## **Introduction**

In Uttaranchal most of the hill farmers are resource-poor, and therefore apply very low level of chemicals, fertilizers and pesticides. As a result, hill soils are almost free from residues of pesticides and chemical fertilizers. This is a very strong point in favour of Uttaranchal for becoming a successful 'organic state'. This study was conducted with the following objectives: (i) to find the adoption level and awareness of organic farming in the study area, and (ii) to study the economics of major crops grown under organic farming vis-à-vis non-organic farming in the area.

## **Material and Methods**

The study was conducted in the district of Udham Singh Nagar in Uttaranchal during the year 2004-05. Out of the total 7 development blocks in this district, Kashipur block was selected purposively due to the fact that in this block some efforts are being made by the state government and NGOs to help the farmers in adopting organic farming through Macro-mode project and Organic Dehraduni Basmati Project (ODBP). A cluster of 3 villages, viz. Kundeshwari, Berkheri and Kharmasi were selected randomly from this block. A list of all the farmers was prepared from the cluster villages, including both adopters and non-adopters of organic farming. Then, 30 farmers (15 adopters and 15 non-adopters) were selected randomly from each village, making the sample size of 90 farmers. The primary data were collected through personal interview using a pre-tested questionnaire.

## **Analytical Procedure**

### **Adoption Status of Organic Farming**

There were two groups of adopters of organic farming in the selected villages. One group was of those adopters who were chosen under macro-mode and ODBP projects being run in the area and the other group was of those farmers who were practising organic farming with their own interest. The percentage of both types of adopters was worked out in the total farmers in the selected villages to assess the adoption rate of organic farming.

### **Awareness Status regarding Organic Farming**

To find awareness about organic farming, a 3-point descriptive rating 'Awareness scale' was constructed. The respondents were asked to indicate their choice as 'Agree', 'Undecided' and 'Disagree' against each of the items in the scale, and these responses were scored as 3, 2 and 1, respectively

in the case of those who were factually correct, reflecting awareness. The scoring pattern was reversed in those cases where the items were incorrect, thereby reflecting lack of awareness. From the individual item score, total and mean scores were calculated. The scores were interpreted as 'higher the score, the greater was the awareness' regarding organic farming and vice-versa.

### Cost of Cultivation

The cost of cultivation of major crops was estimated using the cost concept defined by Commission of Agricultural Costs and Prices (CACP). These cost concepts are explained below:

Cost  $A_1$  = All actual expenses in cash and kind incurred in production by the producer. The items covered in cost  $A_1$  are costs on: (i) hired human labour, (ii) hired bullock labour, (iii) owned bullock labour, (iv) home produced/purchased seed, (v) plant protection chemicals, (vi) home produced/purchased manure, (vii) fertilizers, (viii) insecticides and pesticides, (ix) depreciation on farm machinery, equipment and farm building, (x) irrigation, (xi) land revenue, land development tax and other taxes, (xii) interest on working capital, (xiii) interest on crop loan, and (xiv) miscellaneous expenses.

Cost  $A_2$  = Cost  $A_1$  + Rent paid for leased-in land

Cost B = Cost  $A_1$  + Interest on value of owned capital assets (excluding land)

Cost  $B_2$  = Cost  $B_1$  + Rental value of owned land (net of land revenue) and rent paid for leased-in land

Cost  $C_1$  = Cost  $B_1$  + Imputed value of family labour

Cost  $C_2$  = Cost  $B_2$  + Imputed value of family labour

Cost  $C_2^*$  = Cost  $C_2$  estimated by taking into account statutory or actual wage rate which ever is higher

Cost  $C_3$  = Cost  $C_2^*$  + 10 per cent of Cost  $C_2^*$  to (on account of managerial functions performed by farmer)

## Results and Discussion

### Adoption Status of Organic Farming

The results of adoption status presented in Table 1 reveal that out of total 378 farmers, 138 (36.51%) were engaged in organic farming. In these

**Table 1. Adoption status of organic farming in US Nagar: 2004-05**

Sample villages	Total number of farmers	Farmers engaged in projects	Farmers practising organic farming by choice	Total	Percentage
Kundeshwari	116	30	11	41	35.34
Berkheri	128	30	21	51	39.84
Kharmasi	134	30	16	46	34.33
Total	378	90	48	138	36.51

138 adopters, 90 farmers were those who were engaged in projects on organic farming and 48 farmers were practising it as their choice. However, farmers practising organic farming by choice were facing many problems related to the access to organic manures, seed, etc. and the technological know-how of organic farming.

#### **Awareness Status regarding Organic Farming**

The findings related to each item on the 'Awareness Scale' have been summarized in Table 2. The prominent items on which the respondents scored the highest were : 'Organic farming is not a sustainable agriculture system' and 'Organic farming increases soil fertility'. This means that farmers were aware about the sustainability of organic farming and its contribution towards increasing soil fertility. Also, all the respondents disagreed with the statements 'Synthetic herbicide, insecticides, fungicides and other pesticides are allowed in organic farming' and 'Organic farming causes more health hazards than conventional farming'. The total score on these items was 180 with mean score of 3.

The higher scores earned on the statements like 'Chemical fertilizers are allowed in organic farming' (173), 'Chemical processing aids are allowed in processing of organic foods' (169) and 'Organic products refer to those products produced under conditions required by national or international standards for organic production' (169) revealed a technology to be higher than the mid-point in continuum of the response categories, showing thereby awareness regarding these aspects. A majority of respondents revealed slightly low awareness regarding 'National Programme for Organic Guidelines formed to promote organic farming' with a total score of 154 and mean score of 2.56.

'Organic farming needs more irrigation' and 'National Organic Commodity Board (NCOB), Dehradun defraud promotes organic farming

Table 2. Awareness of sample farmers regarding organic farming in US Nagar: 2004-05

S. No.	Statements	Respondents, No.				Total score	Mean score
		Agree	Undecided	Disagree	Total		
1.	Organic farming is not a sustainable agriculture system	-	-	60 (100)	180	3	3
2.	Organic farming increases soil fertility	60 (100)	-	-	180	3	3
3.	Chemical fertilizers are allowed in organic farming	-	7 (11.66)	53 (88.33)	180	2.9	2.9
4.	Synthetic herbicides, insecticides, fungicides and other pesticides are allowed in organic farming	-	-	60 (100)	180	3	3
5.	National Programme for Organic Production Guidelines formed to promote organic farming	40 (66.66)	14 (23.33)	6 (100)	154	2.56	2.56
6.	Genetically modified seeds and plant materials are allowed in organic farming	53 (83.33)	6 (10)	1 (1.66)	68	1.13	1.13
7.	Crop rotation with legume reduces soil fertility	50 (83.33)	10 (16.66)	-	70	1.16	1.16
8.	Chemicals processing aids are allowed in processing of organic food	-	11 (18.33)	49 (81.66)	169	2.8	2.8
9.	Organic farming needs more irrigation	39 (65)	-	21 (35)	102	1.7	1.7
10.	Organic farming causes more health hazards than conventional farming	-	-	60 (100)	180	3	3
11.	Conversion period is the time between the start of organic management and certification of crop	28 (46.6)	32 (53.3)	-	148	2.46	2.46
12.	The time limit for conversion period is minimum three years	21 (35)	39 (65)	-	141	2.35	2.35
13.	Organic products refer to those products produced/processed under conditions required by national or international standards for organic production	51 (85)	7 (11.66)	2 (3.33)	169	2.81	2.81
14.	Agencies like Indocert provides certification to the product	3 (3.33)	-	57 (95)	66	1.1	1.1
15.	NOCB, Dehradun defraud promotes organic farming in Uttaranchal	13 (21.6)	-	47 (78.3)	86	1.4	1.4
16.	Every year re-inspection of farm is not necessary to maintain certification status	60 (100)	-	-	60	1	1

Note: Figures within the brackets indicate percentages

in Uttaranchal' earned total scores of 102 and 86 with the mean score of 1.7 and 1.4, respectively, thereby reflecting a relatively low awareness about these items. The low score of some of the remaining items reflected that respondents were not cognizant about these aspects of organic farming.

### **Economics of Paddy Cultivation**

The cost of cultivation of paddy under organic and non-organic farmings is given in Table 3. Only cost  $B_2$  was found higher for organic than non-organic paddy, which was due to higher cost of working assets in adopting organic mode. All the other costs, viz.  $A_1/A_2$ ,  $B_1$ ,  $C_1$ ,  $C_2$  and  $C_3$  were higher for non-organic than organic paddy because of higher costs on fertilizers, plant protection chemicals and machine. Similarly, cost  $C_1$  and cost  $C_2$  were also higher because of high imputed value of family labour for non-organic paddy. The share of hired labour in cost  $A_1$  was found higher for organic (17.34%) than non-organic (10.55%) paddy. The share of expenses like irrigation charges, value of seeds, etc. were also higher for organic paddy.

Although the yield was relatively low for organic (26.86 q/ha) than non-organic (32.74 q/ha) paddy, the price received by the farmers was considerably higher for organic (Rs 1380/q) than non-organic (Rs 1161/q) paddy. This higher price favoured to compensate the difference in the yield. The gross returns were Rs 38930/ha from organic and Rs 40403/ha from non-organic paddy. Examining the net returns over cost  $A_1/A_2$  revealed that these were higher for non-organic paddy by 5.86 per cent. This could be attributed to the higher yield from non-organic paddy. However, the net returns from cost  $C_3$  were considerably higher (34.41%) for organic (Rs 7279/ha) than non-organic (Rs 4483/ha) paddy.

### **Economics of Wheat Cultivation**

A perusal of Table 4 reveals that the cost of cultivation of organic wheat (Rs 17752/ha) was lower than non-organic wheat (Rs 22932/ha) over cost  $C_3$ . All the costs, viz.  $A_1/A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$ ,  $C_2$ ,  $C_2^*$  and  $C_3$  were found to be lower in organic wheat than non-organic wheat. The cultivation of non-organic wheat was more labour-intensive (46 mandays/ha) than that of non-organic wheat (45 mandays/ha). Costs on fertilizers and chemicals, interest on working capital and imputed value of family labour and other expenses incurred accounted for the higher cost of non-organic wheat. It was also observed that net returns were higher for non-organic than organic wheat, although net returns over all costs, viz.  $A_1/A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$ ,  $C_2$ ,  $C_2^*$  and  $C_3$  were found to be positive for organic and non-organic wheat. The reason for lower net returns over different costs despite lower cost of

**Table 3. Economics of paddy cultivation under organic and non-organic modes in Udham Singh Nagar: 2004-05**

Particulars	Category of farmers			
	Organic		Non-organic	
<b>Yield (q/ha)</b>				
Main product	26.86		32.74	
By-product	37.14		48.23	
<b>Price (Rs/q)</b>				
Main product	1380		1161	
By-product	50		50	
<b>Return (Rs/ha)</b>				
Main product	37073		38019	
By-product	1857		2411	
Gross return (Rs/ha)	38930		40430	
<b>Cost of cultivation</b>				
Cost concept	Organic		Non-organic	
	Total product (Rs/ha)	Main product (Rs/q)	Total product (Rs/ha)	Main product (Rs/q)
A <sub>1</sub> =A <sub>2</sub>	18786	705	19106	554
B <sub>1</sub>	21071	792	20318	590
B <sub>2</sub>	26071	979	25318	735
C <sub>1</sub>	21742	817	23232	674
C <sub>2</sub>	26742	1004	28232	820
C <sub>2</sub> *	28773	1081	32679	949
C <sub>3</sub>	31651	1190	35947	1044
<b>Net returns over cost concept</b>				
A <sub>1</sub> =A <sub>2</sub>	20144	674	21323	606
B <sub>1</sub>	17858	587	20112	570
B <sub>2</sub>	12858	400	15112	425
C <sub>1</sub>	17188	563	17198	486
C <sub>2</sub>	12188	375	12198	340
C <sub>2</sub> *	10156	298	7751	212
C <sub>3</sub>	7279	190	4483	116

cultivation of organic wheat was its lower yield (19.85q/ha) as compared to non-organic wheat (28.12 q/ha). Also, the price for organic wheat (Rs 875/q) was not much higher than that of non-organic wheat (Rs 780/q), hence the lower yield in the case of organic wheat was not compensated fully by its higher price. Therefore, growing wheat organically was not a profitable venture for the farmers in the study area. Thus, paddy was relatively more profitable than wheat when produced organically.

**Table 4. Economics of wheat cultivation under organic and non-organic mode in Udham Singh Nagar: 2004-05**

Particular	Category of farmers			
	Organic		Non-organic	
<b>Yield (q/ha)</b>				
Main product	19.85		28.12	
By-product	18.46		25.54	
<b>Price (Rs/q)</b>				
Main product	875		780	
By-product	135		135	
<b>Return (Rs/ha)</b>				
Main product	17371		21940	
By-product	2492		3447	
Gross return (Rs/ha)	19863		25388	
<b>Cost of cultivation</b>				
Cost concept	Organic		Non-organic	
	Total product (Rs/ha)	Main product (Rs/q)	Total product (Rs/ha)	Main product (Rs/q)
A <sub>1</sub> =A <sub>2</sub>	8653	395	12220	370
B <sub>1</sub>	9371	428	13396	405
B <sub>2</sub>	14371	657	18396	558
C <sub>1</sub>	10043	459	14994	454
C <sub>2</sub>	15043	688	19994	606
C <sub>2</sub> *	16138	738	20847	605
C <sub>3</sub>	17752	812	22932	696
<b>Net returns over cost concept</b>				
A <sub>1</sub> =A <sub>2</sub>	11209	479	13168	410
B <sub>1</sub>	10492	446	11992	374
B <sub>2</sub>	5492	217	6992	221
C <sub>1</sub>	9820	415	10394	326
C <sub>2</sub>	4820	186	5394	173
C <sub>2</sub> *	3724	136	4540	174
C <sub>3</sub>	2111	63	2456	84

### Conclusions

The adoption status has been found fairly good as 36.51 per cent of sample farmers are engaged in organic farming in the study area. These farmers practising organic farming were aware about the basic facts related



with it like its sustainability, non-permissibility of chemicals, fertilizers and other technological information, while, the farmers not practising organic farming were not fully aware about the methodology and package of practices of organic farming. Although the yields have been found low for organic (26.86 q/ha) than non-organic (32.74 q/ha) paddy, the farmers could realize relatively higher prices for organic (Rs 1380/q) than non-organic (Rs 1161/q) paddy. The net returns over cost  $A_1$  and cost  $C_3$  from organic and non-organic paddy have been found as Rs 20144/ha and Rs 7279/ha and Rs 21323 and Rs 4483/ha, respectively. For organic and non-organic wheat, cost over  $A_1$  and cost  $C_3$  have been found to be Rs 8653/ha and 17752/ha and Rs 12220/ha and Rs 22932/ha, respectively. The net returns have been found higher for non-organic than organic wheat. The yield has been found to be lower for organic wheat (19.85q/ha) than non-organic wheat (28.12 q/ha). The difference between the prices of organic wheat (Rs 875/q) and non-organic wheat (Rs 780/q) has not been much, and therefore growing wheat organically has not been found a profitable venture. Organic paddy has been found more profitable than organic wheat.

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