



Economic viability of organic farming in Himachal Pradesh: an empirical verification

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ABSTRACT

There has been a debate among the researchers on the viability of organic farming in the context of benefits and cost of cultivation. The present study highlights this debate and assesses the economic viability of organic farmers. An attempt has also been made to present an overview of organic farming in Himachal Pradesh. The positive net income indicates the viability of organic farmers whereas deficit shows non-viability. Presently, agriculture of the state is passing through a transitional phase. In place of subsistence farming, farmers are also producing products for market purpose. They are also looking for alternatives in view of increasing costs of agricultural inputs. Organic farming is an important alternative and sustainable option for reducing costs and maintaining productivity of land in the State.

1. Introduction

The farming system has drastically changed from past when only subsistence farming was practiced. Holding sizes were larger and questions of viability of farm income never arose. Nowadays, the average holding size is declining continuously without any positive changes in cropping pattern. Simultaneously, the population pressure is increasing which leads to lower the per capita income. The present study helps to understand the various issues of organic farming system and their economic viability in Himachal Pradesh. Organic farming is not new in the State. It is an age-old concept which has been changed during the green revolution in India. Over the centuries, traditional farming has always followed excellent organic method in the state. Organic farming encourages soil and water conservation on one hand and reduces the environment pollution on the other hand. It applies natural fertilizers such as animal manure and local inputs whereas inorganic farming uses chemical fertilizers and modern technologies to promote agricultural output. But, the use of these modern technologies has led negative impact on environment and society.

Organic farming differs from inorganic farming because it prohibits the use of chemical pesticides (Ohlan, Ramphul, 2016). Organic farming helps in conservation of natural resources for the future generation and reduces the risk of crop failure (Rameshwaret *al.*, 2014). Organic farming is eco-friendly which can improve the health of human being as well as protect the long term fertility of soil. It also minimizes the requirement of water in agricultural land.

Animal husbandry like sheep, goat, buffaloes and horse's manures with their bedding straw has formed bulk of organic matter. This has been supplemented with oak leaf mould, excess forage grasses and green manuring (Singh, Ranveer, 2007). The certified organic products in the State are; Apple, almond, kiwi, plum, apricot, walnut, cherry, offseason mango, litchi, pears, peach chilgoja, pomegranate, pulses like rajmah, mash (urd), mung, kulth, masur, soyabean*etc.* Along with all types of traditional grains like kodra, kaoni, opla, chillai, bathu, ropa (lalchawal), basmati and organic wheat and maize are also certified products in the State.

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1.1 The Concept of Economic Viability

The concept of economic viability of organic farming has gained considerable importance in the recent times. Economically viable farms may be defined as those which can provide an income required for the minimum maintenance of the farm family. Fundamentally, the viability of farm may be defined in terms of net returns from the crops and other enterprises currently figuring in the present cropping pattern. The positive net return over the variable costs may indicate the viable status of farm. The viability of farm has also been considered to be there when the income generated from the farming activities is able to meet out the existing consumption expenditure of the farming families. The situation differs from area to area depending upon the soils, rainfall, irrigation, climatic conditions, credit and other infrastructural facilities (Rao *et al.*, 1994).

The economic viability of organic farming has been measured on the basis of agricultural production and income from various major crops. In the present study at the first stage viability of farm has been worked out on the basis of paid out cost, as the imputed costs are not incurred from the pockets of farmers as such. In the last stage it is measured over B and C costs. These costs include such as; family and hired labour, cost of bullock, value of seed, manure, rent paid on leased in land, irrigation charges, cost of hiring bullock labour *etc.* After deducting the expenditure on these inputs net income from cultivation has been calculated in the present study. In order to work out the net income, imputed value of the family labour, depreciation and other charges on farm implements and machinery, land revenue, interest on working capital and rental value of land have also been taken into consideration (Saikia, 1992). The category of farmer is considered as economically viable if its net agricultural income is sufficient to maintain his family on current consumption expenditure in addition to meeting out the cost of cultivation and expenditure on other enterprises (Tandon and Murdia, 1972).

2. Review of Literature

Various studies have been conducted on economic viability of organic farming both by government agencies as well as by the individual scholars. The main considerations behind reviewing the already existing studies is to evaluate these studies in the light of sampling, design, methodology used and the suggestions made by the various researchers. Gaur, (2016) has reviewed Indian scenario with respect to organic farming. Study concluded with the remarks that organic farming is productive and sustainable, but there is a need for strong support in terms of subsidies, agricultural services and research.

Cook (2016) conducted a study on farming of the future. The main objective of the study was to protect the ecological resources in feeding the world. The study revealed that world should change its approach towards growing agro-ecologically farming as solution to the protection of our natural resources, rural communities and nature. Ohlan (2014), has assessed the economic viability of organic farming in Haryana. The focus of the study was on the analysis of the major constraints faced by farmers in the adoption of organic farming. The information was collected mainly through the focus group discussion method. He suggested that in order to popularize organic farming in Haryana sincere efforts are required. The Government should announce the separate support prices for the organic products. Argyropoulos *et al.* (2013) observed that development of organic farming is unbalanced. They highlighted that the sustainable organic agriculture is a combination of farming, marketing, economy, and knowledge. The expansion of organic farming requires a more sophisticated approach of financing organic farming. Uematsu and Mishra (2012), conducted a study on organic farmers or conventional farmers. They found that certified organic farmers earn considerably lower household income than conventional farmers. Study concluded that the lack of economic incentive is an important barrier to conversion of inorganic farming to organic farming. Amarnath and Sridhar (2012) have conducted a study on the economics and efficiency of organic farming in comparison with conventional farming in Tamil Nadu. The results showed that the net returns per hectare expected from organic farming were comparatively higher than conventional farming and also that the yield of organic turmeric and cotton increased by increasing usage of farm yard manure, neem cake, vermi-compost and panchakaviya. Singh and Grover, (2011) reviewed the economic viability of organic wheat cultivation in Punjab. They assessed the input use and cost pattern of wheat cultivation in Punjab for the period of 2008-09. The study observed that organic wheat cultivation was found more cost-effective in the study area. Yet, another important aspect was reduction in its productivity level poses a grave challenge in term of food security for the nation. The organic farming was found more labour intensive as compare to inorganic farming. Shrivastava (1994) has conducted a study on economic viability of small and marginal farms potentialities for increasing employment and income. This study suggested various measures that could be used for imparting viability to the non-viable farms. The study was conducted in two agro-climatic regions *i.e.* Chhattisgarh plains including Balaghat district and Kymore Plateau and Satpura hills. Vaidya and Sikka (1992) have conducted a study on small and marginal farms in Himachal Pradesh, they found that the level of viability

varies according to the criterion followed, On the criterion of meeting out paid out costs, all the farms under consideration were viable. But, when, it was analyzed in the light of actual consumption expenditure, some of the farms turned out to be non-viable.

From the above review of literature, it may be concluded that there are strong views for organic farming and against the inorganic farming.

3. Research Methodology

In present study, the multistage stratified random cum purposive technique has been used to achieve the specific objectives of the study. The study is conducted in 10 districts of Himachal Pradesh which have been selected on the basis of, having larger area and production of organic farming as well as who are the part of Participatory Guarantee System (PGS) and practiced organic farming for a minimum two years. The selected districts are further divided into development blocks and these development blocks have been eliminated into revenue villages. Lastly a sample of 480 organic farmers has been selected for the present study. Data has been collected from selected farmers through pre-designed questionnaire by using interview method. To analyze the economic viability of farmers the various costs such as cost A, cost B, and cost C, have been calculated. The main field crops maize, wheat, paddy, and barley are taken into consideration to calculate the farm viability. It is assumed that the organic farming is best economic and ecological alternative to avoid food insecurity in long run.

4. Results and Discussion

4.1 Growth of Organic Farming in Himachal Pradesh

There is a global transformation of agriculture towards the organic farming and the organic food system showed a positive effect on important environmental aspects by reducing over-fertilization and use of pesticides. Himachal Pradesh has great scope for the promotion of organic farming due to diverse agro- climatic conditions of the state. The demand for organic products is growing in the state very fast day by day. Growth of organic farming in Himachal Pradesh has mainly two dimensions. These farmers are both certified and uncertified. First category of organic farmers is that who are living in especially tribal areas and they are doing it as a tradition by default. Mostly these areas are chemical free. They are not certified. Second category of organic farmers is that who have recently adopted the organic farming due to adverse effects of inorganic farming. They have also shifted to organic farming to capture emerging market opportunities.

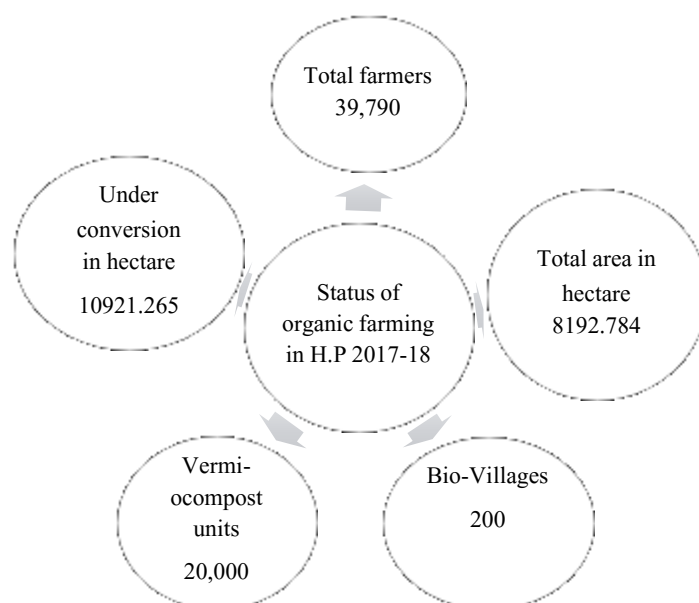
The demand of organic food is more than its supply which results increase in prices of organic food. Due to high income possibilities many farmers turned toward this method of farming.

The Department of agriculture has been promoting organic farming through various training programs, demonstrations, by promoting organic manure, bio- fertilizers, bio-pesticides, vermi-composting, green manuring *etc.* The state government has also provided advisory service to the organic farmers. The state government has decided to promote organic farming in a big way. For this purpose, 'Prakritik Kheti Khushal Kisan Yojana' and 'Zero Budget Natural Farming System, two important schemes have been launched. Figure-1 presents the status of organic farming in Himachal Pradesh. It may be seen from the following Table-1, that presently 39790 farmers have already switched over to organic farming. It can also be seen from the figure that the total organic farmers in Himachal Pradesh during 2017-18 were 39790. About 8192.784 hectares' land has been already converted into organic farming and 10921.265 hectares' area is under conversion in Himachal Pradesh.

5. Land Use Pattern of Sampled Organic Farms in Himachal Pradesh

The employment and income structure in the farming business depends on the cropping pattern and crop intensity. It depends on the level of income needed to satisfy the minimum requirements of consumption items. The land use pattern on the sampled farms has been presented in Table 1. It may be seen from the Table that at aggregate level 538.80 hectares' area was under field crops (59.8 ha irrigated and 479 ha un-irrigated) while 94.9 hectares' land was under orchard. An orchard is the area of land where fruit trees are grown by the farmers. No practice of leasing in and leasing out was found in the study area. This table also presents the cropping intensity of organic farmers. Its higher values indicate the more intensive use of land for crop production. The cropping intensity at overall level was 160.61 percent. It can be seen from the Table-1, that District Chamba observed highest cropping intensity *i.e.* 184.99 percent followed by the farmers of district Mandi which observed slightly higher cropping intensity (176.75 percent) as compared to the farmers of district Kullu (176.69 percent).

Figure 1: Organic Farming at a Glance in Himachal Pradesh



Source: Government of India, Ministry of Agriculture and Farmers Welfare 2018 and Directorate of Agriculture, Shimla, Himachal Pradesh, 2017.

Table 1. Land Use Pattern of Sampled Organic Farms in Himachal Pradesh (Area in Ha/percent)

Sr. No	Districts	Cultivated Land				Leased-in	Leased-out	Un-Cultivated Land	Cropping Intensity
		Field Crop		Orchards					
		I	UR	I	UR				
1	Bilaspur	3.1 (4.45)	56 (80.46)	1.7 (2.44)	8.4 (12.07)	-	-	0.3 (0.43)	147.73
2	Chamba	2.2 (4.09)	45.1 (83.83)	1.1 (2.04)	5.1 (9.48)	-	-	0.3 (0.56)	184.99
3	Hamirpur	2.4 (3.56)	57.4 (85.04)	1.0 (1.48)	6.4 (9.48)	-	-	0.3 (0.44)	171.37
4	Kangra	17.8 (26.57)	28.5 (42.54)	14.4 (21.49)	5.9 (8.81)	-	-	0.3 (0.45)	124.14
5	Kullu	1.6 (3.30)	41.3 (85.15)	0.7 (1.44)	4.6 (9.48)	-	-	0.2 (0.41)	176.69
6	Mandi	10.5 (14.83)	51.3 (72.46)	4.6 (6.50)	4.0 (5.65)	-	-	0.4 (0.56)	176.75
7	Shimla	5.0 (6.58)	60.6 (79.74)	2.7 (3.55)	7.2 (9.47)	-	-	0.4 (0.53)	155.89
8	Sirmaur	7.2 (12.31)	41.8 (71.45)	3.6 (6.15)	5.6 (9.57)	-	-	0.3 (0.51)	163.47
9	Solan	5.2 (7.27)	55.4 (77.48)	3.7 (5.17)	6.8 (9.51)	-	-	0.4 (0.56)	159.24
10	Una	4.8 (8.89)	41.6 (77.04)	2.3 (4.26)	5.1 (9.44)	-	-	0.3 (0.56)	154.48
Overall		59.8 (9.38)	479.0 (75.17)	35.8 (5.62)	59.1 (9.27)			3.2 (0.50)	160.61

Source: Author's own calculations based on field survey

Note: Figures in parentheses denotes percentages of the total

6. Cropping pattern of Sampled Organic Farms in Himachal Pradesh

There are mainly two cropping seasons viz. Kharif season and Rabi season in the state of Himachal Pradesh. Cropping pattern refers to the existing crops, which are being grown in a particular area. The cropping pattern is governed by number of factors viz. soil, climate, irrigation, land productivity, market situation, type of demand and price etc. (Vaidya and Sikka, 1992). It also indicates the level of development and economic prosperity of a farm family. The cropping pattern of sampled farmers shown in the Table-2. It may be seen from the Table that the overall gross cropped area has been reported 786.9 hectares of which 271.6 (67.4 irrigated and 204.2 unirrigated) hectares was under maize crop, 5.1 hectares were under paddy crops and under wheat crops it was 380.8 (36 irrigated hectares and 344.8 hectares unirrigated) hectares. It may also be seen from the table that maize was important Kharif crop which accounted for 34.52 per cent of the gross cropped area. Wheat was most important Rabi crop which covered about 48.4 per cent of the gross cropped area and cultivated under both rainfed and irrigated conditions. Paddy was grown on irrigated land and Barley was other main crop grown during Rabi season by the sample of farmers of the state.

7. Viability of Farms

The farm viability has been defined as a situation where income generated from a particular enterprise is enough to meet out the investment demand of the enterprise. If farmer is able to pay off different costs (paid out costs as well as the imputed costs) involved in the production of a particular enterprises, it is considered to be viable. The following text presents the cost of cultivation of major crops such as maize, wheat, barley and paddy.

The cost of cultivation of crops determines the economic viability of organic farm. These costs include the expenditure incurred by farm families on the field to produce agriculture products. The major direct expenditure includes in the present study are; payment made for hired human labour, hired bullock labour, cost of seed, cost of manure, irrigation charges, cost of plant protection materials etc. After deducting these direct expenditures from net income the viability of farm has been worked out. In order to work out the net income of the farmer families the imputed value of the own family labour, bullock labour, have also been taken into consideration to work out the viability of organic farms.

Table 2. Area under Field Crop on Sampled Organic Farms (Area in percentage)

Districts	Kharif Crops						Rabi Crops				Gross cropped area (Ha.)
	Maize		Paddy		Other Kharif		Wheat		Barley		
	IR	UIR	IR	UIR	IR	UIR	IR	UIR	IR	UIR	
Bilaspur	3.7 (4.40)	22.4 (26.49)	0.0	0.0	0.0	5.6 (6.62)	2.5 (2.90)	50.4 (59.59)	0.0	0.0	84.6 (100.00)
Chamba	2.6 (3.53)	36.4 (48.68)	0.0	0.0	0.0	2.4 (3.21)	1.1 (1.41)	31.6 (42.22)	0.7 (0.94)	0.0	74.8 (100.00)
Hamirpur	2.9 (3.39)	24.2 (28.48)	0.0	0.0	0.0	15.8 (18.60)	1.9 (2.24)	40.2 (47.29)	0.0	0.0	85.0 (100.00)
Kangra	17.0 (26.07)	11.4 (17.48)	2.4 (3.68)	0.0	0.0	0.0	12.6 (19.33)	18.2 (27.98)	3.6 (5.46)	0.0	65.2 (100.00)
Kullu	1.9 (3.14)	9.0 (14.73)	0.0	0.0	0.0	20.0 (32.73)	0.8 (1.26)	28.9 (47.31)	0.5 (0.84)	0.0	61.1 (100.00)
Mandi	12.6 (13.56)	27.0 (29.06)	1.3 (1.36)	0.0	0.0	9.0 (9.69)	5.0 (5.42)	35.9 (38.65)	2.1 (2.26)	0.0	92.9 (100.00)
Shimla	6.0 (6.33)	12.0 (12.66)	0.0	0.0	0.0	30.4 (32.06)	2.4 (2.53)	42.4 (44.74)	1.6 (1.69)	0.0	94.8 (100.00)
Sirmaur	8.6 (11.86)	22.2 (30.47)	0.9 (1.19)	0.0	0.0	7.0 (9.61)	3.5 (4.74)	29.3 (40.16)	1.4 (1.98)	0.0	72.9 (100.00)
Solan	6.2 (7.10)	22.4 (25.48)	0.6 (0.71)	0.0	0.0	16.4 (18.65)	2.9 (3.26)	38.8 (44.11)	0.6 (0.68)	0.0	87.9 (100.00)
Una	5.8 (8.50)	17.2 (25.39)	0.0	0.0	0.0	11.8 (17.42)	3.5 (5.10)	29.1 (42.99)	0.4 (0.59)	0.0	67.7 (100.00)
Total	67.4 (8.57)	204.2 (25.95)	5.1 (0.65)	0.0	0.0	118.4 (15.05)	36.0 (4.58)	344.8 (43.82)	10.9 (1.39)	0.0	786.9 (100.00)

Source: Own Field Survey

Note: Figures in parentheses denotes percentages of the total

7.1 Cost of Cultivation and Return from Maize on Sampled Farms in Himachal Pradesh

Maize was one of the most important kharif crop grown by sample farmers in the study area. It ranked second to wheat in area wise. It is mostly cultivated in a rainfed conditions. It has been found during the investigation that this crop is a staple diet of majority of people in the selected areas and gives very good yields even under the unirrigated conditions. The cost of cultivation and return from maize has been presented in the Table 3. It may be seen from the table that total cost of cultivation of maize on sampled organic farms per hectare /per farm was Rs. 5444 over cost A₁, and A₂. It was Rs. 13074.5 over cost B and Rs. 15774.6 over cost C, per farm/ per hectare. The net return from this crop was Rs. 10116.5 per farm/ per hectare over paid out costs and loss of Rs. 214.2 in case of cost C per farm/ per hectare, at overall level. The largest component responsible for this cost was human labour followed by bullock labour and other material cost. The highest net returns were observed in case of large farmers Rs. 9605.0 per farm/ per hectare at overall level. Net returns from this crop were observed negative in case of marginal and small organic farms.

7.2 Cost of Cultivation and Return from Wheat on sampled Farms in Himachal Pradesh

Wheat was the most important Rabi crop produced in the selected areas of Himachal Pradesh. The analysis of various costs along-with returns from this crop has been presented in Table 4. It may be seen from the table that at overall level, the average cost of cultivation of the per farm/ per hectare has been observed Rs. 5734.6 over cost A₁ and A₂. Like maize the largest component responsible for present cost is also human labour followed by bullock labour and other materials cost. The category wise analysis of Table-4 reveals that the cost of cultivation of the large farms was higher as compared to other categories of farms. The present table further reveals that at aggregate level, wheat cultivation resulted loss of Rs. 60.7 per farm/per hectare in case of marginal farms but it was positive for all other categories of farm. At overall level the net profit from wheat has been observed Rs. 2895.4 per farm /per hectare.

Table 3. Cost of Cultivation and Return from Maize on Sampled Farms in Himachal Pradesh (Rs. Ha/Farm)

Crop (Maize)	Marginal	Small	Semi-Medium	Medium	Large	Over All
Cost A ₁	1603.5	8382.0	13983.3	26235.2	57116.7	5444.0
Cost A ₂	1603.5	8382.0	13983.3	26235.2	57116.7	5444.0
Cost B	3584.8	19900.2	36766.7	64027.3	128928.3	13074.5
Cost C	5212.1	23640.1	41656.1	72258.8	144211.7	15774.6
Gross Return	4075.5	23130.9	46150.0	77376.9	153816.7	15560.4
Net Return Over						
Cost A ₁	2472.0	14748.9	32166.7	51141.7	96700.0	10116.5
Cost A ₂	2702.1	16611.8	34016.7	54652.8	96700.0	10943.8
Cost B	490.7	3230.7	9383.3	13349.5	24888.3	2485.9
Cost C	-1136.6	-509.2	4493.9	5118.1	9605.0	-214.2

Source: Author's own calculations based on own field survey

Note: The calculations are made on the market prices for the period of 2017-18.

Table 4. Cost of Cultivation and Return from Wheat on Sampled Farms in Himachal Pradesh (Rs. Ha/Farm)

Crop (Wheat)	Marginal	Small	Semi-Medium	Medium	Large	Over All
Cost A ₁	1493.6	8030.6	16426.5	29826.9	66866.7	5734.6
Cost A ₂	1493.6	8030.6	16426.5	29826.9	66866.7	5734.6
Cost B	4983.8	22723.9	48526.5	99232.4	206466.7	17827.4
Cost C	7041.2	27089.0	55908.3	110173.1	226416.7	21290.3
Gross Return	6980.5	29386.5	64200.0	138811.1	279200.0	24185.6
Net Return Over						
Cost A ₁	5486.9	21355.9	47773.5	108984.3	212333.3	18451.0
Cost A ₂	5486.9	21355.9	47773.5	108984.3	212333.3	18451.0
Cost B	1996.6	6662.6	15673.5	39578.7	72733.3	6358.2
Cost C	-60.7	2297.5	8291.7	28638.0	52783.3	2895.4

Source: Author's own calculations based on own field survey

Note: The calculations are made on the market prices for the period of 2017-18.

7.3 Cost of Cultivation and Return from Paddy on Sampled Farms in Himachal Pradesh

Paddy was one of the important Kharif crop in the study area. By virtue of its nature, this crop is produced in the irrigated area. It ranks third after wheat and maize. The sowing/transplantation of the crop starts with beginning of monsoons and is ready for harvesting in the month of October-November. The area under paddy in selected region found to be declining due to poor irrigation facilities and declining rainfall. This area has been diverted towards the maize and other cash crops such as vegetables and fruits. The cost of cultivation of paddy with its returns has been presented in Table 5. It may be seen from the table that the total cost of cultivation of paddy was Rs. 14850 per farm per hectare at aggregate level over cost A₁ and A₂. It was Rs. 43710 per farm per/ hectare over cost B. The overall net returns from this crop has been observed positive (Rs. 5540) per farm /per hectare on sampled farms of the selected areas.

7.4 Cost of Cultivation and Return from Barley on Sampled Farms in Himachal Pradesh

Barley is the second most important Rabi crop in Himachal Pradesh especially in the high hill areas. This crop requires very small amount of money on seed, manure, human labour *etc.*

In the plain the cultivation of barley has been stopped in many places because it is considered as an inferior food grain. The area under barley has been gradually transferred to some other superior crops like wheat and off-season vegetables in the state. However, in some area which has also been selected for study farmers are still producing this crop for market purpose and some are producing for their animals. By nature, this crop is organic. Farmers of selected areas were not using any chemical fertilizers or plant protection materials in the production of this crop. The cost of cultivation of barley has been presented in Table -6. The overall cost of barley per farm /per hectare was Rs. 6910.6. This cost was of Rs. 4451.0 per farm for marginal farmers while it was found Rs. 12523.3 per farm for small farmers at aggregate level. Whereas it was Rs. 17573.3 per farm for semi-medium farmers and Rs. 33800 per farm for large farmers at aggregate level. Like other crops, in the cultivation of barley the largest cost component was also the human labour followed by bullock labour costs. The analysis reveals that, at the aggregate level, the farmers were incurring net profits of Rs. 5259.4 per farm over cost A₁ and A₂, at overall level. The net return in case of marginal farmers were observed of Rs 2611 and it was Rs. 9593.3 per farm /per hectare for small farmers, Rs. 4756.7 for semi- medium farmers and in case of large farmers the net return was Rs. 14150 per farm.

Table 5. Cost of Cultivation and Return from Paddy on Sampled Farms in Himachal Pradesh (Rs. Ha/Farm)

Crop (Paddy)	Marginal	Small	Semi-Medium	Medium	Large	Over All
Cost A ₁	-	-	12200	18025	13000	14850
Cost A ₂	-	-	12200	18025	13000	14850
Cost B	-	-	37175	51325	39362.5	43710
Cost C	-	-	44175	62700	45662.5	52180
Gross Return	-	-	49950	66600	52725	57720
Net Return Over						
Cost A ₁	-	-	37750	48575	39725	42870
Cost A ₂	-	-	37750	48575	39725	42870
Cost B	-	-	12775	15275	13362.5	14010
Cost C	-	-	5775	3900	7062.5	5540

Source: Author's own calculations based on own field survey

Note: The calculations are made on the market prices for the period of 2017-18.

Table 6. Cost of Cultivation and Return from Barley on sampled Farms in Himachal Pradesh (Rs. Ha/Farm)

Crop (Barley)	Marginal	Small	Semi-Medium	Medium	Large	Over All
Cost A ₁	974.8	3206.7	4756.7	7000.0	6000.0	1556.6
Cost A ₂	974.8	3206.7	4756.7	7000.0	6000.0	1556.6
Cost B	2767.6	9606.7	13956.7	31000.0	30300.0	4964.6
Cost C	4451.0	12523.3	17573.3	34500.0	33800.0	6910.6
Gross Return	3585.7	12800.0	18400.0	48000.0	48600.0	6816
Net Return Over						
Cost A ₁	2611.0	9593.3	13643.3	41000.0	42600.0	5259.4
Cost A ₂	2611.0	9593.3	13643.3	41000.0	42600.0	5259.4
Cost B	818.1	3193.3	4443.3	17000.0	18300.0	1851.4
Cost C	-865.2	276.7	826.7	13500.0	14800.0	-94.6

Source: Author's own calculations based on own field survey

Note: The calculations are made on the market prices for the period of 2017-18.

Reasons for Conversion of Inorganic to Organic Farming in Himachal Pradesh

There are number of reasons for conversion of inorganic to organic farming in Himachal Pradesh. In general, the prices of inorganic inputs are continuously increasing as a result of it the cost of agriculture production is also continuously increasing. The major costs in inorganic farming are chemical fertilizers and pesticides. These costs in organic farming can be replaced by low cost seeds, manure and relatively less irrigation than inorganic agriculture. But the use of labour in organic farming is higher than the inorganic farming. Organic farming is more environmental friendly and depends upon local resources. Table-7 depicts that 58.8 per cent respondents were of the opinion that environmental concern is the main reason for conversion of inorganic to organic farming while 46.7 percent were strongly agreed that they have personal conviction for this reason. 57.1 percent respondents reported production of healthy food was another important reason for conversion of inorganic to organic farming whereas 43.8 percent respondents stated that they have converted inorganic to organic farming due to negative factors in relation to chemicals.

Conclusion

Agriculture and allied activities are found the major source of earnings of the sampled farmers although they were also dependent on non-agricultural activities to some extent. To work out the economic viability of organic farming in Himachal Pradesh, various costs such as; cost A, cost B, and cost C, have been considered. These costs occupy a significant role in the cropping pattern. The main cereal crops *e.g.* maize, wheat, paddy, and barley are taken into consideration to calculate the farm viability. The financial viability has been worked out over the paid out cost of cultivation for the different crops. The income generations through farm resources are observed to be very low. The results indicate that all the farms located in the study areas were financially viable, *i.e.* they were capable of generating income in excess of cost of cultivation of different crops. Although the level of viability varies from one category to another category and area to area. When farm viability is analyzed over Cost B and Cost C mostly small and marginal organic farmers were found not economically viable. There is a pertinent need for more development of basic infrastructure like roads, agricultural extension services, irrigation facilities, storage facilities; marketing facilities *etc.* Government should also focus on organic certification facilities, demonstration practices and training of the farmers

about organic farming. Certification process is also very complicated. There is still lack of appropriate arrangement for selling of organic products so marketing facilities for organic products are the need of hour in Himachal Pradesh.

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Table 7. Reasons for Conversion Inorganic to Organic Farming (in percentage)

S. No.	Reasons	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Mean
1.	Personal Conviction	46.7	52.9	0.0	0.4	0.0	4.46
2.	Environmental Concern	58.8	38.3	0.4	2.5	0.0	4.53
3.	Production of Healthy Food	57.1	42.5	0.4	0.0	0.0	4.57
4.	Higher Sales Price	48.3	27.9	10.4	9.6	3.8	4.08
5.	Negative Factors in Relation to Chemicals	43.8	47.5	5.0	0.0	3.8	4.28
6.	Less production cost	39.6	29.6	9.2	12.1	9.6	3.78

Source: Own field survey

Note: Mean is calculated by using the following weights: Strongly agree = 5, Agree = 4, Unsure = 3, Disagree = 2, Strongly disagree = 1. The total numbers of sampled respondents are 480.