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RESEARCH PAPER

Identification and Analysis of Constraints Faced by Organic Vegetable Growers

Shaminder Kumar[1*], Sanjeev Kumar[2], R.S. Prasher[1] and Nisha Devi[1]

[1]Department of Social Sciences, Dr. YSP UHF Nauni, Solan, Himachal Pradesh, India
[2]Department of Economics and Sociology, PAU, Ludhiana, Punjab, India

*Corresponding author: shaminderkumar64@gmail.com (**ORCID ID:** 0009-0009-9702-5813)

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ABSTRACT

Organic agriculture is a low-cost, sustainable farming method that contributes to increased food and financial security. The current study was carried out to investigate the various obstacles faced by organic vegetable growers in Himachal Pradesh. The sampled households were chosen using a multistage random sampling procedure. A total of 120 organic vegetable growers were comprising 56 marginal, 41 small, and 23 medium farmers. Garrett's ranking technique was used to prioritise imminent constraints. Small land holdings, a higher incidence of pests and diseases, a decline in crop productivity, a lack of minimum support prices for organic products, non-availability of the marketplace, less erratic monsoon, temperature and humidity fluctuations, and the threat of wild animals were revealed as the most severe constraints faced by farmers in the study area.

HIGHLGHTS

- Garett's ranking technique was used to analyse the constraints faced by the farmers.
- Small land holdings and higher incidence of pests and diseases were the major production constraints.
- Lack of minimum support prices for organic products and non-availability of the marketplace were the major marketing constraints.

Keywords: Constraints, food and income security, garret's ranking technique, multistage random sampling, organic farming

Green revolution technologies involving greater use of synthetic agrochemicals such as fertilizers and pesticides as well as the adoption of nutrient-responsive, high-yielding crop varieties, have increased production output per hectare. However, this gain in output has recently stalled, and there are some signs of a fall in productivity and output. Nevertheless, the recent success of industrial agriculture and the green revolution has frequently obscured significant externalities harming natural resources, human health, and agriculture itself. Furthermore, the farming community is experiencing a number of problems as a result of environmental changes and pollution. Crop damages due to climatic change are putting a lot of pressure on the farmers. The growing awareness of environmental conservation and the health risks posed by agrochemicals has resulted in a significant shift in consumer preference towards food quality. Organic food that is considered safe and hazard-free is becoming increasingly popular among global consumers.

Organic farming is a viable approach to addressing issues such as sustainability, global warming, and food security. Organic production methods are based on specified food production standards and attempt to achieve socially and environmentally

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sustainable agroecosystems. Currently, 187 countries practice organic agriculture on 72.3 million hectares of agricultural land. The Oceania region accounts for over half of all organic agricultural land (35.9 million hectares), with Europe accounting for approximately 16.5 million hectares. In 2021, the total area dedicated to organic agriculture in Asia was more than 6.5 million hectares. There were nearly 1.8 million producers, most of whom were in India. The leading countries by area were China (2.75 million hectares) and India (over 2.66 million hectares). The total area under organic certification in India (as recognised under the National Plan for Organic Production) is 9119865.91 hectares (2021-22). This contains 4726714.74 hectares of cultivable land and another 4393151.17 hectares set aside for wild harvesting (Anonymous, 2023a).

Organic farming systems in India have gained popularity over the last decade since they are seen to offer some solutions to the agriculture sector's current difficulties. Sikkim achieved the incredible feat of turning its whole cultivable land (more than 75000 hectares) to organic certification in 2016. India produced approximately 3430735.65 MT of certified organic products (2021-22), which include a wide range of food products such as oil seeds, fibre, sugar cane, cereals and millets, cotton, pulses, aromatic and medicinal plants, tea, coffee, fruits, spices, dry fruits, vegetables, processed foods, and so on. Madhya Pradesh is the largest producer among the states, followed by Maharashtra, Rajasthan, Karnataka, and Odisha. Organic products are shipped to the United States, the European Union, Canada, the United Kingdom, Switzerland, Turkey, Australia, Ecuador, the Korean Republic, Vietnam, and Japan, among other places. Organic farming has the potential to deliver environmental benefits, non-renewable resource conservation, and increased food quality (Anonymous, 2023b).

Himachal Pradesh is one of the Indian states where farmers, government and non-government organisations have made important contributions to the state-wide process of organic farming promotion and sustainable development in recent years. The farmers of the state practice different farming systems due to the availability of wide range of agro-climatic conditions. However, these farmers experience problems like lack of processing facilities, wild animal menace, labour scarcity, high cost of production etc (Kumar *et al.* 2021a).So far, Himachal farmers' actual experience has showed the benefit of organic farming in reducing/replacing the use of chemical fertilisers and pesticides, lowering cultivation costs and improving soil productive capacity. Based on these experiences, it is expected that organic farming will benefit farmers in all agroecological zones of Himachal Pradesh. Yet, organic farming is growing at a slower pace, despite being the best solution to many environmental issues and food security (Devi *et al.* 2020). Despite the favourable climate for organic vegetable cultivation, farmers experience several sorts of restrictions in adopting organic vegetable production; thus, the current study was undertaken to identify the numerous constraints faced by organic vegetable producers in Himachal Pradesh's hills.

MATERIALS AND METHODS

Study Area

The study was conducted in three districts of Himachal Pradesh namely, Shimla, Solan and Sirmour during the agricultural year 2018-19 (Fig. 1).

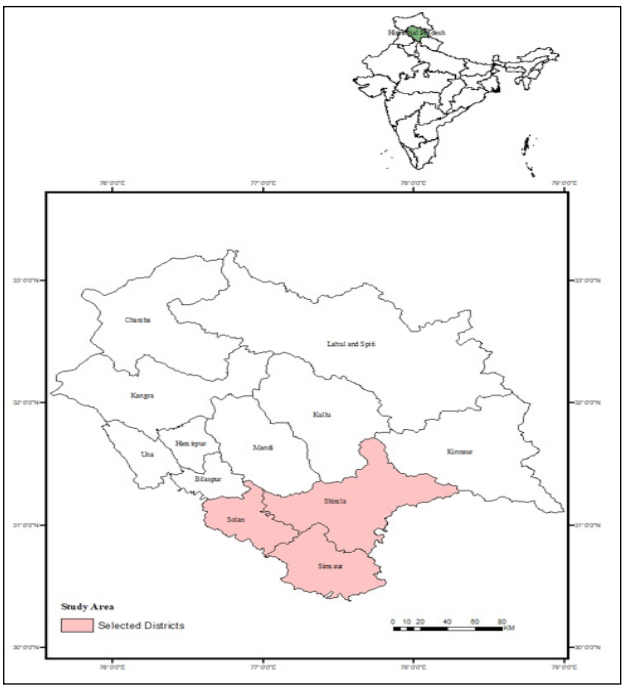

Fig. 1: Map of the study area

These three districts were selected purposively as these districts occupy the maximum area under organic vegetables in the state (Anonymous, 2018-

19). The sampled households were selected using a multistage random sampling technique. In the first stage, two blocks from each district were selected based on the maximum area under organic farming. In the second stage, a complete list of villages engaged in organic cultivation in selected blocks was prepared, out of which, five villages were selected randomly from each selected block. Finally, four farmers practicing organic farming were randomly selected from each selected village in the last stage of sampling to constitute a total of 120 sample households. These households were further divided into marginal (<1 ha), small (1-2 ha), and medium (2-4 ha) farmers based on their land holding size.

Data Collection and Analysis

The study used primary data collected using a well-designed pre-tested schedule. The data was collected for various socio-economic and farm-specific characteristics like family size, working population (15-65 years), dependents population (<14 years and > 65 years), the farming experience of the family head, land holding size, etc. The various constraints faced by organic vegetable growers were identified and divided into four major categories viz., production constraints, marketing constraints, ecological constraints and other constraints. Further, Garrett's Ranking Technique was used to arrange these constraints based on the severity from the farmers' point of view (Zalkuwi *et al.* 2015; Dhanavandan, 2016; Devi *et al.* 2020 and Kumar *et al.* 2021a). The farmers were asked to assign the rank to each category of the constraints and thereafter, the per cent position for each rank was calculated using the following formula:

$$\text{Per cent Position} = \frac{R_{ij} - 0.50}{N_j} \times 100$$

Where, R_{ij} = Rank given to the i^{th} item by the j^{th} individual and N_j = Number of items ranked by the j^{th} individual.

The percent position of each rank was converted into scores using Garrett's table given by Garret and Woodwoth (1969). For each constraint score of the individual respondent was added. Thus, the mean score for each constraint was ranked by assigning a higher rank (1) to the highest value of Garrett's mean score.

RESULTS AND DISCUSSION

Socio-economic and farm-specific characteristics of organic vegetable growers

The data in Table 1 gives the information about socio-economic and farm-specific characteristics of respondents. The perusal of the table shows the average family size in the study was 5.42, out of which 77.60 per cent was the working population (15-65 years). Among different farm categories, medium farms have the highest working population (84.86%) followed by marginal (76.96%) and small (73.99) farmers. About 22.40 per cent population was dependent in the study area with small farmers having the highest population of dependents (26.01%) followed by marginal (23.04%) and medium farmers (15.14%). The results indicated a negative relationship between farming experience and farm size which means that marginal farmers (20.36 years) are more experienced than medium farmers (18.24 years). Overall, the farming experience of

Table 1: Socio-economic and farm-specific characteristics of organic vegetable growers

Particulars	Marginal	Small	Medium	Overall
Total No. of Households	56	41	23	120
Average family size (No.)	5.27	5.37	5.87	5.42
% Working force	76.96	73.99	84.86	77.60
% Dependents population	23.04	26.01	15.14	22.40
Farming experience of the family head (years)	20.36	19.51	18.24	19.66
The average size of land holding (ha)	0.67	1.33	2.68	1.28
Cropping intensity (%)	197.91	191.67	180.15	192.37

the household head was about 19.66 years. The average size of land holding was 1.28 hectares. The cropping intensity also showed a negative relationship with farm size with 197.91 per cent in the case of marginal farms and 180.15 per cent in medium farms. Overall, the cropping intensity was around 192.37 per cent in the study area.

Constraints faced by the farmers

The collected data revealed several constraints that are being faced by the organic vegetable growers in the study area. The results of various aspect-wise constraints perceived by these farmers have been presented below in subsequent tables.

Production constraints

The various production constraints faced by the organic vegetable growers are given in Table 2 which revealed that small land holding was a major constraint at the overall level with a Garret Mean Score (GMS) of 78.36 as well as on small and medium farm categories having GMS of 74.79 and 81.70, respectively. On marginal farms, the cost of labour was reported as the major constraint by organic vegetable growers having GMS of 78.914. The higher incidence of pests and diseases was the second largest constraint (GMS = 75.89) followed by a decline in productivity (GMS = 75.41). The pests and disease management with organic means is complex and needs a holistic and systematic approach. The capacity building on these aspects needs to be addressed through various research and extension programs and should be pest and location-specific. The other major production constraints faced by organic vegetable growers are the non-availability of irrigation facilities, fluctuation in production, and lack of skilled labour. Kumar *et al. (*2021a) also revealed that the farmers of Himachal Pradesh faced the high cost of inputs, high cost of production and labour scarcity as the major production constraints. Similar results were reported by Kumar *et al*. (2018) and Devi *et al.* (2020).

Marketing constraints

In organic vegetable farming, the most important marketing constraint reported by the farmers at

Table 2: Production constraints being faced by organic vegetable growers in the study area

Sl. No.	Constraints	Marginal		Small		Medium		Total	
		GMS*	Rank	GMS*	Rank	GMS*	Rank	GMS*	Rank
1	Costly labour	78.91	I	73.35	II	65.43	XIII	74.43	IV
2	Lack of technical guidance	70.38	X	66.79	X	68.04	X	69.82	X
3	Non-availability of biopesticides	64.52	XIII	63.09	XIII	66.83	XII	65.53	XIII
4	High incidence of pest and disease	74.79	III	72.33	III	78.65	II	75.89	II
5	Non-availability of seed material	61.71	XV	61.93	XV	63.70	XV	62.17	XV
6	Less-fertile soil	71.52	IX	67.77	IX	72.04	VII	71.47	IX
7	Think that local conditions are conducive to inorganic farming	64.13	XIV	62.79	XIV	64.13	XIV	64.72	XIV
8	Lack of skilled labour during the operation period	73.64	VI	70.23	VI	68.70	VIII	72.70	VII
9	Small land holding	76.93	II	74.79	I	81.70	I	78.36	I
10	Decline in productivity	74.09	IV	72.00	IV	78.43	III	75.41	III
11	Lack of awareness about organic practicesto control the pest and diseases	72.39	VIII	69.33	VIII	72.13	VI	72.45	VIII
12	Fluctuating production	72.48	VII	69.95	VII	76.52	V	73.56	VI
13	Non-availability of irrigation	73.66	V	70.56	V	77.22	IV	74.46	V
14	Lack of information on organic farming	66.20	XII	64.56	XII	67.57	XI	66.98	XII
15	Non-availability of organic manures	69.48	XI	66.98	XI	68.65	IX	69.58	XI

GMS is Garrett's Mean Score.*

the overall level as well as among different farm categories was the lack of minimum support prices for organic products (Table 3). The non-availability of a marketplace exclusively for organic produce (GMS=75.48) was the second most important constraint at the overall level. Price instability, distant markets, and high transport charges were other highly severe problems related to marketing which were ranked third, fourth, and fifth respectively in the study area. Price fluctuation is a multifaceted problem attributed to various factors which, when combined, culminating in dangerous consequences for the farmers. Although high prices can technically be good news for farmers, price fluctuation is extremely dangerous, as farmers and other agents in the food chain risk losing their investments if prices fall. Devi *et al.* (2020) also reported that the non-availability of the market and lack of minimum support price for organic produce are f the main problems faced by the organic farmers of Himachal Pradesh. Kumar *et al*. (2021a) and Kumar *et al*. (2021b) also reported that price fluctuations, non-remunerative prices and lack of regulated markets are the main problems faced by the farmers of Himachal Pradesh. Rana *et al.* (2019) also reported that non-remunerative price or the produce and lack of regulated markets are the major marketing problems faced by the farmers.

Ecological constraints

Under ecological constraints, the problem of irregular monsoon was ranked first by all categories of farmers having GMS of 69.80 at the overall level (Table 4). Crop damages due to climatic changes are putting a lot of pressure on the farmers as agriculture in Himachal is largely dependent on monsoon. Fluctuation in temperature and humidity was also found to be a major constraint and was ranked second (GMS = 68.21) at the overall level. The problems of wind and hailstorms, non-suitable climate and soil contamination with pesticides were other highly severe ecological-related constraints in the study area. These findings are following the findings of Devi *et al.* (2020).

Other constraints

Under this category, the wild animals' menace was reported as the major constraint by the farmers among different farm categories as well as at an overall level with GMS of 60.81 (Table 5). The menace of wild and stray animals has emerged as one of the greatest challenges in the recent

Table 3: Marketing constraints being faced by organic vegetable growers in the study area

Sl. No.	Constraints	Marginal		Small		Medium		Overall	
		GMS*	Rank	GMS*	Rank	GMS*	Rank	GMS*	Rank
1	Non-availability of market place exclusively for organic produce	75.48	II	70.72	III	77.83	III	75.48	II
2	Distant markets	73.88	IV	69.35	V	75.30	V	73.76	IV
3	Inability to obtain premium prices for the organic produce	70.11	VIII	67.67	VIII	73.61	VII	71.08	VIII
4	Inadequate storage facilities	71.63	VI	68.67	VI	74.57	VI	72.33	VI
5	Price instability	74.23	III	71.79	II	78.35	II	75.38	III
6	Non-assurance of getting income	71.46	VII	67.79	VII	72.13	VIII	71.47	VII
7	Lack of availability of institutional credit	65.75	XIII	62.05	XIII	65.70	XIII	65.51	XIII
8	Inaccurate weighing instruments	66.04	XII	62.63	XII	66.91	XII	66.08	XII
9	Malpractices by traders at the time of the auction	68.25	XI	62.88	XI	67.70	XI	67.36	XI
10	High transport charges	72.86	V	69.53	IV	76.35	IV	73.55	V
11	Lack of market intelligence	68.68	X	63.58	X	70.22	X	68.29	X
12	Lack of minimum support prices for organic products	76.96	I	72.70	I	80.35	I	77.37	I
13	High commission charges	69.55	IX	65.77	IX	72.04	IX	69.83	IX

GMS is Garrett's Mean Score.*

Table 4: Ecological challenges being faced by organic vegetable growers in the study area

Sl. No.	Constraints	Marginal		Small		Medium		Overall	
		GMS*	Rank	GMS*	Rank	GMS*	Rank	GMS*	Rank
1	Loss of water holding capacity	60.04	V	51.47	VII	55.30	VII	57.06	VII
2	Irregular monsoon	68.54	I	67.72	I	70.70	I	69.80	I
3	Soil contamination with Pesticides	59.41	VI	62.19	V	65.70	V	62.60	V
4	Soil erosion	58.63	VII	59.44	VI	63.96	VI	60.92	VI
5	Fluctuation in temperature and humidity	68.04	II	64.95	III	68.78	II	68.21	II
6	Wind and hail storms	66.88	III	67.00	II	67.17	III	68.09	III
7	Climate not suitable	64.46	IV	63.33	IV	66.35	IV	65.49	IV

GMS is Garrett's Mean Score.*

Table 5: Other constraints faced by organic vegetable growers in the study area

Sl. No.	Constraints	Marginal		Small		Medium		Overall	
		GMS*	Rank	GMS*	Rank	GMS*	Rank	GMS*	Rank
1	Wild animals menace	60.36	I	58.23	I	61.43	I	60.81	I
2	Too technical	48.20	IV	52.51	II	60.09	II	52.83	II
3	The certification process is expensive and complicated	52.77	III	42.37	III	52.43	III	49.86	IV
4	No local processing facilities	54.89	II	42.30	IV	51.17	IV	50.58	III

GMS is Garrett's Mean Score.*

past. Damage to crops by wild and stray animals, monkeys, rabbits, etc. was reported in the study area. Secondly, farmers feel that organic farming is too technical. Thirdly, there were no local processing facilities available in the study area. The farmers feel that agro-processing units can help transform the local organic produce into high-value-added agricultural products which would further improve their income generation and food security. These findings are in close conformity with Kumar *et al.* (2021a).

CONCLUSION

The study shows that the move to organic farming is not without challenges. Small land holding, high incidence of pests and diseases, decline in productivity, non-availability of irrigation facilities, lack of minimum support prices for organic produce, price instability, distant markets, irregular monsoon, fluctuation in temperature and humidity, wind and hailstorms, and crop damage by wild and stray animals, monkeys, rabbits, etc. In organic vegetables' production farmers seek various help from the government, as well as private and cooperative organizations, to tackle all of these difficulties and problems. If these limits can be addressed by excellent planning and execution at the ground level, the consequences can be both successful and beneficial.

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