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Performance of Organic Vegetable Farming among Smallholders Farmers

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ABSTRACT

Globally, the small farmers contribute to a third of total world food production (FAO, 2021). There are various other factors that affect the overall performance and market potential of organic vegetable farming in Sikkim and all of India. So, in order to understand the current scenario of organic vegetable farming and to provide an insight into the preferences and marketing needs of smallholder farmers, a holistic investigation could prove to be useful. Taking these factors into consideration, this study entitled "Performance of Organic Vegetable Farming among the Smallholders of West District (Sikkim)" has been taken up for research.The study was carried out purposively in the state of Sikkim due to the fact that Sikkim is the world's first organic state to become completely organic. Out of four districts, West Sikkim was chosen for the current investigative study on a purposive basis owing to the fact that as it had the highest area under vegetable cultivation. Out of the ten blocks in West Sikkim, two blocks each were selected randomly for the present study.30 organic vegetable farmers were selected from each of the four villages to make up a total respondent group of 120 farmers for the present study.The findings of the research indicated that three indicators of performance of organic vegetable farming among smallholders were categorized as physical indicators, economic indicators and environmental indicators out of which physical indicators were ranked as best performing. Most of the farmers agreed on the medium performance level of all the indicators.

Key words: organic vegetable, performance of vegetable farming, performance indicator

INTRODUCTION

Organic vegetable farming presents a welcome alternative to conventional methods with its sustainable systems and ecologically viable way of providing healthy and safe food for the expanding Indian population. India ranks as the second largest producer of vegetables globally, with a 14per cent share in total global vegetables. There is a huge existing market for vegetables nationally as well as internationally, a large consumer base for organic products, abundance of organic raw materials and a congenial environment for vegetable production all throughout the year. All of these aspects contribute to the thrust towards wide scale adoption of organic vegetable farming. Organic vegetable production is a very suitable choice for implementation in the mountainous region of Sikkim. Organic vegetable production system can be managed efficiently to contribute to food security, income generation and crop diversification. There are a wide variety of vegetables cultivated in different regions of Sikkim based on the climate and irrigation requirements of the crops. Some commonly grown vegetables in Sikkim include tomato, beans, potato, broccoli, peas, carrot, cabbage, radish, cauliflower, leafy vegetables, carrot, chayote, eggplant, cucumber, pumpkin, sweet potato, garlic, onion, okra, bitter gourd, sponge gourd, bottle gourd, ridge gourd, etc.

METHODOLOGY

The study was carried out purposively in the state of Sikkim due to the fact that Sikkim is the world's first organic state to become completely organic. Out of four districts, West Sikkim was chosen for the current investigative study on a purposive basis owing to the fact that as it had the highest area under vegetable cultivation. Out of the

ten blocks in West Sikkim, two blocks each were selected randomly for the present study, which were namely Chumbong and Daramdin. Further, four villages were selected i.e., two from each block by using the random sampling technique. The villages were Chumbong, Budang, Tareybhir and Tikpur. 30 organic vegetable farmers were selected from each of the four villages to make up a total respondent group of 120 farmers for the present study.

Performance of organic vegetable farming among smallholder farmers

In the current investigation, performance is a variable which can be defined as any activity or task of organic farming that influences the lives of the respondent smallholder farmers. A schedule consisting of 14 indicator statements was used to measure the performance variable and the responses were recorded as either "Yes" or "No". Scoring was assigned as 2 and 1 respectively. The 14 relevant statements were categorized into three groups namely, Physical indicators which included 5 statements, Economic indicators including 4 statements and Environmental indicators including 5 statements. The development of performance schedule was done after careful consideration of the organic farming scenario of Sikkim as well as a detailed review of existing literature related to performance of organic vegetable cultivation among smallholder farmers. On the basis of scoring received, the level of performance of organic farming among the farmers was deduced. The maximum that could be scored was 28 and the minimum was 14. The raw data for score obtained was recorded for the 14 mentioned statements. Finally, using the CSRF approach, categorization was done as low, medium and high.

PERFORMANCE OF ORGANIC VEGETABLE FARMING AMONG SMALLHOLDER FARMERS	
Categories	**Range**
PHYSICAL INDICATORS OF PERFORMANCE	
Low	Up to 7.74
Medium	7.75-9.64
High	Above 9.64
ECONOMIC INDICATORS	
Low	Up to 5.79
Medium	5.80-8.02
High	Above 8.02
ENVIRONMENTAL INDICATORS	
Low	Up to 7.43
Medium	7.44-9.19
High	Above 9.19

RESULTS AND DISCUSSION

Performance of organic vegetable farming among the smallholder farmers was analyzed with the help of different indicators which were categorized as physical, economic and environmental indicators. The individual performance of each indicator was also assessed to find out the best performing area of organic vegetable farming. The results obtained from the investigative study have been presented in the following Table 1

Table 1
Distribution of respondents according to the indicators of performance of organic vegetable farming

Indicators of performance				**Rank**
A. Physical indicators				
Sl. No.	**Category**	**Frequency**	**Percentage**	
1	Low (up to 7.74)	11	9.17	I
2	Medium (7.75-9.64)	81	67.5	
3	High (> 9.64)	28	23.33	
Mean=8.69, SD= 0.95				
B. Economic indicators				
1	Low (up to 5.79)	16	13.33	II
2	Medium (5.80-8.03)	104	86.67	
3	High (> 8.03)	0	0	
Mean = 6.91, SD= 1.12				
C. Environmental indicators				
1	Low (up to 7.43)	20	16.67	III
2	Medium (7.44-9.19)	89	74.16	
3	High (> 9.19)	11	9.17	
Mean = 8.31 SD= 0.88				

In accordance to the contents of Table 1, it can be concluded that most respondent organic farmers in the study area (67.5%) fit into the medium category of performance of physical indicators. 23.33 per cent of the remaining organic farmers fell into the high category and only 9.17 per cent reported low performance of physical indicators.With respect to the economic indicators, it was found that most of the respondent organic farmers (86.67%) were seen to agree with the medium performance level of economic indicators. It was also revealed that there were no farmers who fell into the high category while only 13.33 per cent of the farmers fell into the low category of performance of economic indicators. Additionally, above table also displayed data on the environmental indicators of organic vegetable farming among the smallholders in the locale of study. It was seen that 74.16 per cent of the respondents agreed that there was medium level of performance of environmental indicators while 9.17 per cent of the respondents agreed on the high performance of environmental indicators while only 16.67 per cent fell into the category of low performance of environmental indicators.In consideration of all the above results, it can finally be inferred that majority of the respondent organic vegetable farmers fell into the medium level of performance of organic vegetable farming.

While comparing the three indicators, it was found that the physical indicators performed the best and so they were ranked first and the economic and environmental indicators were ranked second and third respectively. This may be attributed to the fact that organic farming has been practiced in Sikkim for such a long period of time that farmers can see the better performance of physical indicators like improvement in quality of vegetables, self-sufficiency for home consumption and improvement in family health. Most of the farmers agreed positively with the statements of physical indicators. Economic indicators like better prices for organic vegetables also seem to be performing well. The environmental indicators seemed to rank last due to the fact that most farmers strongly perceived the lack of resistance to pest and diseases as well as water use inefficiency.

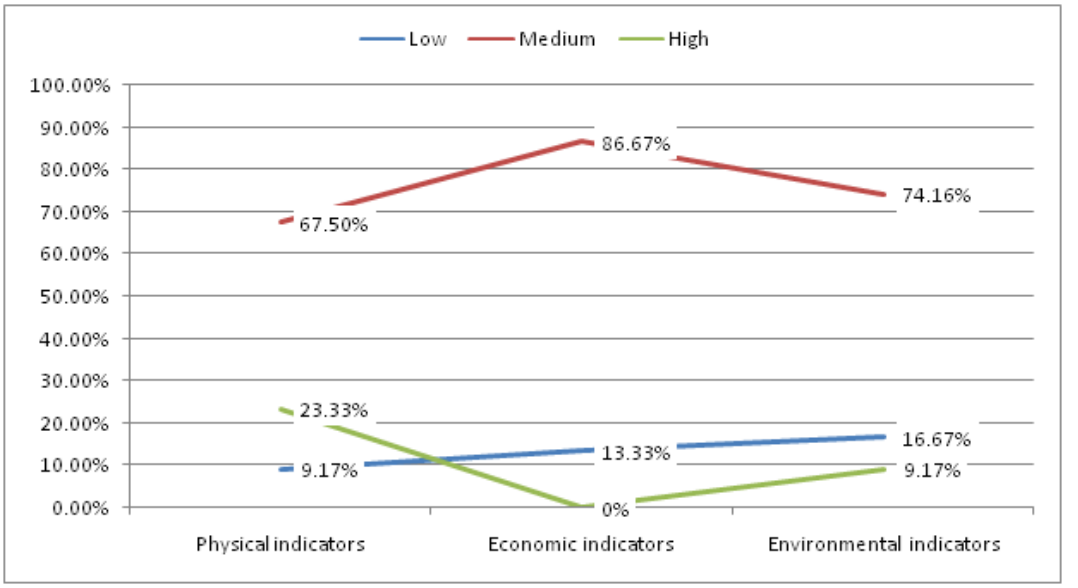


Fig. 1 Percentage distribution of respondents according to the performance of indicators oforganic vegetable farming

Further, the organic vegetable farmers' responses to all the individual statements concerning the performance of organic vegetable farming among smallholders have been presented in Table 2.

Table 2: Performance of organic vegetable farming among smallholders

Sl. No.	Statements	Responses			
		Yes		No	
		f	%	f	%
A.	**PHYSICAL INDICATORS**				
1.	Organic farming leads to increase in yield of vegetables	58	48.33	62	51.67
2.	There is improvement in the quality of vegetables and better health benefits	114	95	6	5
3.	There is self-sufficiency of vegetables for home consumption	105	87.5	15	12.5
4.	Family health has improved significantly	101	84.17	19	15.83
5.	Organically produced vegetables have longer shelf life	65	54.17	55	45.83
B.	**ECONOMIC INDICATORS**				
1.	The cost of cultivation is less as compared to chemical farming	87	72.5	33	27.5
2.	Organic vegetables fetch higher prices in the market	113	94.17	7	5.83
3.	There is an increase in family income	86	71.67	34	28.33
4.	There is improvement in the standard of living	63	52.5	57	47.5
C.	**ENVIRONMENTAL INDICATORS**				
1.	Organic vegetable farming has led to improvement in soil fertility	110	91.67	10	8.33
2.	Better water use efficiency	50	41.67	70	58.33
3.	Increase in resistance to pest and diseases	17	14.17	103	85.83
4.	Efficient utilization of natural resources	100	83.33	20	16.67
5.	Organic vegetable farming is more eco friendly	120	100	0	0

Table 2 clearly depicts the responses of the farmers to the individual statements. It shows that 48.33 per cent of the farmers agreed that organic farming leads to increase in yield of vegetables while a majority of 51.67 per cent did not agree with the same statement. A large majority making up 95% of the total respondents agreed that there is an improvement in the quality of vegetables and better health benefits while only 5 per cent answered negatively to that statement. When enquired about the self-sufficiency of organic vegetables for home consumption, it was revealed by 87.5 per cent of respondent farmers that there was self-sufficiency and only 12.5 per cent said that there was no self-sufficiency for home consumption. 84.17 per cent of the farmers said that their family health has improved significantly and 15.83 per cent disagreed. 54.17 per cent of the farmers also agreed that organically produced vegetables have longer shelf life while only 45.83% of the respondent farmers answered no to this statement.

With respect to the economic indicators of performance of organic vegetable farming, it is apparent that 72.5 per cent of the respondent farmers answered positively that the cost of cultivation is less as compared to chemical farming while 27.5 per cent answered no to the statement. Whenasked about the prices that they get for organic vegetables in the market, 94.17 per centfarmers responded that organic vegetables fetch them higher prices while only 5.83 per cent said that they did not get higher prices. It was also seen that 71.67 per cent of the farmers agreed that there is an increase in family income while 28.33 per cent disagreed. Further, 52.5 per cent of the farmers said that there is improvement in the standard of living. However, 47.5 per centresponded that there is no improvement in the standard of living.

On further investigation of the environmental indicators of performance, it was found that 91.67 per cent of the respondents agreed that organic vegetable farming has led to improvement in soil fertility while 8.33% disagreed. Upon being asked about the water use efficiency, 41.67 per cent of the respondent farmers answered that there was better water use efficiency in organic farming while 58.33 per centdisagreed with the same. 14.17 per cent of the farmers also agreed that there is an increase in resistance to pest and diseases but a majority of 85.83 per cent of them disagreed with the same statement.83.33 per cent of the respondents also said yes regarding the statement of efficient utilization of natural resources in organic farming and only 16.67 per cent responded that there was no efficiency in utilization of natural resources. Lastly, 100 per cent of the respondents agreed that organic vegetable farming is more eco-friendly. One of the respondent farmers provided clear context to the performance of organic vegetable farming among the smallholder farmers by stating the following:

"Organic vegetable farming has been a profitable venture for me. I grow various organic vegetables like cauliflower, cabbage, pea, radish and carrot. There are various aspects of organic vegetable farming that I enjoy the benefits of. Organic vegetable farming is eco-friendly, cost effective and profitable. The vegetables are tasty and healthy as well. I wish to continue to practice organic vegetable farming in my fields for a long time moving forwards. There is however, a major concern that has been plaguing my mind as well as the lives of my fellow neighbours and friends. Over the past few years, the prevalence of insects like ants, aphids and white grubs have impacted the performance of my fields. Since we cannot use chemical insecticides and there is a dearth of knowledge regarding sustainable as well as effective methods of control, I am confused as to what solution can I apply in this situation."

-Chiten Dorjee Sherpa, 37 years, (Tareybhir village)

CONCLUSION

- The present research study was carried out with the intent of examining the current scenario of performance of organic vegetable farming in Sikkim. Most of the respondent farmers belonged to the old age group, had primary

level of education and belonged to nuclear families.

- Three indicators of performance of organic vegetable farming among smallholders were categorized as physical indicators, economic indicators and environmental indicators out of which physical indicators were ranked as best performing. Most of the farmers agreed on the medium performance level of all the indicators.
- Suggestions provided on the basis of information gathered during the study included provision of financial support through loans, encouraging youth start-ups through organic based ventures, promotion of animal husbandry to support organic farming as well as improving marketing of organic produce.

Policy Recommendations

- Organic farmers all over the world, especially smallholder farmers should be encouraged to undertake diversified organic vegetable farming on the basis of suitability of the vegetable crops to the farmer's field. This could help small farmers to maximize profits from minimum landholdings.
- Performance of organic vegetable farming can be examined at a wider scale by the horticulture department and other relevant agencies in different districts of Sikkim so that area based development strategies can be formulated. This blueprint can further be adopted in all the organic farming areas throughout India and globally.
- The major problem areas of organic vegetable farming can be assessed at a wider scale to formulate suitable development frameworks.
- Common interest groups like self-help groups and farmer producer organizations should be established to support the smallholder farmers.
- Facilitating improved access to extension services, encouraging integrated farming systems, providing refrigerated vehicles and directing farmers towards opportunities for export are some of the recommendations that can be considered by policymakers to help optimize performance and market potential of organic vegetable farming among smallholder farmers.

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