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Empowering Rural Livelihoods and Enhancing Nutritional Security through Kitchen Gardens in Patiala District (Punjab)

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Abstract

To meet the daily requirements of fruits and vegetables kitchen garden can be a great option for rural people. Farm Advisory Service Centre (FASC), Patiala had demonstrated kitchen gardening amongst 300 families of three villages of the district to assess the yield and economic impact of the kitchen garden technology in addition to constraints experienced by the selected farmers. The objective was to increase the availability of vegetables and nutrient intake at the household level and to increase farmers' understanding of different technological aspects of kitchen gardening. An interview schedule was used to collect data from the respondents. The results of the present study revealed that after the nutritional intervention, on an average per family received 29-31 percent more vegetables per season. The average total income per family was Rs. 3306 from winter season vegetables and Rs. 3427 from the summer season. Major constraints cited by the chosen farmers were the limited use of high-quality vegetable seeds and improper site selection for establishing a kitchen garden.

Keywords: Kitchen garden, Constraints, Economic analysis

JEL Classification: Q12, Q18, Q13

Introduction

Kitchen gardening is a technology that allows us to grow fresh vegetables at home while making good use of used cookware, clay flower pots, and empty tins. This activity saves money and time,and will also be beneficial to health and the environment. In India, the daily requirement for vegetables is roughly 300 g of (green leafy vegetables account for 50 g, other vegetables 200 g, roots and tubers account for 50 g)and 85 g of fresh fruits (Singh and Singh, 2017). Likewise, ICMR has recommended 100 g of leafy vegetables per day for pregnant women, but availability is very low, So, kitchen garden can be very beneficial to overcome this deficiency. Furthermore, vegetables are an important source of vitamins, minerals, and dietary fiber. These nutrient molecules reduce the risk of chronic diseases such as cardiovascular diseases, diabetes, certain types of cancers and obesity (Singh et al., 2022). For domestic consumption, a large no. of rural families used to grow vegetables in their backyards. However, due to improper vegetable cultivation, they are still devoid of vitamins and minerals available from vegetables. Similarly, the majority of people experience ongoing food insecurity. According to estimates, the world's food production will need to be raised by 70 per cent the mid-2050s to supply all of the people on the planet with the average number of calories they need each day. Now, the emphasis is on achieving a balanced diet, increasing life expectancy and quality of life by identifying food ingredients that boost these parameters.

Moreover, sales of excess vegetables generate direct income, while savings from not purchasing the same from the market and improved trade when produce is exchanged with neighbors. In addition to providing fruits and vegetables, gardening is an aesthetic and therapeutic activity that reduces stress. The economic viability of kitchen gardening units in farmers' backyards was investigated in light of the significance of kitchen gardening in modern society. The main focus was on identifying the barriers preventing the recommended kitchen gardening techniques from being adopted.

Data Sources and Methodology

Present investigations on kitchen gardening were carried out in three villages namely Kathgarh, Khakta Kalan and Mehmudpur of Patiala district for the year 2022. In three villages, there were 300 demonstrations conducted by the Farm Advisory Service Centre, Patiala. Vegetable kits produced by PAU, Ludhiana, for both the summer and winter seasons, were given free of cost to these farmers and farm

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women. The kits included seeds for vegetables like peas, carrots, radish, spinach, coriander, metha, and methi for winter and okra, bottle gourds, bitter gourds, etc. for summer. A total of 45 respondents (5 from each village before intervention and 10 from each village after intervention study) were selected for the present study out of a total of 300 farmers and farm women. Farmers and farm women were advised to practice hand hoeing for weed control and to use organic manures, such as farm yard manure (FYM), to meet the fertilizer needs of vegetable crops. Chemical methods of pest control were to be avoided in favor of manual and mechanical methods. It was suggested that chemical control measures be used sparingly and only when necessary. Since the main goal of the kitchen gardening demonstrations was to wean farmers off of purchasing vegetables from the market. For the purpose of calculating the average returns from these demonstrations, the produce's retail market price was used. Vegetable yield was noted in order to determine the units' economic returns. Studying the limitations felt by the growers was prioritized to spread the idea of kitchen gardening by eliminating the various bottlenecks. The constraint was defined in the current study as an unavoidable force that prevents the adoption of suggested kitchen gardening methods. In consultation with extension scientists, the available literature, field workers, and forward-thinking vegetable growers, a list of major constraints was generated. 30 farmers provided the primary data for the study of the constraints, which were gathered using an interview schedule. According to Meena and Sisodia (2004), the respondents' perceptions of the constraints were graded based on the severity of the problem. The responses' scores were recorded, converted to mean percent scores, and the constraints were ranked in accordance with (Warde et al., 1991).

Results and Discussion

Data collected from the sampled farmers of the district (Table 1) revealed that most of them were educated up to senior secondary level (46.7 %). A little more than half of them were below 40yearsof age (51.1 %).

It was also found that the majority of selected farmers' families were small-sized (51.1%), followed by medium-sized (44.4 %) and large-sized (4.4%). Nutritional education intervention was given through PAU vegetable seed kits at free of cost, regular contact with beneficiaries, group discussions, method demonstrations, etc.

The average per unit (500 m^2 area) production of vegetables from the kitchen garden during the winter and summer seasons, is depicted in Figure 1 and 2. Data revealed that there was 29-31 per cent increase in vegetable production from the kitchen garden unit after interventions during both seasons. Thus, an increase in vegetable production resulted from vegetable availability from 220 to 277.4 g per day per member (average family size = 5) and thus per capita availability of nutrients per day also improved (Singh et al.,

Table 1: Socio-economic profile of the respondents (N=45)

Sr No.	Parameter	Category	Percentage
1.	Educational Qualification	Middle	4.4
		Matriculation	37.8
		Senior Secondary	46.7
		Graduate	11.1
2.	Age (Years)	< 40	51.1
		40-50	24.4
		>50	13.3
3.	Operational holding (ha)	< 1.5	46.7
		1.5-3.0	37.8
		3.0-6.0	15.6
4.	Family Size (numbers)	< 5	51.1
		5-8	44.4
		>8	4.4
5.	Type of Labour involved	Family	57.8
		Hired	11.1
		Family+ hired	31.1
6.	Knowledge about PAU's Kitchen Garden model	Yes	73.3
		No	26.7

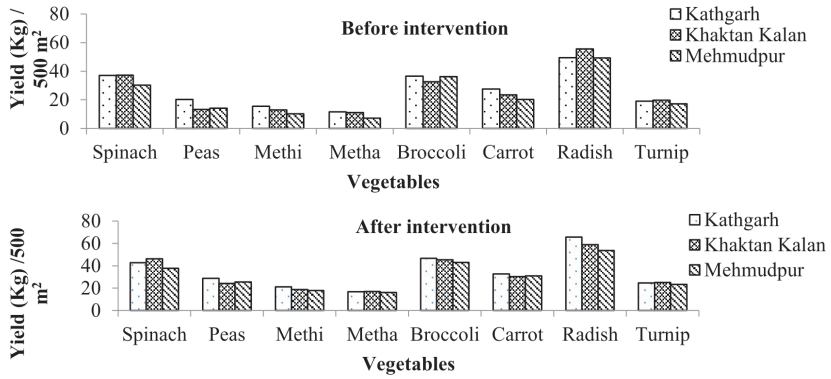

Fig. 1. Average yield of winter season vegetables grown in kitchen garden on 500 m² area (Sample size, n = 15 before intervention; n=30 after intervention)

2022). Data further revealed that among the selected villages, Kathgarh has the highest yield followed by Khakta Kalan and Mehmudpur. This could be due to the better response of selected farmers from the Kathgarh village and the other two villages' farmers might not have followed the recommended practices.

In addition to this, the increase in yield after the intervention is mainly attributed to quality vegetable seed provided to the farmers and the conducting of diagnostic visits to the farmer's field by the FASC scientists. Moreover, farmers were made aware of the use of organic amendments to meet the nutrient requirement of the vegetable crops, thus resulted in increased vegetable production from the kitchen garden. Before the intervention, farmers generally purchased poor-quality vegetable seeds for kitchen gardens from the local market. Data related to economic returns obtained from winter and summer season vegetables produced by 45 farmers of three adopted villages is depicted in Fig 3. Data revealed that each family generated an average total income of Rs. 3306 from winter season vegetables and Rs. 3427 from the summer season. The total income of Rs.6733 was fetched from an area of 500 m². Whereas, before intervention average total income from the kitchen garden was Rs.5306 and thus there is a 27 per cent increase in average income.

The data presented in Table 2 depicted the non-availability of HYVs of vegetables has come out as a very serious constraint perceived by the farmers and was ranked in the 1st position. This is probably due to the fact that farmers generally purchase seeds of main crops (Rice -wheat) from reliable sources like PAU during kisan melas and other extension programs, but showed a lesser interest in kitchen garden seed kits. The second major constraint was

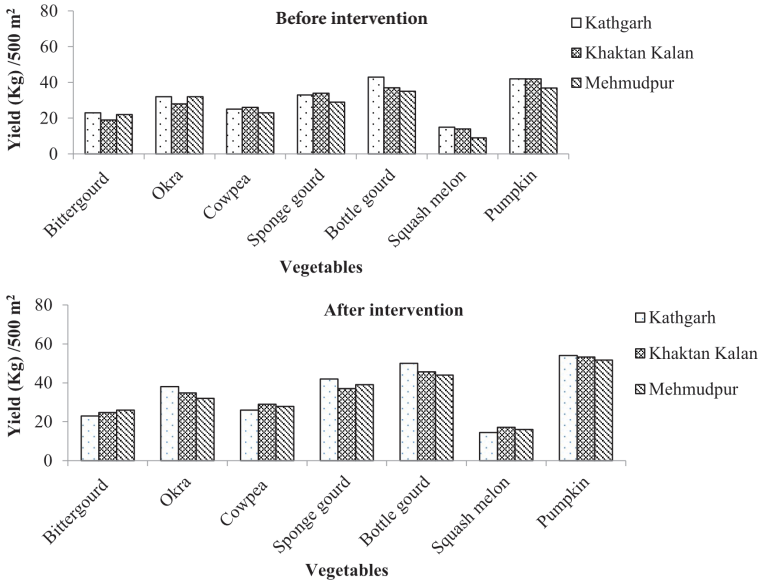

Fig. 2. Average yield of summer season vegetables grown in kitchen garden on 500 m2 area (Sample size, n = 15 before intervention; n=30 after intervention)

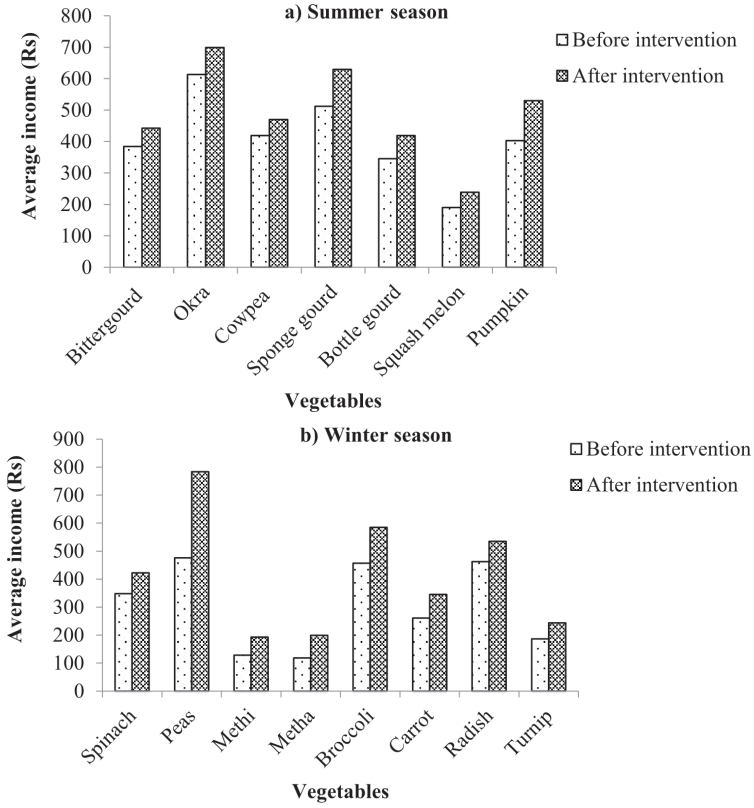

Fig. 3. Average incomefroma) summer season and b) winter season vegetables grown in kitchen garden on 500 m² area, (Sample size, n = 15 before intervention; n=30 after intervention)

Table 2: Constraints perceived in the successful adoption of the kitchen garden

Sr. No.	Constraints	MPS	Rank
I	Improper site selection for kitchen garden	90.63	II
II	Lack of availability of quality vegetable seed at farmer's door step	92.87	I
III	Lack of interest of family members / rural youth in kitchen gardening	87.72	III
IV	Lesser availability/ knowledge regarding bio-pesticides	84.68	IV
V	Lack of awareness about health-related benefits of kitchen garden	83.79	V
VI	Fear of theft from the kitchen garden	77.26	VII
VII	Lack of awareness regarding the preservation of vegetables	80.44	VI

the establishment of kitchen gardens on leftover land which was not used for raising main crops, thus resulting in poor yield from improper site selection. Lack of interest among rural young farmers was also considered by 88 percent of respondents. They preferred to purchase vegetables from local markets. Lack of awareness regarding health-related benefits of kitchen garden ranked V, as the vegetables produced from the kitchen garden are free from pesticide residues. Moreover, irrational use of pesticides causes long-term health impacts for producers and consumers in addition to acute poisoning from field exposures, even for people who live around farms. Lesser knowledge and non-availability of bio-pesticides was also reported by 85percent farmers. The fear of theft of vegetables was also reported as a constraint by 77 percent of respondents. In addition to all the constraints, post-harvest preservation of vegetables (e.g.metha, methi, peas, spinach, etc.) ranked VI. Excess-produced vegetables can be preserved for off-season use without altering the nutrient content of the produce. These findings agreed with those of Singh and Singh (2017) and (Kumar et al., 2011).

Conclusions and Policy Implications

The present study revealed that the use of quality seeds and the adoption of improved practices could increase the availability of vegetables at the farmer-family level. Kitchen gardening boosts social interaction and the surrounding

environment while reducing the cost of vegetable purchases. On the other hand, there are many constraints to the successful adoption of kitchen gardening. In the present study, input constraint *i.e* non availability of quality vegetable seed was the major bottleneck in the successful adoption of kitchen gardening. Different types of vegetables should be cultivated in the kitchen garden to address the problem of nutrient deficiencies. There is need for policy makers to promote awareness and adoption of production of organic vegetables at farmers' field to reduce expenditure and market dependency by the small and marginal farmers. Further, more extension programs should be conducted for popularization of technology to increase availability of pesticide free vegetables to the consumers for maintaining good health to curtail expenditure on medicines.

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