

Original Research Article

Kitchen Gardening: A Promising Approach towards the Nutritional Security of Rural People and its Economic Analysis

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ABSTRACT

Kitchen gardening plays an important role for rural families to recover diversified vegetables in their daily diet. KVK Samba demonstrated the kitchen gardening amongst 100 families of two villages namely Daboh and Raika Labana to analyze the economic impact of the alleged technology along with constraints faced by the growers. The demonstrations on kitchen gardening have paved the way for healthier, long, prosperous and biodegradable life of the rural folk. The results revealed that there was total income of Rs. Rs 2113.7 from Rabi vegetables and Rs 2287.6 from Kharif vegetables. The total vegetable income was Rs. 4401.3/- from an area of 500 m² in three months span. These vegetables were produced with minimal use of chemicals. However, there are certain bottlenecks in successful adoption of kitchen gardening. Overall analysis revealed that brackish irrigation water, high soil pH and EC, limited availability of seed in the form of vegetable kits, lack of awareness regarding varieties and management of insect-pest and diseases and limited knowledge regarding preparation of quality farm yard manure were amongst the serious constraints as perceived by the growers.

Keywords

Kitchen gardening,
Economic
analysis,
Constraints,
Adoption

Introduction

India ranks 102nd out of 117 countries in global hunger Index and suffers from a serious level of hunger with a score of 30.3 in the 2019. Indeed, the country continues to grapple with a high rate of under nutrition and managing it continues to be a massive challenge. The stunting levels are 38.4 percent and underweight numbers are 35.8 percent as reported in National Family Health Survey 4 (Global Hunger Index 2019). There

has been only a marginal improvement over the years. Under nutrition leads to long term effects, including cognitive and growth deficits and reduce immunity to infections. It is the underlying cause of nearly half of all deaths amongst children under five years of age in India.

Food security and nutritional diversity is one of the key areas that a developing country like India should address. Multiple strategies are required to address the issue of food

production and food security. The choice of feasible approaches hinges on the existing social, political and economic conditions and resources available to design and implement the intervention. Home gardens are a time tested local strategy that are widely adopted and practiced in various circumstances by local communities with limited resources and institutional support. With varying local opportunities and challenges, the kitchen garden forms a panacea that can address food security and brings in self reliance, sovereignty and dignity. Households have labour power-the physical ability of household members to generate income (Christopher, 2006). The food security and nutritional diversity of the household can be improved if the house labour power is used in the kitchen garden. The difference in lives can be making even with the dwindling land resource small areas around the house. Household and small communities take the advantage of vacant land and contribute not only to their household food but also the needs of their resident city (Dresche, 2000). Vegetables are the major source of Vitamins, minerals and fibres, their nutritive and medicinal values in human life are well documented. The major vegetable crops are tomato, brinjal, bottlegourd, snakegourd, Knolkhol, potato cauliflower, spinach, methi, coriander. Vegetables are very important part of good diet as they contain various nutrient for many body functions. These vegetables also provide taste, palatability, better digestibility to us and increase the appetite. Vegetables are suitably grown in kitchen garden as they are mostly short duration crops. The nutritional garden is generally located close to the house and is used for growing short duration vegetables, fruits, herbs, medicinal plants and another plants of family need. It not only saves our money and time but also provide a health, unpolluted environment and aesthetic sense to the whole family. Kitchen garden help us in recycling

of kitchen waste when a compost pit is dug in the side of kitchen garden. Gardening benefits both individuals and neighborhood and thus contributes to overall community health. The benefits of food production transcend the physical, mental and emotional health of the individual to leave lasting change on others and on the physical and social space of the community (Armstrong, 2000). One of the easiest way of ensuring access to a healthy diet that contains adequate macro and micronutrients is to produce many kinds of food in the kitchen garden. This is especially important both for people of rural as well as urban area, where people have low purchasing power, distant markets and availability of chemical treated vegetables. Kitchen garden directly provides the food and nutritional security by making access to food that can be harvested instantly, prepared and fed to the family members. Kitchen garden can be grown in the spaces available at the backyard of the house or roof or in the containers. There are many social benefits that have emerged from kitchen gardening practices, better health and nutrition, increased income, employment, food security with in the household. The daily requirement of vegetables is around 300 gm as per ICMR but the availability is very low. Many of the rural families used to grow vegetables in their backyards for their household consumption, but still they lack in adequate consumption of vitamins and minerals because of unorganized way of their cultivation. The farm women of Samba District were growing one or two vegetables of local variety in their Back yard in traditional way. Kitchen gardening in scientific way was demonstrated to make farm women familiar with different vegetables and high value dietary vegetable crops. Realizing the importance of kitchen gardening in modern times, an effort was made to study the economic viability of kitchen gardening units at farmer's door step. Emphasis was laid on identifying the major

bottlenecks in adoption of recommended kitchen gardening techniques.

Materials and Methods

Present investigations on kitchen garden were carried out in two villages namely Daboh and Raika Labana of District Samba of Jammu and Kashmir during the year 2019-20. Hundred demonstrations were conducted in two villages. The farm women of these villages were supplied with vegetable seed kits for both the summer and winter season vegetables. The kits comprised of seed of vegetables viz., peas, carrot, radish, spinach, coriander, methi, metha in winters and okra, spongegourd, bottlegourd etc. in summer.

Out of 100 farm women, ten farmwomen were randomly selected from the aforesaid villages for studying the economic viability of kitchen gardens. For judicious use of fertilizers, soil testing of demonstration plot was carried out. Farmwomen were advised to use organic manures i.e. FYM /vermicompost to meet the fertilizer requirement of vegetable crops and to practice hand hoeing for weed management instead of using herbicides. Manual as well as mechanical methods were to be preferred over the chemical methods of pest control. Chemical control measures were advised to be used need based and as last resort. As the primary objective of conducting kitchen gardening demonstration was to wean away farmers from buying vegetables from market, retail market price of the produce was taken for calculating average returns from these demonstrations. Yield of vegetable was recorded to calculate the economic return from the unit.

To popularize the concept of kitchen gardening by removing the various bottlenecks, emphasis was laid on studying the constraints perceived by the growers. In the present study, constraint was

conceptualized as irresistible force that acts as hindrance in adoption of recommended kitchen gardening techniques. A list of major constraints was prepared in consultation with extension scientist, available literature, field functionaries and progressive vegetable growers. Further the major constraints were categorized into following heads viz., input, technical, socio-cultural, post harvest and general constraints.

The primary data for studying the constraints were collected from 100 farmers with the help of interview schedule. The constraints were perceived by respondents were scored on the basis of magnitude of the problem as per Meena and Sisodia (2004). The scores of respondents were converted into mean percent score and constraints were ranked as per Warde *et al.*, (1991)

Results and Discussion

The average yield and economic returns obtained from summer and rabi season vegetables produced by ten randomly selected farmers were depicted in tables 1 to 3.

It is cleared from the data that from an area of 500 square meter, on an average basis the selected families were able to produce 249.2 kg of rabi season vegetables and 159.3 kg of Kharif vegetables. The cumulative yield of vegetables from 10 families was 408.5 kg.

Thus, the total income gained by the farmwomen after the sale of rabi and summer season vegetable was Rs 2113.7 and Rs 2287.6 respectively. The total vegetable income was Rs 4401.3/- from an area of 500m² in three months span. Thus in six months period one can produce vegetable worth Rs 8802.6/- (Rs 4,000 from Rabi season vegetables and Rs 4802.6 from summer season vegetables) from 500m² area under

vegetables. It was observed that yield obtained in demonstrations was less than potential yield of vegetables. It might be due to the fact the farmers were advised to use minimum chemical fertilizers and pesticides in these units as the produce was meant for their home consumption also. Another reason might be that some of the farmers had not followed scientific cultivation techniques the vegetables production completely.

The data presented in the table showed that amongst in put constraints, irrigation water was the most serious problem as perceived by the growers of rainfed area and was ranked 1st position (78.90%) followed by limited availability of quality seeds of vegetables in the form of kits (76.50%). Under Technical constraints, lack of knowledge regarding improved varieties, seed rate, sowing time and lack of knowledge regarding plant protection measures were the major constraints. This is due to the fact that farmers are generally swayed away by unscrupulous dealers and they generally opt for varieties and chemicals at the behest of those dealers. Another important constraint was lack of awareness how to prepare quality FYM in pits (70.20%).

Whatever FYM was available comprised of cow and buffalo dung heaped in open spaces having higher weed infestation. The data presented in the table 4 further depicted that lack of interest among rural youth was most seriously perceived socio-cultural constraints (71.4%).

This is due to the fact rural youth are lured by the charm of urbanization, Moreover, the parents prefer their wards to be doctors, engineers instead of farmers. The fear of theft of farm produce was perceived as second most important socio-cultural constraint (68.60%) followed by lack of involvement of household women in kitchen gardening

(65.0%). Rural women, generally avoid such tasks due to social stigma.

According to Heyzer and Sen (1994), "Women are seen as having to balance several roles in coping with poverty and having to devise numerous survival strategies. Hence in the generation of economic opportunities for the poor, there is need to target resources to women (Kerms *et al.*, 2004).

The data further depicted that difficulty in selling small amount of surplus produce (67.40%) and lack of knowledge regarding preservation and processing of surplus produce (63.5%) were important post harvest constraints. Amongst general constraints, lesser priority to kitchen gardening than other farm activities and high soil pH and EC were serious constraints. High soil pH and EC adversely affected the overall performance of vegetable crops as these crops are highly sensitive to High pH and EC. The results of present study were in conformity with those of Kanbid and Sharma (1994); Sisodia And Rathore (2004); Kumar *et al.*, (2011) and Sethy *et al.*, (2010).

Economic analysis revealed that kitchen gardens can be panacea to the vulnerable households in providing a form of food security and nutritional diversity. Disposal of organic waste, which is the big problem can also be solved, as the organic waste would be used as organic manure to nourish the kitchen gardens.

However, some constraints would also faced by the growers in successful adoption of kitchen gardening. It can be concluded that input constraints was the most serious constraints. General and technical constraints were at par followed by socio cultural constraints and post harvest constraints.

Table.1 Average yield from rabi season vegetables grown in the kitchen garden on 500 m² area

Vegetable yields (kg)										
S.No.	Spinach	Coriander	Peas	Methi	Metha	KnolKhol	Carrot	Radish	Turnip	cumulative Yield (kg)
1.	45	12	17	6	10	28	35	56	22	231
2.	40	10	23	12	12	30	34	58	35	254
3.	43	11	21	10	11	30	32	50	38	246
4.	42	16	18	12	13	32	36	54	36	259
5.	39	18	23	14	16	36	37	55	37	275
6.	41	19	22	18	17	34	36	54	34	275
7.	40	17	20	14	10	36	34	52	32	255
8.	38	16	21	12	8	35	33	51	31	245
9.	36	16	20	10	10	30	32	48	31	233
10.	30	15	19	10	9	28	31	47	30	219
Total	394	150	204	118	116	283	340	525	326	2492
Average	39.4	15.0	20.4	11.8	11.6	28.3	34.0	52.2	32.6	249.2

Table.2 Average yield from summer season vegetables grown in the kitchen garden on 500 m² area

Vegetable yields (kg)

S.No.	Bittergourd	Okra	cowpea	Spongegourd	Bottlegourd	Tinda	Radish	Cumulative Yield (kg)
1.	20	26	23	22	26	12	10	139
2.	24	30	27	38	34	9	12	174
3.	24	32	26	37	38	13	16	186
4.	23	32	24	35	36	16	18	184
5.	20	30	24	32	39	20	18	183
6.	20	29	22	34	37	18	16	176
7.	18	30	21	29	35	18	15	167
8.	16	28	19	25	29	14	12	143
9.	16	26	18	22	24	12	10	128
10.	15	25	16	19	20	10	8	113
Total	180	288	220	293	318	142	135	1593
Average	18.0	28.8	22.0	29.3	31.8	14.2	13.5	159.3

Table.3 Economic analysis of vegetable production under kitchen garden

S.No.	Name of crop	Season	Average yield	Market rate (Rs/kg)	Average income (Rs.)
1.	Spinach	Rabi season	39.4	6	236.4
2.	Coriander		15.0	8	120.0
3.	Pea		20.4	20	408.0
4.	Methi		11.8	8	94.4
5.	Metha		11.6	8	92.8
6.	Carrot		34.0	10	340.0
7.	Radish		52.5	7	376.5
8.	knolkhol		28.3	8	226.4
9.	Turnip		32.6	7	228.2
Total Rabi season vegetables					2113.7
1.	Bitter gourd	Summer season	18.0	16	288.0
2.	Okra		28.8	15	432.0
3.	Cowpea		22.0	12	264.0
4.	Spongegourd		29.3	15	439.5
5.	Bottlegourd		31.8	15	477.0
6.	Tinda		14.2	13	184.6
7.	Radish		13.5	15	202.5
Total Summer season vegetables					2287.6
Total income from vegetables (Three months period)					4401.3

Table.4 Perceived constraints in adoption of improved kitchen gardening techniques

S.No.	Particulars	MPS	Rank
Input constraints			
1.	Brackish underground Water	78.90	1
2.	Limited availability of seeds of seasonal vegetables	76.50	2
3.	Lesser availability of biopesticides and biofertilizers	74.20	3
Overall		76.53	
Technical Constraints			
1.	Lack of knowledge about improved varieties ,seed rate and sowing time	79.30	1
2.	Lack of knowledge regarding major pests and diseases, their identification and management	76.90	2
3.	Lack of knowledge about recommended fertilizers and how to prepare quality FYM	70.20	3
Overall		75.46	
Socio –cultural constraints			
1.	Lack of interest among rural youth	71.4	1
2.	Fear of theft of kitchen garden produce	68.60	2
3.	Lack of involvement of household women in kitchen gardening	65.003	

Overall	68.3	
Post harvest Constraints		
1. Difficulty in selling small amount of surplus produce	67.40	1
2. Lack of knowledge regarding preservation techniques of vegetables	63.5	2
Overall	65.45	
General constraints		
1.Lesser priority is given to kitchen gardening than any other farm activities	75.20	1
2. High soil pH and EC	70.50	2
Overall	72.85	

Over all analysis revealed that water scarcity, high soil pH, limited supply of seed kits, lack of knowledge regarding varieties, their management practices, control of insects – pests and diseases, limited know how regarding preparation of quality farm yard manure are the major bottlenecks in successful adoption of kitchen gardening. The impact of kitchen gardening was very positive as it gave healthy and nutritious food to the household members and also helped in reducing monetary burden and keep them healthy and active. As it is a fruitful activity to get fresh, nutritious, toxin free vegetables so people must adopt it to harness the immense benefits.

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