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## Impact of planned and non-planned kitchen gardening for improvement of nutrition and economical benefits of societies

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**Abstract**

Malnutrition is a serious public health problem in rural areas of India. Hence most of them are victims of malnutrition specially micronutrient deficiency. To overcome these problem 85 demonstrations of Nutrition Gardening during 2017-18 and 2018-19 were conducted in adopted villages in Kalakankar and Babaganj block Pratapgarh district with the objectives to assess the vegetable production, availability of vegetables from nutrition garden to different 85 family size and impact of nutrition gardening on food consumption pattern of the respondents. Planned layout was designed and year calendar was followed for round the year availability of fruits and vegetables through nutrition garden. Utilizing the small home stead space to produce chemical free, safe and healthy fresh food around the whole year, and on the other hand, valorizes common sense principles of community autonomy, cultural integrity and environmental stewardship kitchen garden will be very functional approach to environment conservation practice that provides solution to microclimatic challenges that directly impact on food, nutrition, agriculture productivity, poverty, hunger and malnutrition, we have chosen 'home garden' as small scale biodiversity and its conservation through women participation.

**Keywords:** demonstration, malnutrition, diet diversity, kitchen garden, nutritional value

**Introduction**

In rural areas of India malnutrition and poor health status is a common problem. It retards growth, increases the risk and duration of illness, reduces work output and slows social and mental development. For poor households' vegetables and fruits are often the only sources of micronutrients in the family diet. Fruits and vegetables are major sources of vitamins, minerals and fibres; their nutritional and medicinal values in human life are well documented (FAO 2017) <sup>[1]</sup>. A kitchen garden is where herbs and vegetables are grown around the house for household use. Since early times a small plot near to the house has been used for growing a variety of vegetables according to the season. Local varieties such as green leafy vegetables (GLV), roots and tubers etc. are all grown in the kitchen garden. In this paper we provide information utilization of planned food and non-planned food in kitchen gardening for purpose of nutritional security and on how to establish and manage kitchen gardens with minimum input for maximum output, and show how to produce varied and nutritious crops of herbs and vegetables for use in the kitchen. Focusing on socio-economic factors plays a key role in ensuring sustainability of these projects. Assuming that increased production of diversified foods will lead to increased consumption and improved intake of micronutrients is one of the limitations that need to be tackled. Understanding and adapting to cultural beliefs, social norms and local food habits will ensure viability of these interventions (Burchi, Fanzo, & Frison, 2011) <sup>[2]</sup>. Kitchen garden or home garden or nutrition garden is primarily intended for continuous supply of fresh vegetables for family use. A number of vegetables are grown in available land for getting a variety of vegetables. Family members do most of works. Area of garden, lay out, crops selected etc. depend on availability and nature of land. In rural areas, land will not be a limiting factor and scientifically laid out garden can be established. Keeping in view the importance of nutrition garden in rural scenario, the Krishi Vigyan Kendra, Pratapgarh has taken this as an initiative for food and nutritional security for rural community of the District.

**Methodology**

This research was undertaken by Krishi Vigyan Kendra, Pratapgarh district during the year 2017-18 & 2018-19 to investigate role of nutritional gardening in addressing food security. This research used both qualitative and quantitative approach to collect data from households and stakeholders.

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Purposive sampling technique was used to select beneficiaries. Those beneficiaries were selected who have 250 m<sup>2</sup> areas in their backyard or nearby area of their house for development of nutrition garden and were interested in nutritional gardening to ensure food security. Both year ten families from adopted villages were selected thus making total of 85 families. The study was conducted in *Kharif*, *Rabi* and *Zaid* season of the year.

Krishi Vigyan Kendra provided seed and seedlings of improved varieties to the selected households. Planned layout was designed to utilize maximum land of the garden with effective utilization of resources and year calendar was advocated to be followed to take more vegetables per unit area. The basic functions of food and their requirement to different age group were taken into consideration while planning the nutrition garden. Home scientist of KVK had motivated all the farm women to prepare kitchen gardening through training and visit and provided all the technical information regarding package of practices of for organic production of the vegetables to boost nutritional security and additional income. The size of garden was designed to be of 250 m<sup>2</sup> area to provide sufficient vegetables to the average family. Total amount of fruits and vegetables produced were recorded from each nutrition garden and average yield per

unit area was calculated. The average production of nutrition garden of two consecutive years was calculated under three heads *viz*, Green Leafy Vegetables (GLV), Roots and Tubers and Others and data calculated of planned and unplanned nutritional garden was cost of cultivation, yield, saving and net returns.

## Result and Discussion

### Socio-economic position of the respondents

Socio-economic characteristics of respondents were analysed and are presented in Table 1. The table indicates that majority (80%) of the respondents were belonged to nuclear family and followed by (20 %) joint family. It was observed that 65 % of the families having 5 to 7 members followed by 1 to 4 members (30 %) and more than 7 members (5%). Analysis on family income cleared that majority (55 %) of the respondents having income of more than Rs. 100000 followed by income of Rs. 50000 to 100000 (30%) and income of less than Rs. 50000 (15%). Analysis on educational qualification of the respondents revealed that 75% of the respondents got primary level education while 10% got middle level education and 15% were illiterate. Looking to the land holding, 60% of the respondents have medium size land holding followed by small size (25%) and large size (15%) land holding.

**Table 1:** Socio-economic characteristics of the respondents

Variable	Categories	No.	Percent
Type of family	Joint family	17	20
	Nuclear family	68	80
Size of family	Small size (1-4 members)	26	30
	Medium size (5-7 members)	55	65
	Big Size (> 7 members)	4	5
Income annual (Rs.)	< 50,000	13	15
	50000-100000	25	30
	> 100000	47	55
Education	Illiterate	13	15
	literate	34	40
	Primary	30	35
	Middle	8	10
	Graduation	0	0
Land holding	Small	21	25
	Medium	51	60
	Large	13	15

### Year wise average vegetable production of nutrition garden

Data in Table 2 depicts average production of vegetables of selected villages from nutrition garden covering 250 m<sup>2</sup> areas. Respondents who were doing unplanned gardening were cultivating 3-6 vegetables at a time in a season such as in *Kharif*- coriander, brinjal, pumpkin and bottle guard *etc.* where as in *Rabi* radish, cabbage, cauliflower, potato and spinach *etc.* in *Zaid* sponge guard, pumpkin, okra *etc.* but in case of planned gardening they had grown 10-14 vegetables in a season by following proper crop rotation. Similar results were reported by Savita *et al.* (2018). From each bed 3-4 vegetables were taken in a year. Ridge of beds were used for sowing root crops like radish, carrot, onion, turnip and beet root *etc.* It is evident from the table that nutrition gardening demonstration results an increase in homestead vegetable production as compare to check. In green leafy vegetable category 310.27 per cent increase in the production of planned nutrition gardening was found in the year 2017-2018 and year 2018-2019 this change was 267.74

per cent as compare to unplanned gardening. The year wise decrease in the per cent change may be due to awareness among villagers after seeing the demonstrations being conducted in their villages. In demonstrations more focus was given to increase the production of Green Leafy Vegetables which is generally lacking in the diet. In Roots and Tubers category of vegetables, per cent increase in the average production of planned garden against unplanned garden was found in the range of 26.21 per cent to 60.29 per cent in two years. Highest average production was found in the Year 2018-2019 which was 157.08 kg/year. In other vegetable category also profound increase in the average production of vegetables from planned garden was found as compare to check. It is very clear from the table that total increase in the production of vegetables of demonstrated nutrition garden ranged from 101.57per cent to 121.19 per cent as compare to check in the two years and average production was highest in the year 2018-2019 which was 551.16 kg/year similar finding was observed Chayal *et al.* (2013)<sup>[3]</sup>.

**Table 2:** Year wise average vegetable production of nutrition garden

Group of Vegetables	Year 2017-18			Year 2018-19		
	Average production (kg/year)		% Change	Average production (kg/year)		% Change
	Demonstration	Check		Demonstration	Check	
Green Leafy Vegetable (GLV)	227.5	55.45	310.27	225.65	61.36	267.74
Roots and Tubers	152.52	95.15	60.29	157.08	124.45	26.21
Others	157.6	92.45	70.47	168.43	87.62	92.22
Total	537.62	243.05	121.19	551.16	273.43	101.57

**Table 3:** Economic analysis of planned and unplanned kitchen garden

Technology option	Yield (Kg/day)	Saving (Rs/day/family)	Cost of production	Net return (Rs/Year)	Increase in yield (%)	Gain
(Farmer Practice) Unplanned nutritional garden	1.3	28.0	1050	10220	-	-
Provide round the year vegetable through nutritional garden	1.8	54.0	1650	19710	34.46	9490

### Economic analysis of planned and unplanned kitchen garden

Looking to the economics presented in Table 3 it can be concluded that from 0.025 ha kitchen garden, the data clearly show that by doing planned nutritional garden farmer are getting 34.46% additional yield over the check (Unplanned kitchen garden). Apart from the improve the health and saving money Rs. 54 per day in vegetables. 85 families had adopted this technique in kalakankar and babaganj block. Net saving per family is Rs. 9490 and technology spread by 85 families that net saving is Rs. 806650 per year and getting fresh and organic vegetables at their home, same result was reported by Talukder *et al.* (2002)<sup>[4]</sup>.

### Conclusion

It can be concluded from the two years study on the frontline demonstrations on kitchen gardening that from a kitchen garden of 0.025 ha area, food and nutritional security can be secured through organically produced high quality vegetables and additional income of Rs. 9490 can be realized.

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