J Krishi Vigyan 2023, 11 (Supple) : 70-74 DOI : 10.5958/2349-4433.2023.00088.0

Effectiveness of Vegetable Cultivation through Kitchen Gardening in Rural Areas

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ABSTRACT

The study was conducted to find the effectiveness of vegetable cultivation using kitchen gardening demonstrations at different villages of Amritsar and Tarn Taran (Punjab) during *Kharif* and *Rabi* season of 2020-2021. Various farmers who were adopting vegetable kitchen garden were selected in district Amritsar and Tarn Taran and the data was collected by personal field visit and interview schedule with farmers. The area per demonstration was 6x6 sq m. This model of vegetable kitchen garden was suggested by Punjab Agricultural University, Ludhiana. The vegetable cultivation by using this model was very effective to increase the supply of vegetables throughout the year. Vegetables like Bottle Gourd, Tomato, Radish, Chinese cabbage and Carrot gives more yield per plot. The harvesting span of vegetables ranged between 30 to 120d in Amritsar district while 30d to 125d in Tarn Taran district. Vegetables like Chinese cabbage, turnip and fenugreek were early to harvest while others like onion and garlic were late to harvest. The total yield per plot ranges from 62.5q/ha to 500q/ha in district Amritsar and 45 q/ha to 475 q/ha in Tarn Taran district. Vegetables like bottle gourd, tomato, radish, Chinese cabbage and carrot gives higher yield in both of the districts. The net income from various vegetables ranges from Rs100 per sqm to Rs 400/m^2 of plot in district Amritsar and Rs90/- to Rs350/- in Tarn Taran district.

Key Words: Farmers,Garden,Kitchen, Nutritional,Rural, Security, Vegetables, Yield.

INTRODUCTION

Vegetables are important sources of proteins, vitamins, minerals and fibers. They play an important role in our diet as they contain various nutrients that are essentials for many body functions. The vegetables also provide taste, palatability, better digestibility to us and increase the appetite. The kitchen garden has been found to play an important role in improving food security for the resource poor rural households in developing countries. Kitchen gardening continues to be the best way of improving the diets and nutritional status of population. Vegetables are suitably grown in kitchen gardens as they are mostly short duration crops. The kitchen garden has been found to play an important role in improving food security for the resource poor rural households in developing countries (Asaduzzaman, 2011). A family can take vegetables from these kitchen gardens round the year. The nutritional kitchen garden is generally located close to the house and is used for growing vegetables, fruits, and other food crops for the family (Jana, 2015). It not only saves our money and time but also can provide a healthy, useful and environment friendly hobby for whole family. Kitchen gardens can help us in recycling of household waste especially when a compost pit is developed. One of the easiest ways of ensuring access to a healthy diet that contains adequate macro and micronutrients is to produce many kinds of foods in the Kitchen garden (Rani *et al,* 2015). This is especially important in rural areas where people have low purchasing power and distant markets. Kitchen gardens can be grown in the spaces available at the backyard of the house or roof or it can be established with joint efforts on a common place or land. Thakor *et al* (2020)

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suggested about kitchen gardens cultivation for household nutritional security in tribal areas.

Keeping in view the importance of vegetables in daily diets, its low availability as well as heavy use of pesticides and fertilizers in vegetable crops the study was conducted in various villages of district Amritsar and Tarn Taran with the objective to study the importance of kitchen garden in increasing vegetable cultivation and income of rural farmers.

MATERIALS AND METHODS

The field demonstrations were conducted regarding cultivation of vegetables by using kitchen gardening at district Amritsar and Tarn Taran of Punjab during 2020-2021. The Tarn Taran district is one of the districts in the Majha region of Punjab, India. Tarn Taran Latitude 31.46 Longitude 74.92. The Amritsar, city is Northern Punjab state of Northwestern India. The latitude of Amritsar is 31.63 and the longitude is 74.87.

The vegetable seed kits as developed by Punjab Agricultural University, Ludhiana have been distributed among vegetable growers under front line demonstrations during *Kharif* and *Rabi* seasons during 2020-2021 at Amritsar and Tarn Taran district. To conduct the study about 50 vegetables kits during *Kharif* season 2020 and *Rabi* 2020 at district Tarn Taran and 50 vegetables kits were given during *Kharif* season 2021 and *Rabi* 2021 at district Amritsar were given to different farmers who were cultivating vegetables in their kitchen garden. The various blocks where these kits were given were Tarsika, Majitha, Verka, Jandiala Guru, Gandiwind, Khadoor Sahib and Chohla Sahib. The kitchen garden model was developed in area of 6x6 sq m model as suggested by Punjab Agricultural University, Ludhiana (Figure 1). The suggested model can produce 300 kg of vegetables each year by growing 27 different vegetables. This will be sufficient to meet vitamins, minerals and protein

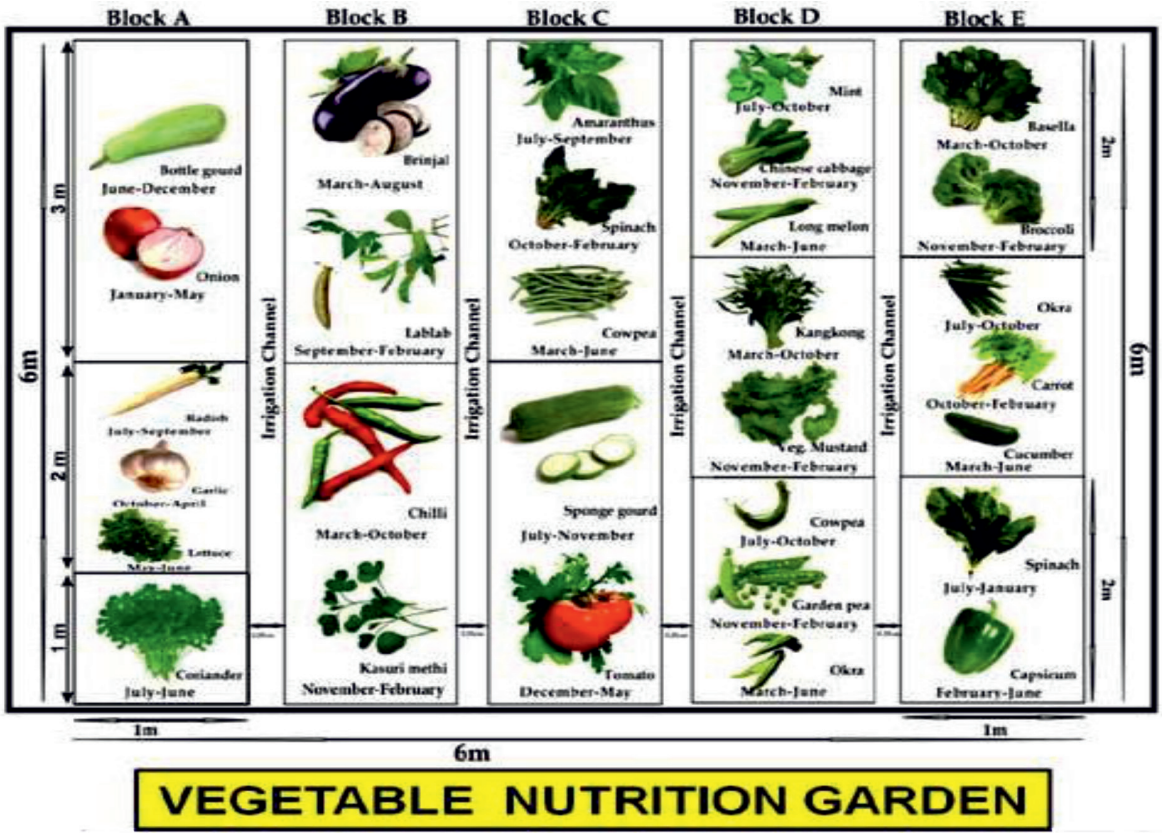

Figure1. Layout of 6x6sqm vegetable nutrition garden used for conducting demonstrations

requirement of a family comprising two adults and two children. Different vegetable like bottle gourd, brinjal, chilli, spinach, summer squash, sponge gourd, tomato, bitter gourd, okra, peas, radish, garlic, coriander, onion, turnip, fenugreek, Chinese cabbage, carrot were cultivated according to their season of cultivation.

The important points to be kept in mind while establishing vegetable kitchen garden were in case of cucurbitaceous vegetates crops like bottle gourd, sponge gourd, long melon, cucumber and tomato, they were weak stemmed and should be staked vertically with the help of nylon ropes tied to bamboo at a height of eight feet for production of good quality fruits. Staggered sowing of coriander, carrot, radish, fenugreek and okra at fortnightly intervals was recommended for continuous supply of these vegetables. The cultivation of different vegetables during *Kharif* season and *Rabi* season along with their varieties, sowing time and harvesting time is presented in Table 1.

To record observations, about thirty farmers from different blocks of Amritsar and Tarn Taran districts were selected and individual data was recorded according to personal interview schedule and field visit. The different characters like sowing time, harvesting time, harvesting days, total yield and net income at different vegetables were calculated .The statistical analysis was performed by using t- test of significance reported by Fisher (1934) to compare means of different characters.

RESULTS AND DISCUSSION

The data obtained regarding cultivation of various vegetables is presented in Table 2.The area under different vegetables in kitchen garden ranges from 1 sqm to 9 sqm with total area of 36sq m in all vegetables with average area under each

Table 1. Showing vegetables, variety, sowing time and harvesting time of various vegetable crops grown under 6x6 sq m vegetable kitchen garden

Sr. No	Vegetables	Variety	Sowing Time	Harvesting Time
1.	Bottle Gourd	Punjab Komal	February-March	April-May
2.	Brinjal	Punjab Raunak	February-March	April-May
3.	Chilli	CH-3	February-March	April-May
4.	Spinach	Punjab Green	Mid-February to April	March-May
5.	Summer Squash	Punjab Chappan Kaddu-1	February-March	April-May
6.	Sponge Gourd	PSG-9	February-March	April-May
7.	Tomato	Punjab Ratta	February-March	April-May
8.	Bitter Gourd	Punjab –14	February-March	April-May
9.	Okra	Punjab Suhawani	February-March	April-May
10.	Peas	AP-3	October-November	December
11.	Radish	Pusa Chetki	April-August	May-September
12.	Garlic	PG-18	October-November	April
13.	Coriander	Punjab Sughand	October-November	December-January
14.	Onion	PRO-6	December-January	April-May
15.	Turnip	L-1	October-November	December-January
16.	Fenugreek	Kasuri Supreme	October-November	December-January
17.	Chinese Cabbage	Saag Sarson	October-November	December-January
18.	Carrot	PC-161	October-November	December-January

Table 2. Vegetable crops grown under 6x6 sq m vegetable kitchen garden along with their area sown, harvesting days, total yield (q/ha) and net income at Amritsar and Tarn Taran district

Sr. No	Vegetables	Area per plot (m^2)	Harvesting Span (Days) Amritsar	Harvesting Span (Days) Tarn Taran	Total Yield (q/ha) Amritsar	Total Yield (q/ha) Tarn Taran	Net Income (Rs/m^2) Amritsar	Net Income (Rs/m^2) Tarn Taran
1.	Bottle Gourd	4	60	59	500.0	450	100	90
2.	Brinjal	4	65	60	375.0	300	200	180
3.	Chilli	9	65	67	237.5	200	300	280
4.	Spinach	1	30	35	312.5	250	250	240
5.	Summer Squash	2	60	58	225.0	200	150	155
6.	Sponge Gourd	2	60	64	200.0	175	150	145
7.	Tomato	4	70	75	500.0	450	250	200
8.	Bitter Gourd	1	60	66	125.0	87.5	280	245
9.	Okra	9	65	60	137.5	100	300	280
10.	Peas	9	50	55	62.5	45	350	300
11.	Radish	4	45	50	500.0	375	300	290
12.	Garlic	4	120	125	125.0	112.5	400	350
13.	Coriander	1	40	45	375.0	387.5	250	200
14.	Onion	2	90	95	375.0	350	350	330
15.	Turnip	2	45	50	250.0	225	200	180
16.	Methi	4	45	50	225.0	200	200	190
17.	Chinese Cabbage	1	30	39	500.0	350	250	240
18.	Carrot	9	60	66	500.0	475	300	270
	Mean	4	58.8	62.16	306.94	262.91	254.4	231.3
	Range	1-9	30-120	35-125	62.5-500	45-475	100-400	90-350
	(P=0.05%)		0.0024		0.000188		0.00021	

vegetable was 4sqm. Some vegetable crops like chilli, okra, peas and carrot were grown in large 9 m^2 plot while other vegetables like spinach, bitter gourd, coriander and Chinese cabbage were grown in small plot of 1sqm size. The harvesting span in days of different vegetables ranges from 30 d to 120 d having average days of 58.8 d. Vegetables like spinach and Chinese cabbage were harvested early as compared to other vegetable crops like garlic and onion which was harvested late in district Amritsar. In district Tarn Taran, the harvesting span ranges from 35-125 d, having average span of 62.16 d.

The total yield of different vegetables ranges from 62.5q/ha to 500q/ha having average of 306.94q/ha at district Amritsar while in district Tarn Taran, the total yield ranges from 45q/ha to 475q/ha, having average of 262.91q/ha. The minimum total yield was recorded by vegetables crops like peas while maximum total yield were recorded by vegetables like bottle gourd, tomato, radish, Chinese cabbage and carrot. The yield at both locations significantly differs from each other. This may be due to difference of temperature and environment of both the districts.

The income per plot of various vegetables at Amritsar and Tarn Taran district showed significant differences. The vegetables like bottle gourd gives less income while other vegetables like garlic, peas and chilli gave more income at Amritsar. In district Tarn Taran, the minimum income was given by vegetable like Bottle gourd Rs 90 per plot while maximum income of Rs 350 per plot was given by garlic, having average income of Rs 231.3 per plot. Similar findings about cultivation of vegetables under kitchen garden along with their total yield, income and nutrition security was suggested by Arya *et al (* 2018), Malabasari and Hiremath (2016) and Sharma *et al* (2021).The availability of different vegetables in a kitchen garden would increase their consumption by population and hence mitigate malnutrition in rural areas. The availability of the food would spur consumption as observed by a study of urban community gardeners in USA (Alaimo, 2008). Beyond the obvious hunger resulting from insufficient food, we have hidden hunger of micronutrients deficiency that leads to vulnerability to infectious diseases physical and mental impairment that leads to low productivity in addition to reduced life expectancy (Turner, 2012).

CONCLUSION

It was concluded that kitchen garden was an effective tool to increase the both yield and technical aspects of rural farmers and it provides regular yield and income to the farmers. There was a big gap of vegetable cultivation before demonstrations about kitchen garden in rural areas of Amritsar and Tarn Taran. There was increased in scientific and technical skills of farmers by cultivating vegetables using 6x6 sq m model of vegetable nutrition garden as suggested by Punjab Agricultural University, Ludhiana. Vegetables like bottle gourd, tomato, radish, Chinese cabbage and carrot gives higher yield and net income in both the districts.

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Received on 19/02/2023 *Accepted on 15/05/2023*