

Impact assessment of integrated nutrition garden concept for nutritional security and livelihood interventions under central Punjab conditions

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Kitchen gardening project is the revolutionary step to increase vegetables production as well as provision of cheap vegetables to the consumers. Wheat and rice are the major crops grown in the district Fatehgarh Sahib and has only 5 % area under vegetable crops and 0.6 % area under fruit plants as percentage to net sown area which demands immediate attention to increase area under these crops. The main focus of the study was to assess the impact of integrated nutrition unit. Fifty farm families were selected to involve in the study were selected randomly from each location to assess the impact of kitchen gardening trainings on their livelihood. The study finding reveals that farmers of the village were able to save about Rs 14296/- from 3 kanal area by growing vegetables, pulse crops and fruits. The concept of integrated nutrition garden may diversify the area intensified by rice- wheat rotation besides improving the livelihood of rural people.

Key Words : Nutrition garden, Livelihood, Diversify, Training

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INTRODUCTION

Agro-climatically district Fatehgarh Sahib falls in the Zone-III of Punjab. Rice and wheat are the major crops grown in the district. The monoculture of rice-wheat cropping system in the district is showing the syndrome of un-sustainability. Ground water resources are depleting at high speed. The soils have developed poor health in the district. There is urgent need to guide the farmers for adoption of resource conservation technologies and crop diversification by increasing the area under substitute crops.

Wheat and rice are the major crops grown in the district Fatehgarh Sahib and has only 5 per cent area under vegetable crops and barely and 0.6 per cent area under fruit plants as percentage to net sown area which demands immediate

attention to increase area under these crops. Pulses cover the large part of human diet in terms of supplying energy. But, area under pulse crops is also very low in the district. The farmers are not even growing the pulses for their home consumption. Thus, pulses, fruit and vegetable cultivation is one of the most potent diversification tools to overcome all the emerging problems and for sustainable agriculture in the district besides overcome the nutritional need of rural people.

Kitchen gardening is a technology which enables us to grow bacteria free vegetables at home providing a good use of empty tins, old utensils and clay flower pots. This activity can not only save our money and time but also can provide a healthy, useful and environment friendly hobby for whole family (Cheema, 2011). Research shows that gardening is a preferred form of exercise across age, gender, and ethnicity (Krems and Lehrmann, 2004). In order to preserve health and prevent malnutrition; we should develop a kitchen garden; grow fresh and clean vegetables and make them a part of our daily diet (Christensen, 2011). Effective transfer of technology, supply of inputs on subsidized rates on soil and

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water conservation works should be taken up effectively and regularly for adoption (Rao, 1996).

The concept of integrated organic nutrition unit was introduced by the Directorate of Extension Education, Punjab Agricultural University, Ludhiana. Based on the concept that the human diet in India is mainly cereal food and the consumption of even low cost protective foods is far from satisfactory. The consumption of cereals in India is among the highest in the world. In an over populated and vegetarian society like ours advocacy of including non-vegetarian items on massive scale will not serve any purpose. Vegetables, fruits and pulses are the major sources of all types of protective elements like vitamins, minerals and proteins and thus their inclusion in everyday diet is absolutely necessary. An adult requires 280-300 g vegetables, 30-50 g fruits and 85 g pulses for normal maintenance of health. But survey suggested, in villages on an average intake of pulses is around 40 grams, vegetables 180 g and insignificant quantity of fruits is part of their daily diet. Majority of the farmers of Punjab are buying vegetables, fruit and pulses from the market at exorbitant price to meet their family needs. These food items may be laden with pesticides which aggravates the health problems. The poor farmers are inadequately nourished although they have the land and resources. Thus, the concept of integrated organic farming unit model of kitchen garden was introduced with the following objectives:

- To bring about nutritional security of rural people.
- To provide them with chemical free, fresh protective food.
- For diversification of crops.
- For eco balance and resource conservation to sustain agriculture.

METHODOLOGY

The study was conducted in the village Suhagheri of block Sirhind in the district Fatehgarh Sahib was purposively selected for the study during the year 2008-09.

Fifty farm families were selected to involve in the study. Before starting the study soil and water testing of the selected farm families was conducted. Based on the analysis of soil and water testing, families were suggested to select the crops and fertilization accordingly. 3 kanal area on the each farm of selected family was proposed to grow pulse crops and fruit plants in 1000 square meter area, while 500 square meter area was proposed for growing vegetable crops.

The data were collected by using structured, questionnaire and well developed interview schedule to elicit information from the kitchen gardening. Description of the data collected involves the use of percentages and means to describe parameters as socioeconomic characteristics.

Chi-square model was used for the interpretation of the results. The Chi-square test provides a method for testing the

association between the row and column variables in a two-way table. The Null hypothesis H_0 assumes that there is no association between the variables (in other words, one variable does not vary according to the other variable), while the alternative hypothesis H_a claims that some association does exist. The alternative hypothesis does not specify the type of association, so close attention to the data is required to interpret the information provided by the test (Chase and Dummer, 1992).

OBSERVATIONS AND ASSESSMENT

The results of the present study as well as relevant discussions have been presented under following sub heads:

Economic analysis:

Farmers are mainly following rice-wheat cropping pattern in the village. They are earning app. Rs. 14218/- from of three kanal area in rice-wheat system (Based on the market price only) (Table 2). Farmers of the village were able to save about Rs. 14296/- from 3 kanal area by growing vegetables, pulse crops and fruits (Based on the sale price only) (Table 1). Considering vegetables, pulses and fruits as part of daily diet and the availability of fresh, low chemical residue vegetables, pulse crops and fruits in addition to saving hard earned money in comparison to rice-wheat rotation, integrated nutrition garden is a healthy and nutrition giving system. After few years other fruit plants will start bearing and the savings from fruits will also be added in integrated nutrition garden.

There are 23,400 farm families in the district. By applying this concept of 3 kanal area of integrated nutrition garden for these farm families, about 3510 ha (3.5 % area of district) area can be diversified.

Thus, integrated nutrition garden has special importance in terms of following points

- Saving of hard earned money of farmers.
- Availability of healthy and nutritious food to family.
- Breaking monoculture of wheat-rice to some extent.

Impact analysis:

It was observed that farmers are happy to save a huge amount from vegetables and pulse crops. The earlier practice of purchasing of vegetables from vegetable vender was ended for these selected families and thus if saving is considered as income then there is increase in the farm income and farmers get fresh vegetables full of nutrition. Especially for the farm women who require higher nutrition at different ages and for the infants and school going children also, this study is highly useful.

Table 3 shows the crop wise / crop type increase in consumption of pulses, vegetables and fruits. Highest increase was noticed for vegetable crops (165 g) followed by pulses

Table 1: Economics on the basis of savings in three kanal area

Sr. No.	Name of the crop	Average qty (kg)	Rate/ kg (Rs.)	Total amount (Rupees)
Rabi vegetables				
1.	Okra	25.5	10.0	255.0
2.	Bittergourd	19.4	12.0	232.8
3.	Cowpea	22.8	10.0	228.0
4.	Spongegourd	24.7	5.0	123.5
5.	Roundmelon	15.8	8.0	126.4
6.	Radish	9.3	5.0	46.5
7.	Bottlegourd	37.7	8.0	301.6
8.	Wanga	2.9	5.0	14.5
Kharif pulses				
1.	Moong	58.4	40.0	2336.0
2.	Mash	39.9	40.0	1596.0
Rabi vegetables				
1.	Palak	41.0	10.0	410.0
2.	Coriander	11.9	10.0	238.0
3.	Peas	20.7	10.0	207.0
4.	Methi	12.1	10.0	121.0
5.	Methe	12.2	12.0	146.4
6.	Chinese cabbage	33.3	10.0	666.0
7.	Carrot	25.0	5.0	125.0
8.	Radish	48.4	7.0	338.8
9.	Turnip	24.7	5.0	123.5
10.	Cauliflower	10.0	5.0	50.0
11.	Onion	15.0	5.0	75.0
12.	Chilli	5.0	10.0	50.0
Rabi pulses				
1.	Gram	91.8	40.0	3672.0
2.	Lentil	58.7	44.0	2583.0
Fruits				
1.	Papaya	6.5	80	80.0
2.	Baramasi lemon	10.0	15.0	150
Grand total				14296.0

Table 2: Earnings from wheat- rice in three kanal area

Sr. No.	Name of the crop	Average quantity (kg)	Rate/ kg* (Rs.)	Total amount (Rs.)
1.	Wheat	675.0	9.75	6581.00
2.	Paddy	937.0	8.15	7637.00
Total				14218.00

Average rate at which farmers sold wheat and paddy in the market

Table 3: Effect of the nutrition garden project on the consumption in gms on daily basis of farm families

Crop	Earlier consumption (g)	Present consumption (g)	Increase in consumption (g)
Pulses			
Moong	08	18	10
Mash	12	25	13
Gram	10	22	12
Lentil	08	15	07
Total pulses	40 g	80 g	35 g
Vegetables			
Green	15	70	55
Leafy	35	100	65
Root	25	55	30
Other	10	25	15
Total	85 g	250 g	165 g
Fruits	10 g	20 g	10 g

Table 4: Consumption pattern before and after the project inception

Name of the item	Consumption per capita before the project	Consumption per capita after the project	%age increase
Vegetables	85g	250 g	194
Pulses	40 g	80 g	100
Fruits	10 g	20 g	100

Table 5: Effect of the nutrition garden project on the economic and health aspects of farm families

Sr. No.	Parameters	Very good	Good	Moderate	Low
1.	Influence on the savings	√	-	-	-
2.	Influence on variety food availability	-	√	-	-
3.	Influence on good health of family	√	-	-	-
4.	Influence on labour availability	-	√	-	-
5.	Influence on soil health	-	-	√	-
6.	Purposeful utilization of spare time	√	-	-	-
7.	Taste of food prepared	√	-	-	-

Table 6: Kitchen gardening training effectiveness

Type/topic of training (list of topics)	Effectiveness (%)		
	Satisfied	Fully satisfied	Partially satisfied
Introduction and importance of kitchen gardening	25	65	10
	20*	62	18
	1.250**	0.145	3.556
Method demonstrations	25	60	15
	20.00	62.00	18.00
	1.250	0.065	0.500
Field days organized	25	70	05
	20.00	62.00	18.00
	1.250	1.032	9.389
Kisan Gosthi	10	50	40
	20.00	62.00	18.00
	5.000	2.323	26.889
Monitoring and guidance visits	15	65	20
	20.00	62.00	18.00
	1.250	0.145	0.222
Total	100	310	90

Chi-Sq = 54.265, DF = 8, P-Value = 0.000

*Expected counts are printed below observed counts, **Chi-square contributions are printed below expected counts

Table 7: Impact of extension activities conducted in the village

Impact	Before training	After training
Practice of kitchen gardening	36.4%	84.4%
Cultivated land area	10 Marlas	03 Kanal
Time allocation for kitchen gardening	0.5 hour	2 hours
Impact on livelihood	Buy costly vegetables, health issues	Cost/saving, improvement in physical health (fitness)
Water source for kitchen gardening	Streams and rainfall	Water tanks
Water conservation technology	Lack of water conservation technology	Fulfill water requirement for kitchen garden and fields
Major constraints	Water shortage for kitchen gardening, pest attacks and less awareness	Water tanks and capacity building

(35 g) and fruits (10 g).

The consumption pattern before the adoption of integrated nutrition unit and after its adoptions shows that the consumption of vegetables, pulses and fruits has increased near to the satisfactory level (Table 4 and Fig. 1).

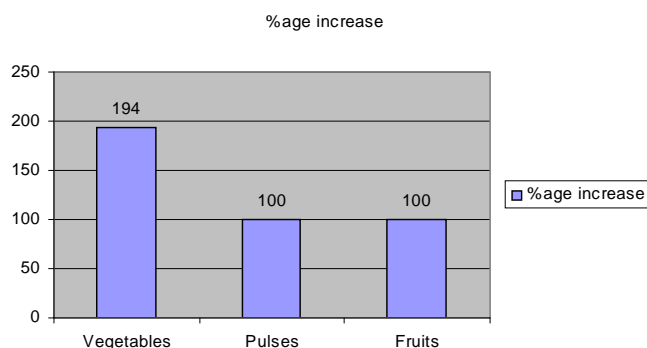


Fig. 1: Percentage increase in the consumption of vegetables, pulses and fruits

Table 5 is based on the questionnaire filled up from the selected farm families covered under the nutrition garden study. Influence on the savings, influence on the good health of the family, purposeful utilization of spare time of the family and taste of the prepared food of integrated nutrition garden showed very good response. While, influence on the availability of variety food and on the labour availability in general showed good trends. As, per the selected farm families the migrated labour required for agriculture operations is happy with the variety of food available with the selected farm families. The influence on the soil health is moderate.

Results of the study analyzed by using Chi-square model (Table 6) which shows that in the case of training effectiveness, it is clearly observed in the data that there was a high significant difference between effectiveness responses and training topics because Chi-square value (Chi-Sq = 54.265) is large having a P value (P-Value = 0.000) less than 1% level of significant.

Conclusion:

The concept of integrated nutrition garden provided balanced nutritional food to the rural people in addition to saving their hard earned money. The concept of integrated nutrition garden may diversify the area intensified by rice-wheat rotation besides improving the livelihood of rural people.

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