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Constraints in Adoption/Non Adoption of Kitchen Gardening

Simrat Pal[1] and Ravinder Kaur[2]

ABSTRACT

Kitchen garden plays an important role for rural families which provide diversification of foods in their daily diet. Most of the families having kitchen garden of different sizes are interested to improve the practice. But many people are facing different constraints while adopting the improved techniques of kitchen gardening. The present study was conducted with the objective to study the impediments/constraints in the adoption/non adoption of kitchen gardening by the rural people of two villages. This study comprised of households as respondents who were adopting or not adopting kitchen gardening. Thus, a total of 145 respondents comprised the sample of the study from two villages. The data were collected through personal interview method with the help of structured interview schedule. The study highlighted that socio cultural constraint was most serious constraint faced by the adopters and general and marketing constraint was the topmost constraint faced by the non-adopters of both locations. The non - availability of quality planting material of fruits and seeds of HYVs of vegetable, lack of knowledge about improved varieties, seed rate and sowing time, lack of knowledge about seed treatment, lack of knowledge regarding major pests and diseases identification and their management and lesser involvement of household women were reported major bottlenecks in successful adoption of kitchen gardening.

Keywords: Adoption, constraints, kitchen gardening, non-adoption.

INTRODUCTION

Horticulture production in the state reached 6,956 thousand metric tonnes in 2017-18, as per the1st advance estimates and this sector is a necessary component for nourishment and nutritional security of the nation (Anonymous 2018). Fruits and vegetables play a significant role in improving health, providing food security and quality to the country's population. The quantity of vegetables produced per capita in India is much lower than what is recommended by the dieticians. In India per capita availability is around 135 g against the minimum requirement of about 300 g for a balanced diet. Continuous dependency on cereal based diet and unsatisfactory consumption of the protective foods results in malnutrition as most of the cereals are deficient in micronutrients such as vitamins and minerals. Vegetables are essential in diet as it provides fiber, and trace minerals, vitamins and proteins and they helps to prevent various diseases resulting from malnutrition and unbalanced nutrition (Islam *et. al.* 2018). An average adult requires 280-300 g vegetables, 30-50 g fruits and 85 g pulses for maintaining good health. But it was found that the actual consumption of pulses in rural areas is around 40 grams, that of vegetables is 180 g and the quantity of fruits in their diet is insignificant (Singh and Kaur 2014). The dietary requirement of vegetables can be easily fulfilled through concept of kitchen gardening as it can easily raise on small piece of land which is available in backyard/front yard of their house. Kitchen garden is a combination of flowers with herbs, fruits and vegetables and this type of garden was usually near the kitchen for convenience, so the vegetables and fruit could be picked at the peak of freshness.

The concept of maintaining a kitchen garden can encourage self-reliance and self-support in the communities (Krems and Lehrmann 2004, Agarwal *et. al.* 2011 and Awasthi *et al.* 2016). Well-managed kitchen gardens can improve rural people's quality of life and foster economic growth that can reduce poverty into the future on a sustainable basis since high proportion of the

[1.] M.Sc. Student, Department of Extension Education, Punjab Agricultural University, Ludhiana, [2.] Director Students' Welfare, Punjab Agricultural University, Ludhiana, Punjab.

population of rural people are dependent on agriculture (Regassa 2016 and Ngeywo and Biwott 2015). There are some predominant reasons for the poor adoption of kitchen gardening amongst rural people may be due to lack of technical know-how, lack of awareness and knowledge regarding inputs like seed, water and plant protection measures, storage and processing etc. A study conducted by Sharma *et. al.* (2011) found that input constraints were the topmost constraints in the Mukstar district of Punjab. This is probably due to the fact that Muktsar district is not know much for vegetable cultivation as more area is diverted under cotton and kinnow cultivation. Realizing the significance of these constraints, it was felt necessary to find out major obstructions in adoption/non adoption of kitchen gardening in the study area. Therefore present study was undertaken to study the impediments/constraints in the adoption/non adoption of kitchen gardening

METHODOLOGY

The study was conducted in Ferozepur district of Punjab. The villages of Ferozepur district were classified into two categories near the city and far off the city. One village from each set was selected randomly. This study comprised of households as respondents who were adopting or not adopting kitchen gardening. One respondent from each household was selected. Thus, a total of 145 respondents comprised the sample of the study.

In the present study, impediment was operationalized as a force which restrains the respondents in adoption of recommended kitchen gardening techniques. A list of major constraints was prepared and primary data were collected from the selected respondents with the help of personal interview schedule. The constraints as perceived by respondents were scored on the basis of magnitude of the problem and the scores of the respondents were recorded and converted into mean score and constraints were ranked as accordingly.

RESULTS AND DISCUSSION

Input constraints

It can be noted from the data given in Table 1 that nearly half of the adopters and non-adopters from near the city category had lesser availability of bio pesticides and bio fertilizers, lesser availability of HYV of vegetables seeds and unavailability of specific eco-friendly and 41.33 per cent of the non-adopters had shortage of land in their house and fields.

Table 1: Distribution of respondents according to input constraints faced in the adoption/ non adoption of kitchen gardening

Input	Far off the city (n_1=75)		Near the city (n_2=70)	
	Adopter	Non Adopter	Adopter	Non Adopter
	f	f	f	f
Shortage of land	5 (6.67)	31 (41.33)	--	19 (27.14)
Unavailability of quality planting materials for Fruits and Vegetables	11 (14.67)	20 (20.67)	1 (1.43)	13 (18.57)
Poor germination of seeds	3 (4.00)	15 (20.00)	--	12 (14.14)
Lack of irrigation facility	1 (1.33)	9 (12.00)	--	4 (5.71)
Lesser availability of bio pesticides and bio fertilizers	37 (49.33)	38 (50.67)	37 (52.76)	28 (40.00)
Lesser availability of HYV of vegetable seeds	36 (48.00)	38 (50.67)	38 (54.29)	28 (40.00)
Unavailability of specific eco-friendly Insecticides	37 (49.33)	38 (50.67)	42 (60.00)	28 (40.00)
Limited family labour	16 (21.33)	28 (37.33)	18 (25.71)	24 (34.29)
Non-availability of package of practices	18 (24.00)	25 (33.33)	25 (35.71)	26 (37.14)
Average	24.29	35.63	25.54	28.55

*Multiple response
Figures in parentheses indicate percentages

One fifth of the adopters (21.33%) and 37.33 per cent of the non-adopters faced the problem of limited family labour. One fifth of the non-adopters had problem of unavailability of quality planting materials for fruits and vegetables and poor germination of seeds. Nearly and equal percentage of the adopters and non-adopters had unavailability of quality planting materials for fruits and vegetables and lack of irrigation facility. A little less than one fourth of the adopters (24.00%) had non-availability of package of practices whereas one third of the non-adopters fell in this category. Only 6.67 per cent and 4.00 per cent of the adopters had shortage of land and poor germination of seeds. In near the city category, majority of the adopters and forty per cent of the non-adopters had unavailability of specific eco-friendly insecticides. Nearly half of the adopters had had lesser availability of HYV vegetable seeds, lesser availability of bio-pesticides, bio-fertilizers and HYV of vegetables seeds whereas forty per cent of non-adopters lie in these categories. Nearly and equal percentage of the adopters and non-adopters had non availability of package of practices. One fourth of the adopters and one third of the non-adopters faced the problem of limited family labour. Less than one fifth of the non-adopters faced the poor germination of seeds, unavailability of quality planting materials for fruits and vegetables and lack of irrigation facility. Very less (1.43%) number of adopters had unavailability of quality planting materials for fruits and vegetables. Findings were in tune with the studies

conducted by various researchers (Zahina-Ramos 2013; Biswas and Jamir 2015; and Rehman *et al,* 2013)

Technical constraints

Data set in Table 2 revealed that the views of respondents about extent of awareness of technical knowhow of improved methods of kitchen gardening. In category of far off the city, 38.67 and 46.67 per cent of the adopters and non-adopters had lack of knowledge about improved varieties, seed rate and sowing time. Nearly one fourth of the non-adopters had lack of knowledge regarding identification and time of infestation of major pests and diseases, recommended dose of fertilizers, pesticides, insecticides and manure application. One fifth of the non-adopters (21.33%) had lack of knowledge methods of seed multiplication and 14.67 per cent had lack of knowledge regarding critical stage of irrigation. Less than one fifth of the adopters had lack of knowledge about identification and time of infestation of major pests and recommended dose of fertilizers, pesticides, insecticides and manure application and same percentage of the adopters had lack of knowledge regarding critical stage of irrigation seed multiplication.

Table 2: Distribution of respondents according to Technical constraints faced in the adoption/ non adoption of kitchen gardening

Technical	Far off the city (n_1=75)		Near the city (n_2=70)	
	Adopter	Non adopter	Adopter	Non adopter
	f	f	f	f
In summer, vegetables does not grow properly	--	-	4 (5.71)	--
Lack of knowledge about				
Improved varieties, seed rate and sowing time	29 (38.67)	35 (46.67)	36 (51.43)	26 (37.14)
Seed treatment	7 (9.33)	18 (24.00)	--	19 (27.14)
Identification and time of infestation of major pests and diseases	12 (16.00)	19 (25.33)	4 (5.71)	23 (32.86)
Recommended dose of fertilizers, pesticides, insecticides and manure application	9 (12.00)	19 (25.33)	6 (8.57)	23 (32.86)
Critical stage of irrigation	6 (8.00)	11 (14.67)	3 (4.29)	15 (21.43)
Method of seed multiplication	6 (8.00)	16 (21.33)	3 (4.29)	20 (28.57)
Average	13.14	22.47	11.42	25.71

*Multiple response
Figures in parentheses indicate percentages

It can also further revealed from near the city category that half of the adopters and 37.14 per cent of the non-adopters had lack of knowledge about improved varieties, seed rate and sowing. Only 8.57 and 5.71 per cent of the adopters had lack of knowledge about recommended dose of fertilizers, pesticides, insecticides and manure application and lack of knowledge about identification and time of infestation of major pests whereas 32.86 per cent of the non-adopters faced these problems. Very less (4.29%) number of the adopters had lesser knowledge regarding method of seed multiplication and critical stage of irrigation whereas 28.57 and 21.43 per cent of the non-adopters lie in these constraints. Findings were in line with the study conducted by Biswas and Jamir 2015.

Socio cultural constraints

It is further depicted from Table 3 that forty per cent of the adopters and 30.67 per cent of the non-adopters from far off the city category had continuous adoption of traditional practices for growing vegetables in comparison to non-adopters because they always follow those techniques which they were learning from their parents and they also called it as "according to the old knowledge". An equal percentage of the adopters and non-adopters had problem of lack of interest among family member and lesser involvement of household women in kitchen gardening. Nearly one fourth of the adopters and non-adopters had fear of theft of kitchen gardening produce.

Table 3: Distribution of respondents according to socio-cultural constraints in the adoption/non adoption of kitchen gardening

Socio cultural constraints	Far off the city (n_1=75)		Near the city (n_2=70)	
	Adopter	Non adopter	Adopter	Non adopter
	f	f	f	f
Continuous adoption of traditional practices for growing vegetables	30 (40.00)	23 (30.67)	31 (44.29)	22 (31.43)
Lack of interest among family members	19 (25.33)	24 (32.00)	29 (41.43)	25 (35.71)
Fear of theft of kitchen garden produce	17 (22.67)	20 (26.67)	19 (27.14)	22 (31.43)
Lesser involvement of household women in kitchen gardening	19 (25.33)	24 (32.00)	21 (30.00)	24 (34.29)
Average	28.33	31.12	35.71	33.12

*Multiple response
Figures in parentheses indicate percentages

In category of near the city, less than half of the adopters had continuous problem of adoption of traditional practices for growing vegetables and lack of interest among family members and 31.43 and 35.71 per cent of the non-adopters belonged to these problems. Nearly and an equal percentage of the adopters and non-adopters had problem of lack of involvement of household women in kitchen gardening. Nearly one third of the adopters and non-adopters had problem of fear of

theft of kitchen gardening produce from the fields.

Economic and Marketing constraints

It can be noted from data table given in table 4 that nearly one third of the non-adopters and 25.33 per cent of the adopters felt the high cost of vegetable seeds/pesticides/fertilizers. One fourth of the non-adopters and 20.00 per cent of the adopters gave priority to rice-wheat crop. In category of near the city, 14.29 and 31.43 per cent of the adopters and non-adopters felt the high cost of vegetable seeds/pesticides/fertilizers. An equal percentage of the adopters and non-adopters gave priority to rice-wheat crop rotation.

Table 4: Distribution of the respondents according to economic and marketing constraints faced in the adoption/non adoption of kitchen gardening

Constraints	Far off the city (n_1=75)		Near the city (n_2=70)	
	Adopter	Non adopter	Adopter	Non adopter
	f	f	f	f
Economic				
Priority to rice-wheat crops	15 (20.00)	19 (25.33)	8 (11.43)	9 (12.86)
High cost of vegetable seeds/pesticides/ fertilizers	19 (25.33)	26 (34.67)	10 (14.29)	22 (31.43)
Average	22.66	30.00	12.86	22.14
Marketing				
Non standardized price	1 (1.33)	25 (33.33)	8 (11.43)	12 (17.14)
Unassured produce	23 (30.67)	30 (40.00)	19 (27.14)	22 (31.43)
Perishability of product	18 (24.00)	27 (36.00)	12 (17.14)	17 (24.29)
Average	18.66	36.44	18.57	24.28

*Multiple response
Figures in parentheses indicate percentages

An investigation regarding the marketing constraints which hinder the respondents for adoption of kitchen gardening. In category of far off the city, nearly one third of the adopters (30.67%) and 40.00 per cent of the non-adopters felt unassured produce of vegetables and fruits. Approximately one fifth of the adopters think fruits and vegetables are highly perishable whereas 36.00 per cent of the non-adopters belonged to this category.

Very less *i.e.* 1.33 per cent of the adopters assume the non-standardized price of fruits and vegetables. In case of near the city, more than one fourth of the adopters (27.14%) and 31.43 per cent of the non-adopters felt unassured produce of vegetables and fruits. Less than one fifth of the adopters had problem of perishability of produce and non-standardized price of produce whereas 24.29 and 17.14 per cent of the non-adopters belonged to these categories.

Table 5: Distribution of the respondents according to post-harvest and other constraints faced in the adoption/ non adoption of kitchen gardening

Constraints	Far off the city (n_1=75)		Near the city (n_2=70)	
	Adopter	Non adopter	Adopter	Non adopter
	f	f	f	f
Post-harvest				
Difficulty in selling small amount of surplus produce	1 (1.33)	13 (17.33)	--	8 (11.43)
Lack of knowledge regarding preservation and processing of surplus produce	--	13 (17.33)	--	8 (11.43)
Lack of marketing at village level	--	12 (16.00)	--	7 (10.00)
Lack of storage system for surplus produce	--	11 (14.67)	--	8 (11.43)
Average	0.33	16.33	--	11.07
Other				
Frequent deluge of kitchen gardens during rainy season due to high water table	16 (21.33)	28 (37.33)	8 (11.43)	27 (38.57)
Problem of proper protection of local goat and stray animals	19 (25.33)	26 (34.67)	25 (35.71)	16 (22.86)
Busy in other field works devoting less time to kitchen garden	16 (21.33)	23 (30.67)	15 (21.43)	12 (17.14)
Average	22.56	34.22	22.85	67.14

*Multiple response
Figures in parentheses indicate percentages

Post-harvest and other constraints

The data further revealed that less than one fifth of the non-adopters from both the locations had problem of lack of knowledge regarding preservation and processing of surplus, lack of marketing at village, problem of storage system for surplus produce and difficulty in selling small amount of surplus produce and very less *i.e.* 1.33 per cent of the adopters from far off the city category had difficulty in selling small amount of surplus produce. There were some other constraints from above constraints faced by the respondents in adoption/non-adoption of kitchen gardening. In far off the city category, nearly one third of the non-adopters had problem of frequent deluge of kitchen garden during rainy season, problem of proper protection of local goat and stray animals and busy in other field works. One fourth of the adopters had problem of frequent deluge of kitchen garden during rainy season, problem of proper protection of local goat and stray animals and busy in other field works. In case of near the city, more than one third of the adopters had problem of proper protection of local goat and stray animals and frequent deluge of kitchen gardens during rainy season. An equal percentage of the adopters and non-adopters had problem of proper protection of local goat and stray animals and busy in other field works. Only 11.43 and 17.14 per cent of the adopters and non-adopters were busy in other field works and problem of frequent deluge of kitchen gardens during rainy season. The results are in consonance with the findings of with Biswas and Jamir (2015).

Table 6: Ranking of constraints faced by the adopters and non-adopters of both locations

Constraints	Far off the city (n_1=75)					Near the city (n_2=70)				
	Adopter (MPS)	Rank	Non adopter (MPS)	Rank	Correlation (r)	Adopter (MPS)	Rank	Non adopter (MPS)	Rank	Correlation (r)
Input	24.29	II	35.63	II		25.54	II	28.55	III	
Technical	13.14	VI	22.47	VI		11.42	VI	25.71	IV	
Socio-cultural	28.33	I	31.12	IV	0.99	35.71	I	33.12	II	0.99
Post-harvest	0.33	VII	16.33	VII		--	VII	11.07	VII	
Economic	22.66	III	30.00	V		12.86	V	22.14	VI	
Marketing	18.66	V	36.44	I		18.57	IV	24.28	V	
General	22.56	IV	34.22	III		22.85	III	67.14	I	

*Mean percent score

It is quite clear from the data in Table 6 that in far off the city category, 'socio-cultural' constraint was the foremost constraint (MPS=28.33, rank Ist) as perceived by the adopters having kitchen garden. Other major category of constraints like 'input' constraints (MPS=24.29), 'economic' constraints (MPS=22.669), 'general' constraints (MPS=22.56), 'marketing' constraints (MPS=18.66) and 'technical' constraints (MPS=13.14) were accorded as II, III, IV, V and VI ranks in rank order by the respondents. Whereas, 'post-harvest' constraints (MPS=0.33) were perceived least important. Among non-adopters, 'marketing' constraint was the topmost (MPS=36.44, rank Ist). This was followed by 'input' and 'general' constraint (MPS=35.63, 34.22) with ranked IInd and IIIrd. Other constraints like 'socio-cultural' (MPS=31.12), 'economic' (MPS=30.00), 'technical' (MPS=22.47) and 'post-harvest' (MPS=16.33) was ranked IVth, Vth, VIth and VIIth. To ascertain the relationship between adopters and non-adopters of far off the city, the rank correlation coefficient is calculated. This shows that there is positive and highly significant correlation at 1 per cent level of significance between adopters and non-adopters of far off the city category. In category of near the city, among adopters similarly 'socio-cultural' constraint (MPS=35.71) was the major constraint followed by 'input' constraint (MPS=25.54), 'general' constraints (MPS=22.85), 'marketing' constraint (MPS=18.57), 'economic' constraint (MPS=12.86), 'technical' constraints (MPS=11.42) and post-harvest constraint (MPS=0) respectively. Non-adopters share that 'general' as a major and foremost constraint (MPS=67.14, rank Ist) followed by 'socio-cultural' (MPS=33.12, rank IInd) and 'input' related constraint (MPS=28.55, rank IIIrd). Rest constraints like 'technical' (MPS=25.71), 'marketing' (MPS=24.28), 'economic' (MPS=22.14) and "post-harvest" (MPS=11.07) were also some of the leading constraints faced by the non-adopters in kitchen gardening in that decreasing order. In order to find out the relationship between ranks accorded by groups of respondents to different categories of constraints, rank correlation was calculated and shows that there is also positive and highly significant correlation at 1 per cent level of significance between adopters and non-adopters of near the city category.

CONCLUSION

This study concluded that socio cultural constraint was most serious constraint among the adopters and general and marketing constraints among the non-adopters of both locations followed by input constraints, technical constraints and postharvest constraints in adoption of Kitchen gardening. While analyzing overall constraints as perceived by the respondents, the study highlighted that unavailability of quality planting material of fruits and seeds of HYVs of vegetable, Lesser availability of bio pesticides and bio fertilizers, lack of knowledge about improved varieties, seed rate and sowing time, lack of knowledge about seed treatment, lack of knowledge regarding major pests and diseases identification and their management and lack of interest among women were reported major bottlenecks in successful adoption of kitchen gardening.

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