



PROBLEMS AND PROSPECTS OF KITCHEN GARDENING IN WARD 24 OF KHULNA CITY: A CASE STUDY

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Abstract: The demand of vegetables and fruits are increasing along with the increasing population. But due to expansion of settlements, the cultivable land is decreasing, especially the fallow land beside the house which is suitable for kitchen gardening. The paper covers the discussion related with kitchen gardening and different socio-economic indicators such as income, occupation, education, knowledge about kitchen gardening, tendency of gardeners, attitudes of land owners regarding kitchen gardening. In the study area, almost all of the houses have 1/6 to 3+ decimal vacant lands in and around their houses. This land is remaining fallow all over the year. However, the present study tries to focus on the problems and prospects of kitchen gardening on these fallow lands located in ward 24 of Khulna City Corporation Area. Some suggestions have been outlined from the study, which will be useful for further studies and to take pilot/action oriented programmes on kitchen gardening in the study area as well as in other areas of Khulna City Corporation.

Key words: Kitchen gardening, land use, vacant land, Khulna

Introduction

Khulna is the third largest metropolitan and industrial city of Bangladesh with an area of 45.65 sq. km. At present, Khulna city i.e., Khulna City Corporation (KCC) and adjacent areas have a population of about 1.22 millions (Anon, 2001) and annual population growth rate is 3.45 (Sarwar *et al.*, 1998). The whole city is divided into 31 administrative wards. Khulna experienced dense population because of industrial expansion during 1950s and 60s. The industrial development was mainly centered to the establishment of large-scale mills and factories such as jute processing, jute mills, news print paper mill, textile mills, hard board mill, salt refining, ship-building, match factories, etc. Still the large-scale industries provide the large share of Khulna's overall economic output and employment (Anon, 1986) As far as the occupational structure is concerned, most of the city dwellers are semi-skilled and unskilled industrial workers. The income of this group of people is significantly low. The income of the households of Khulna city is heavily concentrated in a narrow range of income between Tk. 1,000 to 3,500 per month (Anon, 1992). The city's overall physical development and construction of houses are being conditioned by the overall socio-economic conditions of the city dwellers.

It is noticeable that a vast majority of the city dwellers (10 years and above of both males and females) is engaged in non-agricultural activities such as industry, service, business, transport, construction, etc. In order to meet the daily food requirement of the dwellers of Khulna city, a vast amount of vegetables, fruits, poultry, etc. are being supplied from elsewhere. In recent past, there were gardens and ponds around the houses both in urban and rural areas of Bangladesh. The gardens and ponds help to provide foods, nutrition, additional income, etc. to the owners of the houses, as well as to the urbanites. Now a days, the home gardening have

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been disappeared in the urban areas particularly in the large cities due to the excessive pressure on limited land which has also negative impact on the city's total environment. Khulna city is not an exception from this. It is observed that few houses in Khulna city have gardens in their premises.

The need for Kitchen gardening emerges due to the shortage of vegetables, which are the main sources of vitamins, minerals and dietary fibre. An adult person needs 200gm vegetables daily but people of Bangladesh consume only 28gm vegetables daily, which is insufficient compared to the standard (Roy, 1996). The existing production of vegetables can only meet up 25% of the total need (Talukder *et al.*, 1996). To meet this shortage, there is also a need to produce more vegetables surrounding the homesteads.

So far, no in-depth field oriented research study has been conducted on the aspect of identifying problems encountered and finding out possibilities of development of the gardening in vacant land in and around the houses in the Khulna city. The present study has been made an attempt to conduct a socio-economic survey in Ward 24 of Khulna City Corporation to address the issues relating to the problems and prospects of development of kitchen gardening in Khulna city.

Materials and Methods

Selection of site: After reconnaissance survey, observing desired characteristics, Ward 24 was selected purposively from nine other wards of Khulna City Corporation. Here, desired characteristics including- a mixed developed area, having *kacha*, *pacca* and semi-*pacca* houses, nor congested neither agro-based, as well as having prospect of kitchen gardening.

Collection of data: A structured questionnaire was used to collect information from city dwellers of the selected ward. The questionnaire was pre-tested and standardized after two pilot surveys. The source of information included house owners or dwellers, local leaders, aged persons and different publications from daily newspapers, magazines etc.

Sampling technique: Random sampling technique was implied for conducting the study. The study area firstly classified into three categories according to the nature of construction of buildings namely, *kacha*, *pacca* and semi-*pacca*. Equal numbers of samples have been collected from the above mentioned categories. From each category, alternatively fifth households have been selected as samples. Further, the ownership pattern of the houses is an important factor for kitchen gardening. About 75% of the samples were taken from the owners of the houses and the remaining 25% samples were taken from the rentals. Total households of the Ward 24 were 6804 and 12.7% of the samples were surveyed for the study. Total number of samples drawn was 102.

Data processing and presentation: All collected data and information were checked and verified and re-collected for missing information or incomplete information. All the information from the questionnaires were assembled with the computer software SPSS pc +. The simple tables, cross tables, frequency tables, etc. were prepared and presented in the text.

Results

Occupational status of the household heads: In the study area, largest number of household heads (34.3%) is executives and the second largest (22.5%) is government service holders (Table 1). They are not much more interested on kitchen gardening. They also think that vegetables are much cheaper and production of vegetables is very problematic. The non-government services holders (12%), teachers (6%), day labourers (5%), rickshaw-pullers (6%) are very much interested on kitchen gardening. Occupation is an important factor, which may affect for initiating kitchen garden. It is revealed from the study that if the people earn more then their intention for kitchen gardening comparatively lowers than the people who earn less.

Table 1. Occupation of the household heads.

Types of occupation	Frequency	Percentage
Government service holders	23	22.5
Non-government service holders	12	11.8
Teachers	6	5.9
Businessmen	35	34.3
Day labourers	5	4.9
Rickshaw pullers	6	5.9

Small businessmen	6	5.9
Unemployed	6	5.9
Others	3	2.9
Total	102	100.0

Educational background of the household heads: About 90% of the household heads are literate (Table 2). A few numbers of households (i.e. 10%) are illiterate. If a programme of kitchen gardening is launched in Ward 24, the literate persons could be easily motivated. Table 2 also shows that 32.4% and 22.5% household heads had education at graduate and H.S.C. level respectively, which indicates the favourable condition for undertaking kitchen gardening program in the Ward 24.

Table 2. Educational status of the household heads.

Level of education	Frequency	Percentage
Illiterate	10	9.8
Primary (I-V)	10	9.8
Secondary (VI-X)	10	9.8
Secondary School Certificate (S.S.C.)	14	13.7
Higher-secondary School Certificate (H.S.C.)	23	22.5
Graduate	33	32.4
Engineer/Doctor/Advocate	2	2.0
Total	102	100

Average income level of household heads and its relationship with Kitchen Gardening: Income level is a vital factor for undertaking kitchen gardening in the urban areas. The study depicts that people of upper income group are not interested on kitchen gardening. However, a small number of the aged people of upper income level show interest because they enjoy gardening. Table 3 shows that 7.8% of the household heads earn monthly less than Tk. 2,000 and 39% earn within Tk. 2,000-5,000. Most of the people earn monthly Tk. 4,001-5,000. Only 1% earns more than Tk. 20,000 per month.

It is evident from the study that the lower income group (monthly income within Tk. 2,000-6,000) are very much interested for kitchen gardening. More than half of the respondents are within income Tk. 2,000-6,000 and among them 28 respondents have kitchen garden and 24 respondents have no involvement in kitchen gardening. It was also found that the respondents earning more than Tk. 16,000 per month have no gardens. It indicates that the tendencies of kitchen gardening are lesser with the rise in income levels.

Table 3. Income of household heads and tendency of kitchen gardening.

Monthly income range (Tk.)	Kitchen gardening		Total	Percentage %
	Yes	No		
<2000	3	5	8	7.8
2000-3000	7	4	11	10.8
3001-4000	2	6	8	7.8
4001-5000	12	9	21	20.6
5001-6000	7	5	12	11.8
6001-7000	2	2	4	3.9
7001-8000	4	9	13	12.7
8001-9000	-	3	3	2.9
9001-10000	1	3	4	3.9
10001-12000	1	1	2	2.0
12001-14000	4	5	9	8.8
14001-16000	1	5	6	5.9
16001-20000 & +	-	1	1	1
Total	44(43.1%)	58(56.9%)	102(100%)	100.0

Knowledge about kitchen gardening: On the basis of indigenous practices, family traditions, and due to some training and education programmes, it appears that 94% of the household heads have some knowledge about kitchen garden and only 6% do not have any knowledge on this. Table 4 depicts that 20.6% of the household heads earn monthly Tk. 4,001-5,000 and they (20.6%) have good knowledge about kitchen gardening. The study results reveal that with the increase in income level of the household there is lesser interest on kitchen gardening.

Table 4. Knowledge of kitchen gardening.

Monthly income range (Tk.)	Knowledge about kitchen gardening				Total	
	Yes		No		Frequency	%
	Frequency	%	Frequency	%		
<2000	8	8.16	-	-	8	8.16
2000-3000	11	11.22	-	-	11	11.22
3001-4000	8	8.16	-	-	8	8.16
4001-5000	21	21.42	-	-	21	21.42
5001-6000	12	12.24	-	-	12	12.24
6001-7000	4	4.08	-	-	4	4.08
7001-8000	11	11.22	2	2.04	13	13.26
8001-9000	2	2.04	1	1.02	3	3.06
9001-10000	4	4.08	-	-	4	4.08
10001-12000	2	2.02	-	-	2	2.04
12001-14000	7	7.14	2	2.04	9	9.18
14001-16000	5	5.1	1	1.02	6	6.12
16001-20000 & +	1	1.02	-	-	1	1.02
Total	96	(94%)	6	(6%)	102	(100%)

Nature of involvement among the family members: Most of the housewives (77.27%) were found to be involved in kitchen gardening. Boys and girls take it as sources of enjoyment or hobbies. The head of the households do not show any interest about kitchen garden (Table 5).

Table 5. Nature of involvement in kitchen garden (n = 44).

Nature of family member involvement	Frequency	Percentage
Housewives	34	77.27
Boys	7	15.91
Girls	2	4.55
Others	1	2.27
Total	44	100

Labour used in kitchen garden: Among the 102 surveyed households, 44 households are producing vegetables in informal kitchen gardens. Among 44 households, 43 households (97.73%) give their own labour or involve the family members. Only one household head gave opinion that he has hired labour sometimes to work in their garden. It is clear that the owners are very much interested to work in their own gardens.

Knowledge about fruits production: Table 6 shows that more than 97% of heads are familiar with fruits gardening beside their homesteads due to their indigenous practices and family traditions. Only 2.9% have no idea about it.

Table 6. Knowledge about fruit trees plantation.

Knowledge	No. of respondents	Percentage
Yes	99	97.1
No	3	2.9
Total	102	100.0

Earning from kitchen gardening: In the study area 44 household produce vegetables and earn from their production. Among the producers about 31.8% earn Tk. 201-300, 25% earn Tk. 301-500 and 2.3% earn more than Tk. 1,000 per month (Table 7). Kitchen gardening may be the alternative sources of income of the people of ward 24. It may be mentioned here that 21.42% of the people in the study area earn Tk. 4,001-5,000 (Table 3) which are not sufficient for the families. So, kitchen gardening may be their alternative source of income.

Table 7. Earning from kitchen gardening in the year 2003.

Selling price of vegetables (Tk.)	Frequency	Percentage
100-200	10	22.7
201-300	14	31.8
301-500	11	25.0
501-700	7	15.9
701-1000	1	2.3
1000 +	1	2.3
Total	44	100.0

Respondents' interest in kitchen gardening: From the study it was found that out of 102 samples only 44 respondents are involved in kitchen gardening and remaining 58 respondents have no involvement with kitchen gardening. Among the 58 respondents, more than 65.52% respondents have shown their interest on kitchen garden in future. The rest 34.48% have no willingness about kitchen gardening, most of them were rental and have minimum open space beside their houses.

Table 8. Willingness of kitchen garden in the next year.

Willingness	No. of respondents	Percentage
Yes	38	65.52
No	20	34.48
Total	58	100.0

Problems faced by the household heads in kitchen gardening: Table 9 shows that that 7.8% household heads faced some problems from neighbours in doing kitchen gardening. Most of the respondents (33.3%) expressed that they were facing the maintenance problem. Average 18% of the household heads opined that they were facing seed and water crisis.

Table 9. Problems faced in kitchen gardening.

Types of problem faced	No. of respondents	Percentage
Seed	18	17.6
Pesticides/insecticides	14	13.7
Water supply	20	19.6
Financial	1	1
Disturbance by neighbour	8	7.8
Maintenance	34	33.3
Others	7	6.9
Total	102	100.0

Contact with house owners for kitchen gardening and its permission: Generally, the rental faced the problem of producing vegetables beside the house because without permission from the house owner, the rental households can not do it. In the study out of 102 samples, 24 were rental households. It was found that most of the rentals (about 67%) do not cooperate with the house owners and do not give permission to produce vegetables in the fallow lands beside the house. If the rental households become aware about kitchen gardening and talk with the house owners, it is expected that the production of vegetables increase tremendously in the study area. The mentality of the rentals and owners are the major constraints for kitchen gardening.

Regarding the permission for kitchen garden, around 75% of the house owners showed positive response. Only 25% are not agreed to give permission for gardening beside their houses. Most of the owners did not live in their own houses, so the owners think that it will create problem among the rentals because all the rentals show interest on gardening, but the fallow land is limited beside houses.

Causes of not involving with kitchen gardening: In the study area the respondents are facing some problems regarding kitchen gardening; that is why they could not make a kitchen garden. 75% of the house owners have given promises for kitchen gardening. But due to the lack of time and proper knowledge 38.89% and 22.22% respondents, respectively, have not been involved in kitchen gardening. About 38.89% of the respondents replied that vegetables are so cheap and that is why, they are not interested on producing vegetables. Practically, it is true that vegetables are not much cheaper and are not available all over the year in the market.

Table 10. Causes of no interest on kitchen gardening.

Reasons	No. of respondents	Percentage
Lack of time	7	38.89
Lack of knowledge	4	22.22
Low price of vegetables	7	38.89
Total	18	100.0

Land availability for kitchen gardening: Bangladesh is known as a populous country in the world and as such density of population in the urban area is very much high and land-man ratio is very poor. As a result, the availability of vacant land beside houses is not readily available. In the study area 35.29% of the respondents have only 1/6 decimal land beside houses. Among the 35.29%, only 8.82% involved in kitchen

gardening, and 26.47% respondents were not involved in this respect. The owners have vacant land of 1-1.5 decimal, all of them, (9.81%) involved in kitchen gardening which shows a positive sign (Table 11). Table 11 also shows that the kitchen gardening depends on the fallow land existing around the houses. Actually, tendency for doing gardens is increased with the amount of availability of vacant land. On the other hand, the higher classes possess the maximum vacant land but they are not interested in the kitchen gardening at all.

Table 11. Land availability other than structures.

Land availability (decimal)	Kitchen gardening		Total
	Yes	No	
≤1/6	9(8.82)	27(26.47)	36(35.29)
1/6-1/5	6(5.88)	7(6.86)	13(12.75)
1/5-1/4	3(2.94)	3(2.94)	6(5.88)
1/4-1/3	2(1.96)	5(4.90)	7(6.86)
1/3-1/2	-	1(0.98)	1(0.98)
1/2-1	-	1(0.98)	1(0.98)
1-1.5	10(9.81)	-	10(9.81)
1.5-2	3(2.94)	2(1.96)	5(4.90)
2-3	3(2.94)	3(2.94)	6(5.88)
3+	8(7.84)	9(8.83)	17(16.67)
Total	44(43.14)	58(56.86)	102(100)

Monthly income and land for kitchen gardening: Kitchen gardening does not require any large land. Fallow lands besides the houses can be divided into segments for producing different vegetables. Even kitchen gardening is possible on the roof. From the study it was found that about each household in the Ward 24 has some fallow lands feasible for kitchen gardening. From Table 12 it was found that 35.29% houses have less than 1/6 decimal, 17.75% have 1/6-1/5 decimal, 5.88% have 1/5-1/4 decimal, 4.9% have 1.5-2 decimal and 16.67% have more than 3 decimals of fallow lands. So there are enough supply of lands in the ward 24 for kitchen gardening. From the Table 12 it is also found that households having income Tk.4001-5000 keep more (20.59%) fallow lands in their houses.

Table 12. Amount of fallow lands in accordance with income.

Monthly income (Tk.)	Size of fallow lands (decimal)									Total (%)	
	<1/6	1/6-1/5	1/5-1/4	1/4-1/3	1/3-1/2	1/2-1	1-1.5	1.5-2	2-3		3+
<2000	1	1	-	1	-	-	-	1	1	3	8 (7.84)
2001-3000	3	-	1	1	1	1	3	-	1	-	11 (10.78)
3001-4000	7	-	-	-	-	-	-	-	-	1	8 (7.84)
4001-5000	4	3	1	3	-	-	4	1	2	3	21 (20.59)
5001-6000	8	2	1	-	-	-	-	-	-	1	12 (11.76)
6001-7000	1	1	-	-	-	-	-	-	-	2	4 (3.92)
7001-8000	5	2	-	1	-	-	-	2	2	1	13 (12.75)
8001-9000	2	-	1	-	-	-	-	-	-	-	3 (2.94)
9001-10000	2	1	-	-	-	-	1	-	-	-	4 (3.92)
10001-12000	1	-	-	-	-	-	-	1	-	-	2 (1.96)
12001-14000	2	1	1	1	-	-	2	-	-	2	9 (8.82)
14001-16000	-	2	1	-	-	-	-	-	-	3	6 (5.88)
16000+	-	-	-	-	-	-	-	-	-	1	1 (0.98)
Total	36	13	6	7	1	1	10	5	6	17	102
%	35.29	17.75	5.88	6.86	0.98	0.98	9.80	4.90	5.88	16.67	100

Discussion

In the study, it is found that the lower income group (monthly income within Tk. 2,000-6,000) are very much interested for kitchen gardening. The people of upper income group viz., executives (34.3%) and government service holders (22.5%) are not interested in kitchen gardening. However, a small number of the aged people of upper income level show interest because they enjoy gardening. The non-government services holders (12%), teachers (6%), day labourers (5%), rickshaw-pullers (6%) are very much interested in kitchen gardening.

About 94% of the household heads have some knowledge (indigenous practices, family traditions, etc.) about kitchen garden and only 6% do not have any knowledge on this. Mostly the housewives (77.27%) take care about the kitchen garden. Among 44 households, 43 households (97.73%) give their own labour or involve the family members in kitchen gardening.

Among the producers about 31.8% earn Tk. 201-300, 25% earn Tk. 301-500 and 2.3% earn more than Tk. 1000 per month from kitchen gardening. In the study area, 58 respondents have no involvement with kitchen gardening. But among them, 65.52% respondents have shown their interest on kitchen garden in future.

Without permission from the house owner, the rental households can not do kitchen gardening. Regarding the permission for kitchen garden, around 75% of the house owners showed positive response. Only 25% are not agreed to give permission for gardening beside their houses.

In the study area, 35.29% of the respondents have only 1/6 decimal land beside houses. Among the 35.29%, only 8.82% involved in kitchen gardening, and 26.47% respondents were not involved in this respect. The higher classes possess the maximum vacant land but they are not interested on the kitchen gardening at all.

Fallow lands besides the houses and even roof can be used for producing different vegetables. In the study area, 35.29% houses have less than 1/6 decimal, 17.75% have 1/6-1/5 decimal, 5.88% have 1/5-1/4 decimal, 4.9% have 1.5-2 decimal and 16.67% have more than 3 decimals of fallow lands. So there are enough supply of lands in the ward 24 for kitchen gardening.

Some motivational and awareness building programmes can be taken in the study area for the encouragement of kitchen gardening.

Conclusion

The open spaces beside the households in the urban areas of Ward 24 remain fallow all over the year. These fallow lands could effectively be used as kitchen garden. It may help to supply of nutrients to the urban people. Most of the respondents are not interested on kitchen gardening because of lack of time, knowledge, space, etc. A significant number of lower income groups of peoples have been interested on kitchen gardening. There are unique scopes of popularizing kitchen gardening by taking some action oriented or pilot programme in the study area (Ward 24) as well as other parts/areas of the city corporation.

Kitchen gardening is one kind of hobby and may be a part of exercise of city dwellers. It facilitates to eat fresh vegetables and fruits reach in necessary nutrient/vitamins. It is a source of income for the lower income group as its demand is increasing day by day in the rural as well as urban areas of Bangladesh. In order to increase kitchen gardening in the study area (Ward 24 of Khulna city) following suggestions are given:

- A common slogan in this moment is 'plant a sapling today and take care it; tomorrow it will take care of you'. The slogan is advancing slowly due to the positive attitude of the GOs and NGOs involvement. In the study area, land is not scarce for kitchen gardening but the production of vegetables and fruits are not satisfactory. Much motivation and free sapling distribution among the people is needed in the study area. Side by side, it is needed to develop awareness among the people through Agriculture Extension Offices and NGOs.
- A significant number of peoples of the ward 24 can earn only less than Tk. 2,000-3,000 monthly. This income group may be the target group to execute this type of research. To support these groups, loan disbursement programme may be taken by the banks. BKB (Bangladesh Krishi Bank) may take the major responsibilities in this regard. If it is proved once that kitchen gardening is very much profitable and need oriented then it will spread all over the urban areas of Khulna city.
- According to the opinion of the respondents (99%), soil is favourable for kitchen garden in the study area. They do not use qualitative seeds, fertilizers and insecticides/pesticides. If the people are aware about uses of quality seeds, fertilizers, pesticides, etc. then it can be expected that the production will increase tremendously. Therefore, it is required to train the people about the uses of seeds, fertilizers, pesticides, etc. through some relevant GOs and NGOs in the study area. Block Supervisors of the Agriculture offices can take initiatives too.
- The owners of the house do not permit the rentals for kitchen garden. A necessary institutional arrangement may be made so that the rentals have right to produce vegetables and fruits beside the houses.
- To encourage the respondents- poster, TV programmes, fairs, etc. on kitchen gardening may be the way of encouragement. The GO and NGOs can play vital role in this regard.
- There are some social organizations in the study area (Ward 24). The workers of these social organizations are very much interested to involve them in various programmes regarding kitchen garden. They also have shown their interest to participate in all stages of the programmes. To implement the kitchen gardening programme, there exists a favourable situation in the study area (Ward 24).

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Moreover, kitchen gardening in the city areas can reduce the pressure on agriculture land and is good for the proper use and conservation of agricultural land. Last but not the least, kitchen gardening can produce an environment friendly atmosphere in the city and it can give mental peace to the city dwellers as well.

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