

Marketing Scenario and Sustainability of Vegetable Enterprise of Specially Targeted Ultra Poor in North Bengal

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Abstract

The study aimed to explore the marketing system of vegetables grown by the members of the specially targeted ultra poor (STUP) to identify problems and to suggest solutions for sustaining. Data were collected from 79 second cycle vegetable enterprise households Jaldhaka and Syedpur *upazilas* of Nilphamari district and through questionnaire survey in May 2004. Marketing system comprises of marketing channel and marketing functions. The marketing channel was found to have undergone changes in the second cycle compared to first cycle. The members became more market oriented and more middlemen entered the marketing channel in the second cycle compared to first cycle. There were no major problems other than land renewal. About 46% of the vegetable cultivators faced land renewal problems. Land mortgage instead of land lease may be considered, as this type of land contract can be made for 2-3 years, and is preferred by the vegetable growers. BRAC may consider purchasing land and leasing it out to the STUP members, which would be a long- term solution.

Executive Summary

BRAC introduced a new dimension of poverty reduction in 2002 known as challenging the frontiers of poverty reduction-targeting the ultra poor (CFPR-TUP) programme. The programme was especially designed for the ultra poor, to uplift them to the mainstream by transferring necessary assets, providing enterprise development training, promoting social development programmes and providing health care facilities.

The specially targeted ultra poor (STUP) members received assets from BRAC for vegetable cultivation in May/June 2002. The first cycle of vegetable cultivation took over one year. In the first cycle, BRAC transferred necessary assets and technical assistance to the STUP members along with a subsistence allowance. Before the asset-transfer the STUP members were given three days of training on enterprise development. The assets given to each member were one spade, one manual weeder, one bucket with a pot, one basket for selling vegetable, one insecticide sprayer, one shallow tube well or *Dhekikol* for irrigation (for group use) fencing for protecting vegetable crops, necessary inputs (seed, fertiliser, pesticide, etc.) as well as the labour cost for land preparation, and a piece of leased land (32.44 decimals on average). After completing the first cycle, the STUP women continued their business self-financed from June/July 2003 to June 2004 without BRAC subsidy. This duration is termed as the second cycle in this report. In the second cycle BRAC provided services to the STUP members, such as advice on input purchases, enterprise care and selling output.

The research and evaluation division (RED) of BRAC undertook a study to explore the marketing system, which comprises of a marketing channel and marketing function, to identify problems associated with of vegetable enterprises, and to provide some policy suggestions. The study areas were Jaldhaka and Syedpur *upazilas* of Nilphamari district, which were purposively selected as remote and urban area respectively to see the comparison of two vegetable cultivating areas. The data were collected through questionnaire survey in early May 2004 from 47 STUP households of Jaldhaka and another 32 STUP households of Syedpur *upazilas*.

The average household size was 4.46, where the male-female ratio was 2.19:2.37. Thirty percent of the households were headed by the STUP women while 59% and 11% of households were headed by the STUP women's husbands and sons respectively. Ninety percent of the members were between 15 and 45 years of age while the remaining 10% were 46 years and above, meaning almost all members were economically active as measured by age.

The STUP members cultivated 33 types of vegetables most of which were cultivated in the *Kharif* season (from March to September). The prominent *Rabi* (from October to February) vegetables were cauliflower, cabbage, potato, brinjal, bean, and spinach while bottle gourd, sweet gourd, Indian spinach, red amaranth, jute plant tops and *Kolmi* leaves were cultivated in the *Kharif* season.

According to survey responses, 90-100% of the STUP members bought modern inputs (*e.g.* HYV seed, fertiliser, pesticide, etc.) in cash in the second cycle. The Marketing channel changed in the second cycle compared to first cycle. The STUP members became more market oriented as sales from home reduced from 45% to 39% in the second cycle. On the other hand, more middlemen entered in the marketing channel during the second cycle. Sales to the middlemen increased from 20% to 30% in the second cycle due to certain benefits like bulk sales and receiving a large amount of money at one time.

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The STUP women were largely involved in input collection activities like seed, fertiliser and pesticide purchase, ash and organic fertiliser collection. More than 80% of the members were involved in the collection of different inputs with the exception of fertiliser (67%) and pesticide purchase (49%). In the case of output sales, the STUP members mainly sold from their homes, while their husbands and children were involved in selling vegetables in the market. The STUP members also played a vital role in production and harvesting activities as more than 90% of the women were involved in land preparation, seed sowing, ash application, weeding, irrigation and harvesting activities. The STUP women's husbands mainly involved in land preparation, fertiliser and pesticide application activities. The modes of transportation for carrying vegetable to the market were van (71%), head or shoulder load (24%) and rickshaw (5%). The STUP members' husbands and sons mainly transported and sold vegetable in the market.

The average vegetable cultivating land of the STUP members was 32.44 decimals in the first cycle and 22.47 decimals in the second cycle. The land size was reduced due to some sort of land renewal problems. Regarding land renewal problems, 33% of the STUP households changed land while 67% did not change land in the second cycle. Twenty-three percent of those who did not change land and 92% of those who changed land faced renewal problems. Land renewal problems were greater in Syedpur (59%) compared to Jaldhaka (36%) irrespective of land change. Land rent and distance from home to land increased by Tk 2.46 per decimal per year and 60 meters respectively for those who changed land and faced renewal problem in the second cycle. On the other hand land, rent increased Tk 6.64 per decimal per year for those who did not change land but faced renewal problem. It appears that decreased distance from home to land was exchanged for increased land rent. For instance average land rent increased Tk 8.68 per decimal per year and distance from home to land decreased 850 meters for those who did not face renewal problems, but changed land.

Many STUP members wanted to change land in the third cycle due to land renewal problems (76%), land quality (15%), and distance from home to land (9%). Therefore, land renewal problems should immediately be addressed for sustaining the enterprises. Land mortgage instead of lease may be considered, as this type of land contract was preferred by the vegetable growers. BRAC may consider purchasing land and leasing it out to the STUP members, which would be a long-term solution.

Some research agenda may be taken on a) use of cooperative van by the STUP households to transport vegetables to distant markets, which may save their physical labour, time, and add place utility as well. To some extent one (two) representative(s) may sell vegetables on behalf of other members; b) time utility by storing sweet gourd, bean seed, etc. in the harvesting season; more cultivation of leguminous crops like bean, cowpea, french bean, etc. may add nitrogen to the soil; and c) form utility may also be added by processing bottle gourd for making sugar candy, and potato for making chips, to sustain the business in the off season to get cash flow during this period. Cost of processing for adding utility to the certain products should be given. Besides, more training on household-level vegetable processing should be given to members to perform such new technical jobs properly.

Introduction

Background

BRAC took a new initiative on poverty reduction in 2002 called- Challenging the Frontiers of Poverty Reduction / Targeting the Ultra Poor . This programme has two key components – pushing down and pushing out the frontiers of poverty reduction. Pushing down poverty reduction interventions or targeting the ultra poor comprises of asset transfer, enterprise development training, social development programmes and proper health care facilities for the extreme poor. On the other hand, pushing out the scope of existing interventions, or targeting social constraints, comprises of social development programmes and essential health care facilities to the communities especially village organisation (VO) members. The STUP people comprises of the bottom 10% of the poorest. The aim of the programme was to develop micro enterprises in the rural areas of Bangladesh as a means of introducing income generating activities for active, rural women through self employment. Hence, to serve the programme, different micro enterprises namely cage rearing of poultry, cow and goat rearing , vegetable cultivation, non-farm enterprises i.e. small shops, factory, mobile vending etc., horticulture nursery were provided to the extreme poor. This programme plans to cover 70,000 ultra poor people from 14 districts by 2006 BRAC's organisational structures in the respective areas (Anonymous 2001). These districts are Faridpur, Madaripur, Gaibanda, Rangpur, Shariatpur, Nilphamari, Gopalganj, Jamalpur, Thakurgaon, Rajbari, Kurigram, Shirajganj, Kishoreganj and Sherpur- by 2006, utilising

Rational

The STUP members received assets from BRAC for vegetable cultivation in May/June 2002 and cultivated for one year. This duration is termed as the first cycle during which they were totally subsidised. In the first cycle BRAC transferred necessary assets and technical assistance to the STUP members along with a subsistence allowance. Before the asset transfer, the STUP members were given three- day training on enterprise development. The assets given to each member were one spade, one manual weeder, one bucket and bucket pot, one *tukri* (a bamboo made basket for selling vegetable), one insecticide sprayer, one shallow tubewell or *dhekikol* for irrigation for group use, fencing for protecting vegetable, necessary inputs like seed, fertiliser, pesticide, etc. as well as labour costs for land preparation, and a piece of leased land which averaged 32.44 decimals. After completing the first cycle the STUP women continued their business through their own financing, from June/July 2003 to June 2004, without BRAC's subsidy. This duration is termed as second cycle in this report. In the second cycle, BRAC provided services to the STUP members such as advice on input purchases, enterprise care and output sales. This study intends to identify the problems and prospects of vegetable cultivation enterprises conducted by STUP women in the second cycle by their own financing to address the problems for sustaining the enterprises in the long run. The study also focused on the marketing system of the vegetable enterprises. Vegetable enterprises of STUP members was selected for study due to some problematic characteristics of agricultural products such as bulkiness of product, seasonal supply, sensitive price, perishability, etc.



Objectives

The study aimed to explore the marketing scenario of vegetables cultivated by the STUP members and the sustainability of these enterprises in the long run. To achieve this aim, we wanted to:

- explore the present profile of STUP members;
- explore the marketing system of vegetables grown by STUP members;
- identify the problems and opportunities of vegetable enterprises of STUP members;
and
- suggest policy recommendations for sustaining the enterprise.

Methodology

Study area

Jaldhaka and Syedpur *upazilas* of Nilphamari district were selected, where the STUP vegetable growers were densely located. Jaldhaka is a remote rural area while Syedpur is urban area. These two areas were purposively selected to compare the results from different aspects.

Sampling

The sample of the STUP members was selected under the following criteria:

- a) STUP member must be involved with a vegetable growing enterprise,
- b) STUP member has already crossed the first cycle and operated in the second cycle,
- c) STUP member has completed at least one season of the second cycle, and
- d) STUP member has escaped from BRAC's direct subsidies like asset transfer and subsistence allowance.

All the 79 STUP vegetable growers of Nilphamari district (47 in three villages of Jaldhaka and 32 in three villages of Syedpur *upazilas*) were selected due to the low population size.

Data collection

Data were collected through questionnaire survey in May 2004. The data were analysed using SPSS version 11.0 and Micro Soft Excel packages.

Limitations of the study

The costs and returns from vegetable enterprises have not been calculated due to lack of desired data. Joint costs were found for various vegetables for which individual costs and returns could not be calculated. In addition some standing crops were found in the field at the end of second cycle. Use of chemical fertilisers, insecticides, and continual use of soil might have some negative impact on soil, which was not identified. Seasonality analysis was not done which would indicate the monthly cash flow of vegetable enterprise. In spite of this, the study has revealed new insights into the vegetable cultivation enterprises of the STUP women, which had not been previously studied. It also gives an overall picture of vegetable enterprises conducted by the STUP members, including the challenges of these enterprise.



Findings and Discussions

Profile of the ultra poor vegetable growers

Table 1 shows the age distribution of STUP vegetable growers. Of the 79 STUP members, 56 were in the age ranging from 26 to 45 years. It indicates that assets were given to those women who were economically active measured by age. Their current profession (100%) was 'agriculture' while previous profession (81%) was 'seasonal day labour' they reported. Ninety five percent of the members were found illiterate while 4%

Table 1. Age distribution of the STUP members

Thana	Total	Age in years			
		15-25	26-35	36-45	45+
Jaldhaka	47	5	18	19	5
Syedpur	32	10	12	7	3
Total	79	15	30	26	8

Source: Field survey, May 2004

studied below primary level and 1% up to primary level (Annex 2). The health status of the STUP members revealed that 38% were reportedly 'fit' while 51% and 11% were 'sometimes unfit' and 'often unfit' respectively (Annex 3). The STUP members were better in Syedpur compared to Jaldhaka regarding health care facilities. Communication and infrastructural facilities were available more in Syedpur compared to Jaldhaka. Average family size was found to be 4.46 where male-female ratio was 2.19:2.37 in Nilphamari. Male-female composition of the STUP households was 2.16:2.51 in Jaldhaka, and 2.23:2.16 in Syedpur (Table 2). There were more widows in Jaldhaka than Syedpur, which might be the cause of such male-female ratios in these two upazilas. Thirty percent of the STUP households were headed by the women while 59% and 11% were headed by the STUP women's husbands and sons respectively (Table 2). The number of women-headed households was more in Jaldhaka compared to Syedpur. This was because that number of widows was more in Jaldhaka than Syedpur (Table 3).

Table 2. Average family size, composition, and household head

Thana	Average family size			No (%) of household head			
	Total	Male	Female	STUP women	Husbands	Sons	Total
Jaldhaka	4.6	2.16	2.51	15(32)	23(49)	9(19)	47 (100)
Syedpur	4.25	2.23	2.16	9(28)	23(72)	0	32(100)
Total	4.46	2.19	2.39	24(30)	46(59)	9(11)	79 (100)

Source: Field survey May 2004

Table 3. Marital status of STUP member and working pattern of their husbands

Thana	Marital status of STUP member				Working pattern of STUP women's husbands		
	Currently married	Widowed	Separated	Total	Regular	Irregular	Total
Jaldhaka	28(60)	18(38)	1(2)	47 (100)	19(68)	9(32)	28(100)
Syedpur	29(91)	3(9)	0	32(100)	24(83)	5(17)	29(100)
Total	57(72)	21(27)	1(1)	79(100)	43(75)	14(25)	57(100)

Source: Field survey May 2004, Figurers in the parentheses show percentages

Table 3 shows the marital status of the STUP women where 27% were widowed and 1% separated Table 3 also shows the working pattern of the husbands of the STUP women, where 75% had regular job, 25% had irregular job.

Details about members of the STUP households are given in the Annexes A3-A6 in tabular form.

Overview of enterprise

This section includes the diversity of vegetables cultivated by the STUP members, cropping patterns of vegetables in different seasons, land size, sources of inputs, and work desegregation of the family members. Vegetable enterprises of STUP women are briefly discussed below.

Diversity of vegetables

The STUP members cultivated a wide range of vegetables Thirty-three vegetables including some cereal crops and spices were found cultivated by the STUP members. Most of the vegetables were cultivated in the *Kharif* season i.e. bitter gourd, sweet gourd, ridge gourd, okra, *Kolmee* leaves, red amaranth, Indian spinach, jute plant tops, green chilli, maize, etc. On the other hand, *Rabi* vegetables produced were cabbage, cauliflower, potato, bottle gourd, bean, brinjal, etc. More details of the species cultivated by the STUP members are given in the Annex 8 by season and *upazila*.

Cropping pattern

Different vegetables are cultivated in different seasons. For instance cabbage, cauliflower, potato, etc. grow well in winter season, while summer season is suitable for growing sweet gourd, bitter gourd, okra, *kolmi* leaves, etc. The STUP members cultivated vegetables in two seasons- *Rabi* and *Kharif* as per received training on cropping patterns. Table 4 shows the cropping pattern

Table 4. Cropping pattern followed by the STUP members in Nilphamari

Winter vegetable	Summer vegetable (bitter gourd, sweet gourd, ridge gourd, okra, <i>Kolmee</i> leaves, red amaranth, Indian spinach, jute plant tops, green chilli, maize)	Some leafy vegetable (radish, red amaranth etc)	Winter vegetable (cabbage, cauliflower, potato, bottle gourd, bean, brinjal)
Jan Feb	Mar Apr May Jun	Jul Aug Sep	Oct Nov Dec

Source: Field survey, May 2004

of those vegetable which were cultivated by the STUP members. *Rabi* season is from October to February. *Kharif* consists of *kharif 1* (May to June) and *kharif 2* (July to September).

Land size and distance

Average land size of the STUP members decreased from 32.44 decimals to 22.47 decimals in the second cycle. Thirty-three percent of the STUP households changed land in the second cycle. For 23% of the STUP members distance from home to land increased, while for 27% of members, distance from home to land decreased in the second cycle (Table 5). Average distance from home to land decreased in Jaldhaka and increased in Syedpur in the second cycle for those who changed land (Table 5). For 50% of members distance from home to land remained same in spite of changing land in the second cycle. Average land rent per decimal per year increased from Tk 65.29 to Tk 66.53 in the second cycle compared to the first cycle. Land price (as a proxy of land rent) was higher in Syedpur due to urban area compared to Jaldhaka.

Table 5. Land size (dec), distance (km) from home to land, and land rent(tk/dec/yr)

Variables	Jaldhaka	Syedpur	Total	
No (%) of members who changed land between 1 st and 2 nd cycle	14(30)	12(37)	26(33)	
No(%) of members for whom distance from home to land increased between 1 st and 2 nd cycle	3(21)	3(25)	6(23)	
No(%) of members for whom distance from home to land decreased between 1 st and 2 nd cycle	4(29)	3(25)	7(27)	
Average land size (decimal)	1 st cycle	32.36	32.56	32.44
	2 nd cycle	23.38	21.13	22.47
Average distance from home to land (Km)	1 st cycle	0.36	0.20	0.29
	2 nd cycle	0.34	0.29	0.29
Average land rent (Tk/decimal/year)	1 st cycle	62.42	69.44	65.29
	2 nd cycle	65.31	68.48	66.53

Source: Field survey, May 2004

Sources of inputs

The STUP members collected inputs from different sources i.e., market, BRAC and own source. Table 6 shows that the source of local seed was market (49%) and own source (51%), while HYV seeds e.g. tissue culture seed potato were mostly collected from BRAC (95%). Chemical fertilisers (100%) and pesticides (93%) were collected from local markets. Irrigation water (74%), organic fertiliser (90%) and ash (100%) were home supplied. Irrigation water

from market and home supplied have been defined here as when water was supplied by shallow tubewell (STW) or *Dekhikol* (a manual irrigation pump which is easy to operate by women) respectively. STW needed diesel while *Dhekikol* needed physical labour, and was easily operated by the STUP women. The STUP women used to pile up organic fertiliser (cow dung) and ash in the nearby trench and used them during land preparation for vegetable production. Notable was that the members purchased inputs in cash irrespective of whether from market or BRAC, meaning they had the purchasing power to buy inputs at the beginning of the season.

Table 6. Different sources of input and mode of purchasing by STUP member (in percentage)

Source (purchasing mode)	HYV seed	Local seed	Water	Organic fertiliser	Chemical fertiliser	Ash	Pesticides
Market (cash)	3	49	26	10	100		93
Own	1	51	74	90	-	100	1
BRAC (cash)	95	-	-	-	-	-	6
BRAC (credit)	1	-	-	-	-	-	-
Total	100	100	100	100	100	100	100

Source: Field survey, May 2004

Production and harvesting activities

The STUP women were engaged mostly in production and harvesting activities. Fertiliser application on the other hand, was often carried out by other household members (Figure 1). Eighty two percent of households used hired labour with plough and draft animal for land preparation, as they did not possess such land operational capital, The STUP women were highly involved in ash application, as it is light and easy work. In case of pesticide and fertiliser application, all family members participated, as these were crucial inputs for growth and protection of vegetables. All STUP members participated in harvesting of vegetables while their husbands and children's participated less than 50% in the same work. Ranking of participants from the STUP households in the production and harvesting activities is shown in Table 7 where the STUP women obtained top rank in all activities except fertiliser application.

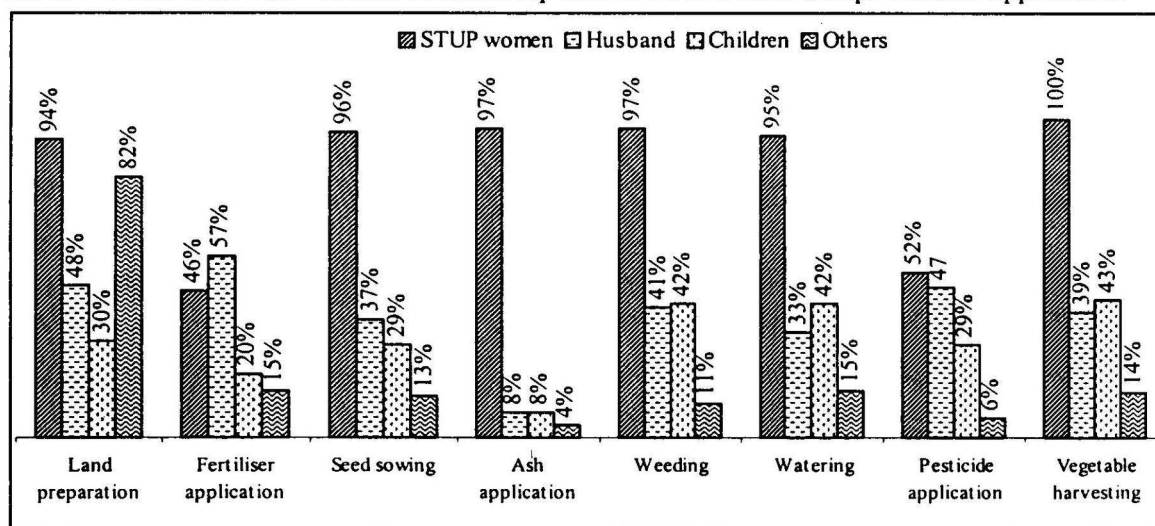


Figure 1. Percent of the HH members and others participated in production and harvesting activities of vegetable

Reasons for selecting vegetable enterprise

Most of the STUP women reported that they chose vegetable enterprise as it would be profitable (66%), while some other chose it as it was their traditional practice (24%), or on the advice of BRAC (10%). Vegetable cultivation was considered profitable in the sense that vegetables may be consumed to meet their daily requirement and simultaneously can be sold as reported.

Marketing system of vegetables

Marketing channel

The marketing channel of vegetables of the STUP members was found to be narrower in the first cycle. Only *paiker/beparis* (middlemen) were involved in the marketing channel. However, the marketing channel was found changed in the second cycle as the STUP women became more market oriented in selling their produce (Figure 2). At the same time selling of vegetables from home was reportedly lower in the second cycle compared to first cycle. Table 7 shows that selling from home reduced from 43% to 39% in the second cycle compared to first cycle. On the other hand, market sales increased from 57% to 61% in the second cycle compared to the first cycle, irrespective home or market *paiker*. More middlemen involvement was found in the second cycle. Their involvement increased from 20% to 29% in the second cycle compared to the first cycle (Figure 2). Middlemen could purchase more vegetable from the STUP members as the vegetable production increased in the second cycle. In addition, the STUP members got a large amount of money at a time through bulk sales for which they were a bit interested to sell the produce to the middlemen. The STUP women mainly sold cabbage and cauliflower to the middlemen.

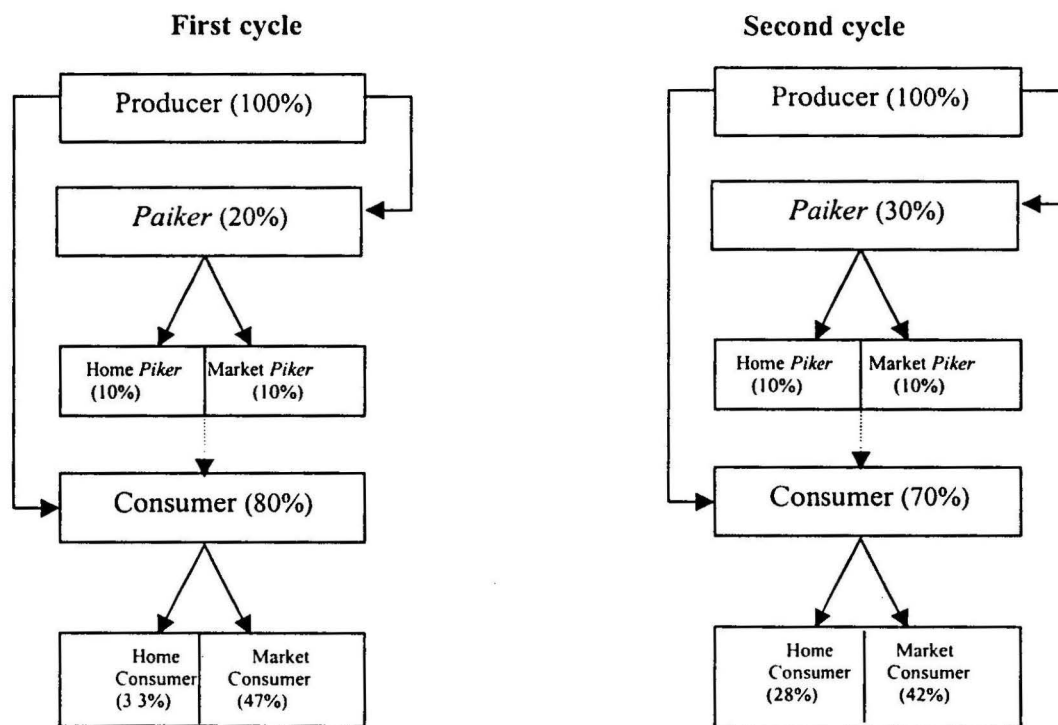


Figure 2. Marketing channel of vegetables



Table 7. Selling pattern of vegetable by STUP members (In percentage)

Selling pattern	First cycle	Second cycle
Market sale	57	61
Home sale	43	39
Middlemen sale	20	29

Source: Field survey, May 2004

The changing pattern of vegetables sales can be summarised as follows:

1. Market orientation of the STUP members increased in the second cycle as they got a higher price in the market.
2. Home sales of vegetables by the STUP members decreased in the second cycle, as home consumers (HC) decreased from 33% to 28% in the second cycle compared to first cycle.
3. Middlemen, especially market middlemen involvement, increased in the marketing channel in the second cycle for buying vegetables from the STUP members.
4. Production of vegetables increased in the second cycle. As such the STUP households sold them to the middlemen to get a large amount of money at a time.
5. Middlemen could purchase huge vegetables from the STUP members for which their involvement increased in the second cycle.

Marketing functions

The STUP women mainly collected ash and cow dung (Figure 3). In the case of seed and pesticide purchase, BRAC personnel sometimes helped the STUP members. However, the STUP members themselves were highly involved in all input collection activities, except pesticide purchase (Figure 3). The STUP women were largely involved in selling vegetables from home while their husbands, children and others were involved in selling vegetables in the markets and in transportation of vegetables (Figure 4).

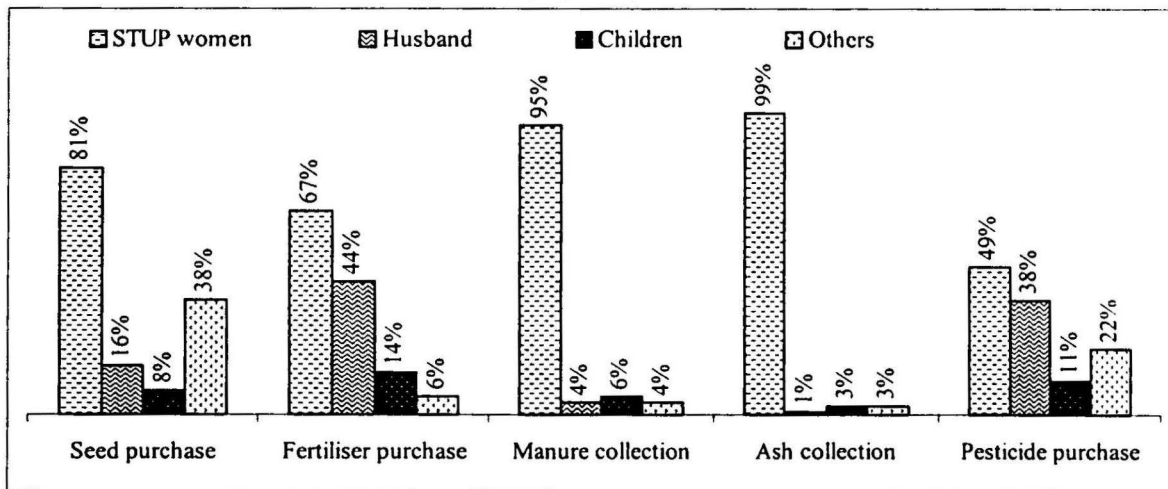


Figure 3. Percent of the HH members and others participated in input purchase/collect activities

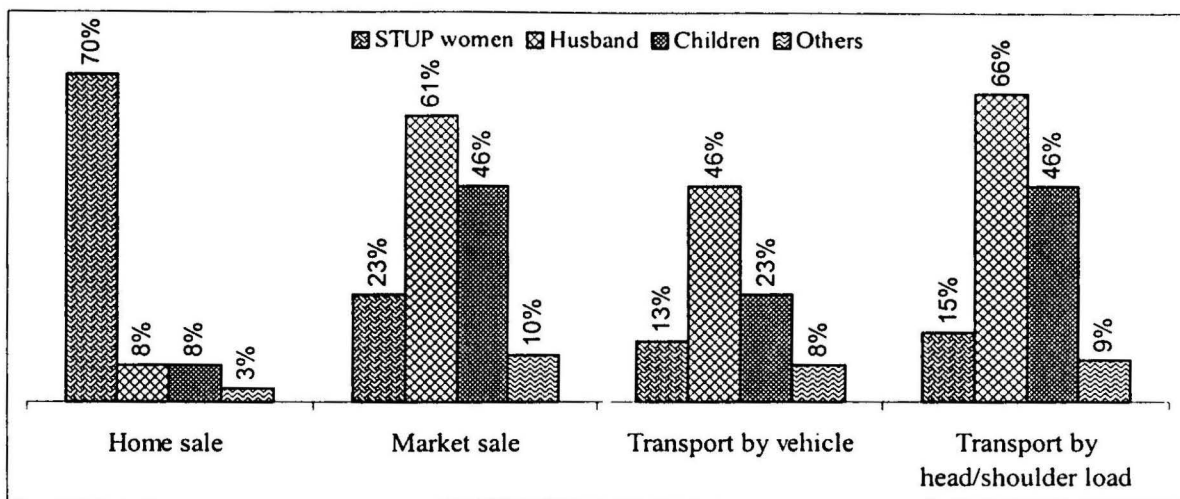


Figure 4. Percent of the HH members and others participated in output selling activities

The STUP vegetable growers did not practice grading but they were involved like cleaning, washing and sorting of vegetables for better and fresher appearance. Their products were of good quality as reported. Almost all the STUP members informed that they could sell all the vegetables that reached the market.

The STUP women often followed the market price and practiced cash sale as 80% of the STUP members reported. Sometimes they practiced barter system at the time of home selling considering the prices of exchanged products i.e. vegetables instead of rice.

The vegetables were mostly transported by van (71%), head load and shoulder load (24%), and rickshaw (5%) They used vans for carrying cabbage and cauliflower as because of bulk sale and heavy in weight, and when they needed to be shifted to the *upazila* markets. They used head load and shoulder load when vegetables were sold in the nearby markets.

Table 9. Modes of transportation used by the STUP people for transporting vegetables (%)

Modes of transportation	Jaldhaka	Syedpur	Total
Van	72	69	71
Rickshaw	2	9	5
Head/shoulder load	26	22	24
Total	100	100	100

Source: Field survey May 2004

The STUP women carried out the vegetable enterprises with their own funds in the second cycle. They purchased all inputs in cash. None of them took loan from the traders for carrying out the enterprise. It indicates that the STUP women might save money during the first cycle and reinvest that in the following cycle.

The STUP women were aware of market information i.e. price of necessary inputs, price of vegetables, etc. The STUP members collected such information by visiting different local and *upazila* markets. BRAC also helped them by prescribing some fixed shops from where they could purchase inputs.



Problems and Potential of Vegetable Enterprise

Problems of vegetable enterprise

The problems of vegetable enterprise were classified into three categories input sector, production sector, and output sector. The STUP women could not control the land, as it was leased in. Therefore land issues have been described in details as a vital factor of production. Sixty-seven percent of the STUP households did not change land while the remaining 33% changed their land for

Table 10a. The STUP households who changed or did not change their land for cultivate

Variables	Jaldhaka	Syedpur	Total
No (%) of HHs who changed land between 1 st and 2 nd cycle	14(30)	12(37)	26(33)
No(%) of HHs who did not change land between 1 st and 2 nd cycle	33(70)	20(63)	53(67)
Total	47(100)	32(100)	79(100)

Source: Field survey May 2004

Table 10b. Change of land and land renewal problem faced by the STUP members

Variables	Number (%) of household who						Total
	Faced problem in renewing land			Did not faced problem in renewing land			
	Jaldhaka	Syedpur	Total	Jaldhaka	Syedpur	Total	
No (%) of HHs who changed land	12(86)	12 (100)	24 (92)	2 (14)	0	2 (8)	26 (100)
No (%) of HHs who did not change land	5(15)	7 (35)	12 (23)	28 (85)	13 (65)	41 (77)	53 (100)
Total	17 (36)	19 (59)	36 (46)	30 (64)	13 (41)	43 (54)	79 (100)

Source: Field survey May 2004

cultivating vegetables (Table 11a). Land renewal problems were more in Syedpur than that in Jaldhaka irrespective of whether there was a change of land (Table 11b). It might be the cause of infrastructural facilities of Syedpur and urban area as well while Jaldhaka was remote area. Naturally land demand might be more in Syedpur compared to Jaldhaka.

Table 10c. Differences in land rent (Tk/dec/yr) and distance (Km) from home between 1st and 2nd cycle

Variables	Difference in land rent (tk/dec/yr) between 1 st and 2 nd cycle for those who faced renewal problem	Difference in land distance (km) between 1 st and 2 nd cycle for those who faced renewal problem	Difference in land rent (tk/dec/yr) between 1 st and 2 nd cycle for those who did not face renewal problem	Difference in land distance (km) between 1 st and 2 nd cycle for those who did not face renewal problem
Members who changed land	- 2.46	- 0.06	- 8.68	0.85
Members who did not change land	- 6.64	0	- 1.29	0

Note: Negative value indicates increase in the 2nd cycle due to difference from 1st cycle to 2nd cycle

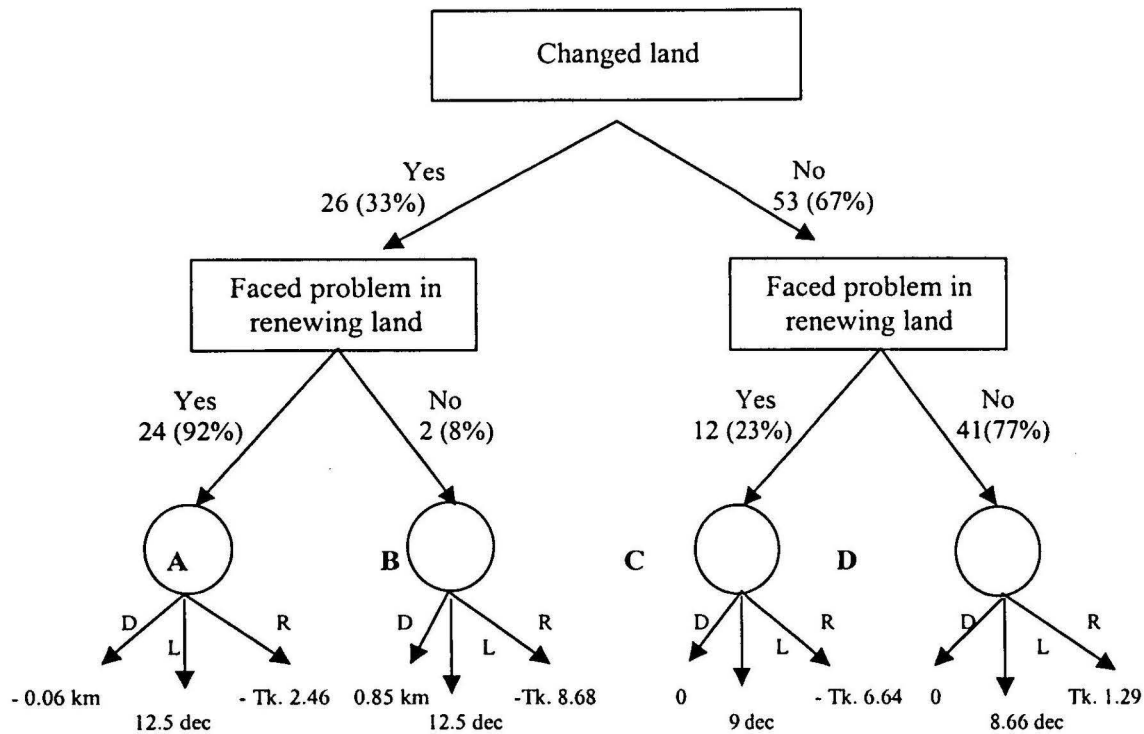
Fifty-nine percent of the households faced land renewal problems in Syedpur while 36% households faced the same problem in Jaldhaka. Ninety-two percent of the households faced renewal problems, of those who changed land while 23% of the households faced problems, who did not change land. On the other hand, 8% of the households did not face renewal problem, of those who changed land while 77% households did not face problems, who did not change land. Hence, 46% faced land renewal problem while the rest did not face problems irrespective of land change (Table 10b).

Average land rent increased by Tk. 2.46 per decimal per year and distance from home to land increased 63 meters in the second cycle compared to first cycle for those who changed land and faced renewal problems (Table 11c) at the same time. The land size decreased by 12.5 decimals in the second cycle compared to first cycle for those who changed land and faced renewal problems. On the other hand, average land rent increased by Tk 6.64 per decimal per year in the second cycle compared to first cycle for those who did not change land but faced land renewal problems. The land size decreased by 9 decimals in the second cycle compared to first cycle for those who did not change land but faced renewal problems (Figure 5).

Table 10d. Summary of the Table 11c

Variables	Faced renewal problem		Did not face renewal problem	
	Rent	Distance	Rent	Distance
Members who changed land	↑	↑	↑↑	↓↓
Members who did not change land	↑↑	↔	↓	↔

Note: ↑ = increase, ↑↑ = highly increased ↓ = decrease, ↓↓ = highly decreased ↔ = unchanged



D = Difference in distance (km) from home to land between 1st and 2nd cycle
 R = Difference in rent (Tk/decimal/year) between 1st and 2nd cycle
 L = Difference in land size (dec) between 1st and 2nd cycle

Figure 5. Flow chart of land change, land renewal problem, difference in rent and distance from home to land between 1st and 2nd cycle

Average land rent increased by Tk. 8.68 per decimal per year and distance from home to land decreased 850 meters in the second cycle compared to the first cycle for those who changed land and did not face renewal problems. It indicates that rent renewal problems, in terms of increases in rent, might be compensated for by lower distances from home to land. The land size decreased by 12.5 decimals in the second cycle compared to the first cycle for those who changed land but did not face renewal problems (Figure 5). On the other hand, land rent decreased by Tk. 1.29 per decimal per year for those who did not change land and did not face land renewal problems. The land size decreased by 8.66 decimals in the second cycle compared to the first cycle for those who did not change land and face renewal problems (Figure 5).

The land size decreased more in the second cycle compared to the first cycle for those who changed land compared to those who did not change at the same time (Figure 5). On the other hand, average land rent increased more in the second cycle compared to the first cycle for those who changed land compared to those who did not change at the same time

Some general problems for which the STUP households wanted to change land in the third phase were land renewal (76%), location of the land (9%), and quality of the land (15%) for vegetable cultivation. The STUP members could also face some problems in changing land i.e., new land may be less productive, they need to pay higher rent, new land may need more

organic fertiliser to be suitable for vegetable cultivation or it may be further away than earlier land due to some unavoidable situation.

The following are some examples of landlord's behaviour with the STUP women as reported:

- (a) A landlord hit Shahida from Uttardeshibai village of Jaldhaka as she accused the landlord of vegetable theft; and
- (b) One landlord was very rigid about the rental agreement, and claimed he would take control of the land again on the maturity date of the lease, whether there were standing crops or not, as Begum from the same village explained her experience. Motahara, Khoteja, Shahida and Jahanara of the same village faced another problem about land quality (i.e. infertile, sandy) for which they wanted to change land after second cycle. Additionally they got other land from their relatives.

There was no problem regarding availability of inputs in the local markets, input prices, etc. This was because they could purchase operational inputs like seed, fertiliser, diesel, and insecticides from local markets in cash during the season. In addition, they already possessed operational capital e.g. spade, manual weeder, bucket, pesticide sprayer, STW or *Dhekikol*, etc.

Sometimes minor problems arose during production of vegetables, which were solved by the technical PO. The problems were regarding fertiliser doses and pesticide applications for different vegetables. Different chemical fertilisers i.e. urea, TSP, zinc, borax, NKP, lime, etc. and hormone, *Shohaga* and insecticides were used for vegetable production. BRAC POs solved such problems by visiting the vegetable fields of the STUP women. The STUP women consulted with the BRAC when they faced problems during harvesting time.

Potential of vegetable enterprise

The potential of vegetable enterprises for improving the livelihoods of TUP members can be described in terms of cropping intensity, nutritional value of vegetable consumption, cash flow, self reliance of women, livelihoods changes of STUP members, and grooming of the rural economy.

(a) The STUP women used the same land for cultivating vegetables three seasons within a year for which cropping intensity became 300% while our national cropping intensity is 178% or less on an average while 187% in Dinajpur and 200% in Rangpur which are adjacent districts of the study area (Hoque and Sikder, 2004, p. 15). This would only be possible for cultivating vegetables rather than cereal crops like rice, wheat, etc.

(b) Vegetables are a source of micronutrients, which were available to members for consumption as they cultivated different kinds of vegetables in different seasons. In addition, some of the STUP households practiced home gardening. This may improve their health and fitness to work. Their consumption patterns were changed. They took more vegetables in their diet than earlier.

(c) Vegetable sales gave them more or less a regular cash flow as they produced vegetables all the year round. (d) The STUP women became self reliant by the intervention of BRAC's CFPR-TUP programme. Their present profession is 'agriculture' which is replaced by 'seasonal day labour'.

(e) The livelihood change is a long-term process and it has different dimensions. However, some positive indicators of livelihood change were found, due to the programme intervention.

The STUP women met their basic needs now (97%), their expenditure pattern was found changed (99%), they accumulated house repairing assets,

Table 11. Livelihood changing indicators

Variables	No. (%) of households responded		
	Jaldhaka	Syedpur	Total
Basic needs	45 (96)	32(100)	77(97)
-Food consumption	47(100)	32(100)	79(100)
-Clothing	47(100)	32(100)	79(100)
-House repairing	40(85)	32(100)	72(91)
-Health care	45(96)	32(100)	77(97)
Expenditure pattern	46(98)	32(100)	78(99)
Asset accumulation	46(98)	32(100)	78(99)
-Physical asset	45(95)	32(100)	77(97)
-Financial asset	47(100)	32(100)	78(99)
Work stress/intensity	47(100)	32(100)	79(100)
-HH work	47(100)	32(100)	79(100)
-Major enterprise care	47(100)	32(100)	79(100)
-Co-enterprise care	47(100)	32(100)	79(100)

Source: Field survey, May 2004

purchased utensils and land operational items (i.e. spade), and saved money as well (Table 11). Their working intensity was increased due to programme intervention by taking care of main and co-enterprise. In addition, they had to do their household work. Health care facilities were more available to the STUP members in Syedpur due to urban area compared to Jaldhaka.

(f) The STUP women became more market oriented over time as a major portion of the vegetables were sold in the market. More middlemen involvement was observed in the second cycle due to more production of vegetables by the STUP members. It indicates that the programme intervention had a positive effect in the rural economy in terms of employment generation, transportation and market expansion.

Recommendations

Land issues

Land is the vital factor for vegetable cultivation because STUP members have to depend on leased land, which is not always available. So, the land problem needs to be addressed immediately. Existing land contracts were found in the form of land leases, which were locally termed as *Khyiashod*, *Khochabondhok*, and land mortgages, which were locally termed as agreements. Regarding the existing land contracts some remedial measures can be explored as a tentative solution to the land problem of STUP members. Some suggestions are switching to land mortgage instead of lease, and purchase of land by BRAC to lease out to the STUP members for vegetable cultivation. Some merits and demerits of these land contracts are discussed below.

Land mortgage: It is a long-term land tenural arrangement between landlord and tenant compared to leasing arrangement. Tenant could use the mortgaged land until mortgage money is refunded to the tenant by the landlord after maturity of the contract. Therefore, both tenant and landlord have to be responsible for this type of land contract.

Merits: a) It is a long-term teneural arrangement (i.e. 3-4 years) compared to a lease (i.e. 1 year); b) Contract money is refundable; and c) Both parties may be benefited.

Demerits: a) Heavy initial investment for STUP households; b) Land could not be changed before maturity date of the mortgage, in the case of poor returns from the investment.

Land purchase: BRAC may purchase land to lease it out to the STUP members for vegetable cultivation which could be a long-term solution of land problem.

Merits: a) The STUP members may be assured of having land at the beginning of the season.

Demerits: a) Acquiring a large plot around a cluster of the STUP members would be difficult; b) If the STUP members want to discuss the vegetable enterprise at anytime, the withdrawal or exit conditions cannot be guessed in advance; c) It will be a huge initial investment on land if it would be purchased in cash; and d) The STUP members may never possess their own a piece of land if they depend on BRAC's land.

Value addition to the product: research agenda for the programme

The prices of vegetables remain lower in the harvesting season due to huge supply in the market. It is known to us that prices of agricultural products notoriously fluctuate due to supply variation, and demand of agricultural products is inelastic. In addition, vegetables are perishable and its production is not possible throughout the year like in the case of industrial products. Thus, supply of agricultural products should be controlled in the peak season to be sold in the off peak season. To do so, value could be added to the products by creating *place, time and form utility*. This might help producers enjoy a higher price including, the processing costs. It was found that the STUP members already added time utility by storing sweet gourd in the summer to sell them in the fall. They also may add form utility by making chips from potatoes, and by making sugar candy (*Morobba*) from bottle-gourd and white gourd, which would be very popular in the rural areas especially to the children. It would further create off season employment for the STUP women. Proper training would be required

to the STUP women to do such work properly. The STUP women may add place utility by transporting their bulky produces to distant places by using a cooperative van. One (two) representative(s) like husbands of the STUP women may also sell the produce in the market on behalf of all other members from a particular area. This may save the time and energy of STUP members, which may be used for alternative income earning activities like day labour, work in vegetable field, taking care of cow.

Processing cost, training cost and scope of outlets, such as STUP women's shop and/or other local shops for selling those processed products, should be considered in advance for doing utility addition to certain products.

Usage of organic fertiliser: Research agenda for the programme

The usage of various chemical fertilisers might be another concerning issue, which could deteriorate the soil quality, yielding poor quality of vegetables in the long run. Furthermore, modern chemical fertilisers are very expensive and environment unfriendly. On the other hand, limited use of chemical fertiliser and more use of organic fertiliser like cow dung and compost may reduce production cost and save the soil health at the same time. Some leguminous crops like *Kheshari Kolai* may be cultivated by changing cropping patterns, which would ultimately add nitrogen to the soil. *Kheshari Kolai* may be used as fodder crops for cows. In addition, more cultivation of beans during the season would add nitrogen to the soil.

Conclusion

The STUP members were found to be very happy with their vegetable enterprises. They applied the acquired knowledge from enterprise development training in the practical field. They gathered experience and confidence over time to carry out the vegetable enterprises in the long-run. It was encouraging that the STUP women enriched their land operational items by purchasing an additional spade and that they accumulated house repairing assets and utensils. They purchased all inputs in cash meaning they had the purchasing power at the beginning of the season. They were much better off than before as they changed their livelihoods to some extent due to the programme intervention. The CFPR-TUP programme was a breakthrough in the pace of their poor lives. The STUP members faced no significant problems other than land renewal, which was due to lack of their own cultivable land. Hence, the land problem should be addressed as soon as possible for carrying out the vegetable enterprises smoothly in the long run.

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Annex 1. Education Status of STUP members

Thana	Education status			
	Illiterate	Under Primary passed (I-IV)	Primary passed (V)	Total
Jaldhaka	43(92)	3(6)	1(2)	47(100)
Syedpur	32(100)	-	0	32(100)
Total	75(95)	3(4)	1(1)	79(100)

Figures in the parentheses show percentages

Annex 2. Health status of STUP members

Thana	Health status			
	Fit whole year	Unfit sometimes	Unfit often	Total
Jaldhaka	12(25)	28(60)	7(15)	47(100)
Syedpur	18(56)	12(38)	2(6)	32(100)
Total	30(38)	40(51)	9(11)	79(100)

Figures in the parentheses show percentages

Annex 3. Age distribution of members STUP HH

Thana	Total	Age distribution					
		0-5	6-14	15-25	26-35	36-45	>=46
Jaldhaka	216	30	67	44	24	36	15
Syedpur	135	19	45	20	21	19	11
Total	351	49	112	64	45	55	26

Figures in the parentheses show percentages

Annex 4. Education Status of members of STUP HH

Thana	Total	Education status				
		Illiterate	Under Primary passed (I-IV)	Primary passed (V)	Above primary	Madrassa passed
Jaldhaka	195(100)	100(51)	76(40)	8(4)	10(5)	1(0.5)
Syedpur	122(100)	79(66)	38(31)	2(1)	3(2)	0
Total	317(100)	179(56)	114(36)	10(3)	13(4)	1(0.3)

Figures in the parentheses show percentages

Annex 5. Health status of members STUP HH

Thana	Total	Health status			
		Fit whole year	Unfit sometimes	Unfit often	Unfit whole year
Jaldhaka	214(100)	89(42)	98(46)	23(11)	4(2)
Syedpur	136(100)	91(67)	37(27)	8(6)	0
Total	350(100)	180(51)	135(39)	31(9)	4(1)

Figures in the parentheses show percentages







Annex 6. Profession of household member

Thana	Agriculture		Day labourer		HH work		Students		Others (petty business, van pulling, helping hand)	
	Major	Minor	Major	Minor	Major	Minor	Major	Minor	Major	Minor
Jaldhaka	55	10	32	17	18	55	48	0	22	13
Syedpur	34	8	22	6	1	39	30	5	23	12
Total	89	18	54	23	19	94	78	5	45	25

Annex 7. Vegetables cultivated by STUP members in different seasons

Name of vegetable	Jaldhaka		Syedpur		Total	
	Kharif	Rabi	Kharif	Rabi	Kharif	Rabi
Maize	16	-	8	-	24	-
Cabbage	-	11	-	11	-	22
Cauliflower	-	40	-	18	-	58
Bottle gourd	2	39	-	24	2	63
Potato	-	36	-	28	-	64
Radish	1	11	1	7	2	18
Red amaranth	30	14	23	4	53	18
Indian spinach	33	3	28	1	61	4
Bitter gourd	7	-	6	2	13	2
Jute plant tops	20	1	22	1	42	2
Sweet gourd	18	5	23	3	41	8
Bean	-	19	-	26	-	45
Brinjal	3	12	3	14	6	26
Lady's finger/okra	8	2	3	1	11	3
Cowpea	7	1	3	-	10	1
Kolmee leaves	33	3	22	-	55	3
Babor shak	-	4	-	4	-	8
Spinach	-	13	-	9	-	22
Coriander seed	-	6	-	4	-	10
Napa shak	-	8	-	11	-	19
Green chilli	7	-	13	4	20	4
Amaranth stem	4	1	5	3	9	4
Snake gourd	8	1	8	1	16	2
Tomato	-	3	1	2	1	5
Ridge gourd	1	1	14	-	15	1
Ash gourd	-	1	4	-	4	1
Sweet potato	-	-	4	1	4	1
White gourd/marrow	1	-	-	-	1	-
Cucumber	1	1	1	-	2	1
Onion	-	-	3	1	3	1
Caown	-	-	-	-	-	-
Nonia shak	-	-	1	-	1	-
Kheera	-	-	1	-	1	-

Annex 8. Flexible manner of STUP members in selling vegetables. Are they changing their marketing behaviour? If so, why?

Combination	Initial sale	Turn	Current sale
1.	Home sale (consumer, <i>paiker</i>)		Market sale (consumer)
	<i>Why change from home paiker & consumer, to market consumer sales</i> - getting a lower price from <i>paiker</i>		
2.	Market sale (consumer)		Market sale (consumer) Home sale (consumer)
	<i>Why add home consumers to market consumer sales</i> - home sales at market price - Vegetable sale appeals to everybody - Huge production - Overcome initial shyness to sell door to door within the village		
3.	Market sale (consumer)		Market sale (consumer, <i>paiker</i>)
	<i>Why add market paiker sales to market consumer sales</i> - retailing is time consuming; Wholesaling saves time which can be used for wage labour, produce more money. - getting more money at a time by selling to <i>paiker</i> - Illness sometimes discourages retail sales - huge production - widow could not pay time in the market because she had more work at home		
4.	Market (consumer, <i>paiker</i>)		Market (consumer, <i>paiker</i>) Home (<i>paiker</i>)
	<i>Why add home paiker to market consumer & paiker sales</i> - getting more money at a time by selling to <i>paikers</i>		
5.	Home sale (consumer)		Home sale (<i>paiker</i>)
	<i>Why turned from home consumer to home paiker sales</i> - getting market price from <i>paiker</i>		
6.	Home sale (<i>paiker</i>)		Home sale (consumer)
	<i>Why change from home paiker to home consumer sales</i> - <i>paiker</i> gives lower price		

7.	Market sale (consumer, paiker) Home sale (consumer)	↔	Market sale (consumer, paiker) Home sale (consumer, paiker)
	<i>Why add home paiker sales to market consumer and paiker sales</i> - huge production		
8.	Market sale (consumer) Home sale (consumer)	↔	Market sale (consumer, paiker) Home sale (consumer)
	<i>Why add market paiker sales to market consumer and home consumer sales</i> - getting large sums of money at a time		
9.	Market sale (consumer) Home sale (consumer)	↔	Market sale (consumer, paiker) Home sale (consumer, paiker)
	<i>Why add home paiker and market paiker sales to home consumer and market consumer sales</i> - getting large sums of money at a time - huge production and no helping hand for retail selling - to sell quickly due to its perishability - single person, so a larger portion of sales to paiker		
10.	Market sale (consumer)	↔	Market sale (consumer) Home sale (paiker)
	<i>Why add home paiker sales to market consumer sales</i> - laborious to shift vegetables to market while home sale to paiker saves both labour and time in exchange for a lower price		
11.	Market sale (consumer) Home sale (consumer, paiker)	↔ △	Market sale (consumer, paiker) Home sale (consumer)
	<i>Why substitute home paiker for market paiker</i> - market paiker gives higher price than home paiker		
12.	Market sale (consumer)	↔	Market sale (consumer, paiker) Home sale (paiker)
	<i>Why add market paiker and home paiker to market consumer sales</i> - home selling to paiker at market price		

————→ Totally changed buyer

↔ Added some new buyers, keeping earlier buyers

↔△ Selling point is the same but buyer, changed

Annex 9. Household members involved in transporting vegetable to the market

In percentage

Activities	Jaldhaka					Syedpur					Total				
	STUP	Husband	Children	Others	Total	STUP	Husband	Children	Others	Total	STUP	Husband	Children	Others	Total
Veg. carrying by vehicle	17	40	33	10	100	11	68	14	7	100	14	51	26	9	100
Veg. carrying by head/shoulder loading	14	40	40	6	100	7	62	24	7	100	11	49	34	7	100

Source: Field survey May 2004

Annex 10. Pricing and related information of the study area (In percentage)

Particulars	Jaldhaka	Syedpur	Total
Competitive price	96	100	97
Cash selling	79	81	80
Practice barter system	21	22	22
Permanent customer	11	9	10
Having bargaining power	98	100	99
Price covers production cost	85	91	87

Source: Field survey May 2004

Annex 11. Land rent and land distance from home from 1st cycle to 2nd cycle

Variables	Difference of land rent (tk/dec/yr) from 1 st cycle to 2 nd cycle for those who faced renewal problem			Difference of land rent (tk/dec/yr) from 1 st cycle to 2 nd cycle for those who did not face renewal problem			Difference of land distance (km) from 1 st cycle to 2 nd cycle for those who faced renewal problem			Difference of land distance (km) from 1 st cycle to 2 nd cycle for those whodid not face renewal problem		
	Jaldhaka	Syedpur	Total	Jaldhaka	Syedpur	Total	Jaldhaka	Syedpur	Total	Jaldhaka	Syedpur	Total
Members who changed land	12 (-5.92)	12 (1)	24 (-2.46)	2 (-8.68)	0	2 (-8.68)	12 (-0.05)	12 (-0.08)	24 (-0.06)	2 (0.85)	0 (0)	2 (0.85)
Members who did not change land	5 (-11.9)	7 (-2.86)	12 (-6.64)	28 (-00)	13 (4.07)	41 (1.29)	5 (0)	7 (0)	12 (0)	28 (0)	13 (0)	41 (0)

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Annex 12. No and % of HH members and others who participated in production and harvesting activities of vegetable

Activities	STUP women		Husband		Children		Others		Total	
	n	%	n*	%	n	%	n	%	n	%
Land preparation	74	94	38	48	24	30	65	82	201	273
Fertiliser application	36	46	45	57	16	20	12	15	109	160
Seed sowing	76	96	29	37	23	29	10	13	138	189
Ash application	77	97	6	8	6	8	3	4	92	120
Weeding	77	97	32	41	33	42	9	11	151	206
Watering	75	95	26	33	33	42	12	15	146	198
Pesticide application	41	52	37	47	23	29	5	6	106	152
Vegetable harvesting	79	100	31	39	34	43	11	14	155	211

*Out of 79 households 21 STUP women were widow and 1 was separated.

Annex 13. Input buying/collection and output selling activities

Activities	STUP women		Husband		Children		Others		Total	
	n	%	n*	%	n	%	n	%	n	%
Input collection activities										
Seed purchase	64	81	13	16	6	8	30	38	113	150
Chemical fertiliser purchase	53	67	35	44	11	14	5	6	104	148
Organic fertiliser collection	75	95	3	4	5	6	3	4	86	110
Ash collection	78	99	1	1	2	3	2	3	83	107
Pesticide purchase	39	49	30	38	9	11	17	22	95	135
Output selling activities										
Contact with middlemen	20	25	17	22	11	14	3	4	51	73
Home selling	55	70	6	8	6	8	2	3	69	92
Market selling	18	23	48	61	36	46	8	10	110	163
Carrying by vehicle	10	13	36	46	18	23	6	8	70	
Carrying by head/shoulder load	12	15	52	66	36	46	7	9	107	

*Out of 79 households 21 STUP women were widows and 1 was separated.

Glossary

Av.	Average
BAU	Bangladesh Agricultural University
Bazar	Daily market
CFPRP	Challenging the Frontiers of Poverty Reduction Programme
dec.	Decimal
<i>DhekiKol</i>	BRRI invented paddle tube well which is cheaper and easier to operate by women
e.g.	example gratia (L)
etc	et cetra (L)
Hatt	Weekly market at rural area
HC	Home Consumer who buys vegetable from STUP home
HH	Household
HP	Home <i>Paiker</i> who collects vegetable from STUP home
HYV	High Yielding Variety
i.e.	id est (L)
Kg	Kilogram
Kharif1	Summer season March to June
Kharif2	Period between late summer and very winter, July to September
MC	Market Consumer
MP	Market <i>Paiker</i>
NKP	Nitrogen Potassium Phosphate, a blended fertiliser used in north Bengal
No.	Number
<i>Paiker</i>	One kind of intermediary who buys product from cheaper source.
/Bepari	
PO	Programme Organiser
Rabi	Winter season, October to February
RED	Research and Evaluation Division
SI No.	Serial Number
SPSS	Statistical Package for Social Science
STUP	Specially Targeted Ultra Poor comprises of the bottom 10% of the poorest
STW	Shallow Tube Well
TSP	Triple Super Phosphate
Tk.	Taka, Bangladeshi currency
Veg.	Vegetable
VO	Village organisation
Yr	Year