

# Case Studies on Cost-Effectiveness of BRAC Provided Services in Selected Enterprises

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## Abstract

This case study was conducted on three types of enterprises that have been promoted by BRAC to examine the viability of the enterprises and the relative cost effectiveness of the services delivered by BRAC. Primary data were collected from 106 carp farmers and 102 broiler rearers while secondary data on 97 tailors were used for the study. The net change in annual income per enterprise due to provision of business development services (BDS) by BRAC was found to be Tk. 3,371 and Tk. 5,071 respectively for enterprises with and without pre-BRAC experiences. The average amount for all enterprises was Tk. 7,584 or Tk. 4,569 per member-farmer involved in carp polyculture. The BDS provided by BRAC include skill development training, pond preparation and its maintenance and other technical assistance. The cost of BRAC was Tk. 336 per farmer against Tk. 201 realized for the same as service charge.

In case of broiler rearing the average net gain in income per lot covering a period of eight weeks due to BRAC programme intervention was Tk. 2,667. This amount was Tk. 3,237 for newly started member-rearers and Tk. 709 for existing ones. The cost of BDS per member rearer was estimated as Tk. 427 while BRAC received Tk. 452 as service charge.

In case of tailoring, since 91% of the sample population were previously housewives without involvement in any income generating activity, the current net income from tailoring has been assumed to have accrued due to BRAC intervention. The average net annual income has been estimated as Tk. 7,836 while the average annual cost of BDS per member was Tk. 490 of which 25% was realized by BRAC from each member as service charge.

In all three cases, the results show that the enterprises are cost effective some suggestions are made to further improve the cost-effectiveness of the enterprises.

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## Glossary

|        |                                                                                         |
|--------|-----------------------------------------------------------------------------------------|
| AO     | Area Office                                                                             |
| BDS    | Business Development Services                                                           |
| BRAC   | Present name of organization previously known as Bangladesh Rural Advancement Committee |
| EIG    | Employment and Income Generation                                                        |
| HYV    | High Yielding Variety                                                                   |
| IGA    | Income Generating Activity                                                              |
| ITDG   | Intermediate Technology Development Group                                               |
| PA     | Programme Assistant (recently redesignated to PO)                                       |
| PO     | Programme Organizer                                                                     |
| RDP    | Rural Development Programme                                                             |
| RED    | Research and Evaluation Division                                                        |
| REDS   | Sarvodaya Rural Enterprise Development Services                                         |
| REP    | Rural Enterprise Project                                                                |
| RPO    | Regional Programme Organizer                                                            |
| SUPSED | Support for Small Enterprise Development                                                |
| VO     | Village Organization                                                                    |



## Summary

Through the Employment and Income Generation (EIG) programme, BRAC involves the landless poor women, provides them credit and other business development services to increase their income and creates new employment opportunities for them. This case study on carp polyculture, broiler rearing and tailoring - three successful enterprises of BRAC's EIG programme. It has been carried out under the Support for Small Enterprise Development (SUPSED) programme which aims to share experiences of successful enterprises in terms of methods used, results achieved and the cost effectiveness and to learn lessons for development of guidelines from each other on 'best practices' for the development of the enterprises. The objective of this study was to find out the relative cost effectiveness of these three enterprises against the service delivery costs of BRAC. The role of BRAC and the use of its services in increasing income of the enterprise and the use of income earned through involvement in the activities selected and to link up all of these together are among other areas of this research.

For this study both primary and secondary data were used. Primary data were collected from 106 carp farmers and 102 broiler rearers. The sample population were selected on certain specific criteria. For carp polyculture and broiler rearing data were collected in November 1998 by administering a structured questionnaire. For tailoring secondary data on 97 member-tailors, collected in June-July 1998, were used.

Carp polyculture is one of the components of BRAC's fisheries programme started in 1976. The objectives of this programme are to increase income and employment by involving poor rural women, develop their skills on aquaculture management and to increase their protein intake. Carp polyculture is done in annual ponds of 0.15 acre and above in size. Around 71% of the farmers used their own pond while the other 29% leased it. Around 58% operated independently and the others cultivated in partnership with other BRAC members. Number of member-farmers involved per enterprise was found to be 1.7. Twenty eight percent of member-farmers had pre-BRAC experiences on this activity. Average length of involvement for all member-farmers was found to be 5.8 years. Profitability analysis of the last production cycle preceding the date of interview shows that average profit per enterprise in 1997 was Tk. 11,825. Net changes in income per enterprise due to BRAC programme intervention irrespective of length of functioning was found to be Tk. 7,584, or Tk. 4,569 per member-farmer involved in fish cultivation. Although income in fish cultivation is highly correlated with many factors, 97% of the farmers reported that their involvement in this activity increased their household income. Seventy two percent stated that they gained better knowledge about fish cultivation. Among other responses on the benefits they gained were security in future life, direct interaction with market, purchase of household assets, generation of new employment and increase in fish consumption.

The cost of BRAC provided services such as skill training<sup>1</sup>, pond preparation and maintenance, technical assistance per member-farmer was Tk. 335.75 against Tk. 201.45

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<sup>1</sup>For yearly cost estimation of skill training on carp polyculture the total amount is divided by 20 based on the assumption that the knowledge gained in the training session will be used for over 20 years. In case of the estimation of cost of skill training on broiler rearing per lot the total amount is also divided by 20 based on the similar assumption.

charged by BRAC. The net income earned by each member-farmer was 56.6 times higher than those of the additional amount spent by BRAC per member-farmer. This programme is very prospective in the sense that still now a vast area of water body is not used for commercial fish cultivation.

Broiler rearing is relatively a new programme activity for BRAC started at the end of 1996. The upgraded poultry rearers are selected for broiler rearing and provided with credit and other technical supports such as supply of day old broiler chicks, feed, vaccine, etc. The objectives of this programme are mainly generation of income and employment, and reduction of nutrition deficiency. Among the sample member-rearers, 23% started rearing before launching BRAC broiler rearing programme although they received credit and other technical support from BRAC. On average, a member-rearer completed 3.6 rearing cycles before the date of survey. In the last lot 311 chicks were reared per member-rearer, of which 97% were supplied by BRAC. Although majority of work related to broiler rearing was done by members themselves, on average 3.6 persons were engaged either partially or fully. A member-rearer from the last lot earned Tk. 3,795 as net profit. The average net gain due to BRAC programme intervention was Tk. 2,667 per member-rearers. This amount was Tk. 3,237 for newly started member-rearers and Tk. 709 for existing ones. Ninety-eight percent of the rearers reported that they could get higher income. Major reasons for lower income were death of chick, lower market price, imperfect knowledge about marketing and malnutrition of birds. Rearers' education, age and skill were also found as the influencing factors. For 81% of the members-farmers increased their household income while for 75% this involvement brought security in their future life due to their involvement in this activity. Ninety three percent of the rearers reported that their involvement helped them to gain better knowledge about broiler rearing. The income was used for future broiler rearing, household consumption, construction of houses, purchase of land, to satisfy rearers' own needs and needs of their children. Part of broiler meat was also used for their household consumption.

The services provided by BRAC to the member-rearers were training, supply of HYV day old chicks, feeds and pots to serve the feed, vaccine, credit and other technical services. The cost of those services per member-rearer in each lot was found to be Tk. 426.75 against Tk. 451.50 charged by BRAC. Comparing the net gains to the BRAC broiler rearers with the cost of BRAC provided services, the broiler enterprise appears to be highly cost-effective.

Tailoring is also a new activity for BRAC introduced in 1997. The women selected for tailoring are within 20-35 years of age, have knowledge on tailoring, few dependents, hardworking, outspoken, enterprising and free from superstition. For this study tailors were selected from Gopalganj and Khulna regions where the programme was initially started. No significant differences have been found between member-tailors in terms of their mean age, household size, number of children and number of income earners. The average household land size was found to be higher for member-tailors of Gopalganj region. Around 91% of the member-tailors were previously housewives. Only 6.2% were involved in tailoring before the implementation of BRAC's tailoring programme. Presently for all member-tailors of Gopalganj and 97% of Khulna region tailoring has become their main occupation. On average 43 and 46 hours per week in Gopalganj and

Khulna respectively were spent on tailoring. Average monthly net income of tailors of Gopalganj and Khulna were found to be Tk. 264 and Tk. 868 respectively. Income was found to be highly correlated with hours spent in the activity, amount of BRAC loan received, number of dependents per earning member, age of member-tailors, skill and personal quality of tailors to attract more clients.

BRAC provides the member tailors orientation training and credit. Other services provided by BRAC were site selection for opening the shop, help in book keeping and profitability analysis and regular follow-up and monitoring. The estimated cost of services provided by BRAC per member-tailor per month is found to be Tk. 40.87 against Tk. 10 charged by BRAC per member-tailor.

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## Introduction and background

Employment and Income Generation (EIG) programme is a very important component of BRAC's rural development activities. Through this programme BRAC involves the landless poor, mainly women, and provides them with credit and other business development services (BDS) to increase income and create employment. BRAC chooses the female for these activities because evidence has shown that women perceive income as owned collectively and income in the hands of women is believed to have nutritional and welfare benefits for the whole household (Kennedy and Peters, 1992, Kennelly, 1988). Hossain (1984) found that micro-enterprises by generating employment for women, can reduce the dependency ratio and increase household incomes. Secondly, they generate employment on a seasonal basis and hence can play an important role in reducing the present high rate of under-employment of rural workers. Thirdly, micro-enterprises usually generate self-employment for the landless and near landless.

Activities of BRAC carried out through EIG programme are divided mainly into six broad groups or sectors namely, sericulture, poultry, livestock, agriculture (crops), social forestry, and fisheries. Number of activities carried out under each group is presented in Table 1. Besides, there are some non-farm activities which are also listed in the Table. Along with credit BRAC provides back up services for these activities which include skill training, access to better inputs and logistic and marketing support where necessary. By the end of December 1997, BRAC delivered its services to 1,566,463 rural entrepreneurs.

**Table 1. BRAC sector programmes under rural development programme**

| Sectors             | Activities                                                                                                      | No. of entrepreneurs as on December 31, 1997 |
|---------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Poultry             | Poultry hatchery, chick rearing, key rearing, egg collection, poultry vaccination, model rearing                | 1,250,246                                    |
| Livestock           | Paravets, goat rearing, cow rearing, artificial insemination centres, fodder cultivation                        | 138,979                                      |
| Fisheries           | Carp hatchery, prawn hatchery, carp nursery, carp polyculture, Thai Sarputi, pond re-excavation, baor fisheries | 88,363                                       |
| Sericulture         | Chawki rearing, silkworm rearing, reeling, silk weaving                                                         | 21,445                                       |
| Agriculture (crops) | Vegetable growing, vegetable seed production, maize cultivation, cotton cultivation                             | 58,723                                       |
| Social forestry     | Grafting nurseries, agro-forestry, strip plantations, horticulture nursery                                      | 5,808                                        |
| Non-farm activities | Grocery shops, restaurants, apiculture, carpentry workshops, tailoring, micro-enterprise development venture    | 2,899                                        |
| Total               |                                                                                                                 | 1,566,463                                    |

*Source: BRAC RDP MIS*



## Rationale

This study is a part of a series of case studies to be conducted in different South Asian countries under the Support for Small Enterprise Development (SUPSED) programme. This is a three-year programme of action research initiated by Sarvodaya Rural Enterprise Development Services (REDS) in collaboration with Intermediate Technology Development Group (ITDG) of Sri Lanka. The programme aims to share experiences of successful services to develop enterprises in terms of methods used, results achieved and the cost-effectiveness and to learn lessons for the development of guidelines from each other on 'best practices' for the development of enterprises. The purpose of this study was to see what lessons may be derived from enterprise support programmes in terms of which support methods have been found to be more effective. The scope of the study was limited to non-financial support services for enterprise development. For conducting this present study funds were provided by SUPSED along with broad guidelines on sampling and indicators to be used.

## Objectives

This is a case study on BRAC's three successful enterprises - carp polyculture, broiler rearing and tailoring - implemented in the rural areas of Bangladesh. The study aimed to find out the relative cost-effectiveness of these three enterprises against the service delivery costs of BRAC. The study considered service delivery costs of BRAC and also the tangible and intangible benefits received by the entrepreneurs in these new activities. The use of income earned from these activities was also studied. The role of BRAC and the use of its services in increasing income of the enterprise and to link up all of these together was another area of this research.

## Methodology

Primary data were collected for carp polyculture and broiler rearing, while for tailoring secondary data collected a few months back for another study were used (Matin, 1998). Information on total number of enterprises and geographical area covered under each of the activities are presented in Table 2.

**Table 2. Information on enterprises selected for the study**

| Name of Enterprise | Year of initiation | No. of beneficiaries as of July '98 | Total No. of RDP area covered |
|--------------------|--------------------|-------------------------------------|-------------------------------|
| Carp cultivation   | 1980               | 82,452                              | 260                           |
| Broiler rearing    | 1997               | 238                                 | 25                            |
| Tailoring          | 1998               | 128                                 | 27                            |

*Source: BRAC RDP MIS*

Due to the devastating flood of 1998 which severely affected two third of the country and dislocated economic activities, the selection of areas for the study had been made in such a way that areas which were relatively free from severe flooding were included. Otherwise data would have yielded unusual results. The study areas were selected accordingly. Major indicators selected for the study were individual and household

characteristics of the participants which included sex, occupation, marital and employment status of RDP Village Organization (VO) members directly involved in the activity, occupation of the household heads, household size, number of income earner in the household and household landholding. The indicators related to the activity in which they were involved viz. length of their involvement, scale of operation, costs and returns of the activity they were involved in, impact on changes in income due to BRAC, additional employment created by the activity they are involved in, members' perception on different types of services they received from BRAC, their usefulness, cost-effectiveness of these services and the benefits they received due to their involvement were also included.

In the cost analysis to the services provided by BRAC cost of credit provision is not included by assuming that the service charges realized for the amount disbursed covers the total cost of lending. Although income of the enterprises was highly correlated with BRAC credit services, the cost of those services was also not included in the cost of production like any other opportunity cost. Cost effectiveness of BRAC provided services is thus the ratio between the benefits to the clients (i.e. increased income derived from enterprise resulting from the service) and the costs incurred by BRAC in the delivery of the service to the enterprise.

A structured questionnaire was administered to gather information on household characteristics, different aspects of the selected enterprises and the benefits derived. Data on carp polyculture and broiler rearing were collected in November 1998. The total number of sample members were 106 for carp polyculture and 102 for broiler rearing. For the study on tailoring data on 97 sample members were used from another BRAC study. For information on costs of services provided by BRAC per beneficiary, published and unpublished secondary data of BRAC were used.

Jessore, Jhinaidah and Kushtia regions which had been less affected by flood were selected for carp cultivation. Three RDP area offices (AO) from each of these regions and twelve programme participants from each AO were finally selected for interview. Broiler rearing is a relatively new activity introduced in 1997. For case study on this activity Gazipur, Manikganj and Tangail regions - the highly concentrated areas of this activity, were selected as sample<sup>2</sup>. All the RDP AOs under these regions were considered as sample areas. Since it is relatively a new activity for BRAC, all the participants who completed minimum two production cycles were taken as sample. The production cycle carried out during the flood was not considered for the analysis as inclusion of this cycle might have distorted the actual result. Data used on tailoring were collected from Khulna and Gopalganj regions in June-July 1998.

## **1. Carp polyculture**

### **1.1 An Overview**

Fish is the major source of protein intake for the rural people in Bangladesh although the intake is very low (20.5 g/person/day). To maintain even the present low level of fish consumption the production needs to be increased by 44% of its present level. To meet

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<sup>2</sup>detail in section 2.1



the required level of 38 g/person/day, present production level would have to be increased by 118%. Pond culture is a major potential in the fisheries sector. Among the 1.3 million ponds in the country only 46% are cultivated, 30% are cultivable but not used and the rest are derelict ponds (RDP, 1995).

BRAC began its fisheries programme in 1976 with the re-excavation of 16 derelict ponds in three districts. Presently the programme is implemented all over Bangladesh.

The objectives of the programme are to:

- increase income and employment opportunities through proper use of local water bodies;
- promote fish culture by re-excavating and re-constructing derelict ponds;
- ensure timely spawn and fingerlings supply;
- develop aquaculture management skills of rural fishermen;
- engage poor fishermen in water bodies and to
- increase the protein intake of the rural poor.

Carp polyculture in annual ponds is one of the components of the programme. It is the mixed cultivation of carp of different varieties. Ponds are selected by using the following criteria:

- size of the pond would be around 0.15 acre or above;
- water level in the pond would be at least 3 feet during 8-10 months;
- surrounding area of the pond would be free from big trees with many branches;
- enough sunlight necessary for the normal growth of fish can be transmitted in the pond;
- although soil type does not always matter for mixed fish cultivation, the sandy loam, clay-loam and loam soil are considered to be better suited.

Carp polyculture is also done in derelict ponds. BRAC leases in derelict ponds from their owners for a maximum period of 10 years, re-excavates them and then, leases it out to its VO members. Lease value per decimal of pond depends on the cost of re-excavation. Money charged for leasing out the ponds is deposited in the VO account of those members who lease in the ponds and use them for the maintenance of ponds. BRAC selects those members for fish cultivation who are very keen to do it, own ponds or can lease them, preferably have previous experiences and willing to participate in BRAC fisheries training session. Farmers and ponds selection are done in February-March. Selected farmers are given training any time during March-May. The preparation of ponds and stocking of fingerlings are done in April-June. Fish is harvested during June-August.

In each decimal of pond around 34 fingerlings of different carp species are released consisting of 10-12 silver carp, 4-6 katal, 6-7 ruhi, 5-7 mrigal, 2 mirror carp and 2-3 grass carp. A member-farmer receives Tk. 175-200 as loan per decimal of water body from BRAC which covers all the cost of production including the lease value (RDP Operation Manual, 1995).

## 1.2 Findings

**1.2.1 Household and individual characteristics of farmers:** Average household size of member-farmers involved in carp polyculture was found to be 5.5, of them 2.3 persons were income earners. Number of dependents per working member was 1.9. Among farmers 3.8% did not own any land, 37.7% had up to 50 decimals, 28.3% owned above 50 decimals but less than 1.5 acres, 30.2% had more than 1.5 acres. Distribution of member-farmers by their household land size indicates that more marginal farmers were involved in carp polyculture. Mean age of females involved in fish polyculture was 36 years (Table 1.1).

**1.2.2 Types of enterprises:** Among member-farmers 57.5% were involved in fish cultivation independently while 32.2% cultivated in partnership with another BRAC member. The rest joined with two or more BRAC members. Maximum number of partners in a pond was found to be seven (Table 1.1). Among member-farmers 70.8% used their own pond, the rest leased it in.

**Table 1.1. Household characteristics of farmers**

| Indicators                           | Mean | Median | SD  | Min. | Max.  |
|--------------------------------------|------|--------|-----|------|-------|
| Average household size (No.)         | 5.5  | 5.0    | 2.2 | 2    | 14    |
| No. of income earner                 | 2.3  | 2.0    | 1.4 | 1    | 9     |
| Household homestead land (decimal)   | 21   | 15     | 18  | 0    | 100   |
| Total household land (decimal)       | 148  | 76     | 198 | 0    | 1,021 |
| No. of RDP members involved per pond | 1.7  | 1.0    | 1.1 | 1    | 7     |

**1.2.3 Extent of employment:** Average length of members' involvement in this activity was 5.8 years. It varies from 2 to 30 years (Table 1.2). Twenty eight percent of the members were involved in fish cultivation previously but did it in a traditional way. After becoming BRAC member they received formal training on fish cultivation and got monetary and technical support from BRAC which helped them increase their income level. Number of involvement of member-farmers in household and other activities increased after starting fish cultivation. All the work related to fish cultivation were found to be done by 8.5% of members themselves. In 51% cases those were done with the help of another household member. In addition, involvement of other two or more household members were found in 40.5% cases. Seventy three percent of the members stated that their husbands were also involved in fish cultivation. In 33% cases children also participated. On average, 7.4 persons per acre of pond were found to be involved in the process of fish cultivation. Since this activity does not require full time involvement of a person except care taking they can carry out this function without affecting other activities. Usually full time care taking is done only if the pond is big in size and far from residence.

**Table 1.2. Individual characteristics of members involved in fish polyculture**

| Indicators                                            | Mean | Median | SD   | Min. | Max. |
|-------------------------------------------------------|------|--------|------|------|------|
| Age of members (years)                                | 36   | 35     | 9    | 20   | 70   |
| Length of fish rearing (years)                        | 5.8  | 4.0    | 5.2  | 2    | 30   |
| No. of activities carried out before starting rearing | 1.8  | 2.0    | 0.9  | 1    | 4    |
| Average pond size (decimal)                           | 68.5 | 49     | 85.8 | 10   | 500  |
| No. of activities carried out after rearing started   | 2    | 2.0    | 0.8  | 1    | 4    |

**1.2.4 Profitability of carp polyculture:** Table 1.3 describes the average cost and return on the carp enterprises used during the preceding year of interview. Average recurrent cost of fish cultivation in 68.5 decimals of pond was found to be Tk. 13,763 which included price of fingerlings, lease value of pond if it is leased out, cost of pond preparation and hired labour, cost of feed, service charge paid to BRAC (Tk. 5 per decimal) and other miscellaneous costs. Price of fingerlings constituted about 39% of the total cost. Cost of feed and lease value of ponds were the next important cost items which with price of fingerlings comprised 82% of the total costs.

Gross income included income from sale of big and small fish, value of fish consumed in the household, value of fish given to others as gift and sale of fruits and vegetables cultivated on the bank of pond. Around 89% of the total income came from sale of fish. It is also important to note that a significant proportion of fish consumed at home (7.7%) helps the grower to meet their own household needs which might not have been possible if they had to purchase it from the market. The mean gross income was found as Tk. 25,589. It was higher for enterprises which started before BRAC's programme due to their larger pond size (Table 1.4). Although cost per decimal of pond is higher for the newly started enterprises, return per decimal was also significantly higher for them. The rate of return on investment was also higher for the newly started enterprises which influenced their total profit margin (Tk. 9,633 and Tk. 12,690 respectively for that enterprises started before and after BRAC programme intervention). The profit margin per member would be Tk. 5,666 and Tk. 7,738 respectively for enterprises that started before and after BRAC programme intervention considering number of members involved per enterprise.

**Table 1.3. Cost-benefit analysis of carp polyculture**

| Cost items           | Value (Tk.)   | % to total | Revenue items           | Value (Tk.)   | % to total |
|----------------------|---------------|------------|-------------------------|---------------|------------|
| Price of fingerlings | 5,332         | 38.7       | Sale of big fish        | 16,481        | 64.4       |
| Pond preparation     | 1,502         | 10.9       | Sale of fingerlings     | 6,254         | 24.4       |
| Feed                 | 3,106         | 22.6       | Hh consumption          | 1,975         | 7.7        |
| Lease value          | 2,894         | 21.0       | Sale of other products* | 571           | 2.2        |
| Labour               | 363           | 2.6        | Others                  | 308           | 1.2        |
| Service charge       | 342           | 2.5        |                         |               |            |
| Others               | 224           | 1.6        |                         |               |            |
| <b>Total cost</b>    | <b>13,763</b> | <b>100</b> | <b>Gross revenue</b>    | <b>25,589</b> | <b>100</b> |

\* Include fruits and vegetables grown on the bank of the pond

**Table 1.4. Mean differences of major indicators of member-farmers involved in the enterprises started with and without BRAC programme support**

| Indicators                                               | Enterprises started before BRAC<br>n=30 | New enterprises<br>n=76 | Total<br>n=106 |
|----------------------------------------------------------|-----------------------------------------|-------------------------|----------------|
| Age of member-farmers (years)                            | 35.3                                    | 36.0                    | 35.8           |
| Household land (decimals)                                | 204                                     | 125                     | 147            |
| No. of VO members involved per enterprise                | 1.70                                    | 1.64                    | 1.66           |
| Average length of involvement (months)                   | 11.1                                    | 3.7                     | 5.8            |
| Average loan size (Tk.)                                  | 5,333                                   | 6,831                   | 6,411          |
| Total accounting cost of rearing (Tk.)                   | 18,512                                  | 11,890                  | 13,764         |
| Gross revenue (Tk.)                                      | 28,145                                  | 24,580                  | 25,589         |
| Profit (Tk.)                                             | 9,633                                   | 12,690                  | 11,825         |
| Profit per decimal pond (Tk.)                            | 236                                     | 298                     | 280            |
| Profit per RDP VO member involved (Tk.)                  | 5,666                                   | 7,738                   | 7,123          |
| Pond size (decimals)                                     | 100                                     | 56                      | 68             |
| Cost per decimal (Tk.)                                   | 162                                     | 188                     | 180            |
| Revenue per decimal (Tk.)                                | 398                                     | 485                     | 460            |
| Revenue-capital ratio (Tk.)                              | 2.85                                    | 3.05                    | 2.99           |
| Profit-capital ratio (Tk.)                               | 1.85                                    | 2.05                    | 1.99           |
| Mean income before joining BRAC (Tk.)                    | 17,335                                  | -                       | 4,906          |
| Mean income after joining BRAC (Tk.)                     | 23,073                                  | 15,992                  | 17,996         |
| Changes in gross income per enterprise due to BRAC (Tk.) | 5,738                                   | 15,992                  | 13,090         |
| Changes in net income per enterprise due to BRAC* (Tk.)  | 5,731                                   | 8,316                   | 7,584          |
| Changes in net income per member due to BRAC (Tk.)       | 3,371                                   | 5,071                   | 4,569          |

\* it is calculated by using the following formula:

$$\Delta Y = \frac{\bar{Y}_t - \bar{C}_t}{\bar{Y}_{t-1} - \bar{C}_t}$$

Where,

$\Delta Y$ - net changes in income

$\bar{Y}_t$ - Mean income after joining BRAC

$\bar{Y}_{t-1}$ - Mean income before joining BRAC

$\bar{C}_t$  - Cost ratio of last year income

In spite of a relatively high income earned by each enterprise it is also important to mention that the enterprises which started before BRAC programme had increased their gross income by Tk. 5,738 from Tk. 17,073 to Tk. 23,073 with BRAC support although their pond size reduced from 160 to 100 decimals. Average net changes in income due to BRAC for the pre-BRAC enterprises was Tk. 5,731 which is calculated by subtracting 65.8% as cost of production from both pre-BRAC and post-BRAC mean income. This 65.8% is taken on the basis of cost-revenue ratio of the last year's production. For the

newly started enterprises it was Tk. 8,316. This amount is calculated by deducting 48% from the average income of Tk. 15,992 since joining BRAC programme. This 48% was taken as cost of production and estimated on the basis of their cost of production for the year preceding the interview. The average changes in income for all enterprises irrespective of their length of involvement due to BRAC intervention was found to be Tk. 7,584, i.e. Tk. 4,569 per member-farmer (Table 1.4).

Among sample enterprises only 7.5% did not make any profit. But 82% of the respondents including all farmers who incurred loss stated that they might get more income than they had received. Among reasons, insufficient feeding due to shortage of liquid money in hand was stated by 29% of the respondents. Among other responses, improper care due to lack of knowledge (10.3%), death of fish for overdose of chemical fertilizer used (9.1%), theft of fish (6.9%), improper selection of harvesting time when market price was low (10.3%) and 'others' including low water level, water overflow due to continuous raining, small size of the pond, small size of fish, lower price in the market and higher lease value were mentioned (Table 1.5).

Among those who reported that insufficient feeding due to shortage of liquid money in hand, farmers with pre-BRAC experiences were proportionately higher. Although farmers with pre-BRAC experiences were relatively better-off in owning more land, they also received significantly lower amount of BRAC loan considering the water body used for carp polyculture. It is likely that the newer farmers who borrowed two times more amount per decimal of water body than the older farmers with previous experiences were able to spend more for feeding and other purposes. The older farmers had also taken relatively less care of fish cultivation than the new farmers. Low water level in the ponds also influenced the net return.

**Table 1.5. Reasons for low income**

| <b>Reasons</b>              | <b>Farmers with previous<br/>experience n=23</b> | <b>New<br/>farmers<br/>n=64</b> | <b>Total<br/>n=87</b> |
|-----------------------------|--------------------------------------------------|---------------------------------|-----------------------|
| Feed shortage               | 52.2                                             | 20.3                            | 28.7                  |
| Improper care               | 4.3                                              | 12.5                            | 10.3                  |
| Death of fish               | 4.3                                              | 9.4                             | 8.0                   |
| Theft of fish               | 4.3                                              | 7.8                             | 6.9                   |
| Low water level             | 13.0                                             | 6.3                             | 8.0                   |
| Improper time of harvesting | 8.7                                              | 10.9                            | 10.3                  |
| Others                      | 13.0                                             | 32.8                            | 27.6                  |
| <b>Total</b>                | <b>100</b>                                       | <b>100</b>                      | <b>100</b>            |

*Note: Others include water overflow due to continuous raining, small size of pond, small size of fish, lower price in the market, higher lease value, etc.*

**1.2.5 Factors contributing to profitability:** Results of bivariate analysis of major factors which were responsible for variation of profit earned per decimal of pond are presented in Tables 1.6 and 1.7. According to the Tables types of soil, ownership of ponds, their size and position, farmers' occupation, education, marital status, farmers' skill on fish

**Table 1.6. Factors contributing to the profitability of carp polyculture**

| <b>Variables</b>                                | <b>% to total<br/>n=106</b> | <b>Profit per decimal</b> |
|-------------------------------------------------|-----------------------------|---------------------------|
| <b>Type of soil</b>                             |                             |                           |
| sandy                                           | 4.7                         | 451                       |
| sandy loam                                      | 31.1                        | 227                       |
| loam                                            | 29.2                        | 209                       |
| clay                                            | 9.4                         | 256                       |
| clay loam                                       | 25.5                        | 404                       |
| <b>Sun light transmitted</b>                    |                             |                           |
| yes                                             | 95.3                        | 285                       |
| No                                              | 4.7                         | 188                       |
| <b>Ownership of ponds</b>                       |                             |                           |
| Self                                            | 70.8                        | 317                       |
| Leased                                          | 29.2                        | 190                       |
| <b>Pond size (dec.)</b>                         |                             |                           |
| 1-20                                            | 21.7                        | 598                       |
| 21-30                                           | 16.0                        | 258                       |
| 31-50                                           | 34.0                        | 197                       |
| >50                                             | 28.3                        | 149                       |
| <b>Pr-BRAC experiences</b>                      |                             |                           |
| yes                                             | 28.3                        | 236                       |
| no                                              | 71.7                        | 297                       |
| <b>No of present activities carried out was</b> |                             |                           |
| more than previous                              | 23.6                        | 230                       |
| equal to previous                               | 71.7                        | 289                       |
| less than previous                              | 4.7                         | 393                       |
| <b>Educational status of members</b>            |                             |                           |
| Illiterate                                      | 42.5                        | 250                       |
| 1-5 class                                       | 31.1                        | 308                       |
| >5 class                                        | 26.4                        | 295                       |
| <b>Marital status of members</b>                |                             |                           |
| Married                                         | 91.5                        | 273                       |
| Unmarried/divorced/separated                    | 8.5                         | 353                       |
| <b>Members' main occupation</b>                 |                             |                           |
| Fish cultivation                                | 23.6                        | 375                       |
| Household work                                  | 59.4                        | 235                       |
| Agriculture                                     | 3.8                         | 167                       |
| Others                                          | 13.2                        | 345                       |
| <b>Decisions were made by the influence of</b>  |                             |                           |
| BRAC                                            | 66.0                        | 293                       |
| Husband                                         | 24.5                        | 261                       |
| Others                                          | 9.4                         | 242                       |



cultivation and household workload of member-farmers had significant contribution to profitability. Those who used their own ponds made more profit because they did not have to pay any lease money. Although the total amount of profit was higher for enterprises with bigger ponds in size the rate was higher for the smallest ones. It might be because feed shortage, found as the major reason for lower income, was proportionately less in the smaller enterprises compared to the bigger ones. The unmarried, divorced or separated women farmers earned more profit than the currently married ones. Results also show literacy but not qualification might have some influence on the output. Members with fish farming occupation earned more than others. Those members who concentrated mainly on fish cultivation by reducing their total number of involvement also gained more. Positive results regarding BRAC influences also show higher profit of member-farmers who decided to be involved in the activity after joining BRAC and did it with the help of BRAC. Results of multivariate analysis support findings of bivariate ones in terms of pond size and its ownership, marital status of member-farmers, their education level and skill on fish farming. Households with higher dependency had to spent more on household consumption which could not permit them to invest more on fish farming. The household dependency negatively influenced in the output of fish cultivation. For those who received proportionately higher amount of BRAC credit per decimal results were found significantly positive.

**Table 1.7. Factors contributing to the profitability of carp polyculture: results of OLS analysis**

| <b>Independent variables</b>                                          | <b>Beta coefficient</b> | <b>t value</b> |
|-----------------------------------------------------------------------|-------------------------|----------------|
| Constant                                                              | 52.09                   | 0.45           |
| Household dependency                                                  | -25.41                  | -1.22          |
| Educational level of members                                          | 9.34                    | 1.07           |
| Marital status of members<br>(unmarried/divorced/separated=1, else=0) | 33.81                   | 0.33           |
| Number of BRAC members cultivated jointly                             | -15.06                  | -0.56          |
| Pond size                                                             | -0.42                   | -0.91          |
| Ownership of ponds (self=1, else=0)                                   | 25.83                   | 0.35           |
| Members' main occupation (fish cultivation=1, else=0)                 | 220.76                  | 2.96           |
| Amount of loan received per decimal                                   | 0.83                    | 5.23           |
| Multiple R                                                            | .60                     |                |
| R Square                                                              | .36                     |                |
| Adjusted R square                                                     | .31                     |                |
| F statistics                                                          | 6.13                    |                |

The distribution of enterprises by amount of loan and their net income received presented in Table 1.8. The Table shows that only 4% of the enterprises did not receive loan. Another 23% received it less than half of the mean amount spent per decimal of water body which was Tk. 180. Only 38% received Tk. 180 and above. The net income received by different loan amount category shows that those who did not borrow any loan earned it more than those who borrowed less than half of their expenses. The enterprises with loan of Tk. 180 and above earned Tk. 441 per decimal of water body which was



nearly two times higher than the amount received by the enterprises from Tk. 91- 180 loan category.

**Table 1.8. Distribution of enterprises by amount of loan received and their net income**

| <b>Loan amount per decimal of water body</b> | <b>No and percentage of sample members</b> | <b>Mean net income/profit (Tk.)</b> |
|----------------------------------------------|--------------------------------------------|-------------------------------------|
| No loan                                      | 4 (3.8)                                    | 166.50                              |
| Tk. 1-90                                     | 24 (22.6)                                  | 136.64                              |
| Tk. 91-180                                   | 38 (35.8)                                  | 213.41                              |
| >Tk. 180                                     | 40 (37.7)                                  | 441.05                              |

**1.2.6 Non monetary benefits:** On the question about the benefits they gained from this project, 88% of the member-farmers mentioned that their involvement in fish polyculture increased their household income although 97% of the respondents reported that it contributed positively to increase their household income. Seventy two percent also gained better knowledge about fish cultivation. It brings some sort of security in their future life as stated by 43.4% of them. Among other responses, exposure to outside world, direct interaction with market, purchase of household assets, generation of new employment, increase in savings, increase in household fish consumption, resulting in raising protein intake and contribution to children education were mentionable (Table 1.9).

**Table 1.9. Benefits gained by the farmers (perception of the growers)**

| <b>Types of benefits</b>                | <b>Responses of the participants</b> |            |            |            |            |            | <b>% responde d</b> |
|-----------------------------------------|--------------------------------------|------------|------------|------------|------------|------------|---------------------|
|                                         | <b>1st</b>                           | <b>2nd</b> | <b>3rd</b> | <b>4th</b> | <b>5th</b> | <b>6th</b> |                     |
| Increased household income              | 86.8                                 | 8.5        | 1.9        | -          | -          | -          | 97.2                |
| Secured future life                     | 0.9                                  | 17.9       | 15.1       | 8.5        | 0.9        | -          | 43.4                |
| Better knowledge about fish cultivation | 4.7                                  | 36.8       | 22.6       | 6.6        | 0.9        | -          | 71.7                |
| Exposure to outside world               | 1.9                                  | -          | 1.9        | 2.8        | 2.8        | 7.5        | 17.0                |
| Direct interaction with market          | -                                    | 9.4        | 13.2       | 4.7        | 7.5        | 1.9        | 36.8                |
| Others                                  | 4.7                                  | 20.8       | 13.2       | 3.8        | 2.8        | -          | 45.3                |

*Note: others include asset increase, children education, generation of new employment*

**1.2.7 Use of income:** Twenty-six percent of the farmers reinvested the amount they received in fish cultivation in the next production cycle, another 25% had given second priority to this sector. In 71% cases part of this income went to the next year's fish cultivation. Eighty-eight percent spent part of their income to meet the household consumption expenditure. Forty-three percent used this money to satisfy members' own needs. It also contributed to satisfy the needs of the children according to 40% respondents. Among other responses, construction of living houses, purchase of land and

other assets, debt servicing, health care, and savings accumulation were important (Table 1.10).

**Table 1.10. Use of income for different purposes on the priority needs**

| Purpose of use                                 | Priority-based use of income (%) |      |      |      |     |      | % responded |
|------------------------------------------------|----------------------------------|------|------|------|-----|------|-------------|
|                                                | 1st                              | 2nd  | 3rd  | 4th  | 5th | 6th  |             |
| Reinvest in fish cultivation                   | 25.5                             | 24.5 | 13.2 | 6.6  | 0.9 | -    | 70.8        |
| Household consumption expenditure              | 30.2                             | 35.8 | 11.3 | 5.7  | 2.8 | -    | 85.8        |
| Construction of living house                   | 2.8                              | 2.8  | 3.8  | 3.8  | 0.9 | -    | 14.2        |
| Purchase of land                               | 7.5                              | 1.9  | -    | 0.9  | -   | -    | 10.4        |
| Purchase of other assets                       | 2.8                              | 3.8  | 3.8  | 4.7  | -   | -    | 15.1        |
| Satisfy own needs                              | 3.8                              | 3.8  | 14.2 | 15.1 | 3.8 | 1.6  | 42.5        |
| Satisfy children needs                         | 0.9                              | 6.6  | 14.2 | 7.5  | 6.6 | 3.8  | 39.6        |
| Supply of protein in the household consumption | 0.9                              | 1.9  | 5.7  | 0.9  | 2.8 | 18.4 | 22.6        |
| Others                                         | 23.6                             | 14.2 | 11.3 | 2.8  | 1.9 | 1.9  | 55.7        |

*Note: Others include debt servicing, health care, savings accumulation, etc.*

**1.2.8 Services provided by BRAC and members' perception:** At the initiation of the programme in each area a pond survey is conducted by BRAC field staff to determine the scope and potentiality of the programme. Then it arranges training on fish cultivation for their members already selected. Other types of services offered by BRAC are: i) help in pond and feed preparation and netting in the ponds, ii) orientation on feeding procedure, iii) ascertain the number of fingerlings of different size and variety suitable for the specific pond, iv) help in receiving fingerlings and maintaining book keeping, v) all kinds of technical support, vi) regular monitoring and follow-up, and vii) suggestions on fish marketing (Table A.1).

Perceptions of member-farmers on the type of services received from BRAC and their usefulness are presented in Table 1.11. Although 28% of the farmers had pre-BRAC experiences on carp cultivation, 90% of the respondents participated in BRAC organized formal training on carp polyculture. Ninety-two percent also received technical advises. BRAC helped a significant proportion of the farmers by supplying fingerlings, feed, medicine and in selling of fish. Ninety seven percent received credit from BRAC. Almost all the respondents mentioned that the amount they had received covered less than half of their total recurrent costs. Moreover, they could not spend the total borrowed amount in this activity. Part of it went for payment of weekly instalment since this activity requires some gestation period for receiving income. In addition to services related to fish cultivation, 82% also stated that they participated in BRAC organized awareness raising training. The new farmers received relatively more services than the older ones. Almost all the respondents who received any kind of services mentioned earlier stated that those were useful in the rearing process and in gaining additional knowledge.

**Table 1.11. Types of BRAC provided services received by the member-farmers and their usefulness**

| Sl No | Types of services                           | % received            |                     |       | Usefulness of services<br>n=106 |
|-------|---------------------------------------------|-----------------------|---------------------|-------|---------------------------------|
|       |                                             | Older farmers<br>n=30 | New farmers<br>n=76 | Total |                                 |
| 1     | Fish cultivation training                   | 73.6                  | 96.1                | 89.6  | 100.0                           |
| 2     | Awareness raising training                  | 73.3                  | 85.5                | 82.1  | 100.0                           |
| 3     | Technical advice for fish cultivation       | 83.3                  | 96.1                | 92.1  | 99.0                            |
| 4     | Inputs supply (fingerlings, feed, medicine) | 13.3                  | 26.3                | 22.6  | 100.0                           |
| 5     | Help in selling fish                        | 20.0                  | 35.5                | 31.1  | 100.0                           |
| 6     | Collection of fingerlings                   | 13.3                  | 35.5                | 29.2  | 100.0                           |
| 7     | Loan                                        | 93.3                  | 97.4                | 96.4  | 84.3                            |

**1.2.9 Cost of BRAC and its effectiveness:** In the process of implementation of the programme BRAC has to incur some expenses for member selection, skill training of selected members and their follow-up. For selection of a member one working day of a Programme Assistant (PA<sup>3</sup>) is spent. It means that one day's salary of a PA including his/her transport and other allowance i.e. Tk. 185, is spent for selecting a member for training. A member is given two day's orientation training after being selected. It is estimated that for one day orientation training Tk. 50 is spent per member which includes salary of the PA trainer, cost of food and stationeries provided for training, and the rent value of the venue used for training. The initial investment cost of BRAC for the development of a member as an entrepreneur is, therefore, Tk. 285 including cost for member selection and the two day orientation training. Since there is no provision for refreshers, this amount is spent by BRAC for each of the member-farmers for his/her development as an entrepreneur. Training is a life long investment. If it is assumed that a member-farmer will use the knowledge gained through training for 20 years then the yearly cost of this training will be Tk. 14.25. During the period of fish cultivation BRAC incurs other service costs. The farmers pay annually Tk. 5 per decimal of water body to BRAC for the services they receive from BRAC. On an average each member cultivated 40.29 decimals of water body. Thus, the total amount paid by each member in the last year was Tk. 201.45. According to BRAC estimates, this amount covers 60% of the total annual cost of the organization. This implies that for member selection, training and follow-up services BRAC spends Tk. 8.33 per decimal of water body or Tk. 335.75 per member-farmer i.e. Tk. 3.33 extra per decimal. The additional cost of BRAC over service charges received from each farmer was thus Tk. 134.30 (Table 1.12). The net gain for a member-farmer due to BRAC was estimated at Tk. 7,584 for the last year (section 1.2.4). This amount exceeds those additional costs of BRAC by 56.6 times. This gives an indication that if BRAC charges the total amount spent per member, the programme will be cost-effective and the member-farmers will continue their involvement in the activity.

<sup>3</sup>Recently re-designated as Programme Organizer (PO)

**Table 1.12. Cost benefit analysis of BRAC provided services per member-farmer**

| <b>Types of services</b> | <b>Total</b>      | <b>Per year</b> |
|--------------------------|-------------------|-----------------|
| Member selection         | 185.00            | 9.25            |
| Training                 | 100.00            | 5.00            |
| Follow up services       |                   | 321.50          |
| Total cost               |                   | 335.75          |
| Service charges received | Tk. 5 per decimal | 201.45          |
| Net gain/loss for BRAC   |                   | -134.30         |

### **1.3 Key messages and conclusions**

Fish cultivation programme helped increase the income of participating households, and thereby, contributed positively to the gross national product of the country. Through re-excavating of derelict ponds and using of uncultivated water bodies for commercial fish cultivation the programme generates additional employment opportunities for the landless, mainly women. This programme is very prospective in the sense that a vast area of water body is not yet used for commercial fish cultivation. Proper use of this water body will further increase country's GNP, increase protein intake of people and, therefore, will reduce their nutritional deficiency. Involvement of the landless poor female will generate additional income and employment for them and reduce their dependency on their male counterparts. In this activity risk of capital loss is very low unless any natural calamities, mainly flood, hit the water body. That is why massive expansion of this programme is possible through which BRAC can earn a substantive amount through service charge. For sustainable fish cultivation the following suggestions have been made by the field staff:

- involving marginal farmers who are not members of RDP VO. They will pay BRAC for the services BRAC will be providing;
- providing training to VO members using advanced technology which will increase productivity;
- since there is some gestation gap between investment and income received it will be less burdensome for the member-farmers if the existing repayment system can be changed by collecting a major amount at harvest time which will reduce the pressure for farmers and help them to spend a higher proportion of the loan amount for fish cultivation;
- introducing demonstration ponds that will make other farmers interested in this activity;
- increasing the number of field staff in each AO for better service delivery and reducing the existing workload.

## **2. Broiler rearing**

### **2.1 An overview**

Broiler rearing is a new component of BRAC's EIG programme. BRAC started this programme at the end of 1996 in Manikganj on an experimental basis through its Rural Enterprise Project (REP). Initially BRAC selected five VO members - the upgraded poultry rearers and provided them with other inputs including training for broiler rearing. The objectives of this experiment were to study the market potentials of broiler meat and to understand whether to get required number of day-old broiler chicks will be a problem if BRAC decides to go for massive expansion. Results revealed that although day-old chicks were not always available, getting adequate number of chicks would not be a problem for BRAC. Secondly, since there is a big gap between low supply and high demand on broiler meat, marketing of broiler will not be a problem. There are many wholesalers who buy broiler in the local market and supply it to Dhaka city. At the beginning of 1997 BRAC consulted with different poultry hatcheries and made agreement with them to get adequate number of day-old chicks. Then Manikganj, Gazipur, Narsingdi, Tangail and Comilla districts which are well communicated with Dhaka were selected for expansion of the programme.

The objectives of the programme are a) generation of employment, b) increasing household income (Tk. 1000- Tk. 1500 per month), c) providing easy access to broiler meat in the rural areas and d) reduction of nutrition deficiency<sup>4</sup>.

Broilers are special varieties of cock/hen reared for meat. During 6-8 weeks of rearing a broiler bird gains 1.5-2.5 kg of weight. In Bangladesh eight different varieties of broilers are reared, namely 1) Shaver Star-Bro, 2) ISA Veddette, 3) Avian, 4) Hybro, 5) Hubs Chicks, 6) Ross Broiler, 7) Arbar Acre and 8) Vencobb. For construction of rearing houses the following criteria are considered:

- high land with better drainage system;
- land with sandy-loam soil with the capacity to absorb the liters of broilers;
- places free from the attack of wild animals; and
- well-ventilated places.

For broiler rearing space required per chick is one sq. feet in winter and 1.5 sq. feet in summer. Cemented floor in the house is preferable for rearing.

### **2.2 Findings**

#### **2.2.1 Household and individual characteristics of rearers:**

Table 2.1 presents mean statistics of rearer households. Average household size of member-farmers involved in broiler rearing was found to be 5.4, of them 2.6 persons were income earners. Forty-three percent of the rearing households owned 50 decimals or less land, 34% had 100 or more decimals (Table 2.2), while 23% owned 51-100 decimals. The average land size for broiler rearing households was found to be 105 decimals. Mean age of members/females involved in rearing was 36 years.

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<sup>4</sup>Poultry meat comprises major part of meat consumption for the rural people. The intake of meat in 1996-97 was only 4.3 kg per capita per annum which is one tenth of the required 43 kg (Fattah, 1998).



**2.2.2 Skill of the rearers:** Twenty-three percent of the rearers reported that they started rearing before BRAC launched the programme, but received credit and other technical supports from BRAC. Number of rearing cycle (lot) completed by each rearer varied from

1 to 25. The average figure was 3.6. Eighty-six percent of the rearers received formal training on rearing from BRAC.

**Table 2.1. Mean statistics of broiler rearing**

| Indicators                                            | Mean | Media<br>n | SD  | Min. | Max. |
|-------------------------------------------------------|------|------------|-----|------|------|
| Average household size (No)                           | 5.4  | 5.0        | 2.0 | 2    | 14   |
| No of income earner                                   | 2.6  | 2.0        | 1.3 | 1    | 7    |
| Age of members (years)                                | 36   | 35         | 8.2 | 18   | 57   |
| Household homestead land<br>(dec.)                    | 30   | 18         | 52  | 3    | 490  |
| Total household land (dec.)                           | 105  | 67         | 126 | 3    | 601  |
| No of members in the household<br>involved in rearing | 2.1  | 2          | 1.2 | 1    | 9    |
| No of works carried out before<br>started rearing     | 2.1  | 2          | 1.0 | 1    | 4    |
| No of works carried out after<br>started rearing      | 1.9  | 2          | 1.0 | 1    | 4    |
| No of lot completed                                   | 3.6  | 3.0        | 3.4 | 1    | 25   |
| No of chicks reared in the last lot                   | 311  | 300        | 126 | 100  | 800  |
| No of chicks supplied by BRAC                         | 301  | 300        | 133 | 0    | 800  |
| No of chicks supplied by others                       | 10   | 0          | 60  | 0    | 500  |

**Table 2.2. Distribution of households by land holding category**

| Land category   | % to population n=102 |
|-----------------|-----------------------|
| ≤ 25 decimals   | 23.5                  |
| 26-50 decimals  | 19.6                  |
| 51-100 decimals | 22.5                  |
| > 100 decimals  | 34.3                  |

**2.2.3 Supply and demand of chicks:** Among the average number of 311 chicks reared in the last lot 301 (97%) were supplied by BRAC and the rest were procured from private hatcheries. It implies that the demand for day-old chick was higher than BRAC could supply. Although BRAC did not have its own hatchery for broiler chicks, for the benefit of its members it collected chicks from private hatcheries. If they want to purchase those required number of chicks from the private hatcheries directly, they have to pay the full amount at the time of delivery. The member-rearers who belong to the poor section of the society can not pay the total price of chicks at a time. Since BRAC is giving a special loan for this activity it is easier for them to carry out this activity.



It is important to note that recently BRAC started hatching broiler chicks in the hatchery established by itself which ultimately will reduce the dependence on private hatcheries and the risk involved in supplying adequate number of day-old chicks.

**2.2.4 Extent of employment:** Broiler rearing is a home based labour intensive activity. For rearing of 311 broiler chicks on an average 3.6 household members were engaged either partially or fully. Although majority of activities (or workload) related to rearing were carried out by members themselves, other 2.6 household members also helped member-rearers in rearing. Seventy-nine percent of the respondents stated that their husbands also shared their workload with them. The involvement of children and other household members were found to be 59.8% and 18.6% respectively. Due to the active participation of members in rearing total number of involvement in household and other activities was reduced. Number of activities involved in before and after starting rearing were found to be 2.1 and 1.9 respectively (Table 2.1).

**2.2.5 Profitability of broiler rearing:** Broiler rearing is both a capital and a labour intensive activity. The initial investment cost is relatively higher. To start with one needs to construct a rearing house in a suitable place. The estimated cost of rearing includes only the recurrent costs which do not consider depreciation value of rearing houses and any opportunity costs. For rearing 311 broiler chicks in the last lot on an average Tk. 18,950 were spent (Table 2.3). Cost of feed and price of day-old chicks constituted 85% of this amount. The amount paid for the services of BRAC also covered another 3.7% of the total expenses.

Gross income consists of revenue from sale of broiler meat, sale of manure, price of meat consumed in the household and price of meat given to others. Revenue from sale of broiler meat constituted 97% of the total income. The total mean income from rearing of 311 broiler chicks was found Tk. 22,745 in the last lot which covered a period of 6-8 weeks. The net profit after deducting all recurrent costs for the household was Tk. 3,795, i.e. Tk. 11.74 per chick reared. It ranged from Tk. -49.70 to Tk. +101.92 per chick.

**Table 2.3. Cost benefit analysis of broiler rearing in the last lot**

| Cost items              | Value (Tk.) | % to total | Revenue items         | Value (Tk.) | % to total |
|-------------------------|-------------|------------|-----------------------|-------------|------------|
| Price of day old chicks | 3,544       | 35.5       | Sale of broiler meat  | 22,035      | 96.9       |
| Feed purchase           | 9,670       | 49.4       | Sale of manure        | 146         | 0.6        |
| Medicines               | 953         | 5.0        | Household consumption | 503         | 2.2        |
| Service charge for BRAC | 703         | 3.7        | Others                | 60          | 0.3        |
| Others                  | 1,213       | 6.4        | Total revenue         | 22,745      | 100        |
| Total cost              | 18,950      | 100        |                       |             |            |

Table 2.4 presents mean differences in the profitability of rearing between rearers who started rearing before launching BRAC broiler rearing programme in 1997 and those who started since 1997. Results show that although the newly started rearers were relatively

poor households owning less amount of land, their performance was better in terms of number of birds reared and allocation of space per bird. The return on investment which was measured by revenue-capital ratio was also higher for them. The survival rate of birds was also higher for the newly started rearers. Those with pre-programme experiences increased their gross income from Tk. 12,558 to Tk. 17,730, i.e. with programme support their average gross income had increased by Tk. 5,172. Net changes in income for member-rearers with pre-programme experiences increased by Tk. 709. For the newly started rearers it was Tk. 3,237<sup>5</sup> like the average net income in this activity. It is estimated, based on assumption that the involvement of members in broiler rearing would not influence income earned through their involvement in other activities. The occupational status of member-rearers shows that only 4% of the rearers were involved in such activities which required their full time involvement. The rest of them were either full time housewives (61%) or involved in such activities such as poultry and livestock rearing (33%) and fish cultivation (1%). It was likely that their involvement in broiler rearing would not create any barrier for their household and other scheduled works. The average changes in income for all member-rearers irrespective of their length of involvement due to BRAC intervention was found to be Tk. 2,667.

**Table 2.4. Mean differences of major indicators of member-rearers before and after launching the programme**

| Indicators                              | Rearers with pre-BRAC experiences<br>n=23 | New rearers<br>n=79 | Total<br>n=102 |
|-----------------------------------------|-------------------------------------------|---------------------|----------------|
| Age of member-farmers (years)           | 36.7                                      | 35.1                | 35.5           |
| Household land (decimals)               | 157                                       | 90                  | 105            |
| Number of lots completed                | 6.7                                       | 2.7                 | 3.6            |
| Amount of loan borrowed (Tk.)           | 6,696                                     | 5,949               | 6,118          |
| Total accounting cost of rearing (Tk.)  | 18,066                                    | 19,208              | 18,950         |
| Gross revenue (Tk.)                     | 20,933                                    | 23,272              | 22,745         |
| Profit (Tk.)                            | 2,868                                     | 4,064               | 3,795          |
| Profit per bird (Tk.)                   | 7.31                                      | 13.02               | 11.73          |
| Number of birds reared                  | 300                                       | 315                 | 311            |
| Cost per bird (Tk.)                     | 59.56                                     | 61.52               | 61.08          |
| Revenue per bird (Tk.)                  | 66.87                                     | 74.54               | 72.81          |
| Revenue-capital ratio (Tk.)             | 1.13                                      | 1.22                | 1.20           |
| Profit-capital ratio (Tk.)              | 0.13                                      | 0.22                | 0.06           |
| Space per bird (sq. ft)                 | 1.01                                      | 1.08                | 1.06           |
| Survivality rate (%)                    | 83.7                                      | 87.9                | 86.9           |
| Mean income before joining BRAC (Tk.)   | 12,558                                    | -                   | 2,832          |
| Mean income after BRAC (Tk.)            | 17,730                                    | 18,498              | 18,325         |
| Net changes in income due to BRAC (Tk.) | 709                                       | 3,237               | 2,667          |

About the possibility of higher income 98% of the rearers reported that they could get higher income from the last lot. Sixty-four percent of them stated that death of chick was

<sup>5</sup>This net change in income is calculated by using the formula used for the calculation of net changes in income of carp polyculture discussed in section 1.2.4.

the main reason for reduction in profit. Another 18% also reported that diseases affected the price of birds. Lower market price, imperfect knowledge about marketing and malnutrition of birds were also responsible for reducing profit (Table 2.5). Results do not show any major differences between rearers with and without previous experiences.

**2.2.6 Factors contributing to profitability of the programme:** The wide variation in the amount of profit per broiler chick reared was caused by many factors. Results of bivariate and multivariate analyses presented in Tables 2.6 and 2.7 show that mortality was the main significant factor contributing negatively to the profitability. Age of members and their present workload also adversely affected the result. Educational status of members, mainly literacy and their skill on broiler rearing also had some influence on the output. Number of members involved in rearing per bird, variety of the broiler and floor construction materials of the rearing house were also responsible for variation in profitability.

**Table 2.5. Reasons for low income**

| Reasons                                                               | Reason 1                         |                                     |                | Reason 2                        |                                     |               |
|-----------------------------------------------------------------------|----------------------------------|-------------------------------------|----------------|---------------------------------|-------------------------------------|---------------|
|                                                                       | with<br>experi-<br>ences<br>n=22 | without<br>experi-<br>ences<br>n=78 | Total<br>n=100 | with<br>experi-<br>ences<br>n=1 | without<br>experi-<br>ences<br>n=12 | Total<br>n=13 |
| Death of chick                                                        | 63.6                             | 60.3                                | 61             | -                               | 16.7                                | 15.4          |
| Low price due to diseases                                             | 18.2                             | 17.9                                | 18             | -                               | 8.3                                 | 7.7           |
| Death of chick on the way<br>from BRAC office to the<br>rearing place | -                                | 3.8                                 | 3              | -                               | -                                   | -             |
| Low market price                                                      | 4.5                              | 3.8                                 | 4              | 100                             | 25.0                                | 4             |
| Imperfect knowledge<br>about market                                   | -                                | 2.6                                 | 2              | -                               | -                                   | -             |
| Others                                                                | 13.6                             | 11.5                                | 12             | -                               | 50.0                                | 46.2          |

**2.2.7 Mortality:** The main reason for variation in the profit was mortality. Table 2.6 shows the variation in the prevalence of mortality under certain circumstances. Mortality was highest for the houses with highest population density and vice versa. The mortality rate was significantly lower for the houses with cemented floor. For other two types of rearing houses results do not show any big differences.

Big differences in mortality rates were also visible in different varieties. Mortality was highest for Shaver Star Bro (14.6%) and lowest for Arbar Acre (5.1%). Age, education and occupational status of members and their present workload also have some influences on it.

Results of multivariate analysis also support these findings (Table 2.7). Members from the younger age group were likely to have less family responsibility, so that they could have more free time to take care of the birds. Broiler is sensitive to diseases, temperature fluctuation, lighting, hygiene and food. Success of the enterprises depends on the skill and knowledge of the rearer on all the contributing factors and their solution. Those who can spend more time on the process of rearing, have better knowledge about the problems

of rearing and their probable timely solutions can reduce the mortality and, therefore, the risk of loss. Number of members involved in rearing per chick was also found as one of the positive contributing factors. With increase in the members involved mortality also increased. It implies that skill on rearing is a major factor for success. Use of additional manpower with less skill adversely affected the success.

**Table 2.6. Factors contributing to the profitability and mortality of broiler rearing**

| <b>Variables</b>                            | <b>% to total<br/>n=102</b> | <b>Mortality rate</b> | <b>Profit per bird</b> |
|---------------------------------------------|-----------------------------|-----------------------|------------------------|
| <b>Rearing house space per broiler bird</b> |                             | <b>13.1</b>           | <b>11.74</b>           |
| <1 sq. ft                                   | 58.8                        | 14.8                  | 9.88                   |
| 1-1.5 sq. ft.                               | 25.5                        | 11.6                  | 12.34                  |
| >1.5 sq. ft                                 | 15.7                        | 8.8                   | 17.68                  |
| <b>Members started rearing</b>              |                             |                       |                        |
| with the help of BRAC                       | 22.5                        | 12.1                  | 13.0                   |
| without the help of BRAC                    | 77.5                        | 16.2                  | 7.3                    |
| <b>No of present works carried out was</b>  |                             |                       |                        |
| equal to previous                           | 78.4                        | 13.3                  | 10.52                  |
| more than previous                          | 18.6                        | 30.6                  | -15.91                 |
| less than previous                          | 2.9                         | 9.4                   | 21.18                  |
| <b>Educational status of members</b>        |                             |                       |                        |
| Illiterate                                  | 31.4                        | 16.5                  | 3.35                   |
| 1-5 class                                   | 36.3                        | 12.7                  | 14.48                  |
| >5 class                                    | 32.4                        | 10.2                  | 16.78                  |
| <b>Age of members</b>                       |                             |                       |                        |
| <= 25 years                                 | 8.8                         | 5.7                   | 17.32                  |
| 26-35 years                                 | 42.2                        | 9.8                   | 17.26                  |
| >35 years                                   | 49.0                        | 17.2                  | 5.97                   |
| <b>Members' main occupation</b>             |                             |                       |                        |
| Broiler rearing                             | 34.3                        | 10.9                  | 15.15                  |
| Poultry and livestock                       | 60.8                        | 13.8                  | 12.06                  |
| Else                                        | 4.9                         | 18.3                  | -16.20                 |
| <b>Floor materials</b>                      |                             |                       |                        |
| mud                                         | 40.2                        | 13.0                  | 9.02                   |
| cemented                                    | 17.6                        | 9.6                   | 20.0                   |
| <i>muncha</i> (bamboo platformed)           | 42.2                        | 14.6                  | 10.88                  |
| <b>Variety of chick</b>                     |                             |                       |                        |
| Shaver Star Bro                             | 45.1                        | 14.9                  | 11.07                  |
| ISA Veddetete                               | 43.1                        | 12.2                  | 12.85                  |
| Arbar Acre                                  | 5.9                         | 5.1                   | 24.41                  |
| Unknown                                     | 5.9                         | 13.2                  | -4.04                  |

It is important to mention that 32 (31%) of the member-rearers did not borrowed loan from BRAC although they spent more in the last lot previous to the interview. The net income/profit per bird was also higher for this group (Table 2.8). Their landholding status was also higher than those who borrowed loan from BRAC. These results indicate that rearers without BRAC loan were resourceful than others, could bear the total cost from their own resources. It also indicates that the sources of capital spent for rearing is not important.

**Table 2.7. Factors contributing to the profitability and mortality of broiler rearing: results of OLS analysis**

| Independent Variables                                                 | Profitability |                | Mortality   |                |
|-----------------------------------------------------------------------|---------------|----------------|-------------|----------------|
|                                                                       | <i>Beta</i>   | <i>t value</i> | <i>Beta</i> | <i>t value</i> |
| Constant                                                              | 12.88         | 0.91           | 5.59        | 0.52           |
| Space per bird (sq. ft)                                               | 0.80          | 0.30           | -2.82       | -1.41          |
| Death rate                                                            | -0.91         | -6.62          |             |                |
| Age of members                                                        | -0.29         | -1.03          | 0.19        | 0.91           |
| Educational status of members                                         | 0.58          | 0.94           | -0.60       | -1.28          |
| No of activities involved in by members                               | -3.05         | -1.26          | 0.74        | 0.40           |
| No of household members involved in rearing per bird                  | 8.94          | 1.76           | 7.97        | 2.50           |
| Broiler rearing as the main occupation of members (broiler-1, else=0) | 2.0           | 0.30           | -12.38      | -2.55          |
| Floor materials of rearing house (cemented=1, else=0)                 | 5.84          | 1.04           | -1.87       | -0.44          |
| Variety of chicks                                                     |               |                |             |                |
| Star Bro                                                              | 13.29         | 1.36           | 7.79        | 1.05           |
| ISA Veddet                                                            | 18.74         | 2.0            | -6.48       | -0.91          |
| Others                                                                | 16.72         | 1.40           | -6.66       | -0.73          |
| Multiple R                                                            | .66           |                | .45         |                |
| R Square                                                              | .44           |                | .20         |                |
| Adjusted R Square                                                     | .37           |                | .11         |                |
| F statistics                                                          | 6.43          |                | 2.27        |                |

**Table 2.8. Costs and benefits of rearers with and without BRAC loan and their landholding status**

| Indicators                              | Rearers with<br>BRAC loan<br>n=32 | Rearers without BRAC<br>loan<br>n=70 |
|-----------------------------------------|-----------------------------------|--------------------------------------|
| Average household landholding (decimal) | 139                               | 90                                   |
| Cost per bird (Tk.)                     | 61.76                             | 60.76                                |
| Net income/profit per bird (Tk.)        | 13.11                             | 11.10                                |

**2.2.8 Diseases of chicks:** Eighty-one percent of the rearers reported that they faced some problems with some diseases affecting their last lot. Single disease was reported in 84% of the cases. Table 2.9 shows the types of diseases affecting the last lot. Gumboro, cold, coccidiosis and ranikhet were the major diseases. Among others paralysis of birds, CRD, calibasilosis and malnutrition were notable. These results may be taken with caution since they are based on the perception of the member-rearers all of whom may not have had perfect knowledge about different diseases.



**Table 2.9. Types of diseases affecting birds during the last lot**

| Types of diseases    | No of responses |          |
|----------------------|-----------------|----------|
|                      | 1st n=83        | 2nd n=13 |
| Gumboro              | 22 (26.5)       | 1 (7.7)  |
| Cold                 | 21 (25.3)       | 3 (23.1) |
| Coccidiosis (amasha) | 13 (15.7)       | 4 (30.8) |
| Ranikhet             | 12 (14.5)       | 2 (15.4) |
| Paralysis            | 7 (8.4)         | 1 (7.7)  |
| Others               | 8 (9.6)         | 2 (15.4) |

*Figures in parentheses indicate percentages*

**2.2.9 Non-monetary benefits:** In addition to income the rearers received as profit, their involvement in this activity brought some changes in their well-being status and the level of their knowledge. Eighty-one percent of the member-rearers stated that it increased their household income. Seventy-five percent of the rearers gave first priority to increase in income among benefits they gained. Seventy-nine percent of the rearers thought that it would bring security in their future life. Ninety-three percent of them responded that due to their participation they had gained better knowledge about broiler rearing. This involvement helped them have some exposure to outside world. Direct interaction with the market in the process of purchasing day-old chicks and selling of broiler meat also helped them in understanding the market imperfections. It also generated new employment opportunities specially for housewives and contributed significantly to their protein intake (Table 2.10).

**Table 2.10. Benefits gained by the rearers (perception of the rearers)**

| Types of benefits                      | Priority based responses of the participants |      |      |      |      |     | % responded |
|----------------------------------------|----------------------------------------------|------|------|------|------|-----|-------------|
|                                        | 1st                                          | 2nd  | 3rd  | 4th  | 5th  | 6th |             |
| Increase household income              | 74.5                                         | 2.9  | 3.9  | -    | -    | -   | 81.4        |
| Secured future life                    | 2.0                                          | 38.2 | 13.7 | 20.6 | 4.9  | -   | 79.4        |
| Better knowledge about broiler rearing | 11.8                                         | 30.4 | 35.3 | 12.7 | 2.9  | -   | 93.1        |
| Exposure to outside world              | 2.0                                          | 4.9  | 4.9  | 8.8  | 26.5 | 2.0 | 49.0        |
| Direct interaction with market         | 5.9                                          | 18.6 | 30.4 | 32.4 | 6.9  | -   | 94.1        |
| Others                                 | -                                            | 2.9  | 2.9  | 2.0  | 2.0  | 1.0 | 10.8        |

**2.2.10 Use of income:** Seventy-eight percent of the rearers reinvested part of their profit in broiler rearing of which 56% had given first priority to it. Seventeen percent spent their income initially to meet their household expenditure. Money earned through this activity was also used for construction of houses, purchase of land and other assets, to satisfy needs of the rearers themselves and their children. Part of the income went to household in the form of consumption of meat (Table 2.11).



**Table 2.11. Use of income for different purposes on priority basis**

| Purpose of use                                 | Priority based use of income (%) |      |      |      |      |     | % responded |
|------------------------------------------------|----------------------------------|------|------|------|------|-----|-------------|
|                                                | 1st                              | 2nd  | 3rd  | 4th  | 5th  | 6th |             |
| Reinvest in broiler rearing                    | 55.9                             | 7.8  | 8.8  | 2.0  | 2.0  | 2.0 | 78.4        |
| Household consumption expenditure              | 16.7                             | 47.7 | 7.8  | 7.8  | -    | -   | 79          |
| Construction of house                          | 2.0                              | 7.8  | 2.9  | 7.8  | 1.0  | 7.9 | 29.4        |
| Purchase of land                               | 1.0                              | -    | -    | 2.0  | 2.0  | 2.0 | 7.0         |
| Purchase of other assets                       | 1.0                              | 4.9  | 1.0  | 1.0  | 2.0  | 3.0 | 12.9        |
| Satisfy own needs                              | 2.9                              | 10.8 | 26.5 | 14.7 | 6.9  | 2.0 | 63.7        |
| Satisfy children's needs                       | 1.0                              | 1.0  | 3.9  | 5.9  | 17.6 | 5.0 | 34.3        |
| Supply of protein in the household consumption | 3.9                              | 2.9  | 20.6 | 17.6 | 1.0  | 3.0 | 49.0        |
| Others                                         | 6.9                              | 4.9  | 5.9  | 3.9  | 2.0  | 1.0 | 24.5        |

*Note: others include raising of awareness, generation of new employment opportunities, passing of free time and reduce dependence on market regarding household meat consumption*

**2.2.11 Services provided by BRAC and rearers perception:** After final selection of prospective members i.e. those who are willing to be involved in broiler rearing and have a free space for it, BRAC offers them different type of services which are listed in Table A.1. Those are skill training on rearing, refreshers, supply of HYV day-old chicks, feeds and pots to serve the feed, suggestions on balanced feed, supply of vaccine, help in book keeping and marketing of broiler, providing monetary and technical support and providing of curative services in some cases. In addition, BRAC establishes a rearing unit in its AO

premises for demonstration. Results of the responses given by the rearers show that 86.3% of the rearers received BRAC's broiler rearing training and 97% of the respondents received technical assistance. Although 98% of the rearers received day-old chicks, 92.2% of them reported that the birds they received from BRAC did not meet their total demand, so they had to purchase additional chicks from private hatcheries. BRAC helped 85% and 89% of the rearers with supply of feed and vaccines respectively. Although every rearer can get credit for rearing, 69% actually obtained it and the rest managed to by themselves. In addition to the services related to broiler, 83% of the respondents also mentioned they got consciousness raising training. Most respondents, who received any kind of services, reported that those services were useful in the rearing process and gaining knowledge (Table 2.12).

**2.2.12 Cost of BRAC and its effectiveness:** Cost of implementation of the programme consists of member selection, skill training of selected members and the follow-up services. The initial investment cost per rearer for BRAC is Tk. 395 - including the cost of rearer selection (one day salary and other allowance paid to a PA i.e. Tk. 185) and cost of three days' skill training (Tk. 210). The latter includes three days' salary of the PA trainer, cost of food and stationeries for training and rent of venue used for training. A rearer pays Tk. 2 per chick to BRAC which includes transportation cost (Tk. 0.50) and charge for the services provided by BRAC (Tk. 1.50). It implies that from a rearer BRAC received Tk. 451.50 (301X1.5) for its two month (8 weeks) services. During the

production cycle and at the preparation stage for rearing a PA<sup>6</sup> of poultry and livestock programme visits to a rearer's house 6-8 times. For those visits he/she spends maximum two working days during a production cycle (lot). The salary of a PA for two days including transport and other allowance is Tk. 185X2 = Tk. 370. The total cost of follow-up services per member per lot is Tk. 407 which includes two day salary of a PA and 10% of that salary as overhead and other miscellaneous cost. The total cost of BRAC for a member-rearer in each lot would be Tk. 426.75 including Tk. 19.75 as cost of member selection and training for each lot if it is considered that a member-rearer will use their knowledge gained through training for 20 lots (Table 2.13).

**Table 2.12. Types of BRAC provided services received by members and their usefulness**

| Types of services                      | % received            |                     |                | Usefulness of services |
|----------------------------------------|-----------------------|---------------------|----------------|------------------------|
|                                        | Older rearers<br>n=23 | New rearers<br>n=79 | Total<br>n=102 |                        |
| Broiler rearing training               | 87.0                  | 86.1                | 86.3           | 100.0                  |
| Consciousness raising training         | 82.6                  | 83.5                | 83.3           | 98.8                   |
| Technical advice on broiler rearing    | 91.3                  | 98.7                | 97.1           | 100.0                  |
| Supply of day-old chicks               | 91.3                  | 92.4                | 92.2           | 100.0                  |
| Feed supply                            | 91.3                  | 83.5                | 85.3           | 98.9                   |
| Poultry vaccine supply                 | 95.7                  | 87.3                | 89.2           | 98.9                   |
| Facilitating marketing of broiler meat | 87.0                  | 93.7                | 92.2           | 97.9                   |
| Loan                                   | 82.6                  | 64.6                | 68.6           | 91.4                   |

**Table 2.13. Cost benefit analysis of BRAC provided services per member-rearer**

| Types of services        | Total  | Per lot |
|--------------------------|--------|---------|
| Member selection         | 185.00 | 9.25    |
| Training                 | 210    | 10.50   |
| Follow up services       |        | 407.00  |
| Total cost               |        | 426.75  |
| Service charges received |        | 451.50  |
| Net gain/loss for BRAC   |        | +24.75  |

The results show that this programme is very cost effective for BRAC in the sense that it brings additional income of Tk. 24.75 from each rearer in every rearing cycle after deducting all possible costs of its services. Although the involvement of the PA poultry and livestock increased his/her workload, but introduction of broiler rearing programme for BRAC did not involve any extra cost except rearer development since in each RDP

<sup>6</sup>Recently redesignated as Programme Organizer (PO)

area the poultry and livestock programme is already being implemented and no extra staff had to be recruited for the broiler rearing enterprise

### **2.3 Key messages and conclusions**

Although broiler rearing is a relatively new activity its adoption by the landless poor is increasing compared to layer rearing due to the advantages mentioned below:

- the production cycle of broiler rearing is very short covering only 6-8 weeks. Capital (recurrent costs) invested can be recovered after the cycle;
- due to existence of higher demand for broiler there is no problem in its marketing;
- mortality rate is lower compared to other types of poultry rearing;
- Although this is a profitable activity, the latter depends on maintaining of humidity and hygiene, space, variety of chicks, skill and time spent on rearing. Professional and careful rearing of broiler may maximize the profit margin.
- Since the programme is very cost-effective its expansion in other areas linked with urban city is possible.

## **3. Tailoring**

### **3.1 An overview**

Tailoring is a relatively new income generating activity introduced by BRAC which was experimented in two regions in 1997 under its Rural Enterprise Project (REP). After one year of successful experimentation it was introduced in all other RDP areas of BRAC.

REP was established in 1985 to promote the search for increasing the income generation potentials of the rural poor in a systematic manner. The objective of the project is to find, through exploration and field testing, new or improved income generating activities which can be owned, operated and managed by BRAC's landless group members. The enterprises cover both farm and non-farm sectors. Major components of this project include idea generation, feasibility study, project selection, project planning and development, project implementation, monitoring and evaluation.

Tailoring is one of the REP activities that seeks involvement of rural women in a more challenging entrepreneurial activity in the non-farm sector. For tailoring shop those women are selected who are within 20-35 years of age, having knowledge on tailoring, mentally prepared to open a shop near bazaar/roadside, having basic accounting skill, few dependents, hardworking and outspoken, enterprising and free from superstition. Widows have been given high priority for this activity.

From each selected AO ten VO members out of 20 were finally selected for training who are very keen to open tailoring shops near roadside. They were given two days orientation training and were taught about the sewing machine's operating system, cutting of materials and sewing of dress (Tailoring Manual, BRAC, RDP).

## 3.2 Findings

**3.2.1 Household and individual characteristics of member-tailors:** The household and individual characteristics of member-tailors of Gopalganj and Khulna regions presented in Table 3.1 do not show any significant differences between these two areas in terms of members' mean age, marital status, number of children irrespective of age, household size and number of income earner per household. The mean age of member-tailors was 29 years. Eighty-three percent of them were currently married. The average household size was found to be 4.5 of which 1.8 were income earners. A member-tailor had on average 2.1 children of which 1.3 were below 12 years of age. The average household total landholding was found to be 25 decimals. Households from Gopalganj owned more land than those of Khulna region.

**Table 3.1. Mean statistics of tailoring households**

| Indicators                            | Gopalganj<br>n=33 | Khulna<br>n=64 | Total n=97 |
|---------------------------------------|-------------------|----------------|------------|
| Age of member-tailors                 | 30                | 29             | 29         |
| % of married                          | 85                | 81             | 83         |
| Number of children below 12 years     | 1.5               | 1.1            | 1.3        |
| Number of children 12 and above years | 0.85              | 0.84           | 0.85       |
| Total number of children              | 2.3               | 2.0            | 2.1        |
| Household size                        | 4.9               | 4.3            | 4.5        |
| Number of income earner               | 1.9               | 1.8            | 1.8        |
| Total household land size (decimal)   | 34                | 21             | 25         |

**3.2.2 Employment and skill of the member-tailors:** Around 91% of the member-tailors were full-time housewives before being involved in tailoring. Only 6.2% were involved in tailoring before launching BRAC's tailoring programmes. Members of Gopalganj region did not have any previous experiences on tailoring while 9.4% of members from Khulna region did it earlier. All members of Gopalganj and 97% from Khulna stated that tailoring has become their main occupation and they work on it every day. Average length of involvement in tailoring prior to the date of interview were 28 and 17 months respectively for Gopalganj and Khulna region. Hours spent in tailoring were found to be 43 and 46 per week respectively for members of the two regions. All members from Gopalganj and 98% from Khulna reported that they themselves use the sewing machine. Sixty-seven percent of all members bought new machines and used them by themselves (Table 3.2).

**3.2.3 Profitability analysis on tailoring:** As shown in Table 3.3 to run a tailoring shop on an average Tk. 273 per month were spent to pay rent of tailoring shop, electricity charges and to meet other miscellaneous cost. The operational costs of a tailoring shop were Tk. 282 for Gopalganj and Tk. 262 for Khulna regions. A member-tailor in Gopalganj and Khulna regions earned Tk. 546 and Tk. 1,136 respectively. Monthly net income for these two regions were found to be Tk. 264 and Tk. 868 respectively after deducting the total operational costs. The average net monthly income covering both regions was Tk. 653 after deducting Tk. 273 as recurrent cost and Tk. 10 charged by BRAC for services. Since 91% of the member-tailors were full-time housewives before

launching this programme by BRAC, this amount may be assumed to be the net gain due to the adoption of this enterprise by BRAC.

**Table 3.2. Information related to the extent of employment of member-tailors**

| Indicators                                      | Gopalganj<br>n=33 | Khulna<br>n=64 | Total n=97 |
|-------------------------------------------------|-------------------|----------------|------------|
| Tailoring as the main occupation of members (%) | 100               | 96.9           | 97.9       |
| Housewives as the previous occupation           | 97.0              | 87.5           | 90.7       |
| Tailoring as the previous occupation            | -                 | 9.4            | 6.2        |
| Length of tailoring (months)                    | 28                | 17             | 20         |
| Hours in a week involved in tailoring shop      | 43                | 46             | 45         |
| Days in a week the shop was opened              | 6.4               | 6.4            | 6.4        |
| Member-herself as user of the machine (%)       | 100               | 96.9           | 97.9       |
| % of new machine used                           | 63.6              | 68.8           | 67.0       |

**Table. 3.3. Profitability analysis on tailoring by regions**

| Indicators                           | Gopalganj n=33 | Khulna n=64 | Total n=97 |
|--------------------------------------|----------------|-------------|------------|
| Average monthly recurrent cost (Tk.) | 282            | 268         | 273        |
| Average monthly gross income (Tk.)   | 546            | 1,136       | 935        |
| Average daily income (Tk.)           | 21             | 45          | 37         |
| Monthly net profit (Tk.)             | 264            | 868         | 663        |

**3.2.4 Factors affecting the income:** Results of multivariate regression analysis presented in Table 3.4 shows that tailors of Gopalganj region earned Tk. 592 less than that of tailors of Khulna region. The contributing factors in this variation of income were hours of involvement in the activity, amount of loan received, number of dependents per earning member, age of member-tailors, existence of previous experiences on tailoring and membership in the management committee of Village Organizations (VOs) of RDP. Those who spent more time in their tailoring shops and had previous skill received more orders. Members with bigger household size shared household chores with other members and could find more time for this activity. Thus, dependency played a significantly positive role on income. Usually members of the management committee are more vocal, literate and friendly. The higher income of members of management committee indicates that for the success of any enterprise personal quality to attract more clients is also important.

It is important to mention that one of the prerequisite in running a tailoring shop specially in the rural areas of Bangladesh is to have some stock of materials and other accessories in the shop. The member-tailors who were in majority cases came from the bottom half of the population (since the average land size was found to be only 25 decimals) used BRAC loan for that. Although 100% of the member-tailors received loan, the amount varied from Tk. 2,000 to Tk. 8,000. The average amount was Tk. 5,907. Results of



multivariate analysis show that those who borrowed higher amount from BRAC earned more. The positive relationship between loan amount and gross income indicates that the amount they received were not sufficient for all to run the business. It also indicates that they did not have adequate capacity to run it independently.

**Table 3.4. Factors affecting the monthly gross income: results of OLS regression**

| Contributing factors                                           | Beta coefficient | t value |
|----------------------------------------------------------------|------------------|---------|
| Constant                                                       | 154.23           |         |
| Age of member-tailors                                          | 5.61             | 1.18    |
| Tailoring as the previous occupation of member-tailors (dummy) | 138.76           | 1.26    |
| Household dependency                                           | 53.14            | 2.23    |
| Members in the management committee (dummy)                    | 86.03            | 1.53    |
| Hours worked in a week                                         | 6.18             | 2.04    |
| Amount of loan received                                        | 0.07             | 3.26    |
| Area differences (Gopalganj=1, Khulna=0)                       | -592.17          | -10.10  |
| Multiple R                                                     | .79              |         |
| R Square                                                       | .62              |         |
| Adjusted R Square                                              | .60              |         |
| F value                                                        | 21.57            |         |

**3.2.5 Services of BRAC:** The above analysis shows that 94% of member-tailors started their business after receiving a two-day formal orientation and with support from BRAC. For these women BRAC's tailoring programme created direct employment opportunity. All of them received loan from BRAC which was also found as one of the significant contributing factors in the income they received. Other BRAC services provided to the member-tailors include site selection for opening the shop, help in book keeping and profitability analysis and regular follow-up and monitoring (Table A.1).

**3.2.6 Cost of BRAC and its effectiveness:** Costs incurred by BRAC for promoting the tailoring programme include selection of members, orientation training, monitoring and follow up of the work of member-tailors. BRAC's credit PA<sup>7</sup> in the bi-weekly meeting makes an announcement to the VO members about the new initiatives taken by BRAC. Those interested in opening tailoring shops and have some knowledge on tailoring are requested to inform the PA in the next meeting. Since the PA also performs scheduled functions this process of member selection does not require any extra cost for BRAC. For two-day orientation training of a member-tailor BRAC spends Tk. 208 that includes two days salary of a regional programme organizer (RPO) with his night allowance, daily allowance of master trainer, food, stationaries and rent of venue used for training. Every month the RPO makes a two-day visit to each AO and spends 20 minutes per member-tailor for follow up. The Programme Organizer of EIG programme of a AO also spends one working day for 10 member-tailors every month i.e., 48 minutes per member-tailor to monitor their business whether it is running smoothly or not. During their visits the PO-EIG and the RPO give necessary suggestions to make business profitable. It is estimated

<sup>7</sup>Recently re-designated to Programme Organizer (PO)



that BRAC spends Tk. 40 per member-tailor monthly for those follow up services mentioned above which includes salary and other allowance paid to RPO and PO EIG and 10% overhead. The total cost of BRAC for training and follow up services per member-tailor was estimated to be Tk. 40.87 per month considering that the member-tailor would use their knowledge gained through training for about 20 years. From each member tailor BRAC charges Tk. 10 monthly for those services mentioned above which covers only 25% of the total costs incurred by BRAC. In other words, BRAC gives Tk. 30 as subsidy per member per month i.e. Tk. 360 annually. On the other hand, monthly net income of Tk. 653 (or Tk. 7,836 annually) earned by a member in tailoring exceeds the additional cost of BRAC by 21.8 times. Since tailoring is highly correlated with experiences and skill, over time the income of a member-tailor is expected to further increase. The net income received by member-tailors in this activity will permit them to pay the total cost of the services they received from BRAC. That is why the programme may be considered as cost effective both for BRAC and member-tailors (Table 3.5).

**Table 3.5. Cost benefit analysis of BRAC provided services per member-tailor**

| <b>Types of services</b> | <b>Total</b> | <b>Per month</b> |
|--------------------------|--------------|------------------|
| Member selection         | -            | -                |
| Training                 | 208          | 0.87             |
| Follow up services       |              | 40               |
| Total cost               |              | 40.87            |
| Service charges received |              | 10               |
| Net gain/loss of BRAC    |              | 30.87            |

### **3.3 Key messages and conclusions**

This activity is suitable for enterprising women with the quality to work longer hours and harder. The outspoken and friendly type of women performed better than the others. Although in member selection priority is given to female with lower dependency, the results show a different picture. Those with higher dependency earned more which implied that BRAC might make some changes in the selection criteria. Since amount of loan is highly correlated with income, the lowest ceiling of loan amount may be raised to facilitate higher income of the member-tailors.

**Table A.1. Types of services provided by BRAC to its participant households of carp polyculture, broiler rearing and tailoring programmes**

| <b>Carp polyculture</b>                                                                                                                                                                                                                                               | <b>Tailoring</b>                                                                                                          | <b>Broiler rearing</b>                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 1. area wise pond survey                                                                                                                                                                                                                                              | 1. selection of women for training                                                                                        | 1. training on broiler rearing                                                              |
| 2. arrangements on fish cultivation training                                                                                                                                                                                                                          | 2. training of women on the operation system of sewing machine and cutting and stitching of materials, fitness of dresses | 2. refresher/training courses every month                                                   |
| 3. help in pond preparation                                                                                                                                                                                                                                           | 3. help in choosing and selection of places for opening a tailoring shop                                                  | 3. supply of HYV day old chicks                                                             |
| help farmers in food preparation and feeding procedure                                                                                                                                                                                                                | 4. supply of credit                                                                                                       | 4. supply of foods and pots to serve the food, suggestions on the balanced food             |
| calculation of the total number of fingerlings per decimal and give suggestions how many fingerlings the farmer can cultivate in the pond with its certain size and which variety of fishes will be more suitable for that specific pond to increase the productivity | 5. help in book keeping                                                                                                   | 5. supply of vaccines                                                                       |
| regular monitoring of health status of fishes                                                                                                                                                                                                                         | 6. help in profitability analysis                                                                                         | 6. helps in book keeping                                                                    |
| help the farmers in netting in the ponds fortnightly                                                                                                                                                                                                                  | 7. regular monitoring and follow-up                                                                                       | 7. provide credit                                                                           |
| help in profitability analysis                                                                                                                                                                                                                                        |                                                                                                                           | 8. help in marketing of broiler                                                             |
| 4. provide credit                                                                                                                                                                                                                                                     |                                                                                                                           | 9. regular monitoring and follow-up                                                         |
| help in receiving fingerlings, in some cases direct supply of fingerlings                                                                                                                                                                                             |                                                                                                                           | 10. curative service provided by inviting specialists in case of unknown diseases of chicks |
| suggestions in purchasing foods to maintain balanced diet                                                                                                                                                                                                             |                                                                                                                           | 11. arrangements of a broiler rearing unit in the office premises for demonstration         |
| regular monitoring and supervision of ponds                                                                                                                                                                                                                           |                                                                                                                           | 12. other technical support                                                                 |
| 5. suggestions on fish marketing                                                                                                                                                                                                                                      |                                                                                                                           |                                                                                             |

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