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## **Impact of Dairy Farming on Livelihood of Participating Women under Grameen Bank in a Selected Area of Rangpur District in Bangladesh**

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### I

#### INTRODUCTION

The Grameen Bank (GB) is well regarded as a successful model for poverty alleviation through providing credit for small income earning enterprises. It is well known today for its extending micro credit to the most vulnerable groups in the country who are usually considered ineligible to receive loan from the existing lending institutions. The borrowers have already been proved to gain substantially from GB credit which is indeed impressive and greatly contributes towards a viable credit system in Bangladesh (Chowdhury, 1989). It believes that the poor can be enabled to create self-employment and improve their living standard without outside help if they could be provided with adequate credit facilities. Now GB is working in 71,371 villages of Bangladesh and women constitute about 97 per cent of its total borrowers (Grameen Bank, 2004).

The economy of Bangladesh is principally based on agriculture and livestock comprises an important component of this sector. The role of livestock sub-sector is crucial in respect of nutrition, employment and income in the economy of the country. The necessary draught power for various agricultural operations and transport is contributed by the livestock sector. It contributes 7.9 per cent of total gross domestic product (GDP), 3.86 per cent of total foreign exchange earnings, 95 per cent of total draught power and 25 per cent of total employment opportunities of Bangladesh (Azad, 2001). Dairy cows produce milk and meat for human consumption, which are very rich in nutrient contents. It provides cash income and creates employment opportunity for the rural people particularly for small farmers and landless labourers through sale of animals and various animal products. Cow dung is an important source of manure for crop and fuel for domestic use. Dairy is a labour intensive activity. The people with small means rear dairy cows as the major source of their family income and in this sense, dairy farming helps in poverty alleviation. Development of this sub-sector may be considered as an important

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strategy of poverty alleviation which is a major objective of the Government of Bangladesh.

In Bangladesh about 66.32 per cent households are landless, 10.18 per cent of them have no cultivable land and 28.44 per cent households have small homestead but no cultivable land (BBS, 2004). An estimated 25 to 30 per cent of the labour force is not productively employed in Bangladesh (Holcombe, 1995). Women are heavily represented among the poor and landless households. Their opportunities are limited. Rather, 'purdah' (veil) system acts as the major obstacle for rural women to establish their rights in the society (Begum, 1988). Low wages, shortage of capital and a low level of skills and literacy contribute to their low productivity. Besides crop production as main source, dairy farming is important among the supplementary sources of income in Bangladesh. Small scale dairy farming plays a vital role in the rural economy by increasing household income and has a great potential for improving the livelihood of the poor women.

Some studies have dealt with the relationship between livestock production and different aspects of livelihood in home and abroad. Paul (1996) studied the impact of milch cow rearing and beef fattening programmes under microfinance programme of Bangladesh Rural Advancement Committee (BRAC) in Mymensingh Sadar thana of Bangladesh and found that both the programmes brought substantial positive change in the family income of the participating households. Abdulai (1999) investigated the dairy sector to improve rural livelihood in India using tabular as well as input-output analyses and revealed that rural income increased in all categories of households which in turn increased the food and non-food expenditures of the households. Radda (2001) analysed the milk marketing and processing in Ethiopia and mentioned that most of the women dairy farmers got an income above the quoted average figure and this in turn created employment opportunities in rural areas. Bachmann (2004) dealt with the relationship between livelihood and livestock in India and Tanzania where it was found that livestock had a clear potential to contribute to poverty alleviation amongst dairy farming households. Systematic studies regarding the impact of NGOs on the well being of their target groups in terms of employment and income generation, changes in values, attitudes and awareness and other indicators of improved living conditions particularly with respect to GB participants are scanty in Bangladesh. Despite the fact that some studies were conducted by scholars covering some of the aspects of GB activities most of which are of macro type and concentrated on the distribution and repayment of credit.

The present study is an attempt to find out and measure the impact of GB on increase or change in income, employment and social status of its target women members. The findings of this study are expected to help the government, policy makers and independent researchers to set priorities to alternative programmes more for rural development in Bangladesh. The objectives of the paper are: (i) to estimate the cost, return and profitability of dairy rearing by GB women members; (ii) to

assess the impact of dairy rearing on the livelihood of participating women under GB; and (iii) to draw some conclusions based on the findings of the study.

II

METHODOLOGY

To achieve the objectives of the present study the necessary data were collected from six villages, namely, Kutobpur, Sangrampur, Srirampur, Uttar Imadpur, Bara Hazratpur and Chhoto Hazratpur under Mithapukur Upazila of Rangpur district. The basic criterion for selecting the sample was that a respondent must at least possess one dairy cow which she bought by the credit from GB. The selection of the respondents was made randomly from among those who fulfilled this criterion. The 60 sample participating women under GB from six villages were selected randomly taking 10 sample farmers from each village. It was found that all the respondents selected had dairy cows of local breed. Data were collected during the months of May to June, 2004 by using pre-tested questionnaire. Both tabular and statistical techniques were employed to attain the objectives of the study. Tabular technique was followed to illustrate the whole picture of the analysis. The sum, mean, gross return, etc., were simple measures to estimate milk production of dairy cows. In the case of statistical technique, the Cobb-Douglas production function model was used to determine the effects of key variables. To identify the most important variables in the production process of milk, the following specification of the model was made:

$$Y = a X_1^{b_1} X_2^{b_2} X_3^{b_3} X_4^{b_4} X_5^{b_5} X e^{U_i}$$

The Cobb-Douglas production function was transformed into the following logarithmic form so that it could be estimated by the ordinary least squares (OLS) method:

$$\ln Y = \ln a + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + U_i$$

Here,

- Y = value of the average milk yield per cow per lactation period (Taka);
- X<sub>1</sub> = value of paddy straw used per cow per lactation period (Taka);
- X<sub>2</sub> = value of green grass used per cow per lactation period (Taka);
- X<sub>3</sub> = value of concentrate used per cow per lactation period (Taka);
- X<sub>4</sub> = value of labour used per cow per lactation period (Taka);
- X<sub>5</sub> = capital cost incurred per cow per lactation period (Taka);
- ln = natural logarithm;
- a = intercept/constant;
- b<sub>1</sub>-b<sub>5</sub> = production coefficients;
- e = base of natural logarithm; and
- U<sub>i</sub> = error term.

Besides, capital cost, depreciation cost of house and resource use efficiency were calculated as follows:

$$\text{Capital cost} = \frac{(\text{Beginning value} + \text{ending value}) \times \text{interest rate}}{2}$$

$$\text{Depreciation} = \frac{\text{beginning value}}{\text{total life (year)}}$$

Resources were considered to be efficiently used resulting in attaining the maximum profit when the ratio of marginal value product (MVP) to marginal factor cost (MFC) approached one, or MVP and MFC for each input were equal. When the marginal physical product (MPP) was multiplied by the product price, the marginal value product (MVP) was obtained. Marginal factor cost (MFC) was the price of one unit of input. To compare the marginal value product (MVP) with the marginal factor cost (MFC) was the standard way to examine such efficiency. The optimum use of a particular input would be ascertained by the condition of equality of MVP and MFC:

$$\text{i.e., } \frac{\text{MVP}_{xi}}{\text{MFC}_{xi}} = 1$$

The MVP of a particular resource represented the addition to gross returns in value terms resulting from an addition of one unit of that resource while other inputs were held constant. The most reliable, perhaps the most useful estimate of MVP was obtained by taking resources ( $X_i$ ) as well as gross return ( $Y$ ) at their geometric means. Since the five variables of regression model were measured in monetary value, the slope co-efficients of those explanatory variables in the function represented the MVPs, which were calculated by multiplying the production co-efficients of given resources with the ratio of geometric mean (GM) of gross return to the geometric mean (GM) of the given resources,

$$\text{i.e., } \ln Y = \ln a + b_i \ln X_i$$

$$\frac{dy}{dX_i} = b_i \frac{Y}{X_i}$$

$$\text{Therefore, MVP (xi) = } b_i \times \frac{\bar{Y}(\text{GM})}{\bar{X}_i(\text{GM})}$$

where,  $Y$  = mean value (GM) of gross return (Taka),  
 $X_i$  = mean value (GM) of the  $i$ -th variable input (Taka),  
 $i = 1, 2$  and  $3$ .

$\frac{dy}{dX_i}$  = slope of production function as well as MVP of i-th input.

In order to capture the status of resource use efficiency, it was considered that a ratio equal to unity ascertained the optimum use of the factor, a ratio more than unity indicated that the gross return could be increased by using more of that resource and a value of less than unity implied the unprofitable level of resource use which should be decreased to minimise the losses.

### III

#### RESULTS AND DISCUSSION

##### *Profitability of Raising Dairy Cow*

Table 1 shows the cost per dairy cow per lactation period. Generally the lactation period lasts for 8 months in the case of local breed cows. The table shows that feed cost was one of the major cost items of rearing dairy cows. The cost of feed included expenses on paddy straw, green grass, oil cake, bran (rice, wheat and pulse), salt, etc. The feeds purchased were valued according to the average prices actually paid by the dairy cow owners. Home supplied or own feeds were also charged according to the average prices prevailing in the market.

TABLE 1. COST, RETURN AND PROFITABILITY OF RAISING DAIRY COW (PER LACTATION PERIOD)

Particulars (1)	Unit (2)	Amount (3)	Price (Taka/unit) (4)	Total cost (Taka/animal) (5)	Per cent of total (6)
<i>Costs</i>					
Feed cost				5945.85	55.77
Paddy straw	Kg	1124.20	2.00	2248.40	21.09
Green grass	Kg	2584.20	1.00	2584.20	24.24
Oil cake	Kg	21.90	8.00	175.20	1.64
Bran	Kg	76.65	7.00	536.55	5.03
Salt	Kg	40.15	10.00	401.50	3.77
Labour cost	Man hour	594.95	5.00	2974.75	27.90
Housing cost	-	-	-	332.15	3.12
Veterinary cost	-	-	-	208.05	1.95
Capital cost	-	-	-	1200.85	11.26
Total costs				10661.65	100
<i>Returns</i>					
Milk	Litre	650.00	14.00	9100.00	66.67
Cow dung	Kg	2982.05	0.45	1341.92	9.83
Calf	-	-	-	3208.35	23.50
Total return				13650.27	100
Net return				2988.62	-

Feed cost shared 55.77 per cent of the total cost for dairy cows. The total feed cost per lactation per cow was estimated at Taka 5945.85. Among various feed items

green grass, paddy straw, bran, salt and oil cake shared in total feed cost by 24.24, 21.09, 5.03, 3.77 and 1.64 per cent respectively.

Labour is an important input in dairy raising activity and it has implication on income and employment generation. In the order of importance, the labour cost came next to feed cost. It appears from Table 1 that total labour cost per lactation was estimated at Taka 2974.75 having a share of 27.90 per cent in total cost.

Housing cost was another cost item in raising dairy cows. Because of poor housing facilities, housing cost in the study area was very low. The cost of housing was calculated by taking into account the depreciation cost, repairing cost and interest on the average value of housing shed. Considering depreciation the housing cost worked out to about 3.12 per cent per cow per lactation (Table 1).

Veterinary cost was calculated by taking into account the actual cost incurred by the farmers. Doctor's fee and medicines constitutes the two major components of the total veterinary cost. Table 1 shows that veterinary cost comprised a negligible amount among the GB members. The reason was that most of the members did not take proper veterinary care for various reasons. The total veterinary cost per lactation per cow amounted to Taka 208.05 comprising 1.95 per cent of the total cost.

Capital cost was measured as the interest on the average value of dairy cows. It was assumed that the dairy cow owners had purchased the cow just before calving and sold it after one year. The rate of interest was found to be 15 per cent per annum. The average capital cost of per dairy cow per lactation was Taka 1200.85 (Table 1).

The return from dairy cows included returns from milk sold and consumed, cow dung and calf. Milk production is a complex process. It depends on feeding, breeding, breed category and management practices and lastly environment. The return from milk was calculated on the basis of the average quantity of milk yield per cow and average price received per litre of milk. Cow dung is a useful waste because it is used as fuel and fertiliser. Return from cow dung was found out by taking average price at which cow dung was sold in the study area. The average prices of cow dung and milk sold in the study area were found to be Taka 14.00 per litre and 0.45 per kg respectively. The return from milk per lactation was Taka 9100.00 per dairy cow which was 66.67 per cent of total return (Table 1).

The average return from the cow dung per dairy cow per lactation was Taka 1341.92 comprising 9.83 per cent of the total returns (Table 1). Moreover, return from calves was estimated at Taka 3208.35 having a share in total return of 23.50 per cent. Total return per lactation stood at Taka 13650.27. Net return was calculated by deducting the total cost from the total return. Thus the net return per lactation period was estimated at Taka 2988.62 per dairy cow.

#### *Productivity in Milk Production*

This section makes an effort to accomplish a functional analysis of dairy milk production. The parameter estimates of the production function for dairy milk

production are presented in Table 2. It is evident from the table that all the coefficients have positive signs which indicates that all the explanatory variables contributed positively in the dairy milk production. Among them coefficients of paddy straw, green grass and concentrate are significant. Moreover, the coefficients of green grass and concentrate are highly significant at 1 per cent level while the coefficient of paddy straw is significant at 5 per cent level. It implies that other factors remaining constant, a 1 per cent increase in paddy straw, green grass and concentrate would result in an increase of milk yield by 0.179, 0.214 and 0.330 per cent respectively.

TABLE 2. ESTIMATED VALUES OF COEFFICIENTS AND RELATED STATISTICS OF COBB-DOUGLAS PRODUCTION FUNCTION

Explanatory variables (1)	Values (2)
Intercept	2.578
Paddy straw (X <sub>1</sub> )	0.179** (0.068)
Green grass (X <sub>2</sub> )	0.214* (0.075)
Concentrate (X <sub>3</sub> )	0.330* (0.076)
Labour (X <sub>4</sub> )	0.0628 (0.069)
Capital (X <sub>5</sub> )	0.021 (0.025)
R <sup>2</sup> (adjusted)	0.56
d.f	5,54
F value	15.98*
Returns to scale (Σ b <sub>i</sub> )	0.806

\* and \*\* Significant at 1 and 5 per cent level respectively.  
 Figures in parentheses indicate standard errors.

The co-efficient of multiple determination, R<sup>2</sup> was 0.56 which indicates that about 56 per cent of the variations in milk yields were explained by the independent variables included in the model. The F-value of the equation was highly significant at 1 per cent level implying that all the variations in milk yield depended mainly upon the explanatory variables included in the model.

The sum total of all the production co-efficients (production elasticity) of the equation for dairy cows was 0.806. This indicates that the production function exhibited decreasing returns to scale for dairy cows which were of local breed.

*Resource Use Efficiency*

The estimated marginal value products (MVPs) of different inputs are presented in Table 3. The table shows that the ratios of MVP and MFC for green grass (X<sub>2</sub>) and concentrate (X<sub>3</sub>) were greater than unity. It indicates that more profit may be obtained by increasing the use of these two resources. In the case of paddy straw (X<sub>1</sub>), labour (X<sub>4</sub>) and capital (X<sub>5</sub>) this ratio was found to be positive but less than unity which



implies that these resources were used at more than optimum level and hence a downward adjustment was essential to bring it closer to unity. As a concluding observation it may be suggested that there is ample scope to attain full efficiency for local breed dairy raising by reallocating the resources of the enterprise in the study area.

TABLE 3. MARGINAL VALUE PRODUCTS (MVP) OF DIFFERENT RESOURCES OF COBB-DOUGLAS PRODUCTION FUNCTION

Variables (1)	Geometric mean (2)	Coefficient (3)	MVP (Tk) (4)	MFC (Tk) (5)	MVP/MFC (6)
Gross return (Y)	47.037	-	-	-	-
Paddy straw (X <sub>1</sub> )	6.037	0.179	1.395	2.00	0.697
Green grass (X <sub>2</sub> )	6.961	0.214	1.446	1.00	1.446
Concentrate (X <sub>3</sub> )	1.901	0.330	8.165	7.50	1.088
Labour (X <sub>4</sub> )	7.883	0.062	0.370	5.00	0.074
Capital (X <sub>5</sub> )	3.28	0.021	0.301	3.29	0.092

MVP = marginal value product = MPP × product price.

MFC = marginal factor cost = Input price.

#### *Impact on Socio-Economic Condition of the Respondent's Family*

It is observed from Table 4 that the respondent women were able to increase their annual income irrespective of income generating activities. Agricultural income came from sale of all the crops, vegetables and fruits while non-agricultural income came from wage labour, rickshaw pulling, petty business and tailoring. Moreover, the GB members began earning income from business of dairy products including milk, cow dung, etc. which was not conspicuous before their joining in GB.

Increase in income was measured in absolute terms at the terminal year (2003) prices. Table 4 shows that increase in income from dairy sector was the highest. Increased income from agricultural activities was the second highest. In general the average per family total income increased by 87.51 per cent.

For being involved with GB, any person whose family owns less than 0.5 acre of cultivable land, is eligible to take loans from the GB for any income generating activity of their choice (Gibbons, 1994). Therefore, the families participating in the GB were landless and very poor people.

Table 4 indicates that the households gained remarkable increase in rented-in land (113.33 per cent) after being a member of GB with a dairy cow. Before coming under GB, they did not have any ponds. At present they on an average possessed 1 decimal pond area per family. Own cultivated area increased by 38.89 per cent. The increase in mortgaged in and rented in lands of member families was quite encouraging. Therefore, land under operation (own land + rented in land + mortgaged in land) increased by 100 per cent.

All the livestock and poultry resources were reported to have increased after becoming members of the GB. The highest number of increase was observed in the case of dairy cow, bull and heifer. Because before coming to GB the borrowers had

no dairy cow, bull and heifer. The increasing trend was also observed in the case of goat, duck and poultry with a respective percentage of 106.67, 56.44 and 27.65 per cent.

TABLE 4. IMPACT ON INCOME AND OTHER SOCIO-ECONOMIC CONDITIONS OF RESPONDENT'S FAMILY

Heads (1)	After (2)	Before (3)	Change (4)	Heads (1)	After (2)	Before (3)	Change (4)
<i>1. Annual income (Taka)</i>				<i>4. Asset position (number)</i>			
Agriculture	16106.67	10112.78	5993.89 (59.27)	Dwelling house	1.42	0.95	0.47 (49.47)
Non- agriculture Business	8231.45 7950.34	7106.51 -	1124.94 7950.34 (* (*)	Bed	2.83	1.75	1.08 (61.71)
Total	32288.46	17219.29	15069.17 (87.51)	Tube-well	0.87	0.33	0.54 (163.64)
<i>2. Land ownership (decimal)</i>				Latrine	0.93	0.50	0.40 (86.00)
Homestead	7	6	1 (16.67)	Radio	0.78	0.23	0.55 (239.13)
Pond	1	-	1 (* (*)	Watch	0.67	0.30	0.37 (123.33)
Own cultivable land	25	18	7 (38.89)	Bi-cycle	0.58	0.25	0.33 (132.00)
Rented in	32	15	17 (113.33)	<i>5. Annual expenditure (Taka)</i>			
Mortgaged in	15	3	12 (400)	Rice	10513.83	7966.67	2547.16 (31.97)
Land under operation	72	36	36 (100.00)	Flour	328.12	203.35	124.77 (61.35)
<i>3. Livestock and poultry (number)</i>				Meat/fish	1303.33	793.28	510.05 (64.29)
Dairy cow	1	-	1 (* (*)	Vegetables	2931.67	2103.33	828.34 (39.38)
Bull	0.58	-	0.58 (* (*)	Spices	1078.79	811.52	267.27 (32.93)
Heifer	0.42	-	0.42 (* (*)	Pulses	706.33	466.64	239.69 (51.36)
Goat	0.62	0.30	0.32 (106.67)	Milk	911.43	90.16	821.27 (910.90)
Duck	1.58	1.01	0.57 (56.44)	Total food	17773.50	12434.95	5338.66 (42.13)
Hen	5.17	4.05	1.12 (27.65)	Clothes	2003.33	1323.21	680.12 (51.39)
				Social purpose	1201.67	753.43	448.24 (59.49)
				Agricultural purpose	7542.45	4987.21	2555.24 (51.23)
				Total	28520.95	19498.13	9022.82 (46.27)

Figures in parentheses indicate percentages.

\*mathematically infinity implying a very large increase.

Assets are capital items which contribute to the flow of income for the households. Seven necessary assets were considered to be possessed by all or some of

the households. All assets reported to have increased after coming of the households under GB. The highest increase was observed in the case of radio (231 per cent) followed by tubewell (163 per cent), bi-cycle (132 per cent), watch (123 per cent), latrine (86 per cent), bed (62 per cent) and dwellings (49 per cent) respectively (Table 4).

Three indicators namely food, clothing and social activities related with expenditure pattern were used to highlight the change of socio-economic status of the families. It is observed from Table 4 that after involvement with GB overall food consumption per family increased by 42.93 per cent. It is also observed that because of member participation and newly generated income from dairy raising the respondents were able to increase their expenditure on clothing which was 51.38 per cent. It is also evident that the overall expenditure in social activities increased by 59.49 per cent and agricultural expenditure increased by 51.23 per cent.

#### *Impact on the Socio-Economic Status of Respondent Women*

The important influences on women's attitudes and behaviour were the group and centre meetings and training sessions which are emphasised by the GB credit programmes. So, women's involvement in different social development activities increased considerably after their participation with GB groups (Table 5).

TABLE 5. AVERAGE CHANGE IN RATE OF PARTICIPATION FOR SELF-DEVELOPMENT ACTIVITIES

Heads (1)	No. of Respondents (yes)		
	After (yes) (2)	Before (yes) (3)	Change (per cent) (4)
<i>1. Participation in self development activities</i>			
Visit Rangpur Town	0.75	0.33	0.42 (127.27)
Attend meeting	0.95	-	0.95 (*)
Training	0.83	-	0.83 (*)
Visit Union Council	0.50	0.16	0.34 (212.50)
<i>2. Change in attitude and values</i>			
Do you maintain 'purdah'?	0.5	1.00	-0.50 (-50.00)
Do you prefer job for women?	1.00	0.40	0.60 (150.00)
Do you attend the meetings regularly?	1.00	-	(*)
Do you go to the GB?	1.00	-	(*)
Do you go to saving <i>samiti</i> ?	1.00	-	(*)
Do you prefer small family?	1.00	0.33	0.67 (203.03)

Figures in parentheses indicate percentages.

\*mathematically infinity implying a very large increase.

After involvement with GB, the rate of increase in attending meetings and undertaking training recorded a very high increase. Currently, women paid frequent visits to town for shopping, health care and relaxation. They also paid visit to union council. Visits of union council and Rangpur town increased by 212.50 and 127.27 per cent respectively.

Women's persuasion and attitude on six different aspects like 'purdah', job, meeting attendance, attendance in GB and savings *samiti* (association) and preference for small family were investigated in the context of GB targeted households. Table 5 indicates that on an average 0.50 women per family maintained 'purdah' currently which had been maintained by 1.00 women earlier, that means, number of women maintaining 'purdah' was reduced by 50.00 per cent. Currently, 1 women from each household believed that employment of women outside home brings welfare to a family which was believed by 0.40 women earlier. Women did not attend GB meeting or savings *samiti* to save money on their own initiative before coming under GB. At present, it became compulsory for them to attend GB meetings or saving *samiti* meetings and the participation rate became extremely high. However, the number of women maintaining small family increased by 203.03 per cent. In short, GB women members are better placed in respect of social awareness, freedom of attitude, persuasion etc. compared to their previous situation.

Women have traditionally been subjected to the will of men and confined to the household. They have had little expectations of being able to make decisions that can alter their lives. Table 6 depicts whether there occurred change in the decision making status of women after their participation in the GB activities. The table also indicates the involvement of men, women and both men and women in the decision making for different activities.

TABLE 6. AVERAGE CHANGE IN DECISION-MAKING STATUS OF THE RESPONDENT WOMEN

Participation (1)	Women alone (No.)			Men alone (No.)			Both (No.)		
	After (2)	Before (3)	Change (per cent) (4)	After (5)	Before (6)	Change (per cent) (7)	After (8)	Before (9)	Change (per cent) (10)
Asset transfer	-	-	-	0.75	1.00	-25.00	1.00	0.33	203.03
Child care	0.83	1.00	-17.00	-	-	-	0.58	0.17	241.18
Education of sons and daughter	0.33	0.08	312.50	0.42	0.75	-44.00	0.85	0.37	129.73
Marriage of sons and daughter	-	-	-	0.42	1.00	-58.00	1.00	0.38	163.16
Building and repairing house	0.45	0.17	164.71	0.33	0.77	-57.14	0.87	0.40	117.50
Family expenses	0.42	0.17	147.06	0.58	0.83	-30.12	0.92	0.50	84.00
Family planning	-	-	-	0.17	0.33	-48.48	1.00	0.83	20.48
Enterprise selection	0.25	0.03	733.33	0.50	0.83	-39.76	0.75	0.33	127.27
Rearing livestock and poultry	0.58	0.25	132.00	0.33	0.66	-50.00	0.83	0.50	66.00
Visit to social function	0.58	0.20	190.00	0.60	0.85	-29.41	0.88	0.47	87.23
Borrowing	0.58	0.33	75.75	0.58	0.90	-35.55	1.00	0.57	75.44

\*Mathematically infinity implying a very large increase.

Table 6 shows that the dominant status of men alone to take decision on various aspects reduced drastically. Most spectacularly the joint decision-making, i.e., decision taken by husband and wife together has increased in all the aspects. Increased joint decision-making was found to be desirable for the welfare of a family. Thus increased share in self-employment and income empowered the women and paved the way for their securing a respectable position in decision-making. This is a clear sign of the improvement in the decision-making status of women. This situation is congenial to sustainable socio-economic development.

## IV

## CONCLUSION AND POLICY SUGGESTIONS

It may be argued that the findings of the present study are consistent with the notion that a holistic approach of socio-economic development resulting from the participation of households in GB led to increased income, level of employment, socio-economic status and decision making activities. Thus GB is helping the rural poor women to lift themselves above the poverty line. In fact, the GB has made a positive contribution to poverty alleviation in the study area. It was observed from this study that the households have successfully gained access to credit and have ensured productive utilisation of loans. It helped in increasing the standard of living of the participants. GB credit programme could well reach the target groups and women participation in decision-making of family affairs was taken into account by their male counterpart after their joining the GB group.

As dairy farming contributes successfully to the improvement of livelihood of rural women Government should support this sub-sector with adequate supply of feed at subsidised price. Moreover, the government should take effective steps so that grazing land should not decrease and khas land (government owned fallow land) should be earmarked for growing fodder or grass. Besides, an effective marketing channel should be developed to ensure fair price of milk for the dairy cow rearing women in the study area.

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