

Training as a Tool for Livestock Technology Transfer and Impact on Food Security and Nutrition Intake of Rural Poor Farmers

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Abstract

This study examined the impact of training on transfer of livestock technology and increase food security of the rural poor in Bangladesh. Stratified random sampling was used to select the sample size. Out of 13, 3 districts such as Habiganj, Brahmanbaria and Kishoreganj were considered and finally, six income generating activities (IGAs) - poultry layer, poultry broiler, duck, goat, cow rearing and cattle fattening were selected. A total of 632 households were interviewed during April to September 2006. The training exposure of the beneficiaries on IGAs has effect on productive and reproductive performances of livestock and poultry. The costs and returns of the project beneficiaries were found higher in each of the IGA than the non training beneficiaries. The earning from the poultry broiler, cow rearing and even duck rearing were found the highest gross margin than the other IGAs. The net return as well as return over per BDT investment was also found the same trend. The average income from different IGAs of livestock was 56.04 per cent and 68.20 per cent for the farmers having training and no training respectively. The additional income from different IGAs, the solvency of the beneficiaries has been increased to a greater extent which reduces the duration as well as severity of food crisis and increased the quantity and quality of food intake by the beneficiaries and improved their livelihood.

Keywords: *Training, transfer of technology, IGAs, impact and food security*

Introduction

The challenges of the twenty-first century, among others are to alleviate poverty in Bangladesh. The agriculture sector consisting of crops, livestock, fisheries and forestry have an indispensable role to play in meeting the challenges (Islam, 1998). Livestock being an integral component of the agricultural farming system of Bangladesh and livestock producers may gain through increased income and employment through access to cheaper livestock products (Jabber, 2003).

Evidence from field studies in developing countries indicates that rural poor and landless households typically derive a larger share of their cash income from livestock than do well-off farmers (Delgado *et al.*, 1999).

Participatory Livestock Development Project (PLDP) has been launched since July 1998 to implement the poultry model to improve the status of those women, reduce poverty and

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increased rural employment Raha (2003) observed that most of the components of poultry production chain under PLDP were profitable. The return to egg collector, poultry worker, and feed seller was positive. Therefore, there are many opportunities to increase poultry production by the rural women. Thus, he suggested a need based comprehensive training should be imparted to the concerned project beneficiaries. Recently government of Bangladesh has launched a goat project as a means of poverty eradication through the technical assistance from DLS. This would be a viable project for poverty reduction in rural areas.

PKSF thus launched a MFTS project financed by IFAD on improving livelihood of the smallholders through transfer of livestock technologies. The goal of the project is to improve livelihoods and food security of moderate and hard-core poor households and the empowerment of women through training on adoption of livestock technologies for sustainable income generating activities with its some partner organization since 2003/04 in 13 southwest and northeastern part of the country covering 97 Upazilas (PKSF, 2003). The present study is an effort to examine the impact of training as a tool for transfer of livestock technologies and improvement on food security of the poor farmers in Bangladesh.

Methodology

A field reconnaissance survey was conducted before sample selection and a population list of beneficiaries with training and credit holders were prepared and discussed the process of MFTS activities. Then stratified

random sampling was applied for conducting socioeconomic survey. A total of 632 farm households (Table 1) were selected taking 210 from each of the 3 districts namely, Habiganj, Brahmanbaria and Kishoreganj.

Table 1. Distribution of sample beneficiaries under MFTS project in the study

IGAs	Training status	Respondents			
		B. Baria	Habiganj	Kishoreganj	Total
Layer farming	With	29	30	32	91
	Without	11	15	12	38
Broiler farming	With	8	0	8	16
	Without	9	2	13	24
Duck rearing	With	6	0	30	36
	Without	14	15	16	45
Goat rearing	With	29	30	29	88
	Without	14	14	18	46
Cow rearing	With	30	16	30	76
	Without	10	7	15	32
Cattle fattening	With	30	30	30	90
	Without	20	15	15	50
Total	With	132	106	159	397
	Without	78	68	89	235
Grand Total		210	174	248	632

There are 9 POs are working under MFTS projects covering 7 Thanas from Habiganj, 7 Thanas from Brahmanbari and 10 Thanas from Kishoreganj. Out of 9 technologies, 6 technologies such as Poultry layer rearing, Poultry broiler rearing, Duck rearing, Goat rearing, Dairy raising and Beef fattening was chosen (PKSF, 2003). A total of 632 with and without training households were surveyed during the month of April to September 2006.

For collection of data an interview schedule was developed in considering the objectives of the study. The interview schedule was pre-tested and accordingly modified before final collection of data. During data collection, the survey team explained the objectives of the study to the respondents. To ensure the

quality of information the interview schedule was checked to examine that information to each of the items had been correctly recorded. If there were any items overlooked and misunderstood or found contradictory, these were corrected through re-interviewing on the spot. All the collected data were processed and analyzed in accordance with the objectives of the study. Consistency checks and keystroke errors were also detected and corrected accordingly before data analysis. The analysis was done using descriptive statistics like percentage, frequency distribution, mean, and rank where appropriate. In addition, 18 focus group discussions were conducted covering each of the IGAs in each district. Thus, a total 180 beneficiaries were consulted in collecting qualitative information for the study.

Findings and Discussion

Economic benefit derived from MFTS project

The main purpose of this section is to investigate the productive and reproductive performances, estimate the costs, return and profitability of different livestock technology under MFTS project in the study area. The cost items included both the fixed and variable costs. The fixed costs consists of purchasing animal/bird, cost of housing and cost of machineries while the variable costs included the labor cost, feed and grass cost, veterinary cost and cost of transports. The details are discussed in the following section.

It was found that there was a significant increase in the period of laying eggs of chicken (120%) while in case of laying ducks it increased by 91.7% after training of the beneficiaries (Table 2). For goats, age at first calving reduced by 2 months from 20 months

to 18 months. In dairy cows, the calving interval reduced by 13.3% while the lactation period increased by 12.5%. The starting age of the cattle fattening is reduced 6 months from 30 months to 24 months and duration of rearing was 5 months instead of 6 months. The average price of each fattening cattle was Taka 9,500 while it was increased to Taka 15,800 means increased by 66.3%. It is evident that the number of eggs per 100 layers per day was 60 and increased to 90. The increase of the period of laying as well as the number of eggs per 100 layers per year has increased from 6000 to 19800 (Table 2). The similar patterns were also found in the case of duck rearing farms (Table 2). There was hardly any changes were found in the case broiler farming. The study clearly indicated the sharp increased (63.6%) for milk production from cows and the selling prices of goat increased (38.5%) due to

improvement of the goat health may be due to training exposure of the respondents. It seems that training might have improved the knowledge of the farmers on feeding,

management and health care of livestock and poultry which ultimately effect on productivity and reproductively performance.

Table 2. Physical output of different IGAs under MFTSP

IGAs	Output	Quantity		% change
		Before	After	
Layer farming	No. of eggs/100 birds/day	60	90	+30.0
	No. of eggs/100 birds/year	6,000	19,800	+230.0
Broiler farming	kg/bird/batch	1.40	1.50	+7.1
Duck farming	No. of eggs/100 birds/day	60	70	+16.7
	No. of eggs/100 birds/year	7,200	16,100	+123.6
Goat farming	Taka/goat in selling time	1,300	1,800	+38.5
Dairy cow	litre/cow/day	5.50	8.00	+45.5
	litre/cow/year	1,320	2,160	+63.6
Cattle fattening	Taka /cattle in selling time	9,500	15,800	+66.3

The total costs of rearing of different livestock species were estimated and found that feed was one of the major cost items of maintaining the animals/birds followed by purchase cost of birds or capital cost of the farm and labor cost. Feed cost included expenses on straw, green grass, wheat bran, pulse bran, oil cake, salt, molasses, vitamin premix etc. For purchased feeds, pricing was not difficult and actual price paid was used but for home supplied feeds, pricing was difficult. Prices in this case, was taken as the same as that of the purchased feeds. Ultimately the prices paid by the sample farmers for the item were averaged and thus a single price was worked out which was the average price for that item. Labor cost was another important cost item for raising local breed and cross-bred dairy cows. Labor was broadly classified into two categories: (i) family labor and (ii) hired labor. The labor supplied by the owner himself and other members of his family, such as, his wife,

brothers, sisters, sons, daughters, etc. was considered as family labor; while hired labor consisted of casual labor and annual labor for whose cash payments were made. The unpaid family laborers were priced at the existing market wage rate. The costs of veterinary charges were calculated by taking into account the actual cost incurred by the farmers. Doctor's fees and medicines were the two major components of the total veterinary charges.

The average housing cost for the poultry birds were higher than the animals due to their total costs were small. Costs of capital included in the present study were the interest on the average value of animals/birds and the interest on the operating capital. It was assumed that the dairy cow owners had purchased the cow just before calving and sold it after the end of life cycle.

To determine the returns, it was necessary to calculate all the return items such as return from milk, cow dung and inventory change of animals. All these items were considered in computing the total return from different animals/birds. It shows that the gross return per year were higher for broiler farming followed by cow rearing and duck farming and all the cases the gross return were higher with training households than the non-training beneficiaries (Table 3). The gross margin, net return over total cost and return over per Taka investment was determined.

The gross margin was calculated by gross return minus variable cost while net return was calculated gross return minus total cost. It shows that gross margin and net return were the highest for the duck rearing followed by cow rearing and poultry broiler with training group. The return over per Taka investment were found higher in most cases with training group though in the case of poultry layer and goat rearing without training were found lower than the training group.

Table 3. Profitability of different IGAs under MFTS project (Taka/year/farm)

IGAs	Training status	Total Return	Total cost	Variable cost	Net return	Gross margin	Return over per BDT investment (Taka)
Layer farming	With	8,640	6,652	3,555	1,988	5,085	1.30
	Without	5,600	3,241	1,522	2,359	4,078	1.73
Broiler farming	With	50,592	41,027	22,242	9,565	28,350	1.23
	Without	30,050	33,990	16,601	6,060	13,449	1.25
Duck rearing	With	47,875	25,447	10,409	22,428	37,466	1.88
	Without	13,375	11,443	6,979	1,932	6,396	1.17
Goat rearing	With	8,400	7,367	3,895	1,033	4,505	1.14
	Without	7,600	5,525	2,890	2,075	4,710	1.38
Cow rearing	With	44,000	23,990	10,040	20,010	33,960	1.80
	Without	26,850	18,107	5,396	8,743	21,454	1.50
Cattle fattening	With	31,000	20,936	9,153	10,064	21,847	1.50
	Without	21,080	16,474	6,576	4,606	14,504	1.30

The changes of income from livestock are shown in Table 4. It was found that the farmers having training exposure on various aspects of livestock technology earned more money (86.86%) from poultry layer, followed by (64.22%) from duck rearing, 63.79% from goat rearing, 51.83% cattle fattening, 26.32% poultry broiler and 15.06% from cow rearing. The average income from different IGAs of livestock was 56.04%. The farmers having no training

exposure earned more income (56.12%) from duck rearing, 53.92% from cattle fattening, 38.56% by poultry broiler, 35.38% from cow rearing, 18.34% by goat rearing and 2.97% from poultry layer. The average income earned by the farmers having no training was 68.20%. The findings revealed that the farmers received training on different IGAs have increased their family income to a greater extent than the farmers have not received training from MFTS.

Table 4. Changes of income from livestock and poultry of the project beneficiaries

IGA Group	Training Status	Taka per year		%
		Before joining MFTSP	After joining MFTSP	
Poultry Layer	With	12,817	23,943	86.80
	Without	3,404	3,505	2.97
Poultry Broiler	With	65,312	82,500	26.32
	Without	43,500	60,275	38.56
Duck Rearing	With	77,444	127,176	64.22
	Without	24,341	38,002	56.12
Goat Rearing	With	5,977	9,790	63.79
	Without	7,693	9,104	18.34
Cow Rearing	With	25,663	29,528	15.06
	Without	18,466	25,000	35.38
Cattle Fattening	With	19,038	28,905	51.83
	Without	14,326	22,051	53.92
All average	With	34,375	53,640	56.04
	Without	18,622	31,323	68.20
Grand total		26,498	42,482	60.32

Food security

The information regarding household food security status of the MFTS project beneficiaries is presented in Table 5. Before intervention of MFTS activities food crisis was existed for three months in a year while after intervention it has reduced to 1.5 months. The MFTS beneficiaries opined that due to MFTS intervention employment opportunity has been created through participation in different IGAs and economic solvency has been obtained, which reduces the duration as well as extent of severity of

food crisis. The information also revealed that during normal period 95% of the members of the community can enjoy 3 meals per day against 80% before project situation. The project activities have increased food security of 15% of the community people. Similarly, a similar trend of food security of the community people was also observed (20% change) during crisis period. This means food crisis was reduced to a greater extent during both the normal and crisis period.

Table 5. Household food security status of the MFTSP beneficiaries

Parameters	Respondent (N =150)		% change
	Before	After	
No. of months in food crisis	3.0	1.5	-50.0
Can have 3 meal/day easily in normal period	80.0	95.0	+15.0
Can have 3 meal/day easily in crisis period	60.0	80.0	+20.0

The quantity and quality of food intake by the MFTS project beneficiaries has also been examined and shown in Table 6. It was found that majority (90%) of the project beneficiaries has increased the quantity of

food intake with varying extent while only 10% opined for no changes. Similarly, 4 out of 5 respondents opined for increased the quality of food intake by the beneficiaries after intervention of MFTS activities. This

means both the quantity and quality of food intake by beneficiaries has been increased to a varying extent as a result of MFTS intervention. As regards overall improvement of livelihood status of the MFTS beneficiaries three- fourths (80%) of the respondents considered the present status of livelihoods as increased by varying extent while rest (20%) of the beneficiaries

considered no changes occurred in life style of the project beneficiaries. This means due to additional income from different IGAs the level of solvency of the beneficiaries has been increased to a greater extent which reduces the duration as well as severity of food crisis and increased the quantity and quality of food intake by the beneficiaries and improved livelihood.

Table 6. Level of quantity and quality of food intake by the MFTSP beneficiaries and improvement of livelihood

Parameters	Respondent (N=150)		Level of increased (%)			
	Number	Per cent	Low	Medium	High	No change
Increased quantity of food intake	135	90	15	60	15	10
Increased quality of food intake	120	80	20	50	10	20
Improved livelihood	120	80	25	45	10	20

Conclusions

- The overall household income of the beneficiaries has been increased to 25.61 percent. The beneficiaries having training exposure has earned higher income than the beneficiaries of without training. Among the sub-sectors, livestock provides higher income than other sub-sectors.
- The overall food intake in terms of different food stuffs has been increased along with family expanses in various areas of livelihood. The program seems

to be effective in terms of food security point of view.

- In most cases livestock related IGAs are financially profitable for both with and without training exposure of the respondents. Among the IGAs, duck and cow rearing earned the highest profit though investments in these IGAs are high. Therefore, the credit ceiling should be increased by the credit providing agencies for the duck, cow and cattle fattening program.

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