

Study on the Comparative Economic Analysis of Fodder Production with Rice at Milk Pocket Areas of Bangladesh

Mohammed Sirajul IslamBangladesh Livestock Research
Institute, Savar, Dhaka, Bangladesh
Email: siraj_blri@yahoo.com**Dr. Nathu Ram Sarker**Bangladesh Livestock Research
Institute, Savar, Dhaka, Bangladesh
Email: sarkernr62yahoo.com**Md. Obayed Al Rahman**Poultry Production Research Division
Bangladesh Livestock Research,
Institute, Savar, Dhaka, Bangladesh
Email: hiraobayed@yahoo.com**Dr. Md. Ahsan Habib**Fodder Research and Development project.
Bangladesh Livestock Research.
Institute, Savar, Dhaka, Bangladesh
Email: ahsan.rony@yahoo.com**Khandoker Touhidul Islam**Assistant General Manager, Chhuya
Agro Product Ltd, Gagipur
Email: tikhandoker@mail.com**Jobaida Shovna Khanam**Animal Production Research Division
Bangladesh Livestock Research
Institute, Savar, Dhaka, Bangladesh
Email: shovnajobaida@yahoo.com

Corresponding author: hiraobayed@yahoo.com

Abstract – Traditional green grasses in pasture land have been reducing gradually and the demands of cultivated fodders are increasing. Recently, sole fodder production has gained popularity as an income generation & livelihood in the milk shed and other livestock potential areas of Bangladesh. This study was based on the economics of the fodder versus rice production of dairy farmers at Sathia and Bera Upazila in Pabna and Sahjadpur Upazila in Sirajgonj districts of Bangladesh. A total of sixty four dairy farmers were randomly selected for interview taken with a structured questionnaire to know the comparative production cost and profit of fodder and rice production. Different variable costs of fertilizer, seeds/cuttings, labour and irrigation with others costs for rice production were significantly ($p < 0.001$) higher than those of variable costs required for fodder production. Net profit was 240.38 BDT more and cost benefit ratio was 1.38 more in fodder production than that of rice production which clearly indicates that fodder production is more profitable than rice production in the studied areas. The results of the study also revealed that fodder cultivation may play a significant role for more income generation than rice cultivation in the livestock potential areas in the country.

Keywords – Net Return, Benefit Cost Ratio, Rice, Fodder, Economics.

I. INTRODUCTION

Livestock plays an important role in the national economy of Bangladesh with a direct contribution of around 3 % percent to the agricultural GDP and providing 15 percent of total employment in the economy. About 75 percent people rely on livestock to some extent for their livelihood, which clearly indicates that the poverty reduction potential of the livestock sub-sector is high. According to Bangladesh Economic Review, (2012), the contribution of livestock sector in GDP in 2010-11 was 2.58%. It is said that two-third milk are produced at the Baghabari milk pocket areas of Bangladesh. There is a huge demand of green fodder for dairy cattle production. Bathan is a common pasture land grazing cattle during January to June of a year and it remains under flood water during the rest of the months of a year. Feed scarcity especially green fodder is one of the most important problems for rearing dairy cows in the milk vita areas. The shortage of quality feed and fodder remains one of the major reasons for low productivity in livestock in

developing countries like Bangladesh (Tareque and Chowdhury, 2010). Most of the livestock farmers meet their fodder requirements by grazing animals on common land, fallow agricultural field or harvested agricultural land. Traditional green grasses in pasture land have been reducing gradually and the demands of cultivated fodders in these areas are increasing. Assuming that milk production, breeding efficiency, growth rate and disease resistances are reducing due to acute shortage of green grass during the lean period. BLRI developed high yielding fodder crops those can minimize the acute feed shortage in those areas. BLRI Regional Station (RS) has taken various effective initiatives like fodder cutting distribution, training, technical etc to the farmers, to solve feeds and fodder problems in the milk vita areas. In the recent time, sole fodder production has gained popularity as an income generation & livelihood in the milk shed and other livestock potential areas of Bangladesh. Therefore, it is necessary to determine the comparative economic analysis between rice and fodder in the respective areas and to disseminate this message to planner and policy makers for the sustainable development of livestock sector. Hence, this study was undertaken with the objective to know the comparative benefit cost ratio (BCR) of fodder vs. rice production at the milk pocket areas.

II. MATERIALS AD METHODS

Fodder Cutting Distribution to Farmers

A total number of 778000 BLRI developed Napier-4 fodder cuttings were distributed to 187 dairy farmers in milk vita areas during the period from November to December, 2014. A survey work was conducted among the 64 dairy farmers out of 187 farmers at Sathia and Bera Upazila under Pabna district and Sahjadpur Upazila under Sirajgonj district of Bangladesh based on the economics of the fodder versus rice production.

Questionnaire Preparation

A structured questionnaire was prepared based on farmers socio-economic condition, cost of items required for fodder and rice production, cattle population, land size of fodder and rice production, dairy production cost and income, household income, expenditure etc. Prior to

conduct the formal survey, the structured questionnaire was pre-tested by interviewing some households and subsequently refined for finalization.

Data Collection Through Survey

To determine the impact of HYV fodder cuttings among the farmers, a total of 64 dairy farmers were randomly selected for taking interview with a structured questionnaire. Single and multiple responses questions were considered for preparing the questionnaire. Single response questions were those questions where the sample households were asked to reply a single question and multiple response questions were those questions where the households had freedom to deliver more than one answer to a given question.

Statistical Analysis

Descriptive statistics were used to compute the socio-economic data. The results, expressed as mean \pm standard error of means (SEM) were analyzed by one-way analysis of variance (ANOVA) to test the significance of difference among the costs required for fodder versus rice production using the statistical program of SPSS (version 17.00) for windows software package (SPSS Inc., Chicago, 11, USA) followed by Duncan's Multiple Range Test (DMRT).

III. RESULTS AND DISCUSSION

Socio-economic Characteristics of Dairy Farmers

Characteristics of dairy farmers in regards to socio-economic status are important for overall farm decision-making. It profoundly influences the selection of up-date technology, crop selection and cultivation to increase their income generation. Thus, various information of dairy farmers like education, age, sex, household size, farm size etc are helpful to understand the farmer's environment and decision-making ability to choose a profitable technology. Socio-economic characteristics of dairy farmers were shown in Table 1. Dairy farmers who do not know how to write a letter were considered as illiterate. Table 1 reveals that a quarter percent of dairy farmers were illiterate but 75 percent farmers had different levels of education. Considering the level of literacy, it can be easily expected that modern technologies would be adopted effectively among these farmers for their better income generation. More than 60 percent dairy farmers were belonged to the age group of 41-60 years followed by 21-40 years (24%) and above 60 years (5%), respectively which imply that farmers were in active ages. About 63 percent farmers' household size were 6-10, followed by 1-5 (27%) and 11-15 (11%), respectively. Household size is a very important factor for crop production specially rice and fodder production. Individual member of a household is a potential source of proxy labor. Available labor in a household can reduce the labor constraints during the peak farming season (Mia et al. 2006). It was also found that more than 95 percent dairy farmers were male and rest of about 5 percent of them were female.

Cattle Herd Size

Cattle herd composition of the study areas are shown in Table 2. It was revealed that average herd size per

household was 11.04 which clearly indicates the densely cattle population in the study areas. The average herd size was 3.59, 2.46, 1.42 and 3.57 milking cows, non-lactating or dry cows, adult male and young stocks, respectively.

Table 1 Socio-economic characteristics of dairy farmers

Characteristics	Frequency	Percentage
Education level		
Illiterate	16	25.00
Primary	10	15.63
Secondary	26	40.63
Higher secondary and above	8	18.74
Total	64	100.00
Age of dairy farmers		
21-40	22	34.38
41-60	39	60.04
60-above	3	4.69
Total	64	100
Household size		
1-5	17	26.56
6-10	40	62.50
11-15	7	10.94
Total	64	100
Sex of farmers		
Male	61	95.31
Female	3	4.69
Total	64	100

Table 2. Cattle herd composition in the study areas

Cattle herd composition		Frequency	Percentage
Cattle/household (Average)		11.04	
Adult female	Lactating	3.59	32.52
	Non-lactating	2.46	22.28
Adult male		1.42	12.86
Young Stock		3.57	32.34

Economic Parameters of Fodder and Rice Production

Different variable costs of production for fodder and rice are shown in Table 3. Dairy farmers used different organic and inorganic fertilizers for fodder and rice production in the study areas. Various inorganic fertilizers like urea, TSP, MP etc. were purchased. Fertilizer cost per decimal of land was BDT 65.36 \pm 5.19 and 106.84 \pm 6.54 for fodder and rice production, respectively and differed significantly ($p < 0.001$). This study revealed that cost of fertilizer for rice production was almost double rather than fodder production.

Farmers had to purchase cutting /seeds for fodder cultivation. On the other hand, they mostly managed rice seeds from their self production. However, during rice cropping period, the cost of labor per man-day varied from Taka 200-350. It was higher in the period of harvest (average BDT 350 per man-day) and lowest in the period

of weeding (average BDT 200). Table 3 shows that, labor cost required for fodder production were BDT 79.43±6.05 per decimal land which was significantly ($p<0.001$) 50% lower than that of rice production cost (BDT 177.07±7.47 per decimal land). This may be due to more labors required for land preparation, seedlings, irrigation, weeding harvesting and threshing of rice production. Dairy farmers had to depend on deep tube-well (DTW) and shallow tube-well (STW) for irrigation of both rice and fodder crops. Purchased water was used for irrigation by most of the farmers. It was observed from this study that more irrigation was needed for rice production than fodder cultivation. Similar results were observed by Satapathy and Tripathy (2001) who found significantly more cost of irrigation for rice production. Irrigation and others cost was significantly higher ($p<0.001$) in rice production (BDT 81.26±8.85 per decimal land) than fodder production (BDT 41.39±4.45 per decimal land). Total costs required for producing fodder and rice were BDT 243.52±9.37 and 401.57±14.47 per decimal land, respectively which differed significantly ($p<0.001$) between crops. Net profit (NP) from one decimal land were BDT 445.82±59.34 and 205.54±21.24 for fodder and rice cultivation, respectively which differed significantly ($p<0.001$) as shown in Table 3.

This means that net profit per decimal land was 240.38 BDT more in fodder production than rice production. Benefit cost ratio (BCR) for fodder and rice production were 2.97±0.29 and 1.59±0.08, respectively which clearly indicates that BCR was 1.38 times more in fodder than rice cultivation. Net profit (NP) and BCR between crops differed significantly ($p<0.001$). NP and BCR were better for fodder production than that of rice production which clearly indicates that fodder production is more profitable than rice production in the study areas.

Table 3. Comparative benefit cost analysis of fodder versus rice production

Economic parameters	Mean (\pm SE) per decimal of land		Level of significance
	Fodder production	Rice production	
Fertilizer (BDT)	65.36±5.19	106.84±6.54	$p<0.001$
Cuttings/seeds (BDT)	50.46±4.38	30.54±2.13	$p<0.001$
Labor (BDT)	79.43±6.05	177.07±7.47	$p<0.001$
Irrigation & others (BDT)	41.39±4.45	81.26±8.85	$p<0.001$
Total production cost (BDT)	243.52±9.37	401.57±14.47	$p<0.001$
Net profit (BDT)	445.82±59.34	205.54±21.24	$P<0.001$
Benefit cost ratio (BCR)	2.97±0.29	1.59±0.08	$p<0.001$

Correlation Between Cattle Population and Fodder Production

It was seen from the Figure 1 that relationship between cattle population and fodder production was positively correlated which means that fodder production land was

increased with the increased of cattle population in a farm household.

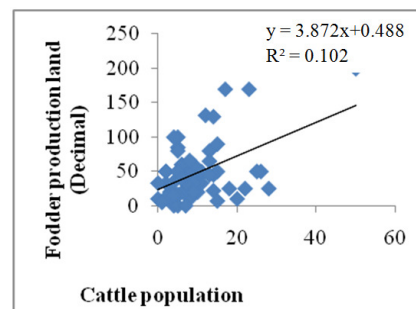


Fig. 1. Correlation between cattle population and fodder cultivation

IV. CONCLUSION

The results of the study revealed that fodder cultivation may play a significant role for more income generation than that of rice cultivation in the studied areas.

V. ACKNOWLEDGMENT

The authors are thankful to the Project Director, Fodder Research and Development Project, Bangladesh Livestock Research Institute, Savar, Dhaka for giving financial support to carry out the survey work.

REFERENCES

- [1] Bangladesh Economic Review. Economic Division, Ministry of Finance, Government of People's Republic of Bangladesh, Dhaka 2012.
- [2] M.A.K. Miah, A.K.M. Ashrafalam and A.H.M.A. Rahman. Impact of Agricultural Credit on MV Boro Rice Cultivation in Bangladesh. *Journal of Agriculture and Rural Development* 4(1&2) 2006: 161-168.
- [3] A.M.M. Tareque and S.M.Z.H. Chowdhury. Agricultural Research Priority: Vision-2030 and Beyond Sub-sector: Livestock (Dhaka: Bangladesh Agricultural Research Council). Available online at: <http://www.barc.gov.bd/documents/Final-Prof.Tareque.pdf> (accessed 30 December 2012).
- [4] Satapathy S.K. and S. Tripathy. An Economic Analysis of Borrower and Non-borrower Rice Farmers in Cuttak District of Orissa, *Indian Journal of Agricultural Economics* 56 (1) 2001: pp. 89-99.
- [5] Statistical package for Social Sciences Version 17.00. SPSS Inc. Illinois, USA 2011.

AUTHORS' PROFILES



Mohammed Sirajul Islam

Place and date of birth:
Mymensingh, Bangladesh; 05/05/1976

Educational Background:

B. Sc in Animal Husbandry at Bangladesh Agricultural University, Mymensingh, Bangladesh.

MS in Animal Breeding and Genetics from the same university in 2001.

Working experience: Senior Scientific Officer in Bangladesh Livestock Institute, Savar, Dhaka, Bangladesh. Now I am working as an In-charge of BLRI, Regional Station, Baghabari, Sirajgonj-6770.

Telephone: +88-0752764550

Mobile: +8801960199249

Email: siraj_blri@yahoo.com



Dr. Nathu Ram Sarker
Divisional Head
Poultry Production Research Division and
Project Director, Fodder Research and Development
Project, Bangladesh Livestock Research Institute,
Savar, Dhaka, Bangladesh
Email: sarkernr62yahoo.com



Md. Obayed Al Rahman
Scientific Officer
Poultry Production Research Division
Bangladesh Livestock Research
Institute, Savar, Dhaka, Bangladesh
Email: hiraobayed@yahoo.com



Dr. Md. Ahsan Habib
Senior Scientific Officer
Fodder Research and Development project
Bangladesh Livestock Research
Institute, Savar, Dhaka, Bangladesh
Email: ahsan.rony@yahoo.com



Khandoker Touhidul Islam
Assistant General Manager,
Chhuya Agro Product Ltd, Gagipur
Email: tikhandoker@mail.com



Jobaida Shovna Khanam
Scientific Officer
Animal Production Research Division
Bangladesh Livestock Research
Institute, Savar, Dhaka, Bangladesh
Email: shovnajobaida@yahoo.com