



Comparative study on fodder and rice production with the emphasis of economic profitability

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ABSTRACT

The study was conducted to investigate the comparative economic profitability between fodder and rice production in a concentrated area at Shahjadpur upazila in Sirajganj district by a pretested survey questionnaire from 22 households. The selection was done based on the concentration of dairy farming with fodder production as well as crop production. Descriptive statistics and one-way ANOVA were performed to analyze the gathered data, and the means were separated using DMRT mean separation test. It was found that 100% farmers cultivated fodder in their land. Results also showed that higher annual cost involved in Irri rice production than Jumboo and Napier production. However, non-significant differences existed among the market price of Irri, Jumboo and Napier production. Lower fertilizer used in fodder production than rice hence, lower fertilizer price (Tk) whereas rice yields only 6.94 MT per household. Annually fodder yield was 83.53 MT whereas rice yields only 6.94 MT per household. Annual fodder cultivation cost was non-significantly higher in rice production than fodder. Comparative economic analysis of fodder and rice production showed that annual selling price was double than annual production cost of rice per 100 decimal lands and in case of fodder, it clearly indicated that annual selling price was much more time higher than annual fodder production cost. The findings of the study concluded that fodder cultivation might play a significant role for more income generation than rice cultivation in the milk production potential areas like Shahjadpur upazila.

INTRODUCTION

Bangladesh is an agro-based country and majority of its population lives in the rural areas. Most of the rural farmers are engaged in crop farming and cattle rearing as their integrated way due to cultivatable land limitation. Any green plant or crop which is cultivated in the land for livestock feeding is termed as fodder. Fodder is a newly emerged crop that added in the farming system of Bangladesh. It became popular in many parts of the country for livestock production especially for dairy production. Fodder production led to increase in crossbred cows that led to increase in milk production (Islam et al., 2016). Fodder plays an important role in economizing the cost of production of livestock products especially of milk. Feeds and fodder constitute about 60-70% cost of total cost in dairy farming (Grover & Kumar, 2012). Most of the livestock farmers meet

their fodder requirements in Bangladesh by cultivation of fodder, grazing animals in *bathan* areas, grazing in common land and fallow agricultural field or harvested agricultural land. In the country, 20% people are directly and 50% are indirectly involved in livestock production which clearly indicated that poverty reduction potentiality of livestock sub-sector is being high (DLS, 2015). Traditional green grasses in pasture land have been reducing gradually and the demands of cultivated fodders in these areas are increasing gradually. Assuming that milk production, breeding efficiency, growth rate and disease resistances are fully dependent on green grass due to its mineral contents. Rice is a cereal grass (*Oryza sativa*) that is cultivated extensively in warm climates for its edible grain and the starchy grain of this plant used as a staple food for human throughout the world. The focus of the current study is to quantify the cost and return and

to explore the interrelationship of factors affecting yield, cost and net return for fodder and rice production in a fixed amount of land to compare those with each other. 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 whereas rice production decreasing day by day. Hence, this study was undertaken to investigate the comparative economic profitability of fodder and rice production.

MAATERIALS AND METHODS

Study area and data collection

A total of twenty two (22) households were surveyed to achieve the objectives of the present study from a cluster area named Rashombari under Shahjadpur upazila of Sirajganj district in Bangladesh. This study area is belongs to Karatoya-Bangali flood plain agro-ecological zone (AEZ-4).

A structured questionnaire was prepared based on farmers economic condition, cost of items required for fodder and rice production, land size of fodder and rice production, dairy production cost and income, household income, expenditure etc. Single and multiple responses questions were considered

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

Analysis of data

Data were analyzed with a view to achieving the objectives of the study. Descriptive statistics and one-way ANOVA were performed to test the significance of difference among the variables of fodder and rice production using SPSS (Statistical Package for the Social Science Software, IBM-17 Corporation, 2014). Duncan's Multiple Range Test was also used to compare the mean values of variables.

RESULTS AND DISCUSSION

Agricultural products cultivation

Agricultural products cultivation scenario at study area is depicted in Figure 1. This figure indicated that 100% dairy household farmers cultivated fodder in their land, 86.3% cultivated rice and 13.7% cultivated vegetables only. These findings are quite similar with Islam et al. (2016) who reported that small category of farmers at Sathia of Pabna district was the highest (57%) for fodder production followed by marginal farmers 37%.

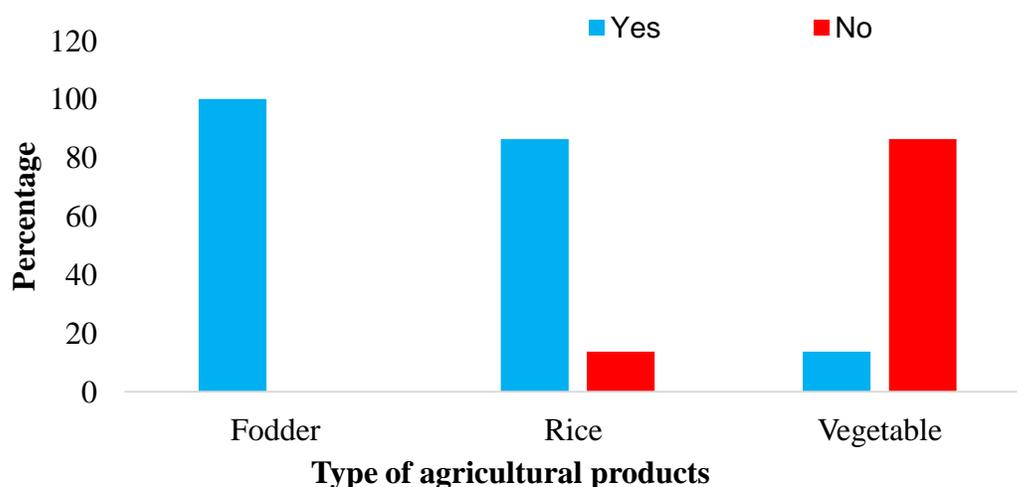


Figure 1
Agricultural products cultivation scenario at study area.

Status of Irri rice, Jumboo and Napier fodder production

Status of Irri rice, Jumboo and Napier fodder production are shown in Table 1. The results showed that there were significant difference in cultivation land among Irri, Jumboo and Napier production. The maximum fertilizer used in Irri

rice production than others and significant differences existed. Also, cultivation period significantly differed among Irri, Jumboo and Napier cultivation. Variation also involved in annual cost for Irri rice production than Jumbo & Napier production. Again, non-significant difference existed among the market price of Irri, Jumbo and Napier production.

Table 1

Status of Irri rice, Jumboo and Napier fodder production at study area.

Variables	Mean \pm SE			P-value
	Irri (HHs=14)	Jumboo (HHs=5)	Napier (HHs=22)	
Cultivable land (decimal)	240.79 ^a \pm 71.43	59.20 ^b \pm 23.77	65.91 ^b \pm 20.84	0.014
Fertilizer used (Kg)	439.64 ^a \pm 174.16	65.00 ^b \pm 23.77	102.23 ^b \pm 17.53	0.035
Price of fertilizer (Tk)	18892.86 \pm 9819.68	2520.00 \pm 1061.79	2309.09 \pm 296.29	0.079
Cultivation period	4.00 ^p \pm 0.00	7.20 ^a \pm 0.80	7.82 ^a \pm 0.18	0.000
Price of cutting (Tk)	14264.29 \pm 10929.46	1272.00 \pm 224.91	1631.82 \pm 87.63	0.284
Annual yield (MT)	7.47 \pm 2.23	58.00 \pm 17.16	89.31 \pm 29.28	0.080
Annual cost (Tk)	79500.00 ^a \pm 23119.55	4740.00 ^b \pm 947.42	7000.00 ^b \pm 2558.06	0.001
Market price (Tk)	162096.00 \pm 44764.44	84500.00 \pm 46764.84	186000.00 \pm 58055.50	0.668

^{ab}mean values with different superscript differed significantly.

Comparative fodder and rice production status per household

Table 2 shows that cultivable land used for fodder production were 64.67 decimal lands per household whereas 234.74 decimal lands used per household for rice production. Lower fertilizer used in fodder production than rice hence, lower fertilizer price (Tk) required for fodder than rice production. These results are quite similar with Islam et al. (2016) who stated that 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. However, this study revealed that the cost of fertilizer for rice production was almost double rather than fodder production. Annually fodder yield were 83.53 MT whereas rice yield only 6.94 MT per household which agreed with

the findings of Islam et al. (2016) regarding the dramatic cattle rearing increasing due to enhancing fodder yield through better production. Annual fodder cultivation cost was higher ($p > 0.05$) in rice production than fodder which might be more irrigation required for rice production than fodder cultivation. This finding has similarity with Satapathy and Tripathy (2001) who found significantly more cost of irrigation for rice production. Irrigation and others cost were significantly higher ($p < 0.001$) in rice production (BDT 81.26 \pm 8.85 per decimal land) than fodder production (BDT 41.39 \pm 4.45 per decimal land). Although non-significant differences existed in fodder & rice market price but mean fodder market price was higher than rice production using limited land for fodder (Table 2).

Table 2
Comparison between fodder and rice production.

Variables	Mean±SE		P-value
	Fodder (F=27)	Rice (F=19)	
Cultivable land (decimal)	64.67±17.38	234.74±53.28	0.884
Fertilizer used (Kg)	95.33±15.05	387.11±128.95	0.346
Price of fertilizer (Tk)	2348.15±300.25	15238.94±7310.60	0.791
Cultivation period (Month)	7.70±0.21	4.00±0.00	0.250
Price of seed/cutting (Tk)	1565.19±85.12	11410.53±8053.65	0.101
Annual yield (MT)	83.52±24.05	6.94±1.66	0.622
Annual cost (Tk)	6581.48±2088.48	74473.68±17383.59	0.683
Market price (Tk)	167203.70±48376.13	155860.53±33872.03	0.426

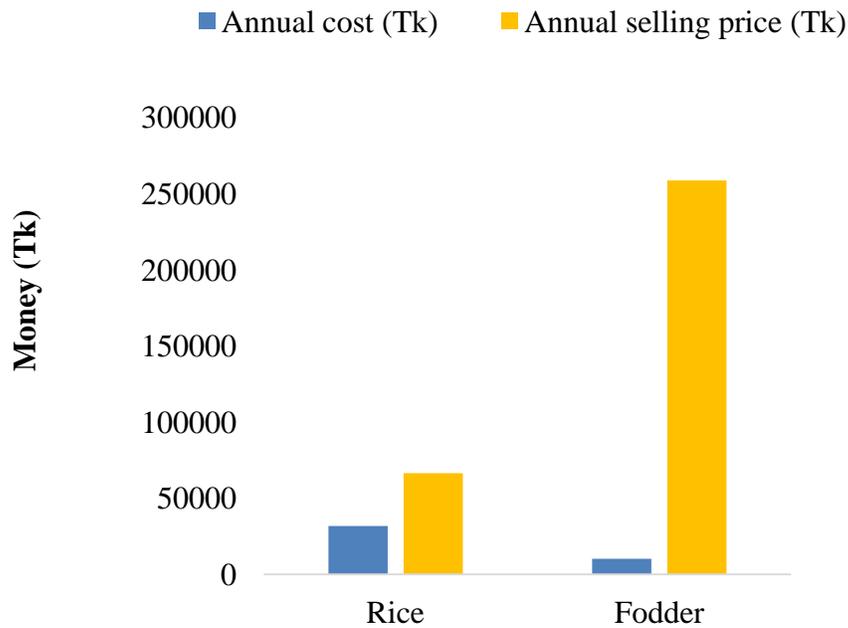


Figure 2
Comparative economic analysis of fodder and rice production equal to 100 decimal lands.

Comparative economic analysis of fodder and rice production in 100 decimal lands

Comparative economic analysis of fodder and rice production equal to 100 decimal lands is shown in Figure 2. It showed that annual selling price was 66397 TK which was double than annual production cost (31726 TK) of rice per 100 decimal lands. In case of fodder, it clearly indicated that annual selling price was 25 times

higher than annual fodder production cost which is supported by Islam et al. (2016).

CONCLUSIONS

It was clearly observed that farmers earned more profit from fodder production than rice production. Thus, fodder cultivation might be cost effective than rice cultivation in the studied areas. But further study is recommended with higher number

of households from different regions to see the correlation of economic production among rice and fodder varieties.

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