Original Research Article

Comparative profitability of Napier fodder with competitive cashcrops in selected areas of Bangladesh.

Abstract

Aims: The research was carried out to investigate the scenario of the fodder-cultivated farmer along with the profitabilityof Napier fodder cultivation in comparison to our main cash crops like rice, jute and onions and the challenges in fodder cultivation.

Study Design: This study was mainly done by collecting primary data through a baseline survey from 60livestock cum fodder cultivating farmers by random sampling techniques.

Place and Duration of Study: This study was mainly done in Shahjadpur, Sirajganj and Santhia, Pabnafrom June 2022- July 2022.

Methodology: Data were entered, shorted, compiled, and analyzed by using a Microsoft Excel worksheet. Descriptive statistics were performed to test the differences among the variables of fodder, rice, jute, and onion production by using SPSS Software, IBM-25 Corporation.
Results: The result of this data shows that the average age range of farmerswas 41.68% between the ages of 41 and 60, whereas 38.33% of farmers were between 20-40 years ages. In the study areas, 75% of farmersknew minimum primary to graduation or above level. Overall 56.67% of farmer's main occupation was agriculture in the selected areas. Only 25% of farmers knewfeed processing. The Benefit-Cost Ratio (BCR) in rice and onion were 1.81 and 1.66 in Shahjadpur and 1.78 and 1.52 in Santhia. In jute and fodder, BCR was 1.34 and 2.11 in Santhia whereas 1.28 and 2.00 in Shahjadpur respectively. The profitability of fodder is higher than other selected cash crops. The maximum 80% of farmers hada lack of training on scientific ways of fodder production.

Conclusion: This the study concluded that fodder cultivation can play a significant role in more income generation in the studied milk pocket areas in comparison to rice, jute, and onion cultivationbecause they had scarcity of fodder and high demand of it.

Keywords: Fodder Cultivation,Cash crops, Production, Benefit-Cost Ratio.

1. Introduction

Bangladesh is an agricultural country. Most of our farmers are involved in a mixed farming system. Crop production along with livestock rearing is the principal occupation in most of the farmers. According to Bangladesh Economic Review 2023, the growth of the agriculture sector stood at 2.61% and sectoral share of GDP 11.20% in the 2022-23 fiscal year[3]. The contribution of livestock to our GDP is 1.85% which is a 16.52%% share of Livestock in Agricultural GDP. Overall 20% population is directly and 50% population is partially dependent on the livestock sector [5]. Due to the increasing population, the agricultural and grazing land of Bangladesh is reduced. As a result livestock feed crisis has increased. To reduce this problem high yielding fodder production is very important in our country. Fodder played an important role in minimizing the cost of livestock production and its products, especially of milk and meat. Feeds and fodder constitute about 60-70% of the total cost of dairy farming [6]. Rice is a staple food in Bangladesh. Most of the farmers cultivated rice on their land as a main crop for both income and their own needs. Jute is called the golden fiber of Bangladesh. According to Jute Production APAC- 2021,The production of jute in Bangladesh was 1.68 million metric tons. Bangladesh was the 2nd leading producer of jute in the Asia Pacific region [2].In Bangladesh, onion is an integral part of people's daily diet and is used very commonly in most food preparations [7]. Large no. of farmers involved in onion

production.Hence, studying the economics of crops and fodder is of utmost importance, but there is scanty literature on this topic in Bangladesh. The present study has been carried out to analyze the socio-economic characteristics of fodder-cultivating farmers, profitability of fodder cultivation and competing crops, marketing of fodder, and problems associated with fodder cultivation. The study was done with the objective of i)To know the present status of fodder cultivation in the selected areas of Bangladesh. ii) To know the profitability of fodder in compare to competitive cash crops in those areas. iii) To find out the major challenges in fodder cultivation.The study will provide useful information to policy planners, future researchers, and others concerned with the livestock sector.

2. Materials and methods

2.1 Study area and data collection

A survey was carried out at Santhia, Pabna, and Shahjadpur, Sirajganj area to know the present status of fodder cum livestock farmer along with their agricultural productivity. A total of 60 livestock cum fodder farmers took 30 from Santhia and 30 from Shahjadpur for collecting necessary data on fodder, crops, and jute production. The data were mainly collected through random sampling methods. To collect this data a questionnaire was predesigned and pretested for final data collection. Data were collected based on the cropping pattern of farmers. Farmers who cultivatedrice mainly cultivated Amon and IRRI/BRRI rice in their land in two cropping patternsaround the year. Farmer of this area mainly cultivated onion and jute in their land in two cropping systems. On the other hand,farmers mainly cultivate fodder around the year and few farmers cultivate fodder for about 6 months a year where 4 times cutting was done by fodder-cultivated farmers because the low-lyingwater-logged areas were not suitable for fodder production. For this reason, we considered once ricecropping time of 6 months, and once jute and onion cropping time of an average 4 monthswhich means 4 months of this land were present as fallow land. For this reason,a 6-month/ 1 cropping pattern was considered for analysis of cost and benefits in those crops and fodder production. Secondary data were collected from journals, reports, official records, and various sources.

2.2 Data analysis

Data wereentered, shorted,compiled, and analyzed by using a Microsoft Excel worksheet. Descriptive statistics were performed to test the differences among the variables of fodder, rice, jute, and onion production by using SPSS (Statistical Package for the Social Science Software, IBM-25 Corporation).
For calculating net return we used the following formula:
Net return= GR-GC; Where, GR=Gross return, GC=Gross cost
Here, GC=TFC+TVC; Where, TFC=Total fixed cost, TVC=Total variable cost
To calculate the benefit-cost ratio we used the following formula

Benefit-Cost ratio = $\frac{\textbf{Gross Return (GR)}}{\textbf{Gross Cost (GC)}}$

3. Results and discussion

3.1. Socio-economicprofileoffoddergrowers

Farmers' age has a big impact on farm output and improved agricultural management methods. Farmers' ages were established by categorizing them into three groups: I) 20-40 years, (ii) 41-60 years, and (iii Above 60 years. The age ranges of different fodder-cultivating farmers are shown in Table 1. In both upazila, 41.68% of farmers were between the ages of 41 and 60, whereas 38.33% of farmers were between 20-40 yearsof age. So we could conclude that the largest percentage of farmers were between the ages of 41 and 60, showing that the majority of farmers were in an active period and performed better in their agricultural operations and the remaining only 19.99% of farmers were above 60.

Table -1. Show the Socioeconomic status of the farmer

Parameters	Santhia (n)	Shahjadpur (n)	Overall (n)
Farmers Age (Year)			

20-40	36.66% (11)	40% (12)	38.33% (23)
41-60	46.68% (14)	36.68% (11)	41.68% (25)
Above 60	16.66% (5)	23.32% (7)	19.99% (12)
Overall	100% (30)	100% (30)	100% (60)
Education level % (n)			
Illiterate	23.34% (7)	26.66% (8)	25% (15)
Primary	36.66% (11)	43.34% (13)	40% (24)
Secondary	30.0% (9)	6.66% (2)	18.34(11)
HigherSecondary	6.66% (2)	13.34% (4)	10.0 (6)
Graduateandabove	3.34%(1)	10.0% (3)	6.67 (4)
Overall	100 (30)	100% (30)	100 (60)
Main occupation % (n)			
Agriculture	66.68% (20)	46.68% (14)	56.67(34)
Business	20.0% (6)	20.0% (6)	20% (12)
Job	6.66% (2)	26.66% (8)	16.66% (10)
Others	6.66% (2)	6.66% (2)	6.66% (4)
Total	100% (30)	100% (30)	100% (60)
Farmers family status (Average)			
Family Size	5.7	6.7	6.2
Earning Member	1.8	1.9	1.8
Dependent member	3.9	4.8	4.3
Dependency ratio	3.16	3.48	3.32

The literacy status of fodder farmers has been classified into five categories based on education level. On average in two upazila, 40% of farmers belongedtothe primary level, 18.34% secondary level, 10% higher secondary and 6.67% degree and above. The remaining 25% had no formal education.Table 1shows the educational qualifications of the farmersin the selected areas.

According to the data, agriculture is the primary occupation of 66.68% of farmers in Santhia with business accounting for 20.0%of farmers. In Shahjadpur, agriculture was the primary occupation of 46.68% of farmers, 26.66% in jobsand 20.0% of farmers involved in business. Overall 56.67% of farmer's main occupation was agriculture. The average family member and earning status of the farmers are shown in Table 1. In Santhia, family size was found 5.7 and in Shahjadpur, it was 6.7. The average family size was 6.2. Earning members in Santhia was 1.8 per family and in Shahjadpur was 1.9. Dependency ratios found in Santhia were 3.16 and in Shahjadpur were 3.48.The average dependency ratio was 3.32.

3.2.Types of fodder mainly Cultivated by farmers

The highest 56.70% and 46.7% of farmers cultivated Napier fodder in Santhia and Shahjadpur upazila whereas the lowest 3.30% farmer's cultivated Napier fodder with maize in Santhia and the same percentage of farmers were found whose cultivated Jamboo fodder in Shajadpur upazila. The highest 51.70% of farmers mainly involved in cultivating Napier fodder and the lowest 5.00% were cultivated both Napier fodder with maize and Jerman grass in the overall study areas. In Santhia, 23.3% of farmers cultivated Napier fodder with Jamboowhereas only 10.0% and 6.70% of farmers were found who cultivated Jerman and Jamboo grass. On the other hand, 33.3% of farmers cultivated Napier fodder with Jamboowhereas10.0% of farmers cultivated Jerman and only 6.70% of farmers cultivated both Napier fodder and Maize at their fodder field in Shahjadpur upazila(Table -2).

Table -2. Showed the different types of fodder cultivated by farmers of Santhia and Shahjadpur.

Parameters	Santhia	Shahjadpur	Overall
Napier/Packchong	56.7% (17)	46.7%(14)	51.70% (31)
Napier and Maize	3.30%(1)	6.70%(2)	5.00% (3)
Napier andJamboo	23.3% (7)	33.3%(10)	28.30% (17)
Jerman	10.0% (3)	10.0%(3)	10% (6)
Jamboo	6.70% (2)	3.30% (1)	5% (3)
Total	100% (30)	100%(30)	100% (60)

3.3. Source of seed and fodder cutting

The highest 80.0% of farmers purchased fodder seeds or cut from the local market in Santhia upazila but the same percentage of farmers used seeds or cutting from their stock/field otherwise, they bought them from the other farmers'households in Shahjadpur upazila. Moreover, the highest 48.35% of farmers also used fodder seeds and cutting from the same source asShahjadpur in the overall study areas(Table- 3). Only 3.30% of farmers from Santhia, 6.70% from Shahjadpur, and 5.00% of farmers from the overall selected areas had the opportunity to get fodder seeds and cutting from different Govt. and Non-Govt. institution at low or minimum cost.

Table-3. The sources of seed and fodder cutting for farmers in Santhia and Shahjadpur upazila

Parameters	Santhia	Shahjadpur	Overall
Local market	80.0% (48)	13.3% (8)	46.65% (28)
Own and from another farmer	16.7% (10)	80.0 %(48)	48.35% (29)
Instittution	3.30% (2)	6.70% (4)	5.00% (3)
Total	100% (60)	100% (60)	100% (60)

3.4. Farmers experience and feedback on fodder production and processing

Table-4. Showed the farmer's experience and feedback on fodder cultivation and processing**.** Farmers had experienced an average of 11 years of fodder cultivation both in Santhia and Shahjadpur upazila with the average fodder land of 53.36decimal in Santhiaand 55.79decimal in Shahjadpur. However, the maximum 70% and 66.67% of farmers didn't obtain any training facility on the proper way of fodder cultivation as well as the standard agronomical practices required to get more fodder production in both selected areas. Only 26.7% of farmers in Santhia and 23.3% of farmers in Shahjadpur upazila knew the feed processing and they processed feed for feeding their livestock during the scarcity period.

Table-4. Farmers' experience and feedback on fodder cultivation and processing

Locations	Experience in fodder cultivation (year)	Training on fodder cultivation		Fodder cultivated land in 2022 (decimal)	Fodder Processing	
		Yes	No		**Yes**	**No**
Santhia	10.56 (30)	33.33% (10)	66.67%(20)	53.36 (30)	26.7%(8)	73.3%(22)
Shahjadpur	10.92(28)	30% (9)	70% (21)	55.79 (24)	23.3% (7)	76.7% (23)
Overall	**10.74 (58)**	**31.66% (19)**	**68.33% (41)**	**54.57 (54)**	**25% (15)**	**75% (45)**

3.5. Farmer involved in rice, jute, onion and fodder cultivation

From Table 4, we found that in Santhia upazila, comparatively 96.67% of farmers cultivated fodder while 76.66%, 60%, and 46.67% of farmers cultivated Rice, Onion, and Jute in their cultivable land. In Shahjadpur, the scenario was also similar where the maximum 93.33% of farmers were involved in cultivating fodder with 66.67%, 63.33%, and 40% farmers cultivating Rice, Jute, and Onion respectively. After harvesting the Onion, most of the farmers followed to cultivate Jute on the same land which helped to reduce the fertilizer cost of the farmers. Some farmers took rent or leased land from other farmers mainly for fodder and other cash crop cultivation.

Table 5. Farmer's involvementin rice, jute, onion, and fodder cultivation.

Location	Rice	Jute	Onion	Fodder
Santhia	76.66% (23)	46.67% (14)	60% (18)	96.67% (29)
Sirajganj	63.33% (19)	66.67% (20)	40% (12)	93.33% (28)
Overall	**70% (42)**	**56.67% (34)**	**50% (30)**	**95% (57)**

3.6. Benefit-Cost Ratio in Santhia and Shahjadpur

Table 6shows the Benefit-Cost Ratio of different cash crops and fodder-producing farmers in the Santhia and Shahjadpur upazila. In Santhia, the maximum annual Gross Cost (GC) of 260142.83Tk was observed for Onion production and 203232.29Tk for fodder production where the minimum annual GC was 153860.51Tk for jute production with the GC 158281.9Tk accounting for Rice production in Santhia upazila. Table 6Shows the benefit-cost ratio of different cash crops and fodder in Santhia and Shahjadpurareas. Moreover, the highest cost for land rent 64868.69Tk, land preparation 17963.64Tk, fertilizer 29725.66Tk, insecticides 16258.75Tk, and labor costs 96221.89Tk, were involved in Onion production respectively. But the irrigation cost of 25939.61Tk, equipment, and another cost of 1586.96Tk was higher in Rice production where the higher seed, seed-bed preparation, and cutting cost were found 75106.58Tk for the fodder production in Santhia upazila. Comparatively maximum Gross Income (GI) of 430817.55Tk was found from fodder production with a minimum GI of 207597.62Tk from Jute production where GI of 394701.01Tk and 282341.50Tk were obtained from Onion and Rice production. The highest income from the main product 430817.55Tk was observed for fodder production but the income from the by-product 31241.11Tk was higher in Rice production. Therefore, the maximum Net Income (NI) was also found 227585.26Tk for fodder production whereas the minimum NI 53737.11Tk was observed for Jute production. In Shahjdpur upazila the maximum annual Gross Cost (GC) 254143.45Tk was observed for Onion production and 215691.95Tk for fodder production where the minimum annual GC was 158161.78Tk for Rice production with the GC 173999.09Tk accounted for Jute production in Shahjadpur upazila. Moreover, the highest cost for land rent 63333.33Tk, land preparation 18193.94Tk, insecticides 17445.45Tk, and labor cost 96737.27Tk was involved in Onion production respectively but the irrigation cost 19862.42Tk was higher in Rice production where the higher fertilizer cost, seed, seed-bed preparation, and cutting cost were found 25833.42Tk and 75106.58Tk for the fodder production in Shahjadpur upazila. The equipment and another cost of 1357.89 were higher in Jute production. Comparatively maximum Gross Income (GI) of 431897.14Tk was found from fodder production with a minimum GI of 222221.21Tk from Jute production where GI of 422836.36Tk and 286157.58Tk was obtained from Onion and Rice production. The highest income from the main product 431897.14Tk was observed for fodder production but the income from the by-product 31830.30Tk was higher in Rice production. Therefore, the maximum Net Income (NI) was also found 216205.19Tk for fodder production whereas the minimum NI 48222.12Tk was observed for Jute production. The BCR in rice and onion were 1.81 and 1.66 higher in Shahjadpur rather than 1.78 and 1.52 in Santhia. In jute and fodder, BCR was higher in Santhia and was 1.34 and 2.11 in comparison to Shahjadpur where the BCR was 1.28 and 2.00 respectively.

Table 6: The benefit-cost ratio of different cash-crop and fodder in Santhia and Shahjadpur areas

Parameters	Rice		Jute		Onion		Fodder	
	Santhia	**Shahjadpur**	**Santhia**	**Shahjadpur**	**Santhia**	**Shahjadpur**	**Santhia**	**Shahjadpur**
A. Fixed Cost								
1. Land rent	30098.81	42309.09	53463.20	53378.79	64868.69	63333.33	55103.97	47181.28
B. Variable cost								
1.Land preparation cost	9122.73	8304.24	5987.88	5987.88	17963.64	18193.94	5987.88	10339.78
2. Irrigation cost	25939.61	19862.42	4945.35	4746.97	9818.36	8981.82	15124.56	15036.53
3.Fertilizer cost	14702.74	13232.42	952.71	1823.94	29725.66	23953.24	26204.71	25833.42
4.Insecticide cost	2876.79	2982.12	4143.39	3927.58	16258.75	17445.45		-
5.Seed & bed preparation/cutting cost	3042.75	2714.24	2566.23	2773.33	24325.76	24354.55	75106.58	83669.91
6.Labour cost	70910.80	67403.03	82867.97	91196.97	96221.89	96727.27	24132.18	25552.74
7.Equipment and others	1586.96	1354.21	1500.00	1357.89	1505.56	1153.85	1200.00	1079.29
Gross cost	158281.19	158161.78	153860.51	173999.09	260142.83	254143.45	203232.29	215691.95
Income from the main product	251100.39	254327.27	191184.42	202327.27	394701.01	422836.36	430817.55	431897.14
Income from by-products	31241.11	31830.30	16413.20	19893.94	-	-	-	-
Gross income	282341.50	286157.58	207597.62	222221.21	394701.01	422836.36	430817.55	431897.14
Net income	124060.31	127995.80	53737.11	48222.12	134558.18	168692.91	227585.26	216205.19
Benefit-cost ratio (BCR)	1.78	1.81	1.34	1.28	1.52	1.66	2.11	2.00

3.7. Majorconstraints tofodder Cultivation

Farmers were informed that they faced various constraints in the selected two areas known as the milk pocket area of Bangladesh shown in Table -7. A maximum of 80% of farmers were told about the lack of training on scientific ways of fodder production as well as the essential standard management practices to make fodder production more profitable (table 8). About 75% of farmers faced problemswith higher fertilizer costswhereas 53.33% and 43.33% said that they faced problemswith unworthy selling prices and lack of quality seed. As a flood-prone area, 36.67% of farmers faced problems with their low land because those lands became in-utilizable for cultivation and farmers encountered huge losses for crop and fodder production during floods. On the other hand, about 16.67% of farmers faced problemswith inadequate nation to their cultivable land during the dry season.

Table -7. The majorconstraints faced by farmers for fodder cultivation in selected areas.

Sl.No.	Constraints	Score	Rank	percentage
1	Lackofpropertraining	48	I	80.0%
2	Higher cost of fertilizer	45	II	75.0%
3	Lackofpropersellingmarket	32	III	53.33%
4	Lack of better quality seed/cutting	26	IV	43.33%
5	Flood Problem in Lowland	22	V	36.67%
6	Higher cost of action	10	VI	16.67%

Discussion

In both upazila, 41.68% of farmers were between the ages of 41 and 60, whereas 38.33% of farmers were between 20-40 years of age (Table 1). So we could conclude that the largest percentage of farmers were between the ages of 41 and 60, showing that the majority of farmers were in an active period and performed better in their agricultural operations and the remaining only 19.99% of farmers were above 60. This study report was comparable with (ShovnaJobaida, 2016), who reported that 60% of dairy farmers belonged to the 41-60 years age group followed by 21-40 years (24%) and above 60 years (5%)[12]. This variation was found due to the study was conducted at different times and not with the same farmers.

In the case of education, on average in two upazila, 40% of farmers belonged to the primary level, 18.34% secondary level, 10% higher secondary and 6.67% degree and above. The remaining 25% had no formal education. This data was closely similar to the findings of ShovnaJobaida et al., (2016) who reported that 75% of farmers had different levels of education and 25% of farmers were illiterate[12]. This result was also similar to Sayeed et al., (2010) who reported that 23.67% of farmers were illiterate, 25.67% completed primary level, 20.67% secondary level, 13.33% SSC, 9.33% HSC and 7.33% degree[13]; Uddin and Dhar (2018) reported that about 47.5% farmers completed at least primary and above educational level[14].

According to the data, agriculture is the primary occupation of 66.68% of farmers in Santhia with business accounting for 20.0% of farmers. In Shahjadpur, agriculture was the primary occupation of 46.68% of farmers, 26.66% in jobs and 20.0% of farmers involved in business. Overall 56.67% of farmer's main occupation was agriculture. This data is also related to the findings of Sayeed et al., (2010) who reported that Agriculture was the highest (77.33%) followed by business (15.67%) and the lowest (7.00%) in service [13] where Uddin and Dhar,2018 mentioned that 68.3% farmers were engaged in agriculture as well as other income generating activities like labor selling, service, small business, etc[14].

In Santhia, family size was found 5.7 and in Shahjadpur, it was 6.7. The average family size was 6.2 (Table 1). The family households in the study areas were higher than the national report where BBS, 2022 reported average number of family members in the Rajshahi division was 4.00 [4]but this study report was closely similar to Sayeed *et al*., 2010 who described that the average number of family

members per farm was 6.10[13] and Uddin and Dhar, 2018 said that average household size of the farmers was 5.0[14]. Earning members in Santhia was 1.8 per family and in Shahjadpur was 1.9. Dependency ratios found in Santhia were 3.16 and in Shahjadpur were 3.48. The average dependency ratio was 3.32. Islam *et al.,* 2016, reported that in Santhia, the family size was found 6.7 and in Shahjadpur, it was 6.93 whereas the dependent member in Santhia was 3.46 and in Shahjadpur was 3.10 where working members in Santhia was 3.3 person per family and in Shahjadpur was 3.83 and the dependency ratio was found in Santhia 1.61 and Shahjadpur 2.31 and average 2.00[10]. This data was also significant in the present study.

The highest 56.70% and 46.7% of farmers cultivated Napier fodder in Santhia and Shahjadpur upazila whereas the lowest 3.30% farmer's cultivated Napier fodder with maize in Santhia and the same percentage of farmers were found whose cultivated Jamboo fodder in Shajadpur upazila. The highest 51.70% of farmers mainly involved in cultivating Napier fodder and the lowest 5.00% were cultivated both Napier fodder with maize and Jerman grass in the overall study areas. In Santhia, 23.3% of farmers cultivated Napier fodder with Jamboo whereas only 10.0% and 6.70% of farmers were found who cultivated Jerman and Jamboo grass. On the other hand, 33.3% of farmers cultivated Napier fodder with Jamboo whereas 10.0% of farmers cultivated Jerman and only 6.70% of farmers cultivated both Napier fodder and Maize at their fodder field in Shahjadpur upazila. Different types of fodder generally cultivated by the farmers in Santhia and Shahjadpur upazila are shown in Table 2. This data is also related to Islam et al., 2016, who reported that in Santhia, the highest 30% of farmers cultivated both jumbo and khesari fodder followed by jumbo and napier 16.67%[10]. In Shahjadpur, 36.67% of farmers cultivated napier fodder followed by 20% jumbo. this data was relevant to Hossain et al., 2005 who reported that in Rangpur 20% and 40% of farmers cultivated napkins and maize, respectively and the rest of the farmers did not cultivate fodder[8]. Farmers had experienced an average of 11 years of fodder cultivation both in Santhia and Shahjadpur upazila. Farmers' experience in this study was lower than Islam et al., 2016, who stated that In Santhia, farmers had 19 years and in Shahjadpur, farmers had 20 years of experience in fodder production for their dairy cattle[10].

The BCR in rice and onion were 1.81 and 1.66 higher in Shahjadpur rather than 1.78 and 1.52 in Santhia. In jute and fodder, BCR was higher in Santhia and was 1.34 and 2.11 in comparison to Shahjadpur where the BCR was 1.28 and 2.00 respectively. This data was also significant in the study ofShovnaJobaida (2016); who found that the benefit-cost ratio (BCR) for fodder and rice production were 2.97 and 1.59 respectively[12], Rahman et al., 2017; who reported that the benefit-cost ratio of jute in Kishoregonj was1.17 and Faridpur 1.24 [11] and Anjum et al., (2018); who mentioned that BCR in Onion was in Kushtia 2.02 and Jhenaidah 1.83[1]. Islam et al.,2018 found BCR in jute, 1.53 in demo farmers and 1.24 in Nondemofarmers at Sirajgonj [9]. In comparison to our cash crops, BCR was higher found in fodder which means fodder cultivation is a profitable than the studied cash crops. The highest BCR in fodder was found due to fodder land requiring less cultivation, irrigation, insecticide and labor costs in comparison to the traditional cash crops. In fodder land, there is no need for weeding and other processing fees. Farmers sell their fodder mainly from the field as a result the cost in fodder is less and BCR is high.

Farmers were informed that they faced various constraints in the selected two areas known as the milk pocket area of Bangladesh shown in Table -7. A maximum of 80% of farmers were told about the lack of training on scientific ways of fodder production (table 8). 53.33% and 43.33% said that they faced problems with unworthy selling prices and lack of quality seed. As a flood-prone area, 36.67% of farmers faced problems with their low land because those lands became in-utilizable for cultivation and farmers encountered huge losses for crop and fodder production during floods. On the other hand, about 16.67% of farmers faced problems with inadequate nation to their cultivable land during the dry season. Similar types of problems were faced by farmers in Bangladesh mentioned by Sayeed et al., (2010). In his study, he reported that unavailability of cuttings/seeds in time, lack of training on fodder cultivation, lack of information about high-yielding fodder species, lack of green fodder preservation techniques, and lack of marketing facilities were major constraints faced by farmers[13].

Conclusion

Fodders played a great role in the feeding system of livestock in Bangladesh.Sirajgonj and Pabna are known as milk pocket areas or capitals of dairy farms in Bangladesh. So the demand of fodder for dairy cows is high in those areas. As the fodder needs little labour and the cost of irrigation, cultivation and insect control is too low this sector is profitable in these areas Along with increased livestock production, the pasture land was also decreased. The price of cattle feed was also high.In the study areas scarcity of fodder was common. As a result,high-yielding fodder cultivation is an emerging issue to reduce feed costs and increase the productivity of livestock,especially milk production of dairy cattle. As fodder production is profitable, so along with other cash crop production fodder cultivation will be a good source of income. However, farmers faced some constraints in fodder production. So extension service will need to improve through the development of fodder nurseries, and training of farmers on fodder production and preservation techniques. The government should take policy on fodder cultivation for the development of the livestock sector.

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