

Available dairy cattle feed resources with their nutrient composition existed on milk pocket area of Bangladesh

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ABSTRACT

The study was undertaken to investigate the available feed resource of dairy cattle in rural villages of Pabna district. A baseline survey was conducted to collect data. Data on available feed resource of dairy cattle were collected from total 50 households from three selected villages (Umarpur, Khorbagan and Hatail Aralia) under Bera Upazila of Pabna district with a pretested survey questionnaire. The collected feed samples were chemically analyzed for knowing the nutritive value at Animal Nutrition laboratory of BLRI Regional Station Baghabari. Results showed that highest number of farmers (82%) used rice straw for cattle feeding as roughage source while 76% farmers used jamboo and 44% farmers used Napier grass. Beside these it was observed that 54% farmers used maize crush, 46% used wheat bran, 26% used til oil cake, 24% used til oil cake and 44% farmers used mixed feed for cattle feeding. Proximate composition of available feedstuff for concentrate showed highest dry matter (DM) % in wheat bran (89.69±0.57%), highest Ash% in til oil bran (17.23±0.27%), highest crude fiber (CF)% in til oil bran (29.33±0.29%), highest crude protein (CP)% in khesari (19.56±0.25%) and more ether extract, (EE)% and nitrogen-free extract (NFE)% in til oil bran (12.64±0.03%) and maize (65.06±0.02%), respectively. Rice straw as roughage served more DM% (89.57±0.13%) but less CP% (straw, 6.60±0.11%) than napier (13.81±0.01% CP) and jamboo (12.50±0.17% CP). Proximate composition of available feedstuff that used in BLRI Regional Station shows that highest DM% is observed in til oil cake (92.15±0.60%), highest CF% is observed in khesari (24.78±1.01%) and highest CP% is observed in soybean meal (43.84±0.19%). Comparative nutrient value of feedstuff between on-station and community result showed that Proximate component of maize (except DM) as CP% (8.44±0.32 vs 13.72±0.16), CF% (2.72±0.03 vs 3.98±0.13), Ash% (1.78±0.02 vs 2.86±0.02) from on-station and community have a highly significant (p<0.001) relation. Proximate component of til oil cake (except DM) as CP% (17.54±0.09 vs 11.45±0.03), CF% (13.92±0.16 vs 29.33±0.27), Ash% (21.58±0.24 vs 17.23±0.27) from on-station and community have also highly significant (p<0.001) relation. There was no significant difference (p>0.05) of DM%, Ash%, CF% between on-station and community khesari feed but had a highly significant (p<0.001) difference between CP% (15.13±0.50 vs 19.56±0.25) of khesari. There was no significant difference (p>0.05) of DM%, CP% between on-station and community wheat bran but had a significant (p<0.002) difference between CF% (6.30±0.69 vs 11.18±0.10) on-station and community wheat bran. From the study it was observed that the farmers of surveyed areas mostly used both cultivated and ready feed for cattle feeding.

INTRODUCTION

Based on the dairy cattle population, Bangladesh has secured 15th position among the top dairy cattle populated countries in the world (FAO, 2012). There are over 264 million dairy cows in the world, producing nearly 600 million tone of milk every year (FAO, 2012) whereas in Bangladesh total cattle population is 23.7 million

(DLS, 2016). The current milk production in Bangladesh is about 7.2 million whereas the demand is 14.7 million Metric Ton considering 250 ml per head/day (DLS, 2016). Though Bangladesh has potentiality to increase milk production in order to minimize the shortage and save huge amount of money which is being spent for importation of milk but there are some extent of problems and one of them is feed and nutrition.

Livestock feed in Bangladesh is primarily derived from crop residue, grass and tree leaves as roughage and cereal by products and very negligible amount of grain as concentrate. Pabna and Sirajganj are the most promising and recognized area where farmers keep dairy cows mainly for milk production (Sikder et al., 2009) and the topography is characterized by as flood prone in nature. Hence, feed availability varies over the year in this area that may affect the cattle nutrition, production and reproduction. Therefore, it is necessary to assess the availability of feed resources and their nutrient composition.

MATERIALS AND METHODS

A baseline survey was conducted for identify the available feed resource of dairy cattle in rural villages of Pabna district. Data on available feed resource of dairy cattle were collected from total 50 households from three selected villages (Umarpur, Khorbagan and Hatail Aralia) under Bera Upazila of Pabna district with a pretested survey questionnaire. The collected feed samples were chemically analyzed for knowing the nutritive value at Animal Nutrition laboratory of BLRI Regional Station Baghabari. The collected data were compiled, tabulated and analyzed (descriptive statistics) by SPSS version 16 (SPSS Inc. Chicago, USA).

RESULTS AND DISCUSSIONS

Available feedstuffs used in Pabna and their proximate composition

Available feedstuffs used in surveyed area are shown Figure 1. It was observed that highest

number of farmers (82%) used Rice straw for cattle feeding as roughage source while 76% farmers used Jamboo and 44% farmers used Napier grass. For concentrate source it was observed that 54% farmer used Maize crush, 46% used Wheat bran, 26% used Til oil cake, 24% used Til bran and 44% farmer used Mixed feed for cattle feeding. These findings can relate with Shahjahan et al. (2017) who reported that the feeding management system in Pabna and Sirajganj districts at household levels revealed that ad libitum fodder and straw supplying was practiced based on the availability of fodder in 60 and 40% households, respectively. In summer, the dairy farmers of Pabna district allowed cultivating fodders to their cattle but reverse situation (mainly straw) found in Sirajgonj because green fodder is usually available during bathan feeding at winter season. Zaedi et al. (2009) stated that bathan is one kind of strip of sandy land rising out of a river bed and also a large area of pasture land for Napier (*Napier* spp.), Jambo, Local Durba and Carpert green grasses, and Khesari (*Lathyrus sativa*) and Matikalia (*Vigna sinensis*) legume production. They also added that cattle were housed in temporary shed and allowed to graze daily about 6-8 hours, and two times concentrate feeding per day (11 am and 3 pm). Das et al. (2003) stated that although legume fodder were available in the Baral of river for the bathan animals the farmers also provided a concentrate mixture of rice polish, mustard oil cake and common salt once a day while the fodder were replaced by straw during stall feeding. Rashid et al. (2007) observed that concentrate feed of dairy cattle was prepared by rice bran, wheat bran, pulses bran, mustard oil cake, till oil cake, crushed rice, molasses and salt.

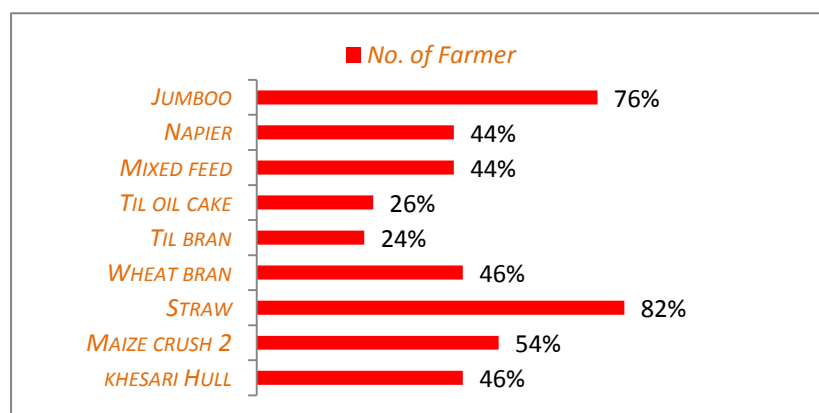


Figure 1. Available feedstuffs used in Pabna

Table 1

Proximate composition of available feedstuff from surveyed area.

Feed Stuff	Nutrient Parameter/Variable (Mean±SE)					
	DM%	Ash%	CF%	CP%	EE%	NFE%
Maize	87.01±0.57	1.78±0.02	2.72±0.03	8.44±0.32	2.82±0.05	71.25±0.19
Khesari	86.75±0.70	5.05±0.60	24.78±1.01	15.13±0.50	2.58±0.24	39.17±1.63
Wheat Bran	87.44±0.66	3.08±0.27	6.30±0.69	15.36±0.49	1.36±0.09	61.34±0.88
Til Bran	92.15±0.60	21.58±0.24	13.92±0.16	17.54±0.09	6.97±0.02	32.14±0.09
Soybean	89.85±0.09	6.18±0.10	6.41±0.05	43.84±0.19	3.12±0.04	30.30±0.30

Table 2

Proximate composition of available feedstuff that used in BLRI regional station.

Feed Stuff	Nutrient Parameter/Variable (Mean±SE)					
	DM%	Ash%	CF%	CP%	EE%	NFE%
KHESARI	86.28±0.42	5.05±0.08	26.17±0.48	19.56±0.25	1.30±0.01	34.19±0.41
Maize	89.10±0.52	2.86±0.02	3.98±0.13	13.72±0.16	3.48±0.01	65.06±0.20
Straw	89.57±0.13	10.78±0.02	33.57±0.21	6.60±0.11	1.68±0.01	45.92±0.21
Wheat bran	89.69±0.57	6.00±0.23	11.18±0.10	15.86±0.19	2.43±0.02	52.22±0.41
Til bran	86.62±0.50	17.23±0.27	29.33±0.27	11.45±0.03	12.64±0.03	15.97±0.04
Til cake	89.93±0.42	9.96±0.08	15.38±0.01	22.66±0.08	5.76±0.02	36.17±0.22
Mixed	85.95±0.19	8.90±0.11	13.53±0.04	14.22±0.06	1.30±0.02	48.00±0.08
Napier	36.20±0.11	6.00±0.05	12.00±0.11	13.81±0.01	1.90±0.01	2.49±0.06
Jamboo	35.00±0.28	5.60±0.06	10.80±0.05	12.50±0.17	1.86±0.01	4.24±0.12

Proximate composition of available feedstuff from surveyed area

Proximate composition of available feedstuff that used in BLRI Regional Station is presented in Table 1. It showed that highest DM% was observed in til bran (92.15±0.60%), highest CF% is observed in Khesari bran (24.78±1.01%) and highest CP% was observed in Soybean meal (43.84±0.19%).

Proximate composition of available feedstuff that used in BLRI Regional Station

Proximate composition of available feedstuff that used in BLRI Regional Station presented in Table 2. where highest DM% was observed in Til oil cake (89.93±0.42%), highest Ash% was observed in Til bran (17.23±0.27%), highest CF% was observed in Til bran (29.33±0.29%), highest CP% was observed in Til oil cake (22.66±0.08%) and more ether extracts (EE)% and nitrogen-free extract (NFE) were observed in Til bran (12.64±0.03%)

and Maize (65.06±0.20%), respectively. For roughage they used Rice straw which served more DM% (89.57±0.13%) but less CP% (straw, 6.60±0.11%) than Napier (13.81±0.01% CP) and Jamboo (12.50±0.17% CP).

Comparative nutrient value of feedstuff between on-station and community

Comparative nutrient value of feedstuff between on-station and community revealed proximate component of maize (except DM) as CP% (8.44±0.32 vs 13.72±0.16), CF% (2.72±0.03 vs 3.98±0.13), Ash% (1.78±0.02 vs 2.86±0.02) from on-station and community had a highly significant ($p < 0.001$) relation. Proximate component of Til bran (except DM) as CP% (17.54±0.09 vs 11.45±0.03), CF% (13.92±0.16 vs 29.33±0.27), Ash% (21.58±0.24 vs 17.23±0.27) from on-station and community have also highly significant ($p < 0.002$) relation. There was no significant difference ($p > 0.05$) of DM%, Ash%, CF% between on-station and community Khesari

feed but had a highly significant ($p < 0.001$) difference between CP% (15.13 ± 0.50 vs 19.56 ± 0.25) of Khesari. There was no significant difference ($p > 0.05$) of DM%, CP% between on-station and community Wheat bran but had a significant ($p < 0.002$) difference between CF% (6.30 ± 0.69 vs 6.30 ± 0.69) on-station and community Wheat bran (Table 3). The study on

few bathan areas by Shahjahan et al. (2017) revealed that those areas encompassed with single or multi ownerships with different ranged cattle population. Green fodder was abundant for cattle in those areas, in addition, most of the farmers provided hand mixed concentrate feeds (maximum 6 kg by two times) for milch cows to ensure the milk production.

Table 3

Comparative nutrient value of feedstuff between on-station and community.

Feed and Location	Nutrient Parameter/Variable (Mean \pm SE)					
	DM%	Ash%	CF%	CP%	EE%	NFE%
Maize						
On station	87.01 \pm 0.57	1.78 \pm 0.02	2.72 \pm 0.03	8.44 \pm 0.32	2.82 \pm 0.05	71.25 \pm 0.19
Community	89.10 \pm 0.52	2.86 \pm 0.02	3.98 \pm 0.13	13.72 \pm 0.16	3.48 \pm 0.01	65.06 \pm 0.20
P value	0.054	0.00	0.001	0.00	0.00	0.00
Til Bran						
On station	92.15 \pm 0.60	21.58 \pm 0.24	13.92 \pm 0.16	17.54 \pm 0.09	6.97 \pm 0.02	32.14 \pm 0.09
Community	86.62 \pm 0.50	17.23 \pm 0.27	29.33 \pm 0.27	11.45 \pm 0.03	12.64 \pm 0.03	15.97 \pm 0.04
P value	0.002	0.00	0.00	0.00	0.00	0.00
khesari						
On station	86.75 \pm 0.70	5.05 \pm 0.60	24.78 \pm 1.01	15.13 \pm 0.50	2.58 \pm 0.24	39.17 \pm 1.63
Community	86.28 \pm 0.42	5.05 \pm 0.08	26.17 \pm 0.48	19.56 \pm 0.25	1.30 \pm 0.01	34.19 \pm 0.41
P value	0.619	0.988	0.282	0.001	0.006	0.042
Wheat Bran						
On station	87.44 \pm 0.66	3.08 \pm 0.27	6.30 \pm 0.69	15.36 \pm 0.49	1.36 \pm 0.09	61.34 \pm 0.88
Community	87.44 \pm 0.66	3.08 \pm 0.27	11.18 \pm 0.10	15.36 \pm 0.49	1.36 \pm 0.09	61.34 \pm 0.88
P value	0.791	0.001	0.002	0.402	0.00	0.001

CONCLUSION

The farmers of surveyed areas mostly used both cultivated and ready feed for cattle feeding and maximum farmers used rice straw for cattle feeding as roughage source and maize crush for concentrate source.

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