

Feeding practices and macronutrient status of high altitude dairy cattle in eastern Himalaya region

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Optimum feeding is the key to any livestock development and it is necessary to evaluate time to time the feeding practices as well as nutritional status of dairy cattle in different parts of the country in order to encounter nutritional deficiencies, if any, to sustain milk production. The Eastern Himalayan region (Agro Eco Region-17), as classified by NBSSLUP (1990), is characterized by warm pre-humid eco-region with brown and red laterite hill soil. Animal husbandry is an indispensable part of the life, economy and culture of tribal high altitude people of this region (Buragohain *et al.* 2004). Reports are available on nutritional evaluation of pasture (Basu and Chatterjee 2002), tree fodders (Chatterjee *et al.* 2003, 2005) etc. in this region. The literatures on dairy husbandry practices of this region are scanty.

In the present experiment efforts have been made to explore existing feeding practices and nutritional status of dairy cattle Eastern Himalayan region. A dairy cattle nutrition survey was conducted in some randomly selected villages in West Kameng and Twang districts of Arunachal Pradesh in eastern Himalaya region and data on locally available feeds, feeding practices, milk yield, body weight of animals etc. were collected following a structured schedule from a total of 100 farmers, 50 each from two districts covering a total number of 395 dairy cattle. Intake of different feeds and milk production of cow have been recorded on the day of the survey. Intake of DCP and TDN of individual cows have been calculated by using the book values (Sen *et al.* 1978) for different feeds and fodder. The intake was compared with the requirement as per the ICAR Feeding Standard (1985) and the deficiency (if any) of DCP and TDN was calculated for individual animal.

Feeding practices followed by the most farmers for the milch animals are traditional in nature (Table 1). Grazing is a very common practice. They also offer cut field grasses

(61%), kitchen waste (53%) and different tree leaves (44%) etc. to their animals. Among the tree fodders zimbu, maar, bamboo, blemker, Bagar etc. are common. Cultivation of green fodder by the farmers is almost non-existent. Some farmers (21%) use to offer paddy or millet straw to their animals. The use of concentrate mixture is not much popular among the dairy farmers mainly due to non availability and high cost. Moreover, feed ingredients like rice grit, wheat flour, rice bran, whet bran, mustard cake etc. are also not commonly used. They rely more on locally available maize grain, millet grain, maize bran etc. Around 80% of dairy

Table 1. General feeding practices for dairy cattle

	Percentage of animals fed the particular feed		
	West kameng	Twang	Cumulative
Ready mix. con. mix	4	4	4
Maize grain	86	72	79
Millet grain	46	38	42
Rice grit/wheat flour	6	0	3
Rice bran/ wheat bran	30	0	15
Mustard cake	6	4	5
Maize bran	70	70	70
Mineral mixture	14	8	11
Salt	86	74	80
Cultivated green fodder	18	16	17
Cut field grass	76	46	61
Field grazing	92	92	92
Kitchen waste	56	50	53
Paddy straw/ millet straw	30	12	21
Tree leaves	64	24	44

farmers offer salt to the milch animals. However, only 11% of the dairy farmers have been found to offer mineral mixture to their animals.

The average milk yield, DM intake and nutritional status of the animals have been presented in Table 2. The average milk yield was 1.88 ± 0.13 and 1.98 ± 0.15 kg/d respectively, for West Kameng and Twang district. The cumulative average

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Table 2. Average milk yield, DMI and macronutrient deficiency in dairy cattle

	West Kumang n, 224	Twang n, 171	Cumulative n, 395
Average milk yield (kg/d/animal)	1.88±0.13	1.98±0.15	1.93±0.09
Average DMI (kg/ 100 kg BW)	2.02±0.07	2.05±0.07	2.03±0.06
Calculated roughage : concentrate ratio	81:19	73:27	77:23
<i>DCP deficiency in cows (as % of req.)</i>			
Nil	34	22	28
Up to 15%	36	22	29
16–30%	16	46	31
More than 30%	14	10	12
<i>TDN deficiency in cows (as % of req.)</i>			
Nil	16	20	18
Up to 15%	20	14	17
16–30%	40	40	40
More than 30 %	24	26	25

milk yield was 1.93±0.09 kg/d. For around 55% of the animals the average milk yield was below 1.5 kg/d and only for 16.8% animals the milk yield more than 3 kg/d. The average dry matter intake (kg/100 kg body weight) was 2.03±0.06 kg/d. The average roughage: concentrate ratio was 77:23.

The nutritional status of the animals in terms of energy and protein deficiency are presented in Table 2. Overall, around 72% cows covered under this survey suffered from protein deficiency. For 29% of animals, the deficiency was only marginal, 31% animals had shown moderate deficiency and 12% animals had shown acute deficiency. Around 82% cows covered under this survey suffered from energy deficiency. For 17% of animals the deficiency was only marginal. However, 40% animals had shown moderate deficiency and 25% animals had shown acute deficiency.

Animals were deficient in both protein and energy. However energy deficiency was more severe than protein deficiency. To combat this deficiency supplementation of nutrients in the form of balanced concentrate mixture, complete feed block *etc.* would be effective. The Government should take necessary measures so that poor dairy farmers can get these inputs at subsidized rate. The results obtained in the present study on existing feeding practices and nutritional status of dairy cattle would definitely help in formulating future strategy to augment the milk production performance of the dairy animals of this region.

SUMMARY

Data on locally available feeds, feeding practices, milk yield, body weight of animals etc. were recorded in some randomly selected villages in West Kumang and Twang districts of Arunachal Pradesh state falling under the Eastern Himalayan region (Agro Eco Region-17). Both protein (DCP) and energy (TDN) intake of the cows have been estimated and compared with ICAR feeding Standard and the deficiency pattern have been analyzed. A total number of 395 dairy cattle have been covered under this study. The cumulative average milk yield was 1.93±0.09 kg/d. Local grasses as well as tree fodders constituted the bulk of the ration. Agricultural by products, viz. paddy and millet straws, millet grain, maize bran, and kitchen wastes were also available for animal feeding but their availability was highly variable depending on season and location. Feeds and fodder samples actually fed to the dairy animals have been analysed for chemical composition. The average dry matter intake (DMI) was 4.254±0.12 kg/d, which was around 2% of the body weight of the animals. Overall, around 72% cows covered under this survey suffered from protein deficiency out of which 12% animals have shown acute (>30%) protein deficiency. Overall, around 82% cows covered under this study suffered from energy deficiency out of which 25% animals have shown acute (>30%) energy deficiency. The protein deficiency was more severe than energy deficiency in both the districts.

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