

A Study on Nutrient Deficiencies in Feed and Fodder Management Systems in Peri-Urban and Rural Areas of Belgaum District of Karnataka

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Abstract

Livestock sector plays an important role in the national economy and in the socio-economic development of the country. Green fodder provides nutrients for milch animals at cheaper cost. In spite of its importance, in the country, green fodder production has not been given proper place in the cropping pattern in providing proper nutrition to livestock. In view of this, a study was undertaken to analyse the nutrient deficiencies in feed and fodder management systems in peri-urban and rural areas of Belgaum district. Total 160 respondents of 8 villages in peri-urban and rural areas were interviewed by administering the standardised interview schedule. The availability of digestible crude protein rural areas was only 0.474 kg/head/day leading to a percentage deficiency of 36.8. In rural areas the availability of total digestible nutrients was only 2.06 kg/head/day and the same was 3.86 kg/head/day in peri-urban areas. The deficiency of total digestible nutrients was observed in both rural (81.42%) and peri-urban areas (75.89). Considerable percentage deficiency was observed in total digestible nutrients of feeds and fodder fed to livestock in rural (93.06%) and peri-urban areas (73.71%).

1. Introduction

India has made remarkable strides in the area of dairy development. India has largest livestock population in the world (DAHD, 2015). The sustainability of the livestock production system in the country is handicapped due to perpetual shortage of feed and fodders even though the livestock industry by and large dependent on agricultural residues, waste materials and naturally available green fodder. Green fodder plays an important role in dairying. The term green fodder applies to those crops which are used to supply the roughages necessary in rations for farm animals and which are suitable for use as green fodder. Green fodder provides nutrients for milch animals at cheaper cost. In spite of its importance, in the country, green fodder production has not been given proper place in the cropping pattern in providing proper nutrition to livestock. At this juncture, it should be noted that only 3.5 percent of cultivable land of the country is allotted for green fodder production (DAHD, 2003).

Fodder plays an important role in economising the cost of milk production. Fodder comprises a major protein of dairy ration of milch animals and therefore cultivation of nutritious and high yielding fodder is inevitable. Profitable livestock farming

depends mainly on availability of fodder. With increase in number of animal population & shrinking land resources, the problem to provide adequate feed and forage is becoming acute. Insufficient availability of fodder is thus one of the major constraints of livestock rearing in the country. The present study was conducted to analyse the Nutrient deficiencies in feed and fodder management systems in peri-urban and rural areas of Belgaum district of Karnataka state.

2. Materials and Methods

Study was conducted in Belgaum district of Karnataka state, as it ranks first in terms of total livestock population (DAHD, 2003). Sample was drawn from peri-urban and rural areas. Periurban refers to an area or village or habitation located in the perimeter of the urban area having partial or complete influence of urbanization. Four villages that are located within a distance of 8 km from district headquarter with partial influence of urbanization were selected as peri-urban areas. Another 4 villages located beyond 8 km were selected for rural areas. Thus the study covered totally 8 villages. Possession of livestock was the main criterion used to select the respondents. In each selected village, 20 respondents

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were randomly interviewed. The study covered 80 farmers from peri-urban area and 80 from rural area totalling to 160 farmers. The data was collected through personal interview technique. Interview schedule was designed incorporating all the identified variables and was tested at three different stages to identify the ambiguities and to standardised the interview schedule. This standardised interview schedule was used to collect the data from the respondents.

Deficiencies in feed and fodder management was operationalised as percentage of protein and energy deficiency found in the daily livestock feeding practices followed by the respondents of peri-urban and rural areas. Information on quantity and type of feeds fed to working animals and to milch animals every day was collected. The average of TDN and DCP were compared with the daily requirements of milch and draught animals as recommended by ICAR. The percent deficiencies for these nutrients were calculated by

considering the difference between the actual availability from the respondents' daily livestock feeding practice and the recommended dosage. This was calculated separately for rural areas and peri-urban areas. The statistical tool correlation was used to know the relationship between selected independent variables with Fodder management.

3. Results and Discussion

3.1 Nutrient Deficiencies in Feed and Fodder Management Systems

3.1.1 Nutrient Deficiencies in Feed and Fodder Management of Milch Animals in Rural and Peri-Urban Areas

The digestible crude protein (DCP) and total digestible nutrients (TDN) requirement and its availability to milch animals in rural and peri-urban areas per head per day were presented in Table 1.

Table 1: Nutrient deficiencies in feed and fodder management of milch animals in Rural and Peri-urban areas (n=160)

Sl. No.	Particulars	Recommended dose	Rural	Peri-urban	Percentage deficiency	
					Rural	Peri-urban
1	Digestible crude protein (kg)	0.75	0.47	1.16	36.8	0.00
2	Total Digestible Nutrients	6.65	2.06	3.86	68.94	41.83

The recommended dose of DCP for milch animals was observed to be 0.75 kg/head/day whereas the availability of DCP in rural areas was only 0.47 kg/head/day leading to a percentage deficiency of 36.8. Low use of concentrate feeds in the ration provided to the livestock in rural areas might be the probable reason for the present finding. But, in peri-urban areas zero percentage deficiency of DCP was found. Utilisation of leguminous feeds, green fodders and concentrates to the livestock by peri-urban farmers could be the reason. The investigator at the time of data collection observed that peri-urban farmers fed more quantity of concentrates with the assumption of improvement in milk production. Thus, the excess feeds were fed to animals.

The similar trend was observed in rural areas in case of total digestible nutrients (TDN), where the recommended dose of

TDN was 6.65 kg/head/day. In rural areas the availability of TDN was only 2.06 kg/head/day and the same was 3.86 kg/head/day in peri-urban areas. Though peri-urban respondents purchased fodder and concentrates to meet out the nutritional requirement, during off season due to higher cost and non availability of quality fodder they had to compromise. This could have been the reason for not meeting the requirement of TDN as per the recommended allowances.

The nutrient deficiencies in feed and fodder management of draught animals in rural and peri-urban areas. It was observed from Table 2 that the deficiency of DCP was observed in both rural (81.42%) and peri-urban areas (75.89%). Considerable percentage deficiency was observed in TDN of feeds and fodder fed to livestock in rural (93.06%) and peri-urban areas (73.71%).

Table 2: Nutrient deficiencies in feed and fodder management of draught animals in Rural and Peri-urban areas (n=160)

Sl. No.	Particulars	Recommended dose	Rural	Peri-urban	Percentage deficiency	
					Rural	Peri-urban
1	Digestible crude protein (kg)	0.56	0.10	0.13	81.42	75.89
2	Total Digestible Nutrients	4.9	0.34	1.28	93.06	73.71

The probable reasons for the above findings might be that, the draught animals require more of TDN and DCP as they were put to rigorous work. However the farmers in general resort to the same feed and fodder used to the milch animals, and thus leading to the deficit of nutritional requirements. The investigator during the time of data collection observed

that only a few farmers were using separate feed for draught animals such as horsegram, but only for shorter period of 1-2 months just before the onset of monsoon to prepare them to take up heavy summer and Kharif operations. The similar findings were reported by Singh *et al.*, (2002).

3.2 Fodder Production and Deficit from Lands Owned by the Respondents

The results presented in Table 3 indicate that, majority of rural respondents (33.75%) produce 5-10 tons of fodder, while majority of the respondents (35.00%) in peri-urban area produced less than 5 tons. The probable reason might be that most of the rural respondents grow crops mainly for grain purpose and the crop residues are utilised as fodder; whereas, less land holding could be the reason for comparatively low production of fodder in peri-urban areas.

Reverse trend was observed with regard to the quantity of fodder shortage experienced by rural and peri-urban

respondents. Most of the rural farmers (42.50%) expressed a dry fodder deficit of less than 5 tons, while it was between 5-10 tons for 28.75 percent of peri-urban respondents. The probable reasons for greater fodder deficit in peri-urban areas might be the prevalence of more percent of cross bred animals leading to more fodder requirement. Less land holding and cultivation of commercial crops could also contribute for experiencing higher fodder deficiency in peri-urban areas. Whereas, in rural areas, the dry fodder deficit is less because of the low fodder requirement by the local buffaloes which comprises of larger proportion of the rural livestock population.

Table 3: Fodder production and deficit from lands owned by the respondents (n=160)

Sl. No.	Particulars	Rural		Peri-urban		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
Production							
<i>A. Dry fodder (tons)</i>							
1	<5	12	15.00	28	35.00	40	25.00
2	5-10	27	33.75	25	31.25	52	32.50
3	10-15	17	21.25	12	15.00	29	18.12
4	15-20	8	10.00	11	13.75	19	11.87
5	>20	16	20.00	4	5.00	20	12.50
Total		80	100.00	80	100.00	160	100.00
Mean		9.175		8.64		9.078	
<i>B. Dry fodder deficit (tons)</i>							
1	<5	34	42.50	17	21.25	51	31.87
2	5-10	3	3.75	23	28.75	26	16.25
3	10-15	2	2.50	5	6.25	7	4.37
4	15-20	3	3.75	3	3.75	6	3.75
5	>20	0	0.00	5	6.25	5	3.12
Total		42	52.50	53	66.25	95	59.37
Mean		2.37		5.52		4.10	
<i>C. Green fodder produced from own field (tons)</i>							
1	<5	41	51.25	32	40.00	73	45.62
2	5-10	6	7.50	4	5.00	10	6.25
3	10-15	3	3.75	5	6.25	8	5.00
4	15-20	3	3.75	2	2.50	5	3.12
5	>20	4	5.00	3	3.75	7	4.37
Total		57	71.50	46	57.50	103	64.37
Mean		2.88		3.59		3.24	
<i>D. Green fodder deficit (tons)</i>							
1	<5	3	3.75	2	2.50	5	3.125
2	5-10	0	0.00	5	6.25	5	3.125

Table 3. Continue...

Sl. No.	Particulars	Rural		Peri-urban		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
<i>D. Green fodder deficit (tons)</i>							
3	10-15	0	0.00	3	3.75	3	1.875
4	15-20	0	0.00	1	1.25	1	0.625
5	>20	0	0.00	2	2.50	2	1.250
Total		3	3.75	13	16.25	16	10.00
Mean		0.6		0.90		3.12	

With regard to green fodder production from own land, nearly three fourth (71.25%) of the rural and more than one half (57.50%) of peri-urban respondents produced green fodder. Half (51.25%) of the rural respondents could produce up to 5 tons and the same quantity was produced by 40 percent of peri-urban respondents. It is reported by the rural respondents that some portion of the land in Kharif is utilised for growing Sorghum, Maize and/or Bajra to meet out the green fodder requirement. Similarly peri-urban respondents mentioned that they take up similar crops for meeting green fodder requirement.

Regarding green fodder deficit, in rural areas only 3.75 percent of farmers expressed deficit of less than 5 tons and none of the respondents expressed a deficit of greater than 5 tons. While, in peri-urban areas, 6.25 percent of respondents expressed a green fodder deficit of 5-10 tons followed by 3.75 percent with green fodder deficit of 10-15 tons. The probable reasons for the above results could be that, the rural farmers utilized the green fodder production produced within their villages for their livestock and it was sufficient to feed their livestock as they are mostly local breeds. Secondly, the rural farmers are poor and do not afford to get fodder from faraway places. They use the dry fodder stored, for feeding their livestock. Whereas, in peri-urban areas, as the livestock population is comprised of crossbred animals in larger proportion, whose nutritional requirements are higher, the farmers had faced a larger green fodder deficiency.

4. Conclusion

The deficiency of Digestible crude protein (DCP) was not observed in peri-urban milch animals but in rural area it was

36.8 percent. Deficiency of total digestible nutrients (TDN) observed in rural and peri-urban milch animals were 68.94 percent and 41.83 percent respectively. Livestock nutrient deficiencies were clearly observed in both rural and peri-urban areas. This could be minimized by providing information about the nutritional requirements of livestock and the available feeds and fodders to meet the nutritional requirement of livestock to the farmers. The farmers should also be trained in producing better fodder cultivars to overcome the nutrient deficiencies in fodder to livestock.

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6. References

- DAHD, 2003. State animal husbandry department, <http://dahd.nic.in/>.
- DAHD, 2015. Annual report, Department of Animal Husbandry, Dairying & Fisheries, <http://dahd.nic.in/>
- Singh, O.N., Singh, A.S. Singh, M.S., 2002, Nutritive value of locally available rice bran in Manipur. *Indian Journal of Animal Research* 36(2), 155-156.