Assessment of Feeding Practices and Nutritional Status of Lactating Buffaloes in Charkhi Dadri District of Haryana, India

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Abstract

An extensive survey was carried out to record feeding practices and nutritional status of lactating buffaloes in Charkhi Dadri district of Haryana state. The survey was conducted during rabi season (January, 2019 - February, 2019). Twelve villages, representing all the blocks of the district were selected for this survey. Samples of feeds, fodder, milk, hair and blood were collected from five families from each category of farmers i.e. belonging to landless category and farmers with land holding in a village. Thus a total of 120 lactating buffaloes were selected for the study. The survey data revealed that in rabi season, berseem was the most preferred green fodder (73.3% farmers) fed by farmers of Charkhi Dadri followed by oat fodder and grasses. Among dry roughages, wheat straw was fed by majority of farmers (90.8%) in the district. Rice straw and bajra kadbi were also being used by farmers depending on availability in the area. Comparatively higher percentage of farmers belonging to landless category was using bajra kadbi. Wheat grain was the most popular as source of energy and was used by 76.7% of buffalo owners followed by bajra grain (44.2%). As protein sources, cotton seed cake and cotton seed were being used by 75% and 47.5% of buffalo owners of landless and farmers with land holding categories, respectively. Comparatively a higher percentage of farmers with land holding (68.3%) were using cotton seeds. Similarly higher percentage of farmers with land holding was using cotton seed cake too. Very few respondents were providing mineral mixture (17.5%) and common salt (13.3%) to their animals in the district. Results showed that average body weight and milk yield of buffaloes of farmers with land holding was 515.27 kg and 11.49 kg per day, respectively which is higher than buffaloes kept by landless farmers (495.10 kg and 8.62 kg/day). Average CP intake of buffaloes of land less farmers was 1.26 kg/day which was 6.67% less than the requirements, whereas, buffaloes of farmers with land holding were receiving 1.67 kg CP per day which is 3.08 % more than the requirement. Furthermore, 68.3% and 20% buffaloes of landless farmers and farmers with land holding were receiving less crude protein than required. Average daily TDN intake by buffaloes of landless farmers and farmers with land holding was 7.36 and 8.49 kg, respectively. Daily TDN intake was 0.83% and 1.90% more than requirement in case of landless farmers and farmers with land holding category respectively. However, 51.7% and 31.7% of buffaloes of landless farmers and farmers with land holding were receiving less TDN than their requirement respectively. This imbalance feeding was mainly due to lack of knowledge and awareness among farmers regarding composition of feeds and nutrient requirements of the animals.

Keywords
Survey, Buffaloes, Feeding practices, Nutritional status

Introduction

Animal husbandry continues to be an integral part of human life since the start of civilization. Over 65% of the population in India is still living in rural areas and most of them are dependent on agriculture and livestock for their livelihood. Two-third of rural community in India is engaged in livestock rearing. It contributes 4.11% of total GDP and 25.6% of total agricultural GDP of India thus plays a vital role in Indian economy. India has largest buffalo population in the world (108.7 million) and ranks first in the world (1). Buffaloes contribute more than 50% of the total milk production in India but lactation
yield per animal is very low i.e. ~1300kg. This low yield is mainly due to feeding of poor quality feeds, particularly crop residues and agro-industrial by-products fed to animals in rural households (2). The main constraint to livestock development is the scarcity and fluctuation in the quality and quantity of the animal feed supply throughout the year. Increased populations and industrialization are making arable land scarce and also a large area of the available arable land is being degraded due to human activities.

To exploit the full potential of dairy animals the ration should be balanced but lack of quality feeds is the main constraint in most of developing countries (3). Most of farmers follow traditional feeding practices on the basis of available feeds and fodder. Generally farmers do not supplement mineral mixture and common salt in ration of animals which cause deficiency of important minerals which leads to various health problems (4). Proper feeding of buffaloes may raise their production by 30-40 %. Therefore, present study was undertaken to assess the feeding practices of lactating buffaloes and to suggest corrective measures for increased milk production and optimal health.

**Materials and Methods**

**Location and Climate**

Charkhi Dadri is recently created as 22nd districts of Haryana state in northern India. District Charkhi Dadri is located between 28.5921° N latitude and 76.2653° E longitude respectively. District Charkhi Dadri is located 112.6 km of India capital New Delhi and 295 km of Haryana capital Chandigarh. The average temperature in Charkhi Dadri is 25.3 °C highest in June and lowest in January. During the year, there is little rainfall in Charkhi Dadri. The average rainfall here is 517 mm.

**Selection of farmers**

Multi-stage stratified random sampling procedure was adopted for the selection of villages. Four blocks of Charkhi Dadri district namely Badhra, Jhojhu, Bond Kalan and Charkhi Dadri were selected purposively for the survey study. Three villages were purposefully selected from each block representing status of their block and from each villages, two categories of farming families i.e. landless farmers and farmers with land holding were randomly selected. From each category of farming family 5 lactating buffaloes per village were selected, thus a total of 120 lactating buffaloes were selected for the study.

**Data collection**

A questionnaire was prepared keeping in mind the objectives and various dimensions of the study. Individual buffalo owner was interrogated regarding the type of feedstuffs (dry fodder, green fodder, grains, cakes, mineral mixture and common salt) and their amount fed to their animals. The weight of animals was calculated by formula suggested by (5)

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\text{Body Wt. (Kg)} = 0.000027454 \times CG^{2.7}, \text{ Where CG is chest girth in centimetre.}
\]

The nutrients requirement of buffaloes was calculated on the basis of their body weight and production performance. The availability of DM, CP, and TDN for each animal was calculated on basis of chemical composition of feed/fodder ingredients and their feed intake.
Finally, the nutrient intake of animals was compared with the nutrients requirements (7) to find out their nutrient deficiencies/excesses.

**Statistical Analysis**

The data were subjected to statistical analysis to draw inferences (8).

**Results and Discussion**

The result of proximate composition and nutritive value of different feedstuffs fed to the buffaloes of Charkhi Dadri district has been presented in Table 1. The average values of the feedstuffs corroborated with the values reported by (9). Variations observed in relation to proximate composition of the feedstuffs might be due to varietal differences, different processing techniques and possible adulterations.

Feedstuffs used by different categories of farmers of Charkhi Dadri district are given in the Table 2. Berseem was the most preferred green fodder fed by of farmer of Charkhi Dadri i.e. 73.3% of farmers were feeding barseem in the district followed by oat fodder and grasses with equal percentage i.e. 23.3%. Comparatively higher percentage of farmers with land holding (83.3%) were using barseem as chief green source while this percentage was 63.3% in case of landless farmers, while a higher percentage of landless farmers were using grasses and weeds as source of green than the farmers with land holding.

Among dry roughages, it was observed that wheat straw was fed by majority of the farmers (90.8%) while rice straw was used by 23.3% of the farmers in the district. Rice straw and bajra kadbi were being used by farmers depending on availability in the area. Comparatively higher percentage of landless farmers was using bajra kadbi as it was available to them at cheaper cost or in exchange of harvesting labour. It was found that wheat flour/dalia was most popular as source of energy and was used by 76.7% of buffalo owners followed by bajra grain (44.2% of farmers) in the district. As protein sources, cotton seed cake and cotton seed were used by 75% and 47.5% farmers respectively. Comparatively a higher percentage of farmers with land holding (68.3%) were using cotton seeds reason might be that cotton seed was more costly and farmers with land holding can easily afford it. Similarly higher percentage of land holding farmers were using cotton seed cake. Farmers were using grains and cake after soaking and boiling in water.

Availability and keeping quality of wheat straw made it preferred choice among dry fodder for feeding of their buffaloes (10). Very few farmers were providing mineral mixture to their animals. Practice of using mineral mixture was observed comparatively higher among farmers with land holding (23.3%) than landless farmers (11.6%). Farmers generally do not supplement mineral mixture and common salt in animal ration of lactating buffaloes in Rohtak and Bhiwani district was reported (10) earlier.

Comparative feeding of different feedstuffs in different blocks of Charkhi Dadri district is depicted in Table 3. It was found that use of barseem as green fodder is almost similar in all blocks of Charkhi Dadri district but use of grasses/weeds was more in Bond Kalan block (26.7%) in comparison to other blocks. Most of the farmers of all the blocks were using wheat straw preferably but feeding of rice straw was highest in Bond Kalan and Charkhi Dadri (33.3%) blocks and lowest in Badhra block (10.0%) because soil type and water availability in Bond Kalan and Charkhi Dadri blocks are suitable for rice cultivation. Bajra kadbi was used more in Badhra and Jhojhu block and 26.6% and 20.0% farmers were feeding bajra kadbi, respectively.
Table.1 Chemical composition (%) and nutritive value (%) of feedstuffs used by farmer of Charkhi Dadri district of Haryana state

| Feedstuffs      | DM %      | CP%        | EE%       | CF%        | NFE%      | TDN* %     |
|-----------------|-----------|------------|-----------|------------|-----------|------------|
| Wheat straw     | 89.21     | 03.09      | 1.02      | 35.44      | 48.56     | 45.0       |
|                 | (88.46-91.70) | (02.62-03.71) | (09.2-1.43) | (33.27-37.71) | (45.62-50.12) |               |
| Paddy Straw     | 89.50     | 04.40      | 1.50      | 41.62      | 34.10     | 44.0       |
|                 | (87.83-91.39) | (03.20-05.17) | (1.12-2.87) | (40.22-43.52) | (31.07-37.51) |               |
| Bajra kadbi     | 86.16     | 04.18      | 0.94      | 34.52      | 51.78     | 52.0       |
|                 | (85.31-88.53) | (03.06-05.32) | (0.74-1.25) | (32.16-41.32) | (45.21-53.89) |               |
| Barseem fodder  | 15.01     | 17.33      | 1.89      | 22.58      | 44.03     | 58.0       |
|                 | (13.47-17.22) | (16.02-20.43) | (1.21-3.16) | (17.63-24.13) | (40.82-49.75) |               |
| Oat fodder      | 25.50     | 07.14      | 2.26      | 32.02      | 52.51     | 52.0       |
|                 | (22.47-27.31) | (06.10-07.85) | (2.85-3.12) | (27.94-34.72) | (49.23-54.82) |               |
| Grasses/weeds   | 15.43     | 11.50      | 1.95      | 25.02      | 51.65     | 50.0       |
|                 | (14.11-17.82) | (09.15-12.41) | (1.31-2.85) | (23.64-28.35) | (48.53-54.73) |               |
| Wheat grain     | 89.15     | 11.30      | 2.40      | 04.55      | 77.90     | 85.0       |
|                 | (88.15-91.35) | (10.55-11.75) | (1.89-2.73) | (3.85-4.90) | (76.87-79.21) |               |
| Bajra grain     | 89.71     | 12.00      | 3.42      | 03.07      | 76.48     | 75.0       |
|                 | (87.50-90.35) | (11.50-12.95) | (3.05-3.85) | (2.72-3.67) | (75.04-77.82) |               |
| Cotton seed cake| 88.50     | 23.63      | 8.60      | 22.60      | 37.62     | 75.0       |
|                 | (87.20-90.35) | (22.76-24.75) | (7.22-9.17) | (20.15-24.84) | (33.14-40.36) |               |
| Cotton seed     | 88.56     | 20.10      | 17.04     | 21.36      | 36.87     | 88.0       |
|                 | (87.14-90.51) | (19.30-22.14) | (15.81-19.42) | (20.17-22.16) | (34.40-39.12) |               |
| Feed pellets    | 88.80     | 18.86      | 2.68      | 12.42      | 62.42     | 78.0       |
|                 | (87.31-91.07) | (16.54-20.12) | (1.95-2.96) | (11.41-14.21) | (60.70-65.47) |               |
| Gram Churi      | 90.86     | 12.41      | 2.39      | 28.41      | 49.27     | 78.0       |
|                 | (88.12-91.82) | (11.39-15.25) | (2.09-2.86) | (24.66-30.26) | (47.18-51.79) |               |

* Calculated values (9)
Figures in Parenthesis indicate range.

Table.2 Comparative feeding plane of different feedstuff used by different categories of farmers of Charkhi Dadri district

| Feedstuffs      | Landless farmers | Farmers with land holding | Overall |
|-----------------|------------------|---------------------------|---------|
|                 | n = 60           | n = 60                    | n = 120 |
| Oats fodder     | 13(21.6%)        | 15(25.0%)                 | 28(23.3%) |
| Berseem fodder  | 38(63.3%)        | 50(83.3%)                 | 88(73.3%) |
| Grasses         | 21(35.0%)        | 07(11.6%)                 | 28(23.3%) |
| Wheat straw     | 53(88.3%)        | 56(93.3%)                 | 109(90.8%) |
| Rice straw      | 13(21.7%)        | 15(25.0%)                 | 28(23.3%) |
| Bajra kadbi     | 12(20.0%)        | 05(08.3%)                 | 17(14.2%) |
| Wheat flour/dalia | 43(71.6%)     | 49(81.6%)                 | 92(76.1%) |
| Bajra (grains)  | 25(41.6%)        | 28(46.6%)                 | 53(44.2%) |
| Cottonseed      | 16(26.6%)        | 41(68.3%)                 | 57(47.5%) |
| Cottonseed cake | 41(68.3%)        | 49(81.6%)                 | 90(75.0%) |
| Gram husk/churi | 04(06.6%)        | 13(21.6%)                 | 17(14.2%) |
| Feed pellets    | 03(05.0%)        | 07(11.6%)                 | 10(08.3%) |
| Mineral mixture | 07(11.6%)        | 14(23.3%)                 | 21(17.5%) |
| Common salt     | 09(15.0%)        | 07(11.6%)                 | 16(13.3%) |

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Table 3 Comparative feeding of different feedstuffs in different blocks of Charkhi dadri District

| Feedstuffs          | Bond Kalan (n=30) | Charkhi Dadri (n=30) | Badhra (n=30) | Jhojhu (n=30) |
|---------------------|-------------------|----------------------|---------------|--------------|
| Oats fodder         | 05 (16.7%)        | 06 (20.0%)           | 10 (33.3%)    | 07 (23.3%)   |
| Barseein fodder     | 22 (73.3%)        | 23 (76.7%)           | 21 (70.0%)    | 22 (73.3%)   |
| Grasses/ weeds      | 08 (26.7%)        | 07 (23.3%)           | 07 (23.3%)    | 06 (20.0%)   |
| Wheat straw         | 27 (90.0%)        | 26 (86.7%)           | 28 (93.3%)    | 28 (93.3%)   |
| Rice straw          | 10 (33.3%)        | 10 (33.3%)           | 03 (10.0%)    | 05 (16.7%)   |
| Bajra kadbi         | 03 (10.0%)        | 04 (13.3%)           | 08 (26.6%)    | 06 (20.0%)   |
| Wheat flour/dalia   | 19 (63.3%)        | 22 (73.3%)           | 27 (90.0%)    | 24 (80.0%)   |
| Bajra               | 11 (36.7%)        | 09 (30.0%)           | 15 (50.0%)    | 18 (60.0%)   |
| Cotton seed         | 12 (40.0%)        | 15 (50.0%)           | 16 (53.3%)    | 14 (46.7%)   |
| Cotton seed cake    | 18 (60.0%)        | 26 (86.7%)           | 24 (80.0%)    | 22 (73.3%)   |
| Gram churi          | 04 (13.3%)        | 07 (23.3%)           | 03 (10.0%)    | 03 (10.0%)   |
| Feed pellets        | 02 (06.7%)        | 03 (10.0%)           | 02 (06.7%)    | 03 (10.0%)   |
| Mineral mixture     | 05 (16.7%)        | 06 (20.0%)           | 05 (16.7%)    | 05 (16.7%)   |
| Common salt         | 03 (10.0%)        | 04 (13.3%)           | 05 (16.7%)    | 04 (13.3%)   |

Table 4 Comparative feeding plane and nutrient intake of animals of different categories of farmers of Charkhi Dadri district

| Attribute                              | Landless farmers | Farmers with land holding |
|----------------------------------------|------------------|---------------------------|
| Average body weight of buffaloes (Kg)  | 495.10 ± 4.20    | 515.27 ± 3.44             |
| Average milk yield (Kg/day)            | 8.62 ± 0.56      | 11.49 ± 0.41              |
| Total DM intake (Kg/day)               | 12.04 ± 2.22     | 14.31 ± 2.00              |
| Total DM Required (Kg/day)             | 13.61 ± 0.11     | 14.17 ± 0.09              |
| DM deficit/excess (%)                  | -11.53 %         | +1.0 %                    |
| Animal underfed in respect of DM       | 36 (60.0%)       | 23(38.3%)                 |
| Total CP intake (Kg/day)               | 1.26 ± 0.05      | 1.67 ± 0.04               |
| Total CP required (Kg/day)             | 1.35 ± 0.05      | 1.62 ± 0.03               |
| CP deficit/excess (%)                  | -6.67 %          | +3.08 %                   |
| Animal underfed in respect of CP       | 41 (68.3%)       | 12 (20.0%)                |
| TDN (Kg/day)                           | 7.26 ± 0.18      | 8.67 ± 0.13               |
| Total TDN Required (Kg/day)            | 7.20 ± 0.24      | 8.49 ± 0.18               |
| TDN deficit/excess (%)                 | +0.83 %          | +1.90 %                   |
| Animal underfed in respect of TDN      | 31(51.7%)        | 19 (31.7%)                |

Bajra cultivation was comparatively higher in these blocks due to less facility of irrigation in these areas and its production required less water than other crops. Most of the farmers were feeding wheat flour/dalia to their animals in all the blocks, however farmers of Badhra and Jhojhu blocks were also using bajra grain and 50% and 60% farmers in these blocks were using bajra grain, respectively. Cotton seed cake was more preferred in
Charkhi Dadri block (86.7%) and cotton seed was more preferred in Badhra block (53.3%). Only a few farmers (17.5 %) were using mineral mixture in the animal ration. Similar pattern of mineral mixture use was observed in all the blocks of the district.

The comparative feeding plane of milch buffaloes of owned by different categories of farmer is presented in Table 4. During survey it was found that people were not aware of scientific feeding practices and nutrient requirements. Majority of farmers were offering concentrate to only lactating buffaloes and concentrate was composed of easily available ingredients like wheat and bajra.

The comparative feeding plane of milch buffaloes owned by different categories of farmers of Charkhi Dadri district revealed that the average body weight of buffaloes owned by landless farmers and farmers with land holding was 495.10 kg and 515.27 kg., respectively. The body weight was higher in case of buffaloes owned by farmers with land holding. Further, it was found that the average milk yield of buffaloes owned by farmers with land holding was higher (11.49 kg/day) as compared to land less farmers (8.62 kg/day). Similar observation were reported earlier in Gurgaon district of Haryana. \(^{(11)}\)

The total dry matter intake was more in case of buffaloes of farmers with land holding (14.31kg/day) than buffaloes of landless farmers (12.04kg/day). On average buffaloes of landless farmers were receiving 11.53 % less dry matter than required. Furthermore, 60% buffaloes of land less farmers were underfed in respect of dry matter.

Average crude protein intake of buffaloes of landless farmers was 1.26 kg/day which was 6.67% less than the requirements. Whereas, buffaloes of farmers with land holding were receiving 1.67 kg CP per day which is 3.08 % more than the requirement. Furthermore, 68.3% and 20% buffaloes of landless farmers and farmers with land holding respectively were receiving less crude protein than required.

Average daily TDN intake by buffaloes of landless farmers and farmers with land holding was 7.26 and 8.67 kg, respectively. Daily TDN intake was 0.83% higher in case of landless farmers and it was 1.90% higher than requirement in case of farmers with land holding category. However, 51.7% and 31.7% of buffaloes of landless farmers and farmers with land holding were receiving less TDN than required. This imbalance feeding was mainly due to lack of knowledge and awareness among farmers about composition of feed ingredients and requirements of the animals.

Results of the present investigation reveal that body weight, milk yield and dry matter intake in lactating buffaloes of farmers with land holding were higher as compared to those reared by landless farmers. A high number of buffaloes reared by both landless and farmers with land holding were receiving ration deficient both in energy and protein. Only a few farmers of the district were using mineral mixture and common salt as nutritional supplement. An approach of balanced feeding and mineral mixture supplementation could be resorted to fill the nutritional gap and optimize milk production in the district.

References

1. 19th Livestock Census (2012). Government of India. Ministry of Agriculture.
2. Sherasia, P.L., Pandya, P.R., Parnerkar, S., Devalia, B.R. and Bhanderi B.M (2016). Evaluation of feeding practices and certain minerals status of lactating
buffaloes in coastal zone of western India. *Buff. Bulletin*. 35(3): 467-477.

3. Makkar HPS (2006). Improving animal productivity through meeting nutrient deficiencies with multi-nutrient blocks, enhancing utilization efficiency of alternate feed resources, and controlling internal parasites: a summary. In: Proceedings of Improving Animal Productivity by Supplementary Feeding of Multinutrient Blocks, Controlling Internal Parasites and Enhancing Utilization of Alternate Feed Resources, Vienna, Austria.

4. Garg, M.R., Bhandari, B.M., Biradar, S.A., Kukreja, J.L. and Sherasia, P.L. (2007). Dietary mineral status of lactating buffaloes in Kolhapur district of Maharashtra State in India. *Ital. J. Anim. Sci.* 6(2): 484-487.

5. Nagacenkar R (1980). All India coordinated Research Project on buffaloes: certain aspects of buffalo productivity research in India. Proc. Summer institute on buffalo management systems. Deptt. Of LPM, College of Animal Sciences, Haryana Agricultural University, Hisar.

6. AOAC (2007). Official Methods of Analysis of AOAC International, 18th edn. Association of Official Analytical Chemists International, Gaithersburg, Maryland, USA.

7. Ranjhan SK (1998). Nutrient requirements of livestock and poultry. Indian Council of Agricultural Research, New Delhi, India.

8. Snedecor GW, Cochran WG (1994). Statistical Methods 8th edn Journal of Educational and Behavioral Statistics. 19(3): 304-307.

9. Sen KC, Ray SN, Ranjhan SK (1977). Nutritive value of Indian feeds and fodders, ICAR, New Delhi, 25.

10. Maan NS, Mandal AB, SihagSajjan, Khatta VK (2014). Feeding Plane and Mineral Status of Murrah Buffaloes in Bhiwani District of Haryana State. Indian J Anim. Nutr. 31(1): 53-59.

11. Baloda, S (2016). Feeding practices of lactating buffaloes in Gurgaon district of Haryana. MVSc. thesis submitted to LUVAS, Hisar.

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