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Nutritional Status of Murrah buffaloes affected by different herd size groups in Etmadpur block of Agra District

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Abstract

Data on feeding and nutritional status of lactating Murrah buffaloes in Etmadpur block of Agra district was recorded. A total of 50 dairy Murrah baffaloes of various lactation number and different herd size groups were selected and nutritional status was ascertained through data collection on body weight, milk yield and feed intake. The body weight of above buffaloes was 506±4.61, 493±5.11 and 481±4.96 Kg in small, medium and large herd size groups, respectively. The milk yields per lactation were found to be 2440±53, 2373±47 and 1996±54 litres respectively, in above herd size groups. The body weight and milk yield per lactation per animal was significantly ($p \leq 0.01$) affected by herd size groups. With increas the herd size, the body weight and milk production was decreased but lactation period and fat percentage was not affected by herd size groups. The DM, DCP and TDN availability was also affected significantly ($p \leq 0.01$) by herd size groups. The availability of above nutrients were decreased with increase in herd size. It is due to poor supply of nutrients in large herd size groups. It is clear from the study that the production of milk, lactation period, body weight, nutrients supply and availability was significantly poor in large herd size groups than small and medium herd size groups.

Key words: Lactation period, Milk yield, Murrah buffaloes, Nutritional status

Introduction

Though the productivity of animals depends on their genetic potential, it is always prudent to feed them with optimum quantities of different macro as well as micro nutrients to exploit their full production potential. The amjor constraint in animal production, nutrition has been identified as the most important factor (International Livestock Research Institute, 1995) because the livestock rearing and production is largely in the hand of resource poor farmers (Brithal and Ravishankajr, 1999). Further the availability of nutrients is dependent on feeds and fodder consumed by the animals, which is affected by the season, cropping pattern, agro ecological conditions, the type and size of land holdings, herd size and socio economic condition of farmers Pantagne et al., 2002 and Meenalochani et. al., 2015.

Improved feeding has a positive effect on productive performance. High milk production and imbalanced feeding is one of the factors for reproductive disorders in cows and buffaloes. Several studies suggested that feed supplied in particular to animals postpartum should be enough to maintain body condition, to support milk production as well as to initiate ovarian cyclicity. The farmers usually provide better feeding through supplementation of concentrate by-products such as oil cakes,, wheat bran and pulse bran only to lactating cows and buffaloes, as the received immediate returns through milk sales. (Alam and Sarder, 2010).

To evaluate the impression of herd size on nutritional status of Murrah buffaloes, the present investigation was therefore undertaken in Etmadpur block of Agra district and 32 farm families with 50 animals in two villages were studied.

Materials and Methods

A total of 50 Murrah buffaloes is various stage of lactation and herd size were randomly selected for the study from two villages of Etmadpur block of Agra district. After selection of villages, and families having Murrah buffaloes, we divided into three herd size groups :

1. Small (having one buffalo) 2. Medium (having two buffaloes) and 3. Large (having more than two buffaloes).

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To estimate nutritional status of Murrah buffaloes the contemplation regarding milk yield, lactation period, body weight and nutritional status of Murrah buffaloes were obtained from selected farmers through face to face interview with the help of a well structured and pretested questionnaire and by personal examinations. Fat was determined by the standard Gorber's method as recommended by AOAC 1965 and body weight by the following formula:

Body weight (Kg.) =

$$\frac{\text{Length (cm) x Heart girth (cm) x 0.367}}{\text{A, B and C}}$$

Where, A = 22.85, B = 21.60 and C= 20.30 for the hearth girth below 165, between 165 and 200 and above 200 cm; respectively.

It comprised milk yield, feeding pattern, quantity of feed and fodder offered during 24 hours, according to body weight and collection of concentrate, wheat straw and green fodder. Besides this, the amounts of nutrients available to the animals from other fodders were calculated by considering average nutritive value of the respective fodders (Ranjhan, 1998).

Table 1: Nutrients required for maintenance of ruminants.

S.No.	Live weight (Kg.)	DCP (Kg.)	TDN(Kg.)
1	150	0.102	1.27
2	200	0.148	1.66
3	250	0.168	2.02
4	300	0.197	2.36
5	350	0.227	2.70
6	400	0.254	3.03
7	450	0.282	3.37
8	500	0.296	3.69

Table 2: Nutrients required for production per Kg. of milk to be added to the maintenance allowance.

S.No.	Fat % (in milk)	DCP (Kg.)	TDN(Kg.)
1	3	0.040	0.269
2	4	0.045	0.316
3	5	0.051	0.363
4	6	0.057	0.411
5	7	0.063	0.458
6	8	0.069	0.506
7	9	0.075	0.553
8	10	0.081	0.602
9	11	0.085	0.650

The milch buffaloes consume generally 3.0 Kg dry matter/100 Kg body weight. In case of DCP and TDN, the ration of milch animals is calculated on the basis of extra maintenance requirement plus that for the daily milk yield. The extra nutrients required for milk production also vary with the fat content of milk and level of milk production. The maintenance and production ration of each animal was computed according to the feeding standard (Sen et al., 1971), the data were statistically analyzed. The nutrients required per Kg. of milk production are given in Table 1 and 2.

Results and Discussion

The data presented in Table 3 revealed that the per lactation and per day milk yield of Murrah buffaloes in Small, Medium and Large herd size groups was found to be 2440±53 and 7.77±0.31, 2373±47 and 7.75±0.38 and 1996±54 and 6.61±0.41 litre, respectively. These results indicated that the milk production was decrease with increase herd size significantly ($p \leq 0.01$). The same trend was observed insignificantly in lactation period of Murrah buffaloes. The fat percentage was not affected by different herd size groups. The body weight of Murrah buffaloes in small, medium and large herd size groups was 506±4.61, 493±5.11 and 481±4.96 Kg., respectively. The body weight was significantly ($p \leq 0.01$) affected by herd size. The body weight was decrease with increasing herd size. It is due to poor availability of nutrients with increase in herd size. The D.M. requirement and availability of Murrah buffaloes in Small, Medium and large herd size were found to be 15.18±0.89 and 14.51±0.71, 14.79±01.02 and 14.09±0.91 and 14.43±01.06 and 13.70±0.76 Kg., respectively. The requirements and availability of DM in this study was decrease with increase in herd size groups, significantly ($p \leq 0.01$). The study further revealed that the DM availability was much lower than that of requirements in all herd size groups, due to poor feeding of roughages and concentrate which results poor productivity of Murrah buffaloes. The table further revealed that the DCP requirement and its availability of above herd size groups was found to be 0.787±0.004 and 0.723±0.003, 0.767±0.005 and 0.704±0.004 and 0.700±0.006 and 0.651±0.004 Kg., respectively; while TDN requirement and availability in small, medium and large herd size groups of Murrah buffaloes was found to be 7.186±0.99 and 6.663±0.81, 7.057±1.03 and 6.534±0.88 and 6.521±0.82 and 6.026±0.92 Kg., respectively. These results indicated that the requirements and availability of DCP and TDN was

Table 3: Nutritional status of Murrah buffaloes

S.No	Items	Herd Size			Overall Average	Varianceratio
		Small	Medium	Large		
1	No. of Animals	18	22	10	50	
2	Milk yield/Lact.(lit.)	2440±53.0	2373±47	1996±54	2269±50	6.896^{++}
3	Milk yield/day(lit.)	7.77±0.31	7.75±0.38	6.61±0.41	7.37±0.36	1.587^{NS}
4	Lactation period(days)	314±2.71	306±2.56	302±2.86	307±2.64	0.963^{NS}
5	Fat percentage	6.93±0.11	6.86±0.19	6.90±0.17	6.71±0.15	1.063^{NS}
6	Body weight (Kg.)	506±4.61	493±5.11	481±4.96	493.33±4.89	5.063^{++}
7	D.M. Requirement(Kg.)	15.18±0.89	14.79±1.02	14.43±1.06	14.80±0.99	4.064^{+}
8	D.M. Availability(Kg.)	14.51±0.71	14.09±0.91	13.70±0.76	14.10±0.793	6.495^{++}
9	D.M.Status (Kg.)	-0.67±0.006	-0.70±0.006	-0.73±0.007	-0.70±0.006	0.864^{NS}
10	DCP requirement(Kg.)	0.787±0.004	0.767±0.005	0.700±0.006	0.751±0.005	4.696^{++}
11	DCP Availability(Kg.)	0.723±0.003	0.704±0.004	0.651±0.004	0.692±0.003	6.318^{++}
12	DCP status (Kg.)	-0.064±0.0004	-0.063±0.0006	-0.049±0.0006	-0.059±0.0005	1.693^{NS}
13	TDN Requirement(Kg.)	7.186±0.99	7.057±1.03	6.521±0.82	6.920±0.951	6.191^{++}
14	TDN availability (Kg.)	6.663±0.81	6.534±0.88	6.026±0.92	6.407±0.87	5.964^{++}
15	TDN status (Kg.)	-0.523±0.003	-0.523±0.003	-0.495±0.004	-0.513±0.003	1.204^{NS}

NS = Non - significant + = Significant at ødd 0.05 ++ = Significant at ødd 0.01

decrease with increase herd size groups, significantly ($p \leq 0.01$). The present data also revealed that the availability of DCP and TDN was much lower than that of requirements. The deficit supply of these nutrients in ration of Murrah buffaloes was due to less supply of leguminous feeds, fodder and concentrates which was good source of these nutrients. The higher cost of concentrates was also a major problem. The study indicated that the nutritional status of Murrah buffaloes in Etmadpur block of Agra district was significantly ($p \leq 0.01$) affected by herd size variation. Small as well as medium herd size was better than large herd size groups. The better production could be obtained by feeding adequately with leguminous forages, concentrate and short herd size groups. Our results on Milk production was better than reported by (Rao et al., 2000) and on production, reproduction and nutritional status was compared favorably with the results of Bhaskar and Gupta (2006) and Bhaskar (2016).

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