The Haryana Veterinarian (December, 2023) **62(2),** 143-145 ISSN 0033-4359 (P) **Short Communication**

EVALUATION OF PRODUCTIVE PERFORMANCE OF HIGH YIELDING MURRAH BUFFALOES UNDER FIELD CONDITIONS AND ITS VALIDATION UNDER ORGANIZED FARM CONDITIONS

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SUMMARY

Twelve post-partum high yielding buffaloes maintained at Animal farm of ICAR-Central Institute for Research on Buffaloes, Hisar were selected for the present study. These buffaloes were divided on the basis of equal milk yield into 2 groups of 6 animals each. control group was kept on organized farm feeding management and treatment group was kept on the most rational feeding management i.e. practice of the farmer for a period/duration of experiment (3 months). Milk sample from each buffalo was collected fortnightly, starting from the fourth day of lactation until the feeding period of the 90th day and pooled in proportion to the milk yield of individual buffalo for analysing the chemical composition of milk. In the control group, the lactating buffaloes were fed farm feeding (concentrate mixture, Green feed, and wheat straw). In the treatment group, the feed was offered twice a day, one hour before the milking time with 3 kg gram churi, 1.5 kg cotton seed cake, 1.5 kg wheat dalia, 10 kg green fodder and 1 kg wheat straw in each time for each buffalo. Average fat (%) was 8.32 and 7.93 in control and treatment group, respectively and average milk production (kg/day) was significantly ($P<0.05$) high in the treatment group.

Keywords: Buffaloes, Composition, Dry matter intake, Feeding, Milk Production, Murrah, Performance, Validation

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India having 193.46 million cattle and 109.85 million buffaloes (BAHS, 2019) and country's milk production is growing by 35.61% during the last six years to 198.4 million tonnes in 2019-20 (The Economic Times, 2019). These livestock play a pivotal role in providing nutritional and livelihood security for millions of rural households in India. Among many factors governing the livestock production, feeding accounts for more than 60-70% of the total recurring cost and hence qualitative and quantitative improvement in this aspect will usually improve productivity. Buffaloes are being preferred over cattle because of their superior quality of milk (high fat and protein, low cholesterol), better efficiency of nutrient utilization from poor quality roughages (Paul *et al.*, 2003). Under field condition, farmers have adopted different feeding strategies for high yielding buffaloes *viz.* high oil, high protein. So to establish a scientific rational feeding of high yielding buffaloes present study evaluate the productive performance of high yielding Murrah buffaloes under field conditions and its validation under organized farm conditions.

Twelve post-partum high yielding buffaloes maintained at Animal farm of ICAR-Central Institute for Research on Buffaloes were selected on the basis of milk yield into two groups of 6 animals in each group (Table 1). One group was kept on organized farm feeding management (control group) and another group was kept on the most rational feeding management (treatment group) i.e. practice of the farmer (Table 2) for 3 months. During the period test day milk yield was recorded. Milk sample from each buffalo was collected fortnightly, starting from the fourth day of lactation until the feeding period of the 90th day and pooled in proportion to the milk yield of individual buffalo for analysing the chemical composition of milk. In the control group, the lactating buffaloes were fed farm feeding (concentrate mixture, Green feed and wheat straw). In the treatment group, the feed was offered two times a day an hour before the milking time and each buffalo was fed 3 kg gram churi, 1.5 kg cotton seed cake,1.5 kg wheat dalia, 10 kg green fodder and 1 kg wheat straw in each time.

Milk Recording: Hand milking was followed every day. Milk produced from each animal was recorded test day throughout the experimental feeding period. i.e. postpartum 90 days, using the electronic weighing machine.

Milk Sampling: Milk sample from each buffalo was collected fortnightly, starting from the fourth day of lactation until the feeding period of the 90th day and pooled in proportion to the milk yield of individual buffalo for analysing the chemical composition of milk. After milking, milk was well stirred and subsequently with long

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handle milk samples were taken with a metallic cylinder with a diameter of about 10 mm, which was slowly dipped till the bottom of the vessel and its upper end remains open. Cylinder was filled with milk simultaneously with its dipping, when the pipe was taken out of the vessel its upper end remains tightly closed with the thumb. The quantity of milk sample was taken about 200 ml.

Chemical Composition Milk: Milk samples were taken immediately before analysis and milk was poured several times from vessel to vessel in order to distribute the fat content uniformly. Representative samples of milk were analyzed for chemical composition (milk protein, lactose, milk fat and SNF) using pre-calibrated ultrasonic milk analyzer (LACTOSCAN LA, 8900 Zagora BULGARIA). Total Solid (TS) content was calculated by adding fat content with SNF.

Dry Matter Intake Recording: Feed intake of animals was recorded once in a week by the recording of the exact weight of feeds offered and residual left. Representative samples were subjected to dry matter estimation for calculation of dry matter intake.

Statistical Analysis: The data generated from the study were analyzed by complete randomized design (CRD) as per the method described by Snedcor and Cochran (1989).

Milk Production: Average milk production per buffalo per day (kg) is given in Table 2. Average milk production (kg/day) was significantly (P<0.05) high in the treatment group in comparison to the control group. Total milk yield was also higher in the treatment group than the control group. Average milk production was 11.31 in control and 12.52 Kg in treatment groups. Buffaloes in treatment group maintained their peak for a longer period of time.

Milk Composition: Average Fat (%) was 8.32 and 7.93 in control and treatment group, respectively with significantly high (P<0.05) in control group. Protein (%) in control and treatment group was 3.78 and 3.63, respectively with no significant (P>0.05) difference. Similarly, the average lactose content was 4.68 (control) and 4.63% (treatment) with no significant (P>0.05) difference. However, the SNF (%) was significantly (P<0.05) higher in control (8.53) group than the treatment (8.00%) group (Table 3). As average milk production of 13 weeks was significantly (P<0.05) higher in treatment group then control due to the higher DM intake as shown in Table 4. Macleod *et al.* (1983) found that as the increase in the proportion of concentrate and linearly milk yield. Moe and Tyrrell (1975) also reported that when ration contains 50 to 60% concentrate and 40 to 50% roughage resulted in high intake of feed and concurrently higher milk production can be achieved. Table 3 shows milk composition of buffalo milk during the experimental period with significantly (P<0.05) higher milk fat in control group in comparison to treatment. Randby (1996) reported that high level of concentrate feeding increases the production of propionic

Table 1. Grouping of buffaloes on the basis of milk yield

No. of Buffaloes	Control	Treatment
	Milk Yield (kg)	Milk Yield (kg)
1	13.0	15.8
2	11.0	10.7
3	13.9	14.0
4	14.1	12.7
5	11.0	7.6
6	8.4	10.0
Mean	11.9	11.8

Table 2. Average milk production/buffalo (kg/day) during the experimental period

Weeks	Control	Treatment
1st	13.15	12.37
2nd	12.27	13.22
3rd	11.43	12.12
4th	12.02	14.27
5th	11.75	12.98
6th	11.10	12.55
7th	10.83	12.67
8th	11.20	12.55
9th	10.87	12.33
10th	9.97	11.87
11th	11.03	12.33
12th	11.08	11.98
13th	10.35	11.50
Mean	11.31 ± 0.20^{a}	12.52 ± 0.22^{b}

*Superscript bearing different letters in a row differ significantly (p<0.05)

Table 3. Milk composition of buffalo milk during the experimental period

S.No.	Milk Parameters	Control	Treatment
1	Fat (%) *	8.32 ± 0.136^{a}	7.93 ± 0.135^{b}
2	Protein (%)	3.78	3.63
3	Lactose (%)	4.68	4.63
4	SNF (%)*	8.53 ± 0.10^{a}	8.00 ± 0.09^{b}

*Superscript bearing different letters in a row differ significantly (p<0.05)

Table 4. Total DMI (QTLs)/buffalo during the experimental period

S.No.	Parameters	Control	Treatment
1	DMI from green (qtls)*	4.07 ± 0.48^{a}	4.26 ± 0.66^{b}
2	DMI from WS (qtls)*	3.53 ± 2.00^{a}	1.20 ± 0.74^{b}
3	DMI from Conc mix (qtls)*	6.37 ± 0.59^{a}	9.14 ± 0.64^{b}
4	Total DMI (qtls)*	13.97 ± 0.01^{a}	14.6 ± 0.01^{b}
5	DMI/day/buffalo (kg)	15.35	16.00

* Superscript bearing different letters in a row differ significantly (p<0.05)

acid in the rumen, which promote partition of energy towards the synthesis of body fat instead of milk fat synthesis resulting in a decrease in milk fat content. Moe and Tyrrell (1975) also reported the similar result to present study.

There was no change in milk protein between the two groups. Naik *et al.*, 2009 and Tyagi *et al.*, 2009 also reported that no significant change in milk protein by the supplementation of bypass protein. Khan *et al.* (2008) reported that milk protein percentage is negatively correlated with a milk yield of buffaloes which is in agreement with the present study.

No significant (P<0.05) effect was observed for lactose content of milk in present study. Balch (1972) also reported effects of diet on lactose were very less as reported in present study.

The significant (P<0.05) effect on SNF in control group is not in agreement to research work of Balch (1972) that diet as very less effect on SNF. As average milk production of 13 weeks was significantly (P<0.05) higher in treatment group than control. Milk fat was significant (P<0.05) higher in control group in comparison to treatment.

Dry Matter Intake

Dry matter intake by the buffaloes of control and treatment groups is given in Table 4. Dry matter intake from all the three sources differs significantly (P<0.05). Similarly, total dry matter intake also differs significantly (p<0.05). Dry matter intake from green was 4.07 and 4.26 kg per day per buffalo in control and treatment groups, respectively. Similarly, dry matter intake from WS was 3.53 and 1.20 kg in control and treatment group, respectively. Dry matter intake from concentrate mix was 6.37 and 9.14 kg per day per buffalo in control and treatment group respectively. Total dry matter intake was 13.97 and 14.60 kg in control and treatment group respectively. As shown Table 4, total DM1 was significantly (P<0.05) higher in the treatment group. The reason was that buffaloes in the treatment group were given more concentrate mixture for validation of farmers feeding management of high yielding buffaloes. When buffaloes in treatment group given more concentrate then dry matter intake from wheat straw automatically decreased because rumen has its own capacity for intake.

Total DMI was significantly (P<0.05) higher in the treatment group. The reason was that buffalo in the treatment group were given more concentrate mixture for validation of farmers feeding management of high yielding buffaloes. When buffaloes in treatment group given more concentrate then dry matter intake from wheat straw automatically decreased because rumen has its own capacity for intake.

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