



Effect of Mineral Supplementation and Dewormer on Service Period and Milk Production in Buffaloes under Field Conditions

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Abstract: An on farm testing was conducted to assess the effect of mineral supplementation and dewormer on service period and milk production of buffaloes under field condition. Twenty four lactating buffaloes of almost same stage of lactation and from II to IV parity were selected for three consecutive years in three randomly selected villages. They were divided into three groups, having 8 in each group. First group was supplemented by mineral mixture @ 50 gms day⁻¹ for 50 days + dewormer (*Fenbendazole*) two times at 21 days interval (T₁); second group supplemented by Cu-Co tablets @ 5 day⁻¹ for 10 days + Janova capsule (an *Ayurvedic* heat inducer) @ 3 day⁻¹ for 5 days and dewormer (*Fenbendazole*) two times at 21 days interval (T₂) and third group served as control (farmers practice) [T₃]. Results revealed that the average service period was 81.2±2.0 days, 96.8±2.5 days and 117.6±3.2 days for treatment T₁, T₂ and T₃, respectively. Treatment T₁ reduced 36.5 days (31.0%) service period and T₂ reduced 20.8 days (17.7%) in comparison to control group (T₃). Treatment T₁ had significant effect on service period over treatment T₂ and T₃. Treatment T₂ also had significant effect on service period over control group. The average milk production was 8.90, 8.15 and 7.12 liter day⁻¹ for treatment T₁, T₂ and T₃, respectively. Treatment T₁ had significant effect on milk production in comparison to control group i.e. farmers practice but it was statistically at par with treatment T₂. The net profit from sale of extra milk was Rs. 37.52 and Rs. 21.32 with B:C ratio 1:7.22 and 1:6.27 for treatment T₁ and T₂, respectively. It can be concluded that mineral supplementation and deworming gave better performance in reducing the service period as well as increasing the milk production of buffalo.

Key words: Buffalo, service period, milk production, mineral mixture, dewormer.

Low milk yield, low growth rate and poor reproductive performance (anoestrus, seasonal breeding behavior and long inter-calving period) are major constraints of buffaloes. In India, buffaloes are mainly fed on cereal straws that are highly lignified and contain low quality of both fermentable protein and carbohydrates. Inadequate and irregular availability of quality feedstuff and imbalance feeding are the main cause of poor productive and reproductive performances of buffaloes (Singh *et al.*, 1990; Qureshi *et al.*, 2002; Sahoo *et al.*, 2004; Wynn *et al.*, 2009).

Profit of dairy enterprises solely depends on the regular and efficient breeding of animals. The research evidences indicate that cattle and buffaloes rearers are not accustomed to follow scientific breeding and health care practices, due to which life time productivity of animals goes down. To increase the productivity

of buffaloes, supplementation of nutrients, which can improve the utilization of poor quality roughages and fulfill the deficiency of nutrients, are essential as the feed utilization. This can be increased by supplementation of critical nutrients in ration (Sampat *et al.*, 1995).

In dairy animals, buffalo is not less than gold for farmers in our country. The buffalo is a triple purpose animal, which provides fat rich milk, meat and traction power. Buffalo is the single major milk producing species in our country (54%) with maximum world's population. Buffaloes are considered more useful not only for quality butter and ghee but also for reasons such as high fat percentage in milk, ability to utilize agriculture produce and capacity to utilize less kilocalories to produce 1 kg of milk. Additionally, district Jhunjhunu has highest buffalo population (buffalo-370248 and cow-174918) in dairy animals (19th livestock census). However, long inter calving period in buffaloes is a major problem in the district.

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Most of the earlier studies to evaluate the impact of mineral supplementation and dewormer were conducted in research station under controlled conditions. A bench mark survey was conducted by Krishi Vigyan Kendra, Jhunjhunu to find out the reasons of long inter calving period and low milk production in buffaloes. Subsequent after prioritization, anoestrus and mineral deficiency were identified as the major problematic cause in buffaloes leading to long inter calving and low milk production. Anoestrus in buffalo occurs mainly due to nutritional deficiency and worms' infestation. So, an on farm testing was designed to study the effect of mineral supplements and dewormer on service period and milk production of buffaloes under field condition.

Materials and Methods

An on farm testing was conducted on 24 lactating buffaloes' at almost same stage of lactation (parturited 15 to 30 days) and from II to IV parity for three consecutive years in three randomly selected villages in different blocks of the district. They were grouped into three groups, having 8 buffaloes in each group. Ration of group one buffalo was supplemented with mineral mixture @ 50 gm day⁻¹ for 50 days + dewormer (*Fenbendazole*) two times at 21 days interval (T₁); second group was supplemented by Cu-Co tablets @ 5 day⁻¹ for 10 days + Janova capsule (an *Ayurvedic* heat inducer) @ 3 day⁻¹ for 5 days and dewormer (*Fenbendazole*) two times at 21 days interval (T₂) and third group of buffaloes were taken as control (farmers practice) [T₃]. An on campus training of selected buffalo owners was also conducted before the start of the trial to facilitate timely observations.

Management practices and fodder supplied to the buffaloes were almost same before and during the trial. Wheat straw and pearl millet stover was fed as dry fodder and feeding of green fodder was done according to availability at farmers' field. Daily milk yield of individual buffalo was recorded through milk recording index card by the buffalo owners and also by the investigator at weekly interval. The buffaloes were closely observed daily (morning and evening) by the owners for heat symptoms. The buffaloes detected in heat were taken for natural/artificial insemination and date of conception was noted. Data were analyzed statistically as per Snedecor and Cochran, 1994.

Results and Discussion

The average service period was 81.1±2.0, 96.8±2.5 and 117.6±3.2 days in treatment T₁, T₂ and T₃, respectively (Table 1). Treatment T₁ reduced 36.5 days service period in comparison to T₃ and it was 31% less in comparison to T₃ farmers practice. Treatment T₁ had significant (P<0.05) effect in service period over treatment T₂ and T₃. Similarly treatment T₂ had reduced service period by 20.8 days (17.7%) in comparison to T₃ and it also had significant (P<0.05) effect on service period over treatment T₃. The present findings are in conformity with the results of Mann *et al.* (2000), Paul *et al.* (2000) and Asarey *et al.* (2014) who reported that mineral supplementation have positive effect on service period of buffaloes.

Daily milk production per buffalo were recorded and depicted in Table 1. It revealed that average milk production was 8.90, 8.15 and 7.12 liter day⁻¹ for treatment T₁, T₂ and T₃, respectively. The treatment T₁ increased 1.78

Table 1. Effect of mineral mixture and dewormer on service period and milk production

Treatment	2008-09	2009-10	2010-11	Average service period/ Milk production	% age decrease/ increase over T ₃
Year wise service period in days					
T ₁	84.1±3.9 ^a	76.8±2.8 ^a	82.50±3.8 ^a	81.1±2.0	31.0
T ₂	104.6±4.5 ^b	89.6±3.7 ^b	96.0±4.1 ^b	96.8±2.5	17.7
T ₃	129.8±5.2 ^c	109.8±4.7 ^c	113.37±5.0 ^c	117.6±3.2	-
CD (P<0.05)	14.3	12.5	12.1		
Year wise milk production (litre day ⁻¹)					
T ₁	8.85±0.31 ^b	8.95±0.43 ^b	8.89±0.39 ^b	8.90±0.20	25.0
T ₂	7.99±0.27 ^{ab}	8.19±0.27 ^b	8.26±0.27 ^b	8.15±0.15	14.5
T ₃	7.20±0.25 ^a	7.04±0.27 ^a	7.11±0.24 ^a	7.12±0.13	-
CD (P<0.05)	0.89	1.11	0.92		

Table 2. Relative profitability of different feeding practices in buffalo

Parameters	Treatment T ₁	Treatment T ₂
Extra milk yield (litre day ⁻¹)*	1.78	1.03
Extra income from sale of milk day ⁻¹ buffalo ⁻¹ @ Rs. 24/lit	42.72	24.72
Total cost of treatment (Rs.) for 50 days duration	260.00	170.00
Total cost of treatment day ⁻¹ buffalo ⁻¹ (Rs.)	5.20	3.40
Net profit day ⁻¹ buffalo ⁻¹	37.52	21.32
B:C ratio	7.22	6.27

T₁ = Ration supplemented with 50 g mineral mixture for 50 days + dewormer (Fenbendazole) twice at 21 days interval.

T₂ = Ration supplemented with Cu-Co tablets @ 5 day⁻¹ for 10 days + Janova capsule @ 3 day⁻¹ for 5 days.

* Compared to control.

liter milk production day⁻¹ which were 25% more in comparison to treatment T₃ and it had significant ($P < 0.05$) effect on milk production over treatment T₃ (Table 1), but it was non-significant with respect to T₂. Similarly the T₂ increased 1.03 liter milk yields per day (14.5%) in comparison to T₃ and it had also significant ($P < 0.05$) effect on milk production. These findings are comparable with those reported by Makar (2001), Uperti *et al.* (2010), Tanwar *et al.* (2013) and Asarey *et al.* (2014).

Relative profitability of supplementary feeding and deworming are presented in Table 2. It was observed that total cost of treatment day⁻¹ buffalo⁻¹ were Rs. 5.20 and Rs. 3.40 for treatment T₁ and T₂, while the net profit from extra milk production day⁻¹ buffalo⁻¹ were Rs. 37.52 and Rs. 21.32 for treatment T₁ and T₂ respectively in comparison to T₃. The benefit cost (B:C) ratio were 7.22 and 6.27 for treatment T₁ and T₂ respectively. Tanwar *et al.* (2013) and Asarey *et al.* (2014), observed less B: C ratio in their study compared to the present findings.

Conclusion

The incorporation of mineral supplements in buffalo concentrate mixture and regular deworming had positive effect on reducing inter calving period and enhancing milk production of buffaloes under field conditions.

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