Productive and Reproductive Performance Evaluation of Buffaloes in Institutional Herds of Bangladesh

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Abstract – The present study was conducted to compare the productive and reproductive performance of buffaloes at two institutional herds of Bangladesh namely Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka and Lal Teer farm Ltd., Bhuapur. The duration of the study was from November 2011 to June 2012 at Lal Teer farm and from November 2012 to March 2013 at BLRI farm. Different productive parameters and reproductive parameters were recorded and analyzed for the purpose of comparative performance evaluation. Average lactation period was 242.39±0.89 days and 226.04±5.98 days; the daily milk yield was 2.86±0.10 litres and 2.75±0.07 litres for buffaloes at BLRI and Lal Teer farm, respectively. Total milk yield per lactation were 737.79±1.35 litres and 645.81±1.85 litres for buffaloes at BLRI and Lal Teer farm, respectively. Birth weight of male and female animals in two institutions did not differ significantly. Daily body weight gain among male animals, differ significantly ($p<0.01$) but in female animals it did not differ significantly. The age at first calving were 43.50±0.54 and 48.92±0.97 months at BLRI and Lal Teer farm, respectively. The gestation period of BLRI and Lal Teer farm buffaloes were 280.89±1.17 and 281.88±2.21 days. Length of calving interval for buffaloes of BLRI and Lal Teer farm, were 487.71±1.56 and 543.85±1.59 days respectively which differed significantly.

From the observed result it can be said that, buffaloes of BLRI farm have better reproductive characteristics compared to Lal Teer farm buffalo herd. Buffaloes of BLRI farm also possess a better productive performance than buffaloes of Lal Teer farm buffalo farm.

Index Terms – Milk Yield, Birth Weight, Gestation Period, Calving Interval, Age at First Calving.

1. INTRODUCTION

The buffaloes of Bangladesh are non-descriptive type. Buffaloes are the second largest source of milk producer in Bangladesh. Buffaloes are known to be better at converting poor-quality roughage into milk and meat. They are reported to have a 5 percent higher digestibility of crude fibre than high-yielding cows; and a 4-5 percent higher efficiency of utilization of metabolic energy for milk production (Mudgal, 1988). Buffaloes are well adapted to a hot and hot humid climate and play a distinct role in the economy of farmers. They provide high quality milk and meat and in addition they are a major source of draft power. The production of milk in countries such as India, Sri Lanka, Pakistan and China, has been increased per animal by 2.44 percent, 1 percent, 1.45 percent and 1.55 percent, respectively, while there has been either no change or only a negligible change in milk production in Bangladesh, Myanmar, Nepal and Vietnam (Dhanda, 2004). Buffaloes are raised under an extensive system in the coastal and hilly areas where large-scale pasture land and enough green forage are available. Buffaloes are raised under a semi-intensive system on plain land and marshy land where there is limited pasture land. An intensive system for buffalo production is not practiced anywhere in Bangladesh even for institutional herds. Nevertheless, there are some common practices viz. no housing system, no artificial insemination system, no routine vaccination programme and no animal identification and record-keeping system (Faruque, 2003). Considering the above facts, the present investigation was designed to evaluate the potentiality of indigenous buffalo in terms of productive and reproductive traits at two different institutional herds of Bangladesh.

2. MATERIALS AND METHODS

TIME AND PLACE OF THE STUDY

The present study was conducted at Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka and Lal Teer Livestock Limited, Bhuapur, Tangail. The duration of the study was from November 2011 to June 2012 at Lal Teer farm and from November 2012 to March 2013 at BLRI farm.

DATA COLLECTION AND RECORD KEEPING

A total number of 39 animals from BLRI buffalo farm and 48 animals from Lal teer buffalo farm were considered for record keeping. Buffaloes were divided into different age groups. Mature buffaloes which are above 4 years, growing buffaloes which are above 2 years and calves were considered less than

2 year of age. The animal herds of selected sites were monitored closely. All required data was collected carefully.

PARAMETER STUDIED

The productive parameter including milk yield, lactation length, birth weight, body weight gain and reproductive trait including gestation period, calving interval and age at first calving were recorded throughout the study period.

STATISTICAL ANALYSIS

Collected data from this study were tabulated and analyzed using Completely Randomized design (CRD) with the help of Statistical Package for Social Sciences (SPSS 17.0) computer program.

3. RESULTS AND DISCUSSION

Productive performance of selected animals of BLRI and Lal Teer Buffalo Farm is shown in table 4.5. It can be seen from the table that, lactation length and total milk yield of buffaloes at BLRI and Lal Teer farm differed significantly ($p<0.01$). But daily milk yield of buffaloes at BLRI and Lal Teer farm did not differed significantly.

Table: 4.5 Productive performances of buffalo at BLRI and Lal Teer farm

Parameter	**BLRI (Mean±SE); n=13**	**Lal Teer (Mean±SE); n=18**	**Significance**
Milk yield (litre/day)	2.89±0.19	2.75±0.07	NS
Lactation length (days)	241.00±1.17	226.04±5.38	NS
Total milk yield (litre)	736.92±2.43	645.81±1.85	**

**=p<0.01, NS= Non significant, n= number of observation, SE= standard error

It was observed that, Milk yield of buffaloes at BLRI were higher (2.86±0.10 litre) than those of Lal Teer farm (2.75±0.07 litre). In the same way lactation length was also higher (242.39±0.89 days) than that of Lal Teer farm (226.04±5.98 days). This ultimately reflected in the total milk production profile. So it was reported that total milk yield was significantly higher in BLRI buffalo farm (737.79±1.35 litre) than that of buffaloes at Lal Teer farm (645.81±1.85 litre).

Jainuddin (1988) reported that, milk yield in local buffaloes was 1.94 lit/day with the highest yield of 5.5 lit/day. Faruque (1990) mentioned that, the lactation period is 275.50±19.10 days for the indigenous buffalo of Mymensingh. From the observed result it can be said that, daily milk yield of buffaloes at BLRI and Lal Teer farm are higher.

Birth weight and body weight gain are represented in Table 4.3. From the table it is revealed that, birth weight of male and female animals in two institutions did not differ significantly. Daily body weight gain among male animals, differ significantly ($p<0.01$) but in female animals it did not differ significantly.

Table 4.3 Birth weight and daily body weight gain of calves

Parameter	**Sex**	**BLRI Farm (Mean±SE)**	**Lal Teer Farm (Mean±SE)**	**Significance**
Birth weight (kg)	Male	26.00 (n=1)	28.03±2.93 (n=3)	NS
	Female	22.00±1.00 (n=2)	24.78±3.38 (n=2)	NS
Daily Body weight gain (gm)	Male	182.28±0.00 (n=1)	180.23±0.00 (n=3)	**
	Female	176.26±0.00 (n=2)	168.25±0.00 (n=2)	NS

**=p<0.01, NS= Non significant, n= number of observation, SE= standard error

From the table 4.3 it is revealed that, birth weight of male and female animals in two institutions did not differ significantly. Daily body weight gain among male animals, differ significantly ($p<0.01$) but in female animals it did not differ significantly.

Hasnath (1985) mentioned that buffalo calves grew rapidly in the first year (daily gain 330 to 360 gm) after which the growth rate falls drastically (daily gain 40 to 50 gm). Hussen (1990) found that the daily body weight gain up to one year of buffalo calves in Tangail district was 180.4±7.9 gm. Salma *et al.(1997)* reported that the daily gain is relatively lower for summer born calves (136.67±0.08 g) than that for spring born calves (175.89±0.09g).

The traits considered for the evaluation of reproductive characteristics of buffaloes were gestation length, age at first calving and calving interval. The means along with standard errors for various reproductive traits of buffaloes are presented in the Table 4.4.

Table 4.4 Reproductive performance of buffaloes at BLRI and Lal Teer farm

Parameter	BLRI Farm (Mean±SE); n=13	Lal Teer Farm (Mean±SE); n=18	Significance
Gestation Length (days)	279.92±1.92	281.88±2.21	NS
Age at first calving (months)	43.69±0.86	48.92±0.97	**
Calving Interval (days)	488.54±2.41	543.85±1.59	**

**=p<0.01, NS= Non significant, n= number of observation, SE= standard error

Age at first calving and calving interval of buffaloes at BLRI and Lal Teer farm differed significantly (p<0.01). But gestation length of buffaloes at BLRI and Lal Teer farm did not differ significantly. The productive and reproductive characteristic of buffaloes in these two institutes are similar to indigenous river type buffalo.

4. CONCLUSION

The present study was conducted to evaluate the reproductive and productive performance of the institutional buffaloes in Bangladesh.

The average age at first calving was 48.92±0.97 months and 43.50±0.54 months at Lal Teer and BLRI buffalo farm respectively. While the longest and shortest age at first calving was 60 months and 39 months at Lal Teer and BLRI buffalo farm respectively. The average gestation period compared to buffaloes of BLRI and Lal Teer Farm, it is shorter in BLRI than Lal Teer Farm. Calving interval differed significantly (p<0.01) among different individuals. Buffaloes of Lal Teer Farm had significantly longer calving interval than buffaloes of BLRI. Average lactation period was 242.39±0.89 days and 226.04±5.98 days; average daily milk yield was 2.86±0.10 litre and 2.75±0.07 litre at BLRI and Lal Teer farm respectively. Total milk yield was 737.79±1.35 litre and 645.81±1.85 litre in BLRI buffalo farm and Lal Teer farm respectively. Buffaloes of BLRI farm produced almost 6.65% more milk than cows of Lal Teer buffalo farm.

From the interpretation of analyzed data and observed results, it may be concluded that the productive and reproductive performance of BLRI buffalo herd is much more higher than the Lal Teer buffalo herd. Productive and reproductive characteristics of both herds may comparable to Indigenous river type buffalo.

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