

Comparative Study of the Morphometric Characteristics of Buffaloes in Institutional Herds of Bangladesh

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Abstract

The present study was conducted to compare the morphological characteristics 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. The coat colour, horn pattern and body measurements of buffaloes were observed, measured and recorded. It was observed that, the coat color of selected buffaloes in Lal Teer buffalo herd were light black to jet black (56.25%), light black (31.25%) and grey color (12.50%) whereas in BLRI buffalo herd it was 87.18% black 7.69% grey and 5.13% brown colored buffaloes. The highest percentage of buffaloes both in Lal Teer and BLRI buffalo herd possessed jet black (56%) and black (88%) color, respectively. In Lal Teer Buffalo Farm 62.5% buffaloes

were curved upward and 37.5% were curved centrally. On the other hand, in BLRI buffalo farm 66.67% buffaloes had curved, 28.21% spiral and 2.56% crescentic horn pattern. The recorded body measurement data were analyzed and the study showed that height at wither, length and heart girth of mature buffaloes at BLRI were 124.35±1.12 cm, 130.29±0.84 cm and 179.88±0.81 cm whereas in Lal Teer Livestock farm it was 132.19±0.77 cm, 139.75±1.46 cm and 183.81±1.44 cm, respectively. From the results of present findings, it can be concluded that the buffaloes of BLRI and Lal Teer Livestock farm are more or less similar as per their morphometric characteristics and comparable to indigenous river type buffalo.

Key word: Morphometric characteristics, indigenous buffalo, coat color, horn pattern, river type.

I. INTRODUCTION

There are about 174 million buffaloes in the world of which 97% are in Asia, 2% in Africa, and 0.2% in Europe (FAO, 2004). In Asiatic region, buffaloes raised by small farmers owning less than two hectares of land and fewer than five buffaloes. Buffalo has been playing an integral part of livestock agriculture in Asia for over 500 years, producing draft power, milk, meat and hides. Asia is the native home of the water buffalo, with 95% of the world population, with about half of the total in India. Many Asian countries depend on the water buffalo as their primary bovine species. It is valuable for its meat and milk, as well as the job it performs like draft power etc.

Buffalo contributes 72 million tons of milk and three million tons of meat annually to world food, much of it in areas that are prone to nutritional imbalances. The production of milk and meat from buffaloes in Asian countries over the last decades has shown an increasing pattern in countries such as India (2.44%), Sri Lanka (1%), Pakistan (1.45%) and China (1.55%) while there has been either no change or negligible change in milk production in Bangladesh, Myanmar, Nepal and Vietnam. In some regions of east and south-east Asia,

there has been a negative growth. Meat production from buffaloes has shown a growth of 1.43 percent only in Pakistan. Although buffalo milk production increased by 2.26 percent in Asia but meat production declined marginally (Dhanda, 2004).

Buffaloes occupy an important place in the agricultural economy of Bangladesh because of their adaptability to harsh climatic conditions, tolerance to tropical diseases and survival under poor feeding and management practices. Bangladesh possesses only 0.83 million buffaloes representing 0.5% of the total world buffalo population (FAO, 2004) with an estimated growth rate of buffalo population per year over a period of 1960-2000 was 0.28% in Bangladesh. The productivity of indigenous buffaloes is low mimic to indigenous cows. The indigenous buffalo cows produce 600 to 1000 liters of milk in 270 days lactation period (Faruque, 1994). However, the information on characterization of buffaloes at institutional herds is limited. Considering the above conditions, the present study was undertaken to compare the morphometric characteristics of buffaloes in institutional herds of Bangladesh

II. 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.

Parameters Studied

The coat color, horn pattern and body measurements were recorded throughout the study period and body measurements were taken by measuring tape in cm to determine the phenotypes.

Statistical Analyses

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.

IV. RESULTS AND DISCUSSION

Type Characteristics and Appearance

The coat color pattern of buffaloes in two institutional herds has been presented in figure 4.1 and figure 4.2. The coat color of selected buffaloes in Lal Teer buffalo herd were found to range from light black to jet black (56%), light black (31%) and grey color (13%) whereas 88% black 8% grey and 4% brown colored buffaloes were observed in BLRI buffalo herd. It is interesting to note that highest percentage of buffaloes both in Lal Teer and BLRI buffalo herd possessed jet black (56%) and black (88%) color, respectively

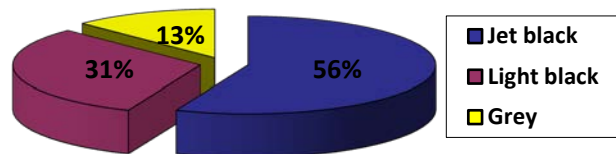


FIGURE 1 COAT COLOR PATTERN IN LAL TEER BUFFALO HERD

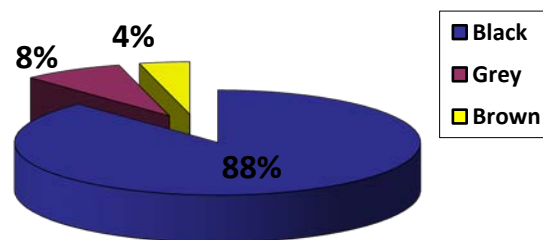


FIGURE 2 COAT COLOR PATTERN IN BLRI BUFFALO HERD

which supports the study of Cockrill (1974) who found that the buffalo of Bangladesh is non-descript types. Hussen (1990) and Faruque (1994) reported that the coat color of buffaloes in Mymensing region varied from jet black to light grey. Phenotypic characteristics of buffaloes of BLRI farm and Lal Teer farm are presented in table no. 4.1.

TABLE I PHENOTYPES OF BUFFALOES IN TWO INSTITUTIONAL HERDS OF BANGLADESH

Institution	Total no of buffalo	Phenotypes								
		Coat color		Spot in forehead		White spot in tail		White stocking		
		Color	%	Number	%	Number	%	Number	%	
BLRI Farm	39	Jet black (n=34)	56.25							
		Light black (n=2)	31.25	0	0	1	2.56	2	5.13	
		Grey (n=3)	12.50							
Lal Teer Farm	48	Black (n=42)	87.5							
		Grey (n=4)	8.33	3	6.2	5	10.42	11	22.92	
		Brown (n=2)	4.17		5					

number of observation

Horns were found somewhat spiral, short and tightly curled to form a coil in the study area which are shown in figure 4.3 and 4.4 and plate 4, 5 & 6.

In Lal Teer Buffalo Farm 62% buffaloes were curved upward and 38% were curved centrally. On the other hand, in BLRI buffalo farm 68% buffaloes had curved, 29% spiral and 3% crescentic horn pattern.

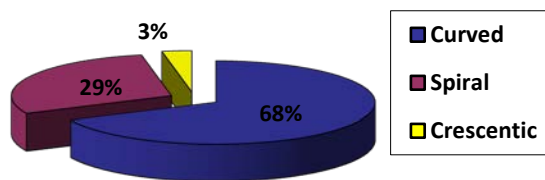


FIGURE 4 HORN PATTERN IN BLRI BUFFALO FARM

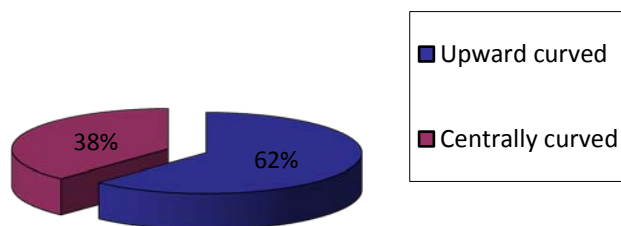


FIGURE 3 HORN PATTERN IN LAL TEER BUFFALO FARM

Different body measurements in terms of height, length and heart girth for different types have been presented in Table 4.2. Height, length and heart girth of mature buffaloes at BLRI farm were varying significantly ($p < 0.1$) 124.35 ± 1.12 cm, 130.29 ± 0.84 cm and 179.88 ± 0.81 cm and height, length and heart girth of mature buffaloes at Lal Teer farm were 132.19 ± 0.77 cm, 139.75 ± 1.46 cm and 183.81 ± 1.44 cm respectively. Height, length and heart girth of growing buffaloes at BLRI farm were 104.47 ± 1.16 cm, 110.89 ± 1.06 cm and 162.00 ± 1.22 cm whereas height, length and heart girth of growing buffaloes at Lal Teer farm were 127.91 ± 1.49 cm, 132.91 ± 2.44 cm and 177.18 ± 2.9 cm respectively. On the other hand, height, length and heart girth of calves at BLRI farm were 55.33 ± 1.20 cm, 68.33 ± 2.03 cm and 84.00 ± 1.53 cm whereas height, length and heart girth of calves at Lal Teer farm were 64.80 ± 2.35 cm, 70.60 ± 2.18 cm and 76.80 ± 2.52 cm, respectively.

TABLE II BODY MEASUREMENTS OF INSTITUTIONAL BUFFALOES IN BANGLADESH

Age group	Parameter	BLRI Farm (Mean±SE)	Lal Teer Farm (Mean±S E)	Significance
Mature cows		Above 38 Months (n=17); Male:4, Female:13	Above 38 Months (n=32); Male:6, Female:26	
	Body weight (cm)	376.06 ± 6.37	403.75 ± 6.36	**

Growing buffaloes	Height (cm)	124.35±1.12	132.19±0.77	**
	Length (cm)	130.29±0.84	139.75±1.46	**
	Heart girth (cm)	179.88±0.81	183.81±1.44	NS
		24-38 months (n=19)	24-38 months (n=11)	
Calves	Body weight (cm)	205.16±1.36	316.55±5.55	**
	Height (cm)	104.47±1.16	127.91±1.49	**
	Length (cm)	110.89±1.06	132.91±2.44	**
	Heart girth (cm)	162.00±1.22	177.18±2.97	**
		Below 24 months (n=3)	Below 24 months (n=5)	
	Body weight (cm)	92.00±0.58	90.60±11.43	NS
	Height (cm)	55.33±1.20	64.80±2.35	*
Length (cm)	68.33±2.03	70.60±2.18	NS	
Heart girth (cm)	84.00±1.53	76.80±2.52	NS	

* = $p < 0.05$; ** = $p < 0.01$, NS = Non significant, n = number of observation, SE = standard error

Body weight, height and length varied significantly ($p < 0.01$) among mature buffaloes of two institutions whereas heart girth varied non-significantly. Body weight, length and heart girth varied non-significantly and height varied significantly ($p < 0.05$); incase of calves.

Fahimuddin (1975) described the Surti breed is a well shaped animal of medium size, characterized with prominent eyes, strain back, moderately sickled shaped horns of medium length, long and broad head rounded between horns and wedge shaped barred low on the legs wide and deep hind quarters and a fairly long tail with a white tuft. The horns varied from short to tightly curl and forming coil and sickle shape which was similar with our study.

Hasanath (1985), Faruque (1994, 2000) and Aziz (1999) reported that the height and heart girth of adult buffaloes in

Mymensingh ranged from 123.6 cm, 126.5 cm, 123.05 cm-131.10 cm and 169.5 cm-183.5 cm respectively which was very much similar to our study results.

CONCLUSION

From the interpretation of analyzed data and observed results, it may be concluded that the morphometric characteristics of buffaloes at BLRI and Lal Teer farm are more or less similar and comparable to Indigenous river type buffalo.

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