Shobuj Bangladesh Publications House
International Journal of Natural and Social Sciences
ISSN: 2313-4461

Morphometric, productive and reproductive characteristics of cattle at Magura district

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ABSTRACT

A survey was conducted during the period of July 2012 to January 2013 to collect information on morphometric, productive and reproductive traits of cattle at Magura district. A total of 44 cattle from selected farm/families were considered for the present study. There was wide variation among coat colors of the studied cattle population. The observed coat colours were Reddish (29.54%), Black with White spot (25%), White (18.18%), Black (11.36%), Grey (9.09%) and Ash (6.82%). The average wither height, heart Girth, body length, chest width and tail length were 70.29±18.68, 96.14±49, 54.29±14.64, 20.29±3.73, and 51.57±18.51 cm respectively in males, and 90.03±21.13, 128.19±34.21, 84.11±24.82, 30.43±7.66 and 65.21±17 cm respectively in females. The average milk yield per day was 3.43±1.47 liters, lactation length was 250.77±34.03 days and the average dry period was 146.5±33.91 days. Average gestation length and calving interval were 287.88±8.28 days and 467.86± 52.23 days respectively. The age at first calving was on an average 40.47±10.04 months.

Key words: Cattle, morphometric, productive and reproductive characteristics.

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INTRODUCTION

The indigenous cattle of Bangladesh have been evolved through several generations of natural selection in the humid and subtropical climate. The importance of these cattle lies in their draught power capacity, heat tolerance, disease resistance, adaptability to harsh agro-climatic conditions and ability to survive and perform under scarce feed and fodder. All these made those cows as popular. Although productive characteristic and performance of those native cattle is not satisfactory. From the beginning of the artificial insemination technique most of our native cattle become more productive and beneficial for the farmer.

Livestock is one of largest resource of Bangladesh for alleviation of poverty. Our farmer wants to be more benefited through livestock rearing. Apart from these livestock plays important role in foreign earning, exchange and creating emplacement opportunity. The scientific information on morphological features, various productive and reproductive traits of these cattle is very rare till today. Livestock sectors comprise around 12 percent in the national income, more than 10 million Bangladeshi directly depend on these sectors for their livelihoods.

Indigenous cattle in Bangladesh are non descriptive type. As their productive performance is very poor to establish them as breed. To overcome those problems govt. of Bangladesh as well as different organization emphasis on rearing

How to cite this article: MM Rahman, Y Arafat, MA Jalil, IH Rasel, S Ahmed and MA Islam (2015). Morphometric, productive and reproductive characteristics of cattle at Magura district. International Journal of Natural and Social Sciences, 2(1): 113-117.

cross breed cattle. After crossing with a highly productive breed the overall production will increase among those indigenous which are bred to high yielding variety. The average production will be in a state from where the entire farmer becomes satisfied. The cattle resources of Bangladesh are mostly of the indigenous type (*Bos indicus*) with a substantial number of Sindhi, Sahiwal, Jersey and Holstein-Friesian crossbreds. Indigenous cattle experience late maturity, short lactation length, long calving interval and poor production of milk and draught power but are more disease resistant and capable of thriving in harsh conditions (Majid et al., 1992).

There are a few improved varieties of cattle such as Red Chittagong, Pabna type milking cow and North Bengal Grey cattle localized in some areas of the country. Most of the cattle are of indigenous type and non-descript type. These so called indigenous type of cattle have neither been identified (either by phenotypic and genetic characterization) nor has any objective study been made on their conformation or productive and reproductive performance. The productive and reproductive performance of indigenous cattle all over the country has not yet been well evaluated. Therefore the present study was undertaken to evaluate the morphological, productive and reproductive characterize the cattle of Magura district in Bangladesh.

METHODOLOGY

Study area and sampling

The study was conducted in the 2 upazila namely, Magura sadar and Sreepur under Magura district in the year 2013. A total number of 44 cattle of different age and sex were selected randomly from different locations of study area. A total of 18 cattle owners were randomly selected for interview by the author keeping in mind the objectives of the study.

Collection of data

The data were collected both from primary and secondary sources for the study. Primary data were collected by the researcher himself through face to face interview with the selected farmer in the study area. Secondary data were also accumulated from official records, books, journals and from the various statistical year books. Morphological traits were recorded in centimeter (cm) with the help of measuring tap and were classified according to sex of the animal. Details of the observation containing physical and morphological traits were recorded in the prescribed format and within a questionnaire form. If any data was missed or confused it was further standardized or rationalized and corrected by comparing those with local standards to keep consistency of data.

Morphometric parameter of cattle was defined at the time of study according to the measurement described by Habib et al., (2003) which are defined briefly in table 1.

Table 1
Description of different morphometric measurements of cattle.

Trait	Description
Wither height	Vertical distance between the fetlock and the point of wither.
Body length	Distance between points of shoulder to pin bone.
Heart girth	Diameter surrounding the chest diameter of the animal.
Chest width	Chest width was measured as the broadest portion of the chest.
Horn length	Length of horn from base to tip.
Tail length	Distance from the base of the tail to tip of the switch.

Processing and analysis of data

The filled up interview schedules were scrutinized and summarized carefully. The collected data were carefully edited in order to eliminate ambiguities and internal inconsistencies. Then the collected data were transferred to master sheets from interview schedules. Data were systematically examined and analyzed by using Microsoft Excel programme.

RESULTS AND DISCUSSION

The coat color, wither height, body length, heart girth, chest wide and tail length as morphometric

character, whereas milk yield, lactation length and age at first calving, gestation length, calving interval, and dry-period consider as productive and reproductive measurement respectively.

Morphometric characters

Coat color

The coat color of cattle at Magura district showed a great variation (Table 2). Out of 44 cattle 29.54% was red to reddish, 25% was black with white spot or patch, 18.18% was white, 11.36% was black, 9.09% was grey, and 6.82% was ash colored. Koirala et al., (2011) reported highest percentage of roan color native cattle followed by black coat color in Sylhet as found in this study. Whereas Al-Amin et al., (2007) reported highest percentage of deeply grey to white coat colored cattle in Bogra. Saleem et al., 2010 the majority of the Achai cows have spotted reddish brown in coat color which is very similar to that of present study.

Table 2
Different color variation and percentage (%) of cattle in Magura district.

Coat color	Percentage (%)
Reddish to Red	29.54
Black with white spot	25.00
White	18.18
Black	11.36
Grey	09.09
Ash	06.82

Wither height

Average wither height of cattle was 70.29±18.68cm in male and 90.03 ±21.13cm in female (Table 3) which was very much similar to the findings of Koirala et al., 2011, who reported 89.03±11.14 cm wither height of indigenous cattle of Sylhet. The wither height of this is lower than the study the study of Al-Amin et al., 2007, Karthickeyan et al., (2006) and Habib et al., (2003) due to variation of breed and age of the cattle.

Table 3
Morphometric character of cattle in Magura district.

		Mean ± SD	
Charac-ters	Parameter	Male	Female
Body	Wither height (cm)	70.29±18.68	90.03±21.13
	Heart girth (cm)	96.14±19.49	128.19±22.96
	Heart girth (cm)	96.14±19.49	128.19±22.96
	Body length (cm)	54.29±14.64	84.11±24.82
Chest	Chest width (cm)	20.29±3.73	30.43±7.66
Tail	Tail length (cm)	51.57±18.51	65.21±17.16

Heart girth

The present study showed that average hearth girth of cattle at Magura district was 96.14±19.49cm in male, 128.19±34.21cm in female (Table 3) which were similar to the findings of Koirala et al., 2011 and Al-Amin et al., (2007). On the other hand the report of Habib et al., (2003) observed the hearth girth of 139.85±1.63 cm in Red Chittagong cow which were higher than that of cattle of Magura in Bangladesh.

Body length

Cattle of Magura district have average body length of 54.29±14.64cm in Male and 84.11±24.82cm in female (Table 3). The result is strongly supported by the study of Kayestho et al. (2011). Amin et al., (2007) found the average body length of 99±13.8 cm in North Bengal grey cattle which is more or less similar to the present finding. The variation of body length in different breeds observed by different authors (Koirala et al., 2011; Saleem et al., 2010; Karthickeyan et al., 2006; Habib et al., 2003).

The average body length of cattle of Magura varies significantly from other cattle reported above. The variation of body length is due to different geographic location, variation in breed, and management. Cattle rear under different

managemental practice may differ in their body size and length.

Chest width

The mean chest width in male and female cattle is 20.29±3.73 cm and 30.43±7.66cm respectively. This result is similar to the findings of Koirala et al., 2011 who reported 32.48±6.48cm chest width of cattle in Sylhet.

Tail length

The average tail length in male and female was 51.57±18.51cm, 65.21±17.16cm respectively (Table-07). Kayestho et al., (2011) found the average tail length of cattle of Assam was 54.196±0.527cm which was similar to the findings of present study. Whereas average tail length of Red Chittagong cattle is 92.29±4.29cm reported by Bag et al. (2010) which is higher than present study.

Productive traits

Daily milk yield

The mean daily milk yield is presented in the (Table 4). The mean milk yield per day was 3.4±1.469 liter. The maximum and minimum milk yield per day was 6.0 and 1.0 liters, respectively.

Table 4
Productive trait of cow in Magura district.

Parameters	Mean ± SD
Milk Yield(L/d)	3.43±1.469
Lactation Length (days)	250.77±34.03
Dry period	146.5±33.91

The finding was similar to the study of Al-Amin et al., (2007) who recorded highest peak milk production of 3.5±0.18 kg per day in Bogra. The milk production of native cattle of Sylhet district 1.33±0.4 liters/day (Koirala et al., 2011) and Red Chittagong 2.55±0.11 liters/day (Habib et al., 2003) which are less than the present study. Khan et al., (2000) observed an average daily milk yield under farm and rural conditions to be 2±0.65 kg and 1.80±0.87 kg, respectively which is slightly lower than the result of present study. Difference in genetic architecture, feeding system, quality and quantity of ration, milk man and time of milking may be affecting the daily milk yield of indigenous cow.

Lactation length

The average lactation length of native cows of Magura was 250.77±34.03 days (Table 4). The highest and lowest value of lactation length was found to be 295 and 180 days, respectively. Koirala et al., 2011 found the lactation length of native cow of Sylhet district 187.94±14.77 days which is lower than the native cow of Magura district of this study. Al-Amin et al., (2007) observed the mean lactation length of North Bengal grey cattle of Bangladesh 219±38.2 days.

Dry period

The mean dry period of cow at Magura was 146.5±33.91days. Koirala et al. (2011) reported dry period of cattle of Sylhet was 220.81±15.68 days which is higher than the present study. Whereas the mean dry period of North Bengal Grey cows is 180±42.4 days (Al-Amin et al., 2007) is very close to the present study.

Reproductive traits

Gestation length

The average gestation length of cow of Magura was 287.88±8.28 days (Table 5). The highest gestation length was 310 days and the lowest was 278 days. The gestation period of North Bengal Grey cows is 281±1.3 days (Amin et al., 2007) and Red Chittagong cow 281.30±1.43 days (Kahn et al., 1999).

Table 5
Reproductive traits of cow in Magura.

Trait	Mean ±SD
Gestation length (days)	287.88±8.28
Age at 1st calving (month)	40.47±10.04
Calving interval (days)	467.86±52.23

However variation in the gestation length might be due to genetic variation along with environmental

factors such as season, temperature, feeding and management to a little extent. (Al Amin et al., 2007).

Age at first calving

The average age at first calving of indigenous cow of Magura was 40.47±10.04 months (3.37 years) (Table 5). The maximum and minimum age at first calving of indigenous cattle of Sylhet was 3 and 4.5 years, respectively. Amin et al., (2007) observed the mean age at first calving of North Bengal grey cattle 1190.70±19.67 days (3.27 years). This result is partially in accordance with the finding of present study. Genetic and management factors specially feeding system and care might have influenced this trait.

Calving interval

The overall calving interval of cattle of Magura district in Bangladesh was 467.86±52.23 days (Table 5). The maximum and minimum calving intervals were 520 and 430 days respectively. Habib et al., (2003) found the mean calving interval of Red Chittagong cow is 409.9±17.8 days which is lower than those in the present study. Zafar et al., (2008) found the mean calving interval of Sahiwal cow of Pakistan to be 429±3.74 days which is also lower than those in the present study. Calving interval varies due to maternal and environmental factors such as feeding, management, fertility etc. (Al Amin et al., 2007).

CONCLUSION

The present study demonstrated the variation in morphometric, productive and reproductive characteristics of cattle at Magura with other cattle reared in this country. Further studies are needed to compare the genetic variation and production performance of the native cattle of Magura district with other indigenous breeds.

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