



Phenotypic and Morphometrical Characteristics of Sahiwal Cattle

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Authors' contributions

This work was carried out in collaboration among all authors. Author PK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors Jnyanashree Saikia and Jitendra Saharia managed the analyses of the study. Author DCM managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

The present study was conducted at Institutional livestock farm complex, College of Veterinary Science, Assam Agricultural University, Khanapara. A total of 37 adult Sahiwal pure breed cattle were selected to study their phenotypic and Morphometric characteristics. Phenotypic characteristics were visually recorded and morphometric measurements were taken with a measuring tape. Coat and face colour of most of the animals are deep brown in colour but also few light brown colour animals were noticed. The muzzle, eye lashes, hooves and tails colour of Sahiwal cattle are mostly black. Deep and light brown colour Hump was found. A well-developed udder, a large pendular dewlap and long naval flap were found. The average Heart Girth, Body length, Ear length, Ear width, Neck length, Hoove length, Hoove circumference, Tail length were found to be 103.33±2.79, 62.33±0.48, 10.08±0.39, 6.58±0.28, 25.83±0.50, 4.33±0.18, 11.33±0.28, 39.83±0.27, 24.33±0.28, 113.41±2.27 cm respectively.

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1. INTRODUCTION

Sahiwal is an outstanding milk breed of zebu cattle that derives its name from its original habitat the Sahiwal area in the Montgomery district of Punjab in Pakistan. The coat colour of Sahiwal cattle is brownish red with darker extremities. The biggest advantage of Sahiwal is its higher milk production and high-fat content compared to the other breeds of indigenous cattle. The presence of loose skin around their whole body makes Sahiwal fairly resistant to tick-borne diseases [1]. They can thrive easily in high humid areas. Sahiwal cow possesses a majestic look with its well-developed udder, a large dewlap and naval flap, drooping ears, massive hump, and a long tail with a black [2]. They are also known for their mothering ability, rapid weight gain, easy calving, the capacity to cope with bloat, hybrid vigour, and longevity (can reproduce up to 20 years) [3].

Despite having a profound impact on the rural economy and their significant contribution in terms of milk production, the purebred cattle population has not received due attention. According to Breed Survey, Dept. of Animal Husbandry, Dairying & Fisheries, Govt. of India, 2013, the population of Sahiwal cattle in India is (10,92,451)only. Due to crossbreeding and changes in agricultural systems, the purebred population of animal is decreasing over the years. Therefore, the reduction of the population should be minimized in such a way that it should be commercially available under existing circumstances. Within the breeds variation in morphometric measurements reflect adaptation to the specific production system. There is also a need to enhance the adaptability of the Sahiwal breed in regions outside its breeding tract. For this, the cooperation of governmental and non-governmental organizations as well as milk cooperatives is of utmost importance.

However, very little information is available related to phenotypic characteristics and morphometric measurement. Keeping this view, the present study has been undertaken to study of phenotypic and morphometric measurement of Sahiwal cattle.

2. MATERIALS AND METHODS

The present study was conducted in the herd of pure breed Sahiwal cows maintained at the

Instructional livestock farm complex, College of Veterinary Science, Khanapara, Assam Agricultural University, Assam. For the present study 37 adult Sahiwal female cattle were selected. The weather condition of Assam is typically tropical monsoon rainfall type with high levels of humidity and heavy rainfall, with warm summers and mild winters. The plains of Assam have a tropical climate with high humidity; the hills have a sub-alpine type of climate. All the animals of the present investigation were kept under similar housing system i.e. double row tail to tail with concrete floor. The animals were regularly provided green fodder, dry fodder and concentrates, during morning and evening at the time of milking as per the practice followed in the farm.

Physical characteristics (colour of coat, muzzle, face, eye lashes, horns, hump, udder, hooves and tail switch) were recorded visually. Morphometric measurements (heart girth, body length, horn length, horn circumference at base, ear length & width, neck length, hooves circumference and tail length) were recorded using measuring tape. All experimental animals were weighted empty stomach at morning prior to feeding by using weighing balance and were recorded. Birth and weaning weight was recorded by using weighing balance. The data were subjected to statistical analysis with standard method.

3. RESULTS AND DISCUSSION

Coat colour of most of the Sahiwal cattle are deep brown in colour but few light brown colours animals were also noticed. The muzzle colours of Sahiwal cattle are predominantly black and also mixed with brown colour. Face of all the Sahiwal cattle are brown in colour. Colour of the eye lashes found to be black. The hump of Sahiwal cattle recorded as deep and light brown in colour. Colour of the hooves and tails are black. A well-developed udder, a large pendulous dewlap and long naval flap are also recorded. The different morphometric measurements of Sahiwal cattle are depicted in Fig. 1.

The average heart girth and body length of Sahiwal Cattle were 103.33 ± 2.79 cm and 62.33 ± 0.48 cm, respectively. The body length of Sahiwal cows (>36 months) was recorded as 139.13 ± 1.26 cm by Patoos et al. [4]. Another study on Achai cattle on mean heart girth and

body length were 138.36 ± 1.70 cm and 110.27 ± 1.66 cm respectively [5]. Similar study on Body length (97.1 ± 0.5 cm) and Heart Girth (140.6 ± 0.5 cm) on Ponwar cattle were reported by Gaur et al. [6], while Singh et al. [7] reported the height at wither of adult male and female Deoni cattle as 134.36 ± 2.03 cm and 122.22 ± 1.23 cm respectively. Others morphometrical measurements i.e. Ear length, Ear width, Neck length, Hoove length, Hoove circumference, Tail length were found to be 10.08 ± 0.39 cm, 6.58 ± 0.28 cm, 25.83 ± 0.50 cm, 4.33 ± 0.18 cm, 11.33 ± 0.28 cm, 39.83 ± 0.27 cm, 24.33 ± 0.28 cm and 113.41 ± 2.27 cm respectively. In the present study, average birth weight recorded as 26kg

and average weaning weight (6 months) was 120 kg. Hayaz et al. [5] recorded the average birth and weaning weight in Achai cattle of 14.90 ± 0.80 kg and 50.0 ± 5.00 kg respectively. The mean body length, Heart girth, length of the Tail and Ear were reported by Kayastha et al. [8] in indigenous cattle of Assam was 83.668 ± 0.590 , 113.146 ± 0.738 , 54.196 ± 0.527 and 18.131 ± 0.111 cm respectively Panchung and Roden [9] reported tail length 109 ± 4.7 for bull and 88 ± 1.8 cm for cows in Siri cattle. Bhinchhar et al. [10] reported the body length, heart girth, ear length were 108.06 ± 0.90 , 145.50 ± 1.80 respectively in Gangatiri cattle.

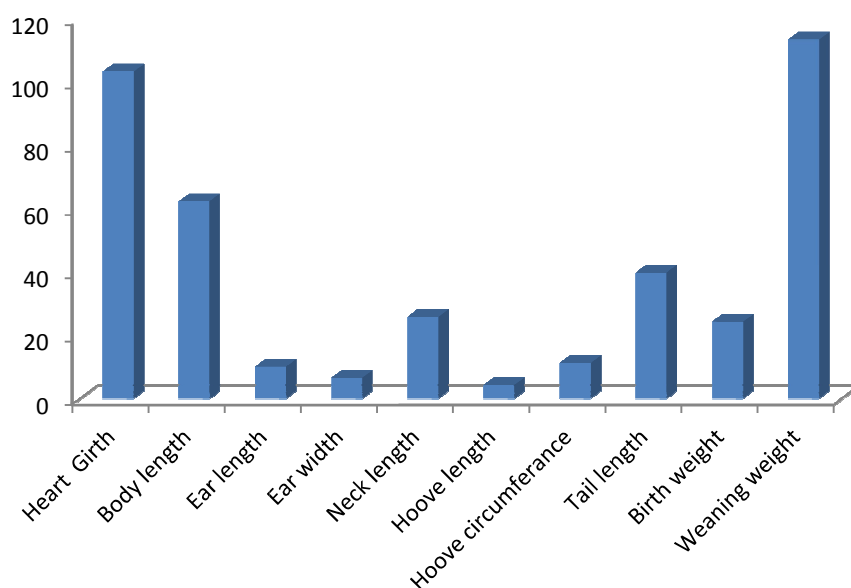


Fig. 1. Morphometric measurements of Sahiwal cattle

Table 1. Characteristics of few qualitative traits of Sahiwal

Qualitative traits	Characteristics
Coat colour	Deep brown
Muzzle colour	Black
Face colour	Brown
Eye- lashes colour	Black
Hump	Deep and light brown
Hooves and Tails	Black
Udder	Well develop
Dewlap	Pendulous
Naval flap	Long

4. CONCLUSION

The relative information about phenotypic and morphometric measurements of pure breed Sahiwal cattle may help in improvement of breed characteristics and conservation aspect.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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