



Studies on linear body measurement of Marathwadi buffalo on field scale

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ABSTRACT: The study was conducted in Osmanabad district of Marathwada region in Maharashtra. Data were collected on 1013 Marathwadi buffalo animals of different age groups where 990 were female buffalo and 23 were breeding bull. The linear body measurement and body weight of buffalo in five age groups (0-3, 4-12, 12-24, 24-36 and above 36 months) were recorded. The LSM of chest girth of five age groups of female buffalo were 78.31 ± 0.46 , 99.28 ± 0.71 , 134.58 ± 1.02 , 162.32 ± 1.05 and 177.69 ± 0.42 and that of breeding bull were noted as 180.49 ± 1.23 cm. The LSM of body length of five age groups of female buffalo were 65.68 ± 0.43 , 78.50 ± 0.49 , 103.90 ± 0.72 , 118.39 ± 0.55 and 124.02 ± 0.17 and that of breeding bull were noted as 128.02 ± 0.97 cm. The LSM of height at wither of five age groups of female buffalo were 76.15 ± 0.47 , 85.98 ± 0.42 , 107.65 ± 0.58 , 119.29 ± 0.52 and 123.43 ± 0.16 and that of breeding bull were noted as 129.65 ± 0.43 cm. The LSM of body weight of five age groups of female buffalo were as 37.43 ± 0.66 , 72.63 ± 1.53 , 175.24 ± 3.79 , 289.10 ± 4.66 and 361.68 ± 1.96 and that of breeding bull were noted as 384.22 ± 7.26 cm.

KEY WORDS : Marathwadi , Buffalo, Measurement, Linear body weight

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INTRODUCTION

India possesses 111.30 million of total buffalo population of the world (Singh and Singh, 2012). The milk thus produced in India is contributed not only by the recognized milch buffalo breed but also by several other buffalo breeds, types existing in the country.

Marathwadi buffalo breed has been located in the valley of the rivers Purna, Dudhna and North banks of Godavari. It is well distributed in the districts of Beed, Parbhani, Jalna, parts of Nanded, Latur and Osmanabad districts of Marathwada region.

The buffaloes in Marathwada region are entirely different from the western and northern types and clearly represent a very ancient indigenous type, characterized with lighter built

and long flat horns. The central Indian breeds are distinguishable from north India, curled horned breeds. The animals of Marathwadi buffalo breed are reared by virtue of its potentialities, consistency and adaptabilities to varied prevailing circumstances (Hadi, 1965). This peculiar animal dominates the small sized herds in rural area being a regular breeder and is mainly reared for milk production (Gujar *et al.*, 1999). The body weight is an important criterion for selecting the animals for a healthy herd and plays major role in maintaining and managing the animals more economically.

The body measurement traits play important role in judging the animal and often help in predicting probable value of the animal. Over and above, body size and conformation of animal play a substantial role in input and output relationship. The body girth is indicative of developments of various body cavities, thus giving sufficient idea for development of vital organs. For estimating the balanced ration, one has to consider the body weight of the animal. But under farmers conditions, it is not possible to have weighing facility. In the absence of valid records, one has to consider external body measurements for predicting live body weight. Attempts for estimation of live body weight utilizing body measurements have been done in good amount in cattle; but the work is in egg in case of buffaloes. Therefore, an attempt has been made in this regard.

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This study was taken up at College of Agriculture, Latur, Marathwada Krishi Vidyapeeth, Parbhani (M.S.).

MATERIAL AND METHODS

Out of 1013 Marathwadi buffalo animals, 990 female and 23 breeding bull were used for present study. The animals were divided in five age groups such as (0-3 months) 121 female buffalo, (4-12 months) 181 female buffalo, (12-24 months) 95 female buffalo, (24-36 months) 112 female buffalo female, (above 36 months) 481 female buffalo and 23 were breeding buffalo bull of age group (above 24 months). Among these animals, 291, 256, 203 and 263 were selected from 5 villages of each tehsil Bhum, Kalamb, Osmanabad and Lohara, respectively, of Osmanabad districts of Marathwada region of Maharashtra. The data for present investigation have been recorded for various body measurements viz., chest girth; body length and height at wither for Marathwadi individuals from the Osmanabad district. These Marathwadi buffaloes were distributed in 20 villages of four tahsils. Efforts have been made to collect data of these measurements by taking actual measurements of each individual on 1013 individuals at of different age groups. Arrangement was made to stand the animal on even surface and in normal position at the time of measurement. The body measurements have been made with the help of standard metallic tape. The data were generated on farmer's field condition, with the help of questionnaires and door to door visits. The raw data collected on the characters under study were classified in suitable sub-class frequencies and subjected for correction. The data were classified into four blocks as given below. B1- Bhum tahsil, B2- Kalamb tahsil, B3-

Osmanabad tahsil and B4- Lohara tahsil. The body weights at various age groups in Marathwadi buffalo were estimated by using Shaeffers formula. For statistical analysis of data, the Least Square Technique as outlined by Harvey (1976) was employed. After analysis of variance, the significant effects were further analyzed to have all the pair wise comparisons. For this purpose, the DMRT as modified by Karner (1957) was applied.

RESULTS AND DISCUSSION

The Least Square Mean of body measurement and body weight were recorded at different age groups for female animals and buffalo breeding bull and are presented in Table 1. The LSM of girth, body length and height at 0 to 3 months of Marathwadi buffalo were 78.31 ± 0.46 , 65.68 ± 0.43 and 76.15 ± 0.47 cm, respectively. Similar results were reported by Gujar (2003) and Gambhire (2009); in the same breed.

The LSM of girth, body length and height at 4 to 12 months of Marathwadi buffalo were 99.28 ± 0.71 , 78.50 ± 0.49 and 85.98 ± 0.42 cm, respectively. Similar results were reported by Kalyankar (2001) and Gambhire (2009); in the Marathwadi buffalo breed.

The LSM of girth, body length and height at 13 to 24 months of Marathwadi buffalo were 134.58 ± 1.02 , 103.90 ± 0.72 and 107.65 ± 0.58 , cm, respectively. Similar results were reported by Kalyankar (2001); Gujar (2003) and Gambhire (2009); in the Marathwadi buffalo breed.

The LSM of girth, body length and height in breeding bull of Marathwadi buffalo were 180.49 ± 1.23 , 128.02 ± 0.97 and 129.43 ± 0.43 cm, respectively. Such type of results also

Table 1 : Least square mean and standard error of girth, length, height and weight at different age group of Marathwadi buffalo

Age group (month)	Sex	Animal (N)	LSM \pm S.E			
			Girth	Length	Height	Weight
0-3	Female buffalo animal	121	78.31 ± 0.46	65.68 ± 0.43	76.15 ± 0.47	37.43 ± 0.66
4-12	Female buffalo animal	181	99.28 ± 0.71	78.50 ± 0.49	85.98 ± 0.42	72.63 ± 1.53
13-24	Female buffalo animal	95	134.58 ± 1.02	103.90 ± 0.72	107.65 ± 0.58	175.24 ± 3.79
25-36	Female buffalo animal	112	162.32 ± 1.05	118.39 ± 0.55	119.29 ± 0.52	289.10 ± 4.66
More than 36	Female buffalo animal	481	177.69 ± 0.42	124.02 ± 0.17	123.43 ± 0.16	361.68 ± 1.96
Above 24	Breeding bull	23	180.49 ± 1.23	128.02 ± 0.97	129.65 ± 0.43	384.22 ± 7.26

Table 2 : ANOVA for block effect on girth, length, height and weight at different age group of Marathwadi buffalo

Age group (month)	Sex	Animal (N)	F Value			
			Girth	Length	Height	Weight
0-3	Female buffalo animal	121	1.25 ^{NS}	0.98 ^{NS}	0.76 ^{NS}	0.54 ^{NS}
4-12	Female buffalo animal	181	0.65 ^{NS}	1.41 ^{NS}	1.45 ^{NS}	0.93 ^{NS}
13-24	Female buffalo animal	95	2.57 ^{NS}	0.84 ^{NS}	0.49 ^{NS}	1.97*
25-36	Female buffalo animal	112	1.68 ^{NS}	1.20 ^{NS}	0.62 ^{NS}	1.13 ^{NS}
More than 36	Female buffalo animal	481	3.72*	4.06**	4.03**	4.04**
Above 24	Breeding bull	23	0.28 ^{NS}	0.30 ^{NS}	1.84 ^{NS}	0.69 ^{NS}

* and ** indicate significance of values at <0.05 and 0.01, respectively

NS- Non significant

reported by Pundir and Sahai (1997) in Nagpuri, Bhadawari, Jaffarabadi, Mehsana, Murrah, Nilli-ravi and Surti buffaloes; Patil and Ulmek (2001) in Pandharpuri; Pundir and Ahlawat (2007) in Bhadawari, Jaffarabadi, Mehsana, Murrah, Nagpuri, Nilliravi, Pandharpuri and Surti buffaloes.

The LSM of girth, body length and height at more than 36 months of Marathwadi buffalo were 177.69 ± 0.42 , 124.02 ± 0.17 and 123.43 ± 0.16 cm, respectively. Similar results were reported by Kalyankar (2001); Pundir and Ahlawat (2007); Shrikhande *et al.* (1996) in Nagpuri buffalo and Pundir and Ahlawat (2007) in Bhadawari, Nagpuri and Surti buffaloes.

The LSM of body weight for Marathwadi buffalo at 0 to 3, 4 to 12, 13 to 24, 25 to 36 and more than 36 months of age were reported as 37.43 ± 0.66 , 72.63 ± 1.53 , 175.24 ± 3.79 , 289.10 ± 4.66 and 361.68 ± 1.96 kg, respectively. Similar results were reported by Gambhire (2009) in Marathwadi buffalo and Chauhan *et al.* (2008) in Pandharpuri and Nagpuri buffalo.

ANOVA for block effect on chest girth, body length, height at wither and body weight of different age groups of Marathwadi buffalo animals have been presented in Table 2.

Conclusion:

It can be concluded that from the present investigation on growth production and linear body measurement of Marathwadi breed maintained in different management condition that, the breed is found well adapted to varied geographical and management situations but the preference to the breed is not given by the animal owners of this area. For well distribution of this adapted breed the formation of "Breed Society and Registration of Herds" is essential in future.

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