

## PHENOTYPIC CHARACTERISTICS OF SWAMP BUFFALOES OF MANIPUR\*

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### ABSTRACT

An investigation was carried out to study certain phenotypic characteristics of swamp type buffaloes of Manipur in 2009 - 2010. Average body weight, body length, heart girth, height at withers, pouch girth and length of tail were found to be  $223.06 \pm 6.70$  kg,  $98.96 \pm 1.16$ ,  $142.60 \pm 1.60$ ,  $108.85 \pm 0.92$ ,  $149.29 \pm 1.61$  and  $46.78 \pm 0.95$  cm respectively. Significant effect was observed on all these phenotypic characteristics due to age group and sex while type exerted no significant effect on the above characteristics. All these phenotypic characteristics exhibited an increasing trend with the advancement of age. Higher values were recorded in males than the females on all these phenotypic characteristics.

**Key words :** Swamp buffalo, Manipur, Semi-wild.

The buffaloes of Manipur are medium in structure, compact with strong legs, grey to grayish in colour with sickle shaped horns. The horns are broad at the base and corrugated in nature. The tail is long with a moderate switch. There are two distinct white markings, one around the neck and the other at the brisket region known as '*kati*' in local dialect. A typical white to grayish white colour is observed from knee to coronet in majority of buffaloes. The neck is comparatively short. The forehead is almost flat and face is

proportionately small compared to the body. The eyes are large and slightly bulging in male. The majority of the swamp type buffaloes of Manipur are semi-wild in nature.

### MATERIALS AND METHODS

A survey was carried out to study certain phenotypic characteristics of swamp type buffaloes of Manipur and data were collected from the available breeding records, personal observations and verbal communications with the individual owners of the two districts, viz. Ukhru (hill) and Thoubal (plain) of Manipur covering a period of one year from April, 2009 to May, 2010. A total of 548 observations were recorded for this study. Out of total 548 observations, 275 and 273 were recorded from Thoubal (plain) and Ukhru (hill) district of Manipur respectively. The data obtained were classified as follows:

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## Characteristics of Swamp buffaloes

1. Types – The data were classified into 2 groups according to types of swamp buffaloes available in Manipur, viz. the 'Hill Type' and the 'Plain Type'.

2. Age group – The data were classified into six different groups, viz. below 6 months, 6 months and < 1 year, 1 year and < 2 years, 2 years and < 3 years, 3 years and < 4 years and, 4 years and above, and designated as G<sub>1</sub>, G<sub>2</sub>, G<sub>3</sub>, G<sub>4</sub>, G<sub>5</sub> and G<sub>6</sub> respectively.

3. Sex – The data were classified into two groups according to the sex of the animals, viz. male and female, and designated as M and F respectively.

The data were subjected to statistical analysis as per the standard methods.<sup>2</sup>

### RESULTS AND DISCUSSION

Mean and standard error of body length, heart girth, body weight, height at withers, pouch girth and length of tail according to types, age group and sex are depicted in Table 1.

Statistical analysis revealed highly significant effect ( $P < 0.01$ ) of age group and sex of animal on body length, heart girth, body weight, height at withers, pouch girth and length of tail while type of animal exerted no significant effect on these characteristics. Higher values were recorded in males than the females on all these phenotypic characteristics.

*Body length* - Mean body length was found to be  $98.96 \pm 1.16$  cm. The mean body length in adult buffaloes was recorded as  $135.03 \pm 0.97$  cm. Males had longer body length as compared to females of same age group. A few research workers<sup>1, 3, 6</sup> reported higher body length and a

significant influence of sex on body length in swamp buffaloes of Assam.

*Heart girth* – Mean heart girth was found to be  $142.60 \pm 1.60$  cm while it was  $195.31 \pm 0.87$  cm in adult buffaloes. Research workers<sup>5, 3</sup> in Nili buffaloes and in swamp buffaloes of Assam observed a lower heart girth while other research workers<sup>1, 6</sup> observed a higher value of heart girth in swamp buffaloes of Assam.

*Body weight* - Mean body weight was found to be  $223.06 \pm 6.70$  kg. The average mature body weight of Manipuri buffaloes was found to be  $471.43 \pm 3.71$  kg while it was about  $430.13 \pm 4.24$  kg and  $363.48$  kg in swamp buffaloes of Assam<sup>3</sup> and Nagpuri buffaloes<sup>7</sup> respectively.

*Height at withers* – Mean height at withers was found to be  $108.85 \pm 0.92$  cm. The average mature height at withers was observed to be of  $133.34 \pm 0.51$  cm in adult buffaloes. Certain research worker<sup>3</sup> reported a similar value ( $107.85 \pm 0.32$  cm) in swamp buffaloes of Assam. Higher values were observed by other research worker<sup>4, 6, 1</sup> in Murrah buffaloes and in swamp buffaloes of Assam. The effect of sex on height at withers was found to be highly significant.

*Pouch girth* – Mean pouch girth was found to be  $149.29 \pm 1.61$  cm. In adult buffaloes the mean pouch girth was recorded as  $201.24 \pm 0.91$  cm. In swamp buffaloes of Assam, pouch girth was observed to be smaller by a research worker<sup>3</sup>, while another research worker<sup>6</sup> reported a similar figure.

*Length of tail* – Mean length of tail was found to be  $46.78 \pm 0.95$  cm while it was about  $75.17 \pm 1.74$  cm in adult buffaloes. But other research workers<sup>3, 6</sup> observed a higher value of length of tail in swamp buffaloes of Assam.

Table 1 : MEAN ± SE OF BODY LENGTH, HEART GIRTH, BODY WEIGHT, HEIGHT AT WITHERS, POUCH GIRTH AND LENGTH OF TAIL OF SWAMP BUFFALOES OF MANIPUR.

Effect	No. of observations	Body length (cm)	Heart girth (cm)	Body weight (kg)	Height at withers (cm)	Pouch girth (cm)	Length of tail (cm)
$\mu$	548	98.96 ± 1.16	142.60 ± 1.60	223.06 ± 6.70	108.85 ± 0.92	149.29 ± 1.61	46.78 ± 0.95
Types							
Hill	273	99.40 <sup>a</sup> ± 1.60	143.05 <sup>a</sup> ± 2.29	224.39 <sup>a</sup> ± 9.46	109.44 <sup>a</sup> ± 1.40	149.99 <sup>a</sup> ± 2.33	47.27 <sup>a</sup> ± 1.37
Plain	275	99.14 <sup>a</sup> ± 1.70	142.62 <sup>a</sup> ± 2.29	221.90 <sup>a</sup> ± 9.68	108.86 <sup>a</sup> ± 1.29	149.04 <sup>a</sup> ± 2.27	47.11 <sup>a</sup> ± 1.52
Age group							
G <sub>1</sub>	94	69.06 <sup>a</sup> ± 0.31	100.26 <sup>a</sup> ± 0.55	65.42 <sup>a</sup> ± 1.01	81.80 <sup>a</sup> ± 0.32	105.59 <sup>a</sup> ± 0.59	24.01 <sup>a</sup> ± 0.23
G <sub>2</sub>	96	76.95 <sup>b</sup> ± 0.64	111.06 <sup>b</sup> ± 0.57	90.76 <sup>b</sup> ± 1.55	90.53 <sup>b</sup> ± 0.31	117.83 <sup>b</sup> ± 0.61	26.97 <sup>b</sup> ± 0.10
G <sub>3</sub>	89	78.40 <sup>bc</sup> ± 0.82	116.08 <sup>c</sup> ± 0.62	100.91 <sup>bc</sup> ± 1.97	94.62 <sup>c</sup> ± 0.73	122.47 <sup>c</sup> ± 0.55	30.91 <sup>c</sup> ± 0.39
G <sub>4</sub>	77	111.39 <sup>d</sup> ± 1.92	153.62 <sup>d</sup> ± 1.78	246.28 <sup>d</sup> ± 8.16	123.61 <sup>d</sup> ± 1.13	163.47 <sup>d</sup> ± 1.85	60.67 <sup>d</sup> ± 1.05
G <sub>5</sub>	95	123.12 <sup>e</sup> ± 1.08	178.45 <sup>e</sup> ± 1.07	354.73 <sup>e</sup> ± 0.21	130.48 <sup>e</sup> ± 0.52	184.92 <sup>e</sup> ± 4.37	63.93 <sup>e</sup> ± 0.31
G <sub>5</sub>	97	135.03 <sup>f</sup> ± 0.97	195.31 <sup>f</sup> ± 0.87	471.43 <sup>f</sup> ± 3.71	133.34 <sup>f</sup> ± 0.51	201.24 <sup>f</sup> ± 0.91	75.17 <sup>f</sup> ± 1.74
Sex							
M	271	100.97 <sup>a</sup> ± 1.67	145.31 <sup>a</sup> ± 2.30	235.66 <sup>a</sup> ± 9.91	110.19 <sup>a</sup> ± 1.31	152.31 <sup>a</sup> ± 2.33	48.49 <sup>a</sup> ± 1.37
F	277	96.99 <sup>b</sup> ± 1.60	139.94 <sup>b</sup> ± 2.23	210.73 <sup>b</sup> ± 9.21	107.54 <sup>b</sup> ± 1.29	146.34 <sup>b</sup> ± 2.22	45.10 <sup>b</sup> ± 1.30

★ NB : Subclass means having different superscript differed significantly (P&lt;0.05)

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## CONCLUSION

In the conclusion it may said that the information on swamp buffaloes of Manipur is very much scanty and therefore data generated regarding this animal is highly appreciable. The swamp buffalo plays a significant role in the socio-economic life of the people of Manipur. Of course further studies are needed with large number of buffaloes covering the entire state of Manipur in order to establish this noble animal as a breed in near future.

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