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Short Communication

Relationship of scrotal circumference to age, body weight and testicular volume of swamp buffalo

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ABSTRACT

Scrotal circumference (SC) and testicular volume (TV) of thirty eight swamp buffalo bulls maintained at Livestock Research Station, Assam Agricultural University, Mandira and ranging in age from 12 months to 60 months and weighing 132 kg to 358 kg. Ages and body weight (BW) were recorded for each male at the time of measurement to find out correlation with SC and TV. SC and TV increased linearly and correlated significantly with age and BW (SC vs age : r = 0.72, P<0.01; SC vs BW, r = 0.82, p<0.01; TV vs BW : r = 0.78, P<0.01). SC measured from 14.1±0.42 to 22.2±0.54 cm for ages ranging from 12 to 60 months, revealing that testicular size in swamp buffaloes was very much smaller than domestic cattle. The SC norms distributed with age would be useful in the evaluation of swamp buffalo male for breeding soundness.

Key words: scrotal circumference, swamp buffalo

Scrotal circumference measurement have been incorporated into the revised breeding soundness examination system because of its high correlation with sperm production in young Bos taurus bulls (Coulter, *et al.*, 1975 and Mc Gowan *et al,* 2002). The relationship of BW and testicular size was reported for Egyptian buffalo male (Yasser and Mahmood, 1972) and Mehsana buffalo bulls (Kodagali and Deshi, 1996), but there is paucity of information on SC measurement in the swamp buffalo bulls. In the present study an attempt was made to relate SC and TV measurement to age and BW.

Thirty eight swamp buffalo bulls maintained at Livestock Research Station, Assam Agricultural University, Mandira ranging in age from 12 to 60 months were used in the present study. The animals were let loose in the morning in the open field for grazing and housed during night. The animals were not supplied with any concentrate. SC was measured with a flexible cloth measuring tape around the greatest diameter of the testes and scrotum. TV was measured by the amount of water displaced when the testicles were immersed in a pail of warm water (37°C) filled to brim. Age were taken from record of birth dates and BW were obtained at the time of SC and TV measurements.

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The relationship of age to SC is shown in Table 1. There was a steep increase of SC up to around 33 month of age and then increased was linear. The maximum SC attained for the swamp buffalo was about 24 cm. The mean SC for buffalo bulls ranged from 14.1±0.42 cm to 60 months revealing that testicular size in swamp buffaloes was very much smaller than cattle. The relationship of SC to age was significant (r =0.72, P<0.01).

The relationship of BW to SC is shown to Table 2. The mean SC ranged from 14.4±0.81 to 22.2 to 0.38 for buffalo bulls of BW ranging from 132.15 ±4.3 to 358.4±3.5 kg. From this study it is clear that SC as a measurement of testicular size were highly correlated with BW and age in swamp buffalo.

SC was more correlated with BW (r =0.82, P<0.01) than the age (r = 0.72, P<0.01). Similar relationship was observed in Malaysian swamp buffalo (Bongso *et al.*, 1984) and Belmont Red Bulls (Mc Gowan *et. al.*, 2002).

The relationship of TV to BW is shown in Table

Table 1. Scrotal circumference (SC) in swamp buffalo bulls of different age.

Age (Months)	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
SC (cm) mean±SE	14.1±0.4	15.1±0.9	16.4±0.4	17.4±0.5	18.5±0.4	19.5±0.5	20.1±0.4	21.3±0.6	21.3±0.5	21.3±0.6	21.4±0.5	21.9±0.4	22.11±0.5	22.2±0.5	22.2±6.9	22.2±0.5	22.2±0.5

Table 2. Scrotal circumference (SC) in swamp buffalo bulls of different body wt (BW).

SC (cm) Mean ±SE	BW (kg) Mean ±SE
14.4±0.8	132.15±4.3
15.3±0.32	148.61±3.3
16.4±0.43	158.36±4.2
17.5±0.42	185.21±3.6
18.8±0.24	212.4±5.2
19.4±0.53	250.3±3.2
20.1±0.43	290.4±4.5
21.3±0.21	322.3±5.3
22.2±0.38	358.4±3.5

Table 3. Testicular volume (TV) in swamp buffalo bulls of different body weight (BW)

TV (ml) Mean ± SE	BW (kg) Mean ± SE
67.2±6.5	134.1±4.2
90.3±7.3	152.3±3.5
112.2±9.2	195.8±3.7
132.2±6.5	221.5±4.1
147.3±5.2	253.6±3.2
168.2±5.5	295.2±5.2
198.3±4.5	320.1±3.2
253.5±8.5	353.6±5.1

3. There was steady increase in TV with BW. The means TV was 67.2±6.5 to 253.5±8.5 ml for BW of 134.1±4.2 to 353.65±5.1 kg. The relationship between TV and BW was significant (r = 0.78, P<0.01). Since SC is strongly related to fertility, the data in this study may be used to evaluate potential swamp buffalo bulls for breeding soundness when combined with other parameter such as sperm motility and morphology. SC norms have been reported for bull (Elmore *et al.*, 1976), ram (Braun *et al.*, 1980) and buck (Bongso *et al.*, 1982). Further studies are being undertaken to estimate the age at puberty and relationship of testicular histology with SC, age and BW to develop a SC norms for swamp buffalo.

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