Indian J. Anim. Prod. Mgmt. Vol. 30(3-4) 103-106 (2014)

SEXUAL BEHAVIOUR AND SEMEN CHARACTERISTICS OF SWAMP BUFFALO BULLS

D. J. TALUKDAR ; K. AHMED ; J. SAHARIA[1] ; G. C. DAS[2] ; H. MAZUMDAR AND J. HUSSAIN[3]
Department of Animal Reproduction, Gynaecology & Obstetrics
College of Veterinary Science, A.A.U.
Khanapara, Guwahati-22

Received : 20.10.2014 ***Accepted : 30.11.2014***

ABSTRACT

The study was conducted to record the basic information on sexual behaviour and semen quality of four Swamp buffalo bulls maintained at "Network Project on Swamp Buffalo," Department of Animal Genetics and Breeding, College of Veterinary Science, Khanapara, Guwahati, Assam. A total of 160 ejaculates, 40 ejaculates from each bull collected by Artificial Vagina (AV) method were utilized for the present study. During approach towards the teasers, 26.95% bulls were found aggressive, 51.72% were active and 21.38% were dull. After approaching the teaser, tactile stimulations, like sniffing (38.19%), smelling (17.36%), licking (36.11%), bunting (49.30%), flehmen posture (43.50%) and chin resting (37.50%) were observed. Reaction time ranged from 6 to 20 seconds and ejaculate time from 10 to 40 seconds. The dismounting time was from 10 to 15 seconds. Out of 160 ejaculates, the colour of semen was creamy white, milky white and light yellowish in 50.00, 31.25 and 18.75 per cent ejaculates respectively. The difference between bulls was significant ($P< 0.01$) for ejaculate volume, mass activity, initial sperm motility, sperm concentration, total HOST reacted spermatozoa and total head abnormalities ($P< 0.05$) while live sperm, live intact acrosome, mid piece abnormalities and tail abnormalities did not differ significantly between bulls.

Key words : Swamp buffalo bull, sexual behaviour, semen characteristics.

In Assam, the vast majority of buffaloes are of the swamp type, which is distributed in all parts of the State. They are commonly used as draught animals and their manure is used as fertilizer for rice and other crop cultivation but people also take full advantage of them for transportation, sports (buffalo fighting), as a saving bank against hard-time and subsidiary labour for the villagers. Traditionally, Swamp buffalo bulls are run with a group of females without knowing their reproductive performance. The breeding bull either through natural or Artificial insemination (AI) represents half of the genetic composition of its progeny (Coulter and Foote, 1979). On account of the extensive use of outstanding sires, a careful study of breeding bull has become very important. The knowledge of reproductive behaviour and semen quality are valuable tools to estimate the reproductive efficiency of a bull [2, 9]. A lot of research has been done on sexual performance and semen picture of various breeds of buffalo in different parts of the world. As for as semen picture and reproductive behaviour of Swamp buffalo are concerned, a few

[1]Professor, Dept. of LPM
[2]Principal Investigator, Net work project on swamp buffaloes
[3]Assistant Professor, Dept. of LPM

information is available in the literature about the Swamp buffalo of Assam. The study was therefore undertaken to record the sexual behavior parameters and semen quality of Swamp buffalo bulls.

MATERIALS AND METHODS

A total of 160 ejaculates, 40 ejaculates from each of four breeding Swamp buffalo bulls aged four to six years maintained at "Network Project on Swamp Buffalo," Department of Animal Genetics and Breeding, College of Veterinary Science, Khanapara, Guwahati, Assam were collected by Artificial Vagina (AV) method. Sexual behaviours of breeding buffalo bulls were recorded as per standard procedure[9]. The ejaculate volume, colour, mass activity[12], initial sperm motility[12], sperm concentration[4], live sperm[4], total HOST reacted sperm[7], live intact acrosome[11], sperm abnormality percentage[12] were studied as per methods described by earlier workers.

RESULTS AND DISCUSSION

During approach towards the teasers, 26.95% bulls were found aggressive, 51.72% were active and 21.38% were dull. After approaching the teaser, tactile stimulations, like sniffing (38.19%), smelling (17.36%), licking (36.11%), bunting (49.30%), flehmen posture (43.50%) and chin resting (37.50%) were recorded. None of the Swamp buffalo bull was shy as reported for some of the Nili Ravi bulls[3]. Following mounting the copulatory patterns included shifting of weight on hind legs and erection of penis of various degrees. The erection was observed in 72.22%, whereas it was partial on 24.31% and absent on 3.40%. The copulatory act consisted fixing of fore-leg on teasers pelvis (84.72%) or on flank (19.28%), the soles of the hind feet resting on the ground and back line over lumber region was straight (70.83%) or slightly concave (29.17%). Bulls were swinging their heads in the air (85.32%) or resting their heads on the back of the teaser (14.68%). The penile movement to locate artificial vagina, intromission and strong ejaculatory thirst were observed in all the cases. Reaction time ranged from 6 to 20 seconds and ejaculate time from 10 to 40 seconds which is lower than the time reported in Murrah buffalo bulls [11]. The dismounting time was from 10 to 15 seconds. Dribbling of pre-ejaculation fluid was observed in all the Swamp buffalo bulls. Out of 160 ejaculates, the colour of semen was creamy white, milky white and light yellowish in 50.00, 31.25 and 18.75 per cent ejaculates respectively and creamy white was most dominant colour noted throughout the study period in most of the bulls. This is in agreement with the findings of earlier workers[6, 8]. The mean ejaculate volume was 2.80 ±0.14, 1.84±0.08, 2.11±0.08 and 2.10±0.10 ml in Bull-I, II, III and IV respectively and the overall mean was 2.21 ± 0.06 ml. The mean ejaculate volume differed significantly ($P<0.01$) between bulls. The mean mass activity was found to be 3.80+, 3.60+, 3.75+ and 3.56+ in Bull- I, II, III and IV respectively with an overall mean of 3.67+. The mean mass activity differed significantly ($P<0.01$) between bulls. The overall mean mass activity score (scale 0-4) in Swamp buffalo bulls recorded in the present study was in close proximity with that reported (Scale 0-5) in Swamp buffalo[6, 8]. The mean initial sperm motility was 83.62±0.64, 80.12±0.65, 80.87±0.64 and 76.37±0.64 per cent in Bull-I, II, III and IV respectively and the overall mean was 80.25 ± 0.38 per cent. The mean initial sperm motility differed significantly ($P<0.01$) between Bulls. The overall mean initial sperm motility in Swamp buffalo bulls (80.25 ± 0.38 %) recorded in the present study was in close proximity with that reported in Swamp buffalo[6, 8]. The mean live sperm was 82.82±0.87, 79.37±1.06, 80.3±1.06 and 79.8±0.95 per cent in Bull-I, II, III and IV respectively with an overall mean of 80.57 ± 0.50 per cent. The mean live sperm did not differ significantly between bulls. The overall mean live sperm (80.57 ± 0.50 %) recorded in the present study was close to the values reported in Swamp[6]. The mean sperm concentration in Bull-I, II, III and IV was 1251±27.82, 1243.25±31.90, 1171.5±26.00 and 1081±29.67 million per ml respectively and varied

significantly (P<0.01) between bulls. The overall mean sperm concentration was 1186.68 ± 15.32 million per ml. The overall mean concentration of spermatozoa in the present study was close to the values reported by earlier workers[5, 8]. The mean incidence of total HOST-reacted spermatozoa in Bull-I, II, III and IV was 84.35±0.75, 85.4±1.01, 81.05±1.58 and 79.27±1.21 per cent respectively with an overall mean of 82.51 ± 0.61 per cent. The mean incidence of total HOST- reacted sperm varied significantly (P<0.01) between bulls. The overall mean of total HOST-reacted sperm in Swamp buffalo bulls (82.51 ± 0.61 %) recorded in the present study was in close proximity to the values reported by earlier workers[8]. The mean incidence of live intact acrosome in Bull-I, II, III and IV was 86.87±0.53, 86.67±0.45, 86.37±0.43 and 85.1±0.59 per cent respectively with an overall mean of 86.25 ± 0.25 per cent. Bull to bull variation was found to be non significant. The present value was higher than the values reported by earlier workers[1, 3]. This might be due to differences in breed, age, body weight, season, restraints, number of false mount and frequency of semen collection. The mean incidence of sperm head abnormalities in Bull-I, II, III and IV was 0.66 ± 0.16, 0.60 ± 0.18, 0.53 ± 0.22 and 1.40 ± 0.25 per cent respectively with an overall mean of 0.80 ± 0.11 per cent. The incidence of head abnormalities varied significantly (P<0.05) between bulls. The overall mean incidence of sperm head abnormalities in the present study (0.80±0.11%) was lower than that reported by earlier workers in Swamp buffaloes[6, 8]. The mean incidence of mid piece abnormalities was 0.67±0.17, 0.56 ± 0.18, 0.33 ± 0.17 and 0.44 ± 0.18 per cent in Bull-I, II, III and IV respectively with an overall mean value of 0.50 ± 0.08 per cent. The incidence of mid piece abnormalities did not differ significantly between bulls. The overall mean of mid-piece abnormalities (0.50±0.08 %) was in close proximity with that reported by earlier worker in Swamp buffaloes [5, 6]. The mean incidence of tail abnormalities was found to be 4.11 ± 0.54, 3.67 ± 0.24, 3.44 ± 0.30 and 3.78 ± 0.32 per cent in Bull-I, II, III and IV respectively with an overall mean of 3.75 ± 0.18 per cent. Bull to bull variation was found to be non significant. The overall mean of tail abnormalities (3.75 ± 0.18 %) recorded in the present study was in close proximity with the findings of earlier worker[8, 11].

CONCLUSION

In conclusion, the swamp buffaloes were very active at semen collection time and exhibited pronounced libido. The penile movement to locate artificial vagina, intromission and strong ejaculatory thirst were observed. Reaction time ranged from 6 to 20 seconds and ejaculate time from 10 to 40 seconds with dismounting time was from 10 to 15 seconds. There was no such variation in seminal attributes and the values were within the normal range. It can be concluded from the present study that the Swamp buffalo of Assam showing normal semen picture and reproductive behaviour and the data provides a preliminary basis for assessing the swamp buffalo bulls with better fertilizing potential in order to use the information to improve the genetics and the production of swamp buffalo.

REFERENCES

1. Adeel, M., Ijaz, A., Aleem, M., Rehman, H., Yousaf, M.S. and Jabbar, M.A. (2009). Improvement of liquid and frozen thawed semen quality of Nili-Ravi buffalo bulls (*Bubalus bubalis*) through supplementation of fat. *Theriogenology,***71**: 1220-1225.

2. Ahmad, N., Shahab, M., Khurshid, S. and Arslan, M. (1989). Pubertal development in the male buffalo: longitudinal analysis of body growth, testicular size and serum profiles of testosterone and oestradiol. *Anim. Reprod. Sci.*,**19**: 161-170.

3. Anzar, M., Khan, L.H. and Ahmed, M.N. (1988). Sexual performance of buffalo bulls during natural mating and semen collection. *Buffalo Journal*, **2**: 149-160.

4. Blom, E. (1950). A simple rapid staining method for the differentiation between live and dead sperm cells by means of Eosin and Nigrosin. *Nord. Vet. Med.,* **2:** 58.

5. Das, G.C., Deori, S., Das, B.K. and Goswami, R.N. (2007). Seminal characteristics of the Swamp buffalo of Assam. *Indian Vet. J.,* **84**: 1052-1053.

6. Das, P., Sarma, S., Kalita, D.J., Biswas, R.K. and Das, G.C. (2013). Certain physico-chemical characteristics of semen of swamp buffalo. In. Compendium of National Symposium on Buffalo for sustainable food security and Annual General Body meeting of Indian Society for Buffalo Development, on 15-16 March, 2013, Pp. 111

7. Jeyendran, R.S., Van der Ven, H.H., Perez-Pelaez, M., Carbo, B.G. and Zaneveld, L.J.D. (1984). Development of an assay to assess the functional integrity of the human sperm membrane and its relationship to other semen characteristics. *Journal of Reproduction and Fertility,* **70**: 219-228.

8. Koonjaenak, S., Pongpeng, P., Wirojwuthikul, S., Johannisson, A., Kunavongkrit, A. and Martinez, H.R. (2007). Seasonality affects post thaw plasma membrane intactness and sperm velocities in spermatozoa from Thai A.I. Swamp buffalos (*Bubalus bubalis*). *Theriogenology,* **67**: 1424-1435.

9. Lunstra, D. D., Ford, J.J. and Echternkamp, S.E. (1978). Puberty in beef bulls: hormone concentrations, growth, testicular development, sperm production and sexual aggressiveness in bulls of different breeds. *J. Anim. sci.,***46**: 1054-1062.

10. Tamuli, M.K. and Watson, P.F. (1994). Use of a simple staining technique to distinguish acrosomal changes in the live sperm sub-population. *Anim. Reprod. Sci*., **35**: 247-250.

11. Tomar, S.S. and Singh, S.P. (1996). Studies on reaction time and some of the seminal attributes and their inter-relationship in Murrah buffalo bulls. *Indian Journal of Animal Research,* **30**: 49-54.

12. Zemjanis, R. (1970). Collection and evaluation of semen In: *Diagnostic and Therapeutic Techniques in Animal Reproduction*, 2nd edn. Williams and Wilkins Co., Baltimore, Pp.139-155.

★ ★ ★