

## SEXUAL BEHAVIOUR AS AN INDEX OF FERTILITY IN BARBARI GOATS

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### ABSTRACT

Six juvenile bucks of 12 months of age were studied for sexual behaviour at the time of semen collection. Various parameters like sexual behaviour, reaction time, tactile stimulation and mating ability were studied. The sexual behaviour ranged from 71.50 to 93.66 per cent which was significantly correlated (-0.895) with reaction time. The reaction time ranged from 17.08 to 24.00 seconds. The differences between the sexual behaviour and reaction time between the bucks were statistically significant.

**Keywords :** Sexual behaviour, Fertility, Goats.

### INTRODUCTION

Expression of overt sexuality is considered as a useful parameter while judging of male animals for breeding purpose. Various workers opined that sexual desire or libido in male domestic animals is largely inherited but environmental influence could widely modified it (Watson, 1964). Further it has been established that optimum sexual desire has a positive correlation with seminal attributes and fertility in all domestic ruminants (Roberts, 1971). In small ruminants like goat and sheep evaluation of sexual behaviour is more useful in expression of sexual desire in goat, which varies from individual to individual in the same breed as well as in different breeds.

Preponderance of earlier reports showed that no comprehensive studies of sexual behaviour in goat have been attempted methodically or scientifically except in few breeds. Many of the Indian breeds like Barbari contribute substantially for economic upliftment of rural

poor but no attempt has been made to study their sexual behaviour, which is one of the pre requisite for the conservation of the breed.

Thus the present study was undertaken to provide a rational and practical approach to evaluate the sexual behaviour in Barbari goats.

### MATERIALS AND METHODS

The study was carried out on six juvenile bucks of 12 months of age at IVRI, Izatnagar and they are maintained under standard managemental practice. The bucks were closely observed for their libido and sexual behaviour at the time of semen collection and various parameters like sexual behaviour, reaction time, tactile stimulation and mating ability score were calculated as per the procedures laid down by Anjar *et al.* (1993) in buffaloes. A total of 72 observations were made from six bucks. The scoring pattern of sexual behaviour comprised of libido and mating ability and the scoring of libido was done on the basis of sexual aggressiveness, reaction time and tactile stimulation.

#### a) Sexual aggressiveness :

The behaviour of buck during approach towards the doe was assessed visually and classified as follows:

**Aggressive:** Extremely eager to mount and approach the doe with full vigor.

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**Active:** Approached the doe with less vigor and aggression.

**Dull:** Proceeded with a dull expression and took a longer time to mount.

**Shy:** Exhibited mild sexual interest and was reluctant to mount.

**Reaction time:** The time taken by a buck from exposure to the teaser until mounting.

**Tactile stimulation:** Tactile stimulation exhibited by bucks consists of sniffing, Flehmen reaction, licking, bleating, pawing, nudging, urinating, butting, chin resting and licking of penis. For each characteristic 0.2 was added to the total score obtained for reaction time and sexual aggressiveness.

**Reaction time (RT) and Sexual aggressiveness (SA) of bucks.**

The reaction time and sexual aggressiveness was arrived as such.

RT(sec)	score	SA	score
<20	4	Aggressive	4
21-40	3	Active	3
41-60	2	Dull	2
61-80	1	Shy	1
>80	0		

**Tactile stimulation**

Activities		Activities	
Sniffing	yes/no	Nudging	yes/no
Flehman reaction	yes/no	Butting	yes/no
Licking	yes/no	Chin resting	yes/no
Bleating	yes/no	Licking of penis	yes/no
Pawing	yes/no	Urinating	yes/no

Thus a libido scoring (%) of each attempt was computed as below:

$$\{[(RT \text{ score} + SA \text{ score}) + 0.2(T.S), 10]\} \cdot 100.$$

Reaction time and sexual aggressiveness of any successful attempt was used for libido scoring. If a

buck did not mount in three chances, then "Zero" score was given for the particular buck. Mating ability was scored on the basis of 10 point scale after assessing behavioural events displayed by bucks during ejaculation.

**Mating ability score based on various behaviour**

Sexual events	Score
Penile erection (PE)	2
Complete-2	
Partial-1	
Absent-0	
Mounting (MO)	1
Penile Movement (PM)	1
Grasping the teaser firmly (GT)	1
Ejaculatory Thrust (ET)	2
Strong-2	
Weak-1	
Absent-0	
Throwing whole body forward (TW)	0.5
Sudden backward movement of the head(SM)	0.5
Ejaculation (E)	2.0
Total	= 10

After mating if a buck did not ejaculate, then 1 point was deducted from the total score for each futile attempt. If a buck did not ejaculate in 3 attempts, a refusal to ejaculate designation was noted and a "Zero" score was given. The mating ability score was calculated in successful attempts as follows.

$$\{[(PE + MO + ET + PM+GT+TW+SM+E)-futile attempt], 10\} \cdot 100.$$

The sexual behaviour score was calculated from the net scores of libido and mating ability as follows.

$$\frac{(\text{Libido score} + \text{mating ability})}{2}$$

The statistical analysis of the data generated was done according to Snedecor and Cochran (1994).

## RESULTS AND DISCUSSION

The overall mean ( $\pm$ SE) sexual behaviour score during semen collection was recorded as  $81.29 \pm 1.88$  with the range from 52.50 to 95.00 percent. The mean ( $\pm$ SE) sexual behaviour percent of individual animal was ranged from  $71.50 \pm 4.88$  to  $93.66 \pm 0.97$  in bucks. The differences in sexual behaviour percentage between the bucks were statistically significant ( $P < 0.01$ ) as shown in Table.

Means with different superscripts in a row differ significantly. ( $P < 0.01$ )

Regarding evaluation of sexual behaviour no literature is available to compare the present study. However reaction time to mounting (Mittal, 1987; Roca *et al.*, 1991) and sexual events. (Rana, 1989; Das *et al.*, 1991) were practised to assess the sexual behaviour. In the present study the sexual behaviour was found to be correlated negatively and significantly ( $-0.895$ ) with reaction time. Rise in circulating testosterone stimulates the central nervous system and all sex linked glands resulting in an increase in the level of libido. Shorter the reaction time, the higher the exhibition of libido and vice versa (Leboeuf, 1992).

Table : Reaction time and sexual behaviour: (mean  $\pm$  SE) of bucks

Parameters	Bucks number							"F" value
	I	II	III	IV	V	VI	Overall	
Reaction time in sec.	24.00 <sup>a</sup> $\pm 1.35$	23.50 <sup>a</sup> $\pm 1.08$	19.33 <sup>bc</sup> $\pm 0.84$	17.08 <sup>c</sup> $\pm 1.05$	22.33 <sup>ab</sup> $\pm 1.04$	25.00 <sup>a</sup> $\pm 1.08$	21.87 $\pm 0.52$	8.25**
Sexual behaviour(%)	72.04 <sup>c</sup> $\pm 4.14$	77.45 <sup>bc</sup> $\pm 5.20$	91.33 <sup>ab</sup> $\pm 1.59$	93.66 <sup>a</sup> $\pm 0.97$	81.79 <sup>ab</sup> $\pm 5.03$	71.50 <sup>c</sup> $\pm 4.88$	81.29 $\pm 1.88$	5.57**

Positive effects of oestrus doe (Leboeuf, 1992) and visual competition (Price *et al.*, 1984) increase the sexual behaviour in bucks which is displayed by different activities (Naskar *et al.*, 1998). A higher output of testosterone from the testis or a higher concentration of testosterone at the target organs will raise the excitability of the male to such an extent that the entire accessory organs dependant upon the androgen activity will secrete their secretions in increased manner (Walton, 1962) which was evident from this experiment. Assessment of mating ability of a breeding buck is important because inability to copulate may be associated with spinal bone lesions (Bane and Hansen, 1962).

However, sexual behaviour alone cannot be used as an index of fertility but assessment of other seminal parameters along with in vitro fertility test and hormonal assay will be more pertinent for complete fertility studies.

In the present study a small number of bucks were assessed. The rationality of sexual behaviour on fertility will be more valid and authentic if such a study in a larger population of bucks is undertaken.

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