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Reproductive Performance of Estrus Pattern in Bachaur Cows of Bihar

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ABSTRACT

Background: The Bachaur is a medium sized draft purpose breed mostly present in Madhubani, Darbhanga and Sitamarhi districts of Bihar and presently the breed is at the verge of extinction. Since no data is presently available regarding the estrus pattern in these cows therefore, present study was designed to document the oestrus intensity, estrus cycle length, estrus behaviour and duration of estrus in these animals.

Methods: The total of nine healthy breeding Bachaur cows aged 3 to 5 years were maintained under identical managemental conditions. The estrous cycles of nine animals was synchronized using Cloprostenol Sodium @ 500 µg I/M (Pragma®, Intas, India) in cycling Bachaur cows. Estrus was detected in the morning and evening for external signs of estrus, estrus behavior, intensity of estrus, estrus duration and estrous cycle length.

Result: In the present study, mounting or mounted by other animals was observed in more than 70% and sniffing, tried to lick and Flehmen's reaction was observed in about 66.67% of treated cows. The other parameters like bellowing, restlessness, milk yield reduction, frequent micturition and Flehmen's reaction were recorded in 44.44%, 55.56%, 44.44%, 55.56% and 66.67%, of animals, respectively. The most appreciable physical sign of estrus recorded was intense swelling of vulva (in 88.89%) however hyperaemia of vulva, copious estrual mucous discharge, pronounced tonicity of uterus, completely dilated os cervix and presence of large palpable follicle on the ovary was observed in 44.44%, 55.56%, 66.67%, 77.78% and 66.67%, of cows respectively.

Key words: Bachaur cow, Estrus Behavior, Estrus cycle, Estrus intensity.

INTRODUCTION

The Bachaur is a cattle breed of Bihar that has been recognized by ICAR-National Bureau of Animal Genetic Resources (NBAGR) Karnal with accession no. 3002. Their native tract is the middle Gangetic plain region of Madhubani, Darbhanga and Sitamadhi districts in Bihar. It is reported that due to the shrinking of original breeding tract, the Bachaur cattle are now concentrated in areas adjacent to the Nepal border and regions of Koilpur subdivision of Sitamadhi district reported by Chandran *et al*. (2014). The population of this breed was recorded 7, 41,432 in Livestock census 2013 (Government of India, New Delhi).

The Bachaur is a draft purpose breed that is maintained by the Koir and Ahir communities and mostly dependent on pasture feeding. This breed is white or grey in color with small and stumpy horns, medium sized compact breed with straight back, flat or slightly convex forehead and weighing approximately 270 kg.

To the best of our knowledge, data is not available regarding the reproductive performance of Bachaur cows. Therefore, the current study was planned to document the estrus pattern of Bachaur cows.

MATERIALS AND METHODS

Bachaur cows (n=9) aged 3 to 5 years with body condition score ranged from 3 to 5 (0-5), free from external and internal parasitic infestation and normal hematological parameters were selected from its native breeding tract at Sitamarhi district of Bihar. The cows were 2nd to 3rd lactation and calved at least 2 to 3 month before. The cows were monitored for six consecutive milking and selected with average milk yield exceeding 4 litres/day. These cows were subjected to gynaecological examination twice with an interval of

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10 days for normal genitalia with active ovaries and regular oestrous cycle.

The Estrous cycles of nine animals was synchronized using Cloprostenol Sodium @ 500 µg I/M (Pragma®, Intas, India) in cycling Bachaur cows. Estrus was detected in the morning and evening for external signs of estrus, estrus behavior, intensity of estrus, estrus duration and estrous cycle length. All the Bachaur cows were constantly observed for the exhibition of estrus symptoms at six O'clock in the morning and six O'clock in the evening for a period of 30 minutes. The intensity of estrus was measured by using a score card at lined by Bhattacharyya *et al*. (2017). Further the intensity of estrus was classified as weak, intermediate and intense estrus based on the type of the symptoms exhibited by the animal. The score card of estrus signs was allotted in intense (31-36), intermediate (19-30) and weak (12-18), respectively. The duration of estrus was estimated in hours from the time of first appearance of behavioural symptoms to disappearance of symptoms of estrus. The estrus cycle length was estimated in days from the time of onset of estrus to the appearance of subsequent estrus.

Results and Discussion

Behavioural signs of Estrus

In this study, estrus behaviour and their intensity were recorded for data interpretation and the score card of different oestrus sign was allotted in intense (31-36), intermediate (19-30) and weak (12-18), respectively in accordance with Bhattacharyya *et al*. (2017).

In the present study, mounting or to be mounted by other animals was observed in more than 70% of the animals and sniffing, licking of genitalia and Flehmen's reaction was recorded in 66.67% of treated animals. The other parameters like bellowing, restlessness, milk yield reduction, frequent micturition and Flehmen's reaction were observed in 44.44%, 55.56%, 44.44%, 55.56% and 66.67%, of the cows respectively.

The majority of Bachaur cows exhibited 77.78% mounting, allowing mounting by other animals with attempt to mount milkers, followed by sniffing tried to lick with Flehmen's reaction 66.67%, more restlessness 55.56% and continuous bellowing 44.44%. In the present study, 44.44% continuous bellowing was observed in Bachaur cows. In our study, the bellowing activity and homosexual mounting on other cows was comparable with the findings of Madhavatar *et al.* (2023), who reported the intense bellowing activity by the cows with higher level of blood estrogen due to seasonal effect.

Restlessness in the treated animals was recorded 55.56% which was less than the report by Layek (2010) in Sahiwal cows (68.96%) however, restlessness was reported by Gunasekaran *et al.* (2008) in crossbred cattle (45.59%). In Bachaur cows, mounting by other animals with attempt to mount milkers was observed in 77.78% of animals which is less than that reported previously in Kankrej cows (100%) by Madhavatar *et al.* (2023).

In Bachaur cows, reduction in milk yield and frequent micturition were 44.44% and 55.56% respectively, which is in accordance to the observations of Madhavatar *et al,* (2023) and Gunasekaran *et al*. (2008). In the present study 55.56% Bachaur cows exhibited frequent micturition during estrus, which was higher than that reported by Mangal (2009) and Layek (2010) in Sahiwal cows and Ansari (2011) in Deoni cattle.

Physical signs of estrus:

The most appreciable physical sign of estrus recorded was intense swelling of vulva (88.89%) in this study. The incidence of intense hyperaemia of vulva, copious estrual mucous discharge, pronounced tonicity of uterus, completely dilated os cervix and presence of large palpable follicle on the ovary was recorded as 44.44%, 55.56%, 66.67%, 77.78% and 66.67%, respectively.

The intense swelling of vulva in Bachaur cows was observed in 88.89% which is in accordance with the findings of Kumar *et al*. (2009) in Haryana cows. The vulva of the cows is generally wrinkled or occasionally looks smoother in non-estrus cows. Around the estrus period in cows, clear stringy mucus discharges seen either on the resting ground or on the perineal region (Keown and Kononoff, 2007). In this study, estrual discharge recorded was copious (55.56%), scanty (33.33%) and no discharge in 11.11% of cases. In many treated animals during estrus, scanty to no discharge was observed in cows which were examined 14 to 16 hrs after the start of the behavioural estrus signs. In few cows copious discharge was found within 12 hrs of estrus at the time of examination. These observations are in accordance with previous findings in cows (Deshpande, 1982) and Goat (Bhattacharyya *et al*., 2000), who reported that estrual mucous discharge was copious in early stage of estrus and scanty or absent in late stage of estrus due to circulatory levels of estrogen in blood (Mangal, 2009).

In our study large follicle and small follicle were palpated in about 66.67% and 33.33% cases respectively. The palpation of the ovarian follicle depends on the stage of the animal estrus. These observations are in accordance with the findings of Bhattacharyya *et al*. (2017).

Estrus intensity, Duration of estrus and oestrus cycle length

The estrus intensity, duration of estrus (Hrs) and Oestrous cycle length (Days) were recorded and was observed that estrus intensity was intense in 6 out of 9 animals (66.67%), intermediate in 2 out of 9 animals (22.22%) and weak in 1 out of 9 animals (11.11%). The estrus intensity in Ongole and Sahiwal cows reported by Naidu and Rao, (2006) and Layek (2010), was lower than the present findings but weak estrus was higher in Ongole and Sahiwal cows as compared to the Bachaur cows.

The mean duration of estrus in Bachaur cows was 19.22±0.64 hrs with a range of 16 to 21 hrs. Mattoni *et al.* (1988)

observed in non-lactating Zebu cattle, the estrus duration (7.66±4.68) hrs was lower than the reports of our present study in Bachaur cows. The similar findings were also reported by Naidu and Rao (2006) in Nellore (Ongole) cows.

The mean overall oestrus cycle length in Bachaur cow was 21±0.67 days. The minimum duration of 18 days and maximum duration of 24 days was observed in estrous cycle length of Bachaur cows in the present study.

The higher estrus interval reported in Peranakar Ongole cattle by Imron *et al.* (2016) was comparable with the present findings of Bachaur cows (21±0.67 days). Siregar *et al.* (2016) reported estrus interval of 17.8±0.4 days in Aceh cattle which was lower than the present study. These variations might be due to variation in follicular wave patterns (Sirosis and Fortune, 1988).

CONCLUSION

In Bachaur breed the vulvar edema and copious mucous discharge were observed as the predominant signs of estrus, however, were recorded as lower than that of other draught and milch breeds of indigenous cows. However, Bachaur have two and three follicular waves during their estrus cycle similar to other indigenous cow breed.

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Conflict of interest

All authors declare that they have no conflicts of interest.

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