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Oestrus behaviour in Swamp buffalo cows under organized farm

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Abstract

A study was conducted on 17 Swamp buffalo cows maintained at Network Project on Buffalo improvement (Swamp), College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam to accumulate data on oestrus behaviour. Oestrus behaviour was studied based on direct observations. The study revealed that behavioural signs of oestrus were not prominent in Swamp buffalo cows. Oedematous vulva and hyperemia of vaginal mucus membrane were the two clinically detectable external signs exhibited by all animals during oestrus. Relaxation of cervix, moderate uterine tone and presence of palpable ovarian follicle were the common genital changes detectable on rectal palpation of the genital organs in all animals during oestrus.

Keywords: Swamp buffalo, Oedematous vulva, ovarian follicle

Introduction

Dairy industry in India is mainly buffalo oriented. Buffalo has the unique ability to utilize coarse feeds, straws and crop residues and convert them into milk at higher rate of feed conversion than that of cow. Better adaptability of buffalo to tropical climates and higher disease resistance ensure their place in the future world agriculture facing the challenges of global warming. Buffaloes found in the state of Assam are Swamp type. Rate of reproduction is the basis of production in animals. One of the essential pre requisites for efficient reproduction of an animal is regularity of oestrous cycle and prompt detection of oestrus followed by timely breeding. In dairy industry, inadequate heat detection has been considered as the primary constraint for herd reproductive performance. In an organized dairy herd, approximately 50% of the heats go undetected and 20.75% buffaloes are inseminated at improper time (Kumaresan *et al.* 2001) ^[10]. Further, silent heat is considered as one of the major obstacles in understanding reproductive parameters and obtaining success of assisted reproductive technology in buffaloes (Mondal *et al.* 2008) ^[11]. Keeping these facts in view, the present study was conducted to detect the oestrus behaviour in Swamp buffalo cows under organized system of rearing.

Materials and methods

The experimental animals included in the present study comprised of 17 buffalo cows maintained at Network Project on Buffalo improvement (Swamp), College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam. All the animals were observed twice daily 6 to 7am in morning and 5 to 6pm in evening. Animal exhibited sign of oestrus were followed for two consecutive days. Each animal showing external sign of oestrus was also examined per rectum twice daily for two days to study the changes of genital organ during oestrus. The parameters included:

Frequency of signs of oestrus

Each animal was observed for exhibition of different signs of oestrus as described by Sinha (1998) ^[15] and the frequency of occurrence of each sign was worked out as the percentage of animal exhibiting the sign of oestrus.

Intensity of oestrus

Intensity of oestrus was recorded as intense when more than 50 percent of the signs as described by Sinha (1998) [15] were exhibited by the individual animals under the present study. It was considered as poor when 50 percent or less than 50 percent number of signs was shown by the animal. The intensity of oestrus was expressed in percentage.

Physical characteristics of oestral discharge

Physical characteristics of oestral discharge included its quantity and colour. Quantity was recorded as free flowing when distinct discharge was seen flowing from vulva, scanty when there was evidence of vaginal discharge sticking to the tail or buttock region of the cow and absent when there was no evidence of vaginal discharge at all.

Duration of oestrus

This was considered as the period from first exhibition of signs of oestrus to the time or ceseation of oestrus sign. Duration of oestrus in an individual animal was estimated by adding 6 hours to the interval of time in hours between the first and last observed oestrus.

Changes of genital organ on rectal palpation

For this each animal was examined per rectum twice daily and changes in cervix, uterus and ovaries were recorded. Cervix was examined for patency and recorded as open and closed. Palpation of a distinct depression on the external os was indicative of open cervix and otherwise closed. Both horns of uterus were palpated for uterine tone and recorded as good tone, when the horns showed distinct turgidity and coiling on palpation. It was recorded moderate when the horns showed some degree of turgidity but no distinct coiling. Ovaries were examined for presence of palpable follicle or corpus luteum.

Statistical Analysis

The statistical analysis of the data was done using Micro Soft Excel-2010 (<http://office.microsoft.com>).

Result

Signs of oestrus

Different signs of oestrus in buffalo cows and the frequency of occurrence of each sign have been presented in Table 1. It can be observed from the table that commonly occurring behavioural signs of oestrus in buffalo cows were oedematous vulva (Fig 1), vaginal hyperemia (Fig 2) and vaginal discharge occurring in the frequencies of 100.00, 100.00 and 5.88 percent respectively.

Table 1: Frequency of occurrence of different signs of oestrus in swamp buffalo.

Signs of oestrus	No of observation	Frequency (%)
Oedematous vulva	17	100.00
Vaginal hyperemia	17	100.00
Vaginal discharge	1	5.88



Fig 1: Swelling of vulva

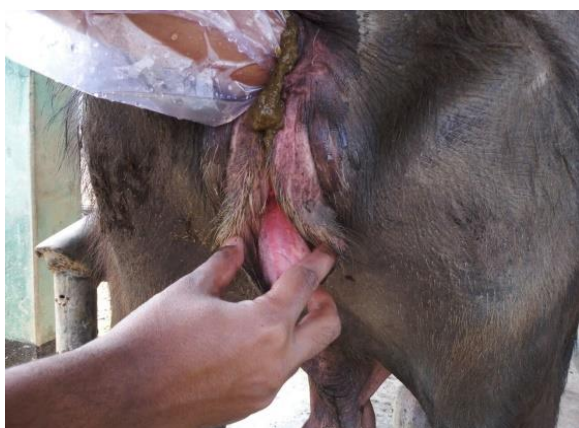


Fig 2: Hyperemia of vagina

Intensity of oestrus

The intensity of oestrus in a total of 17 Swamp buffalo cows under the present study has been shown in Table 2. The frequency of occurrence of intense and poor signs of oestrus was 0.00 and 100.00 percent respectively.

Table 2: Intensity of oestrus in swamp buffalo cows

Intensity of oestrus	No of observations	Frequency (%)
Intense	0	0.00
Poor	17	100

Physical characteristics of oestral discharge

Physical characteristics of oestral discharge in Swamp buffalo cows have been represented in Table 3. The percentage frequency of free flowing, scanty and absence of oestral discharge was 0.00, 5.88 and 94.12 respectively. Colour of the oestral discharge could not be studied as only 1 cow out of the total 17 showed vaginal discharge which was scanty in quantity

Table 3: Characteristics of oestral discharge in swamp buffalo cows

Characteristics	No of observation	Frequency (%)
Free flowing	0	0.00
Scanty	1	5.88
Absent	16	94.12

Duration of oestrus

The average duration of oestrus in 17 Swamp buffalo cows was found to be 19.41 ± 0.97 hours with a range of 18 to 30 hours

Changes in the genital organ of Swamp buffalo cows during oestrus

Changes in different parts of genital organ as detected on rectal palpation during the period of oestrus in Swamp buffalo cows have been shown in Table 4. Cervix was found to be

relaxed and open and was exhibited by all the Swamp buffalo cows (100.00 percent). Uterus was moderately turgid and observed in all animals (100.00 percent). Palpable follicles and regressing corpus luteum on the ovaries was detected in 100.00 and 76.47 percent cows respectively.

Table 4: Changes in the genital organs of swamp buffalo cows as detected on per rectum examination during oestrus

Part of genital organ	Changes observed	No of observation	Frequency of occurrence (%)
Cervix	Relaxed and open	17	100.00 (17)
Uterus	Turgid (moderate)	17	100.00 (17)
Ovary	a) Presence of palpable follicles	17	100.00 (17)
	b) Presence of palpable regressing corpus luteum	17	76.47 (13)

Discussion

Signs of oestrus

Signs of oestrus in Swamp buffalo cows as observed in the present study were less pronounced and hence less reliable indicator of oestrus. This was in agreement with the findings of Hafez (1954) [6] in Egyptian buffalo and Kanai and Shimizu (1982) [9] in Swamp buffalo who reported that the symptom of heat in buffaloes was less intense than in cows. It had been reported that presence of bull enhances exhibition of signs of oestrus. Ishaq (1956) [8] reported that in only 6 percent cases it was possible to detect oestrus in absence of male. According to Hafez (1954) [6] detection of oestrus was improved by the use of bulls and maximum ferning of cervical mucus on the day of oestrus. In the present study detection of oestrus in the buffalo cows was done in absence of bull.

In the present study oedematous vulva and vaginal hyperemia were found to be the two clinically detectable sign of oestrus in Swamp buffalo cows. Chede (1990) [3] in buffaloes, Borah (1994) [2] in Murrah buffaloes and Sinha (1998) [15] in Swamp buffalo heifers reported the frequency of occurrence of oedema of vulva during oestrus ranging from 84.62 to 100.00 percent. Lower incidence of vulval swelling during oestrus was reported by Kanai and Shimizu (1982) [9] and Sinha (1998) [15] in Swamp buffalo cows and the figure were 70.80 and 65.63 percent respectively.

Observations as regards to vaginal hyperemia were also reported by Singh *et al.*, (1984) [14] in Murrah buffalo heifers (100.00%), Chede (1990) [3] in buffaloes (100.00%), Amonge (1993) [1] in Swamp buffaloes (100.00%) and Borah (1994) [2] in Murrah buffaloes (85.71%). Lower incidence of vaginal hyperaemia was recorded by Gill *et al.* (1973) [5] in Murrah buffaloes (64.78%) and Kanai and Shimizu (1982) [9] in Swamp buffalo cows (29.20%).

Vaginal discharge was observed in only 5.88 percent Swamp buffalo cows. Similar findings were also reported by Gill *et al.* (1973) [5] in Murrah buffalo cows (16.98%) and Kanai and Shimizu (1982) [9] in Swamp buffaloes (0.00%). On the other hand much higher incidence of vaginal discharge at oestrus was observed by Shrivastava and Kharche (1985) [13] in Murrah buffalo (100.00%), Amonge (1993) [1] in Swamp buffaloes (50.94%), Borah (1994) [2] in Murrah buffaloes (88.57%) and Sinha (1998) [15] in Swamp buffalo cows (87.50%). The variations in the quantity of oestral discharge might be due to variation in the level of oestrogen as had been reported by Hafez (1985) [6]

Intensity of oestrus

In the present study intensity of oestrus found to be poor in 100 percent animals. This corroborated the findings of Hafez (1954) [6] in Egyptian buffalo and Borah (1994) [2] in Murrah buffaloes who reported the incidence of silent oestrus in

buffaloes as high as 80 to 86 percent. According to Roberts (1971) [12] silent oestrus in animals might be due to lack of adequate secretion of oestradiol by mature and secondary follicle or due to need for a higher threshold of oestrogen.

Duration of oestrus

Average duration of oestrus in the present study was found to be 19.41 ± 0.97 hours with a range of 18 to 30 hours. This was within the range reported by Hafez (1954) [6], Ishaq (1956) [8], Kanai and Shimizu (1982) [9], Sinha (1998) [15] and Gamit *et al.* (2015) [4] in different breeds of buffaloes (Range 16.96 to 22.19 hours). Chede (1990) [3] recorded comparatively longer duration of 28.61 ± 2.86 hours in buffalo cows.

Changes in the genital organ of Swamp buffalo cows during oestrus

Relaxation of cervix, turgidity of the uterus and presence of palpable follicle in the ovary were the prominent genital changes in Swamp buffalo cows as detected on clinicogynaecological examinations. These changes were detected in all oestrus buffalo cows (100.00 percent). Uterine tone however was found to be moderate degree in all animals. Sinha (1998) [15] also reported 100 percent occurrence of open cervix in both cows and heifers during oestrus. He however reported much lower frequency of occurrence of moderate uterine tone in oestrus buffalo cows (25.00 percent) and heifers (23.08 percent). In Murrah buffaloes turgidity of uterus with open cervix was observed in more than 90.00 percent animals (Patel and Sharma, 1982) [14]. Shrivastava and Kharche (1985) [13] reported 61.67 percent relaxed cervix and tonic uterus in Murrah buffalo heifers. Similarly Gill *et al.* (1973) [5] also reported higher percentage of turgid or coiled uterus (85.53 percent) and presence of palpable ovarian follicle (100.00 percent) in buffaloes during oestrus.

Conclusion

Behavioural signs of oestrus were not prominent in Swamp buffalo cows. Oedematous vulva and hyperemia of vaginal mucus membrane were the two clinically detectable external signs exhibited by all animals during oestrus. Relaxation of cervix, moderate uterine tone and presence of palpable ovarian follicle were the common genital changes detectable on rectal palpation of the genital organs in all animal during oestrus.

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