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## Study on status of genital changes in silent oestrus and normal oestrous crossbred cows during different stages of estrous cycle under village condition of Assam

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### Abstract

The present study was conducted to find out the status of genital changes in twenty confirmed silent oestrus and twenty normal oestrous crossbred cows. It was cleared that vulvar swelling, pink vulvar mucous membrane, scanty vaginal discharge, relaxed cervix, presence of uterine tone and presence of mature follicle on the day of detected estrus and presence of corpus luteum on day 10 of estrous cycle were the common clinically detectable genital changes associated with silent estrus cows like that of normal oestus cows. From these clinical findings it was confirmed that the animals were cyclic though all animals did not exhibit behavioural signs of estrus. Therefore, clinico-gynaecological examination of postpartum anoestrus cows at regular interval might be a diagnostic tool for detection of cyclicity in silent estrus crossbred cows in field condition.

**Keywords:** Silent estrus, normal estrus, crossbred cow, genital changes, uterine tone, corpus luteum

### Introduction

Silent estrus condition is known to be one of the major reproductive problems causes great economic loss to the dairy farmers who are maintaining crossbred cattle. High producing dairy cows have inherently low expression of estrus signs [7], particularly during the early postpartum period [5]. Thus silent behavioural signs of estrus or lack of ovulation, unobserved estrus and poor estrus detection efficiency could greatly increase the incidence of anoestrus in high yielding crossbred cows.

Cows affected with silent estrus are needed to be examined at frequent intervals for detection of estrus which is painstaking and tedious. Farmers cannot detect animals in silent estrus. Moreover, research works on silent estrus are too meager [3]. Keeping these, in view the present investigation was planned to study the genital changes during the estrous cycle of silent estrus and normal oestrous crossbred cows of Assam.

### Materials and Methods

For the present study twenty (20) confirmed silent oestrous crossbred cow and twenty (20) normal oestrous crossbred cows were selected from the Udalguri district of Assam.

### Silent estrous cows

The postpartum crossbred cows which failed to exhibit estrus symptoms till 90 days after parturition were investigated and the cows which had palpable structures on either of the ovary or had genital changes like that of an estrus cow were categorized as silent estrus cows.

### Normal estrous cows

The postpartum crossbred cows which exhibited behavioural estrus symptoms within 90 days postpartum were investigated and the cows which had palpable structures on either of the ovary or had genital changes during estrus were categorized as normal estrus cows.

### Physical signs of estrus

The following physical signs of estrus were observed and the number of animal showing each sign was recorded and percentage was worked out as per the methods described by [14].

**Swelling of vulva:** When the vulva became oedematous without wrinkleness it was considered as swollen vulva.

**Colour of vulvar mucous membrane:** The colour of vulvar mucous membrane was recorded as pink, when the mucous membrane became hyperemic and pale, when the hyperemia of mucous membrane was less or absent.

**Quantity of vaginal mucus:** The quantity of vaginal mucus was noted as free flowing, when there was copious flow of mucus; scanty, when small quantity of mucus was flowing from the vulva and absent, when there was no vaginal discharge on rectal palpation.

**Colour of vaginal mucus:** Colour of vaginal mucus was recorded as clear, when mucus was transparent, and opaque, when transparency became reduced.

#### Status of the genital organ recorded on clinical examination

The different parts of the genital organ were palpated per rectum on day 0, 5, 10, 15 and 20 of estrous cycle in both silent and normal estrus cows. Status of different reproductive organs was recorded and the number of animals having the same status was noted and the percentage was worked out as per the methods described by [14].

**Cervix:** The cervix was examined for the presence of any abnormality. Consistency and patency of the cervix was recorded. Consistency of the cervix was recorded as relaxed or firm / closed based on its softness. Patency of the cervix was recorded as open when a depression could be palpated on the os cervix by the tip of the thumb. Patency of the cervix was recorded as closed when no distinct depression was felt on the os cervix.

**Uterus:** The uterus was palpated per rectum for the presence of any detectable abnormality as well as tone. Depending on intensity the tone of the uterus was recorded as very good, good, moderate and no tone.

**Very good tone:** The uterine tone was recorded as very good when the horns of the uterus were felt as turgid and curled into a rather tight configuration.

**Good tone:** The uterine tone was recorded as good when the horns of the uterus were turgid without definite coiling.

**Moderate tone:** The uterine tone was recorded as moderate when uterine turgidity developed immediately after rectal palpation of the uterus.

**No tone:** When the horns of the uterus revealed no turgidity and was flaccid that offered no resistance on palpation.

**Ovary:** Both the ovaries were examined per rectum for the presence of any detectable abnormality as well as for other physiological structures on the surface of the ovary as listed below:

**Graafian follicle:** The ovarian follicle having a fluctuating area of 10 to 20 mm in diameter was recorded as Graafian follicle.

**Medium sized follicle:** The ovarian follicle having a fluctuating area of less than 10 mm in diameter was recorded as medium sized follicle.

**Mature corpus luteum:** A bulging ovarian structure with or without distinct neck having liver like consistency at the site pre-occupied by a Graafian follicle was recorded as mature corpus luteum.

**Regressing corpus luteum:** A small, firm ovarian structure without a distinct neck at the site of previous mature corpus luteum was recorded as regressing corpus luteum.

## Results and Discussion

### 1. Genital changes at different stages of estrous cycle in silent estrus cows

Frequency of occurrence of genital changes at different stages of estrous cycle in silent estrus crossbred cows was recorded on rectal palpation and the findings have been presented in Table 1.

The percentage of swollen vulva at the time of detection of silent estrus was 75.00 which increased to 80.00 in next estrus (day 20). The pink vulvar mucous membrane was recorded in all (100.00%) silent estrus cows on the day of detected silent estrus and in next estrus. There was no copious vaginal mucus discharge during the detected silent estrus as well as in next estrus. The scanty vaginal discharge was present in 55.00 percent silent estrus cows on the day of detected estrus which increased to 65.00 in next estrus (day 20).

**Table 1:** Frequency of occurrence of genital changes at different stages of estrous cycle in silent estrus cows (n=20)

Genitalia changes	Frequency (%) at different days of estrous cycle				
	Day 0	Day 5	Day 10	Day 15	Day 20
<b>Vulva :</b>					
Swollen	75.00 (15)	0.00 (0)	0.00 (0)	0.00 (0)	80.00 (16)
<b>Colour of vulvar mucous membrane :</b>					
Pink	100.00 (20)	0.00 (0)	0.00 (0)	0.00 (0)	100.00 (20)
<b>Quantity of vulvar mucus:</b>					
Copious	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
Scanty	55.00 (11)	0.00 (0)	0.00 (0)	0.00 (0)	65.00 (13)
Absent	45.00 (9)	0.00 (0)	0.00 (0)	0.00 (0)	35.00 (7)
<b>Cervix:</b>					
Relaxed	100.00 (20)	0.00 (0)	0.00 (0)	0.00 (0)	100.00 (20)
<b>Uterine tone :</b>					

Good	65.00 (13)	0.00 (0)	0.00 (0)	0.00 (0)	80.00 (16)
Moderate	35.00 (7)	0.00 (0)	0.00 (0)	0.00 (0)	20.00 (4)
<b>Ovary :</b>					
Mature follicle	100.00 (20)	0.00 (0)	0.00 (0)	0.00 (0)	100.00 (20)
<b>Corpus luteum :</b>					
Mature	0.00 (0)	0.00 (0)	100.00 (20)	85.00 (17)	0.00 (0)

Figures in the parentheses indicate number of observations.

The cervix was relaxed in all (100.00%) silent estrus cows on the day of detected estrus and in next estrus.

The uterine tone was recorded as good and moderate in 65.00 and 35.00 percent silent estrus cows on the day of detected estrus, while the values were 80.00 and 20.00 per cent in next estrus. Mature follicle was present in all (100.00%) silent estrus cows on the day of detected estrus and in next estrus. Corpus luteum was present in all (100.00%) silent estrus cows on day 10 of estrous cycle which was found in 85.00 percent cows on day 15 of estrous cycle.

From the present study it appeared that vulvar swelling, pink vulvar mucous membrane, scanty vaginal discharge, relaxed cervix, presence of uterine tone and presence of mature follicle on the day of detected estrus and presence of corpus

luteum on day 10 of estrous cycle were the common clinically detectable genital changes associated with silent estrus cows. From these clinical findings it was confirmed that the animals were cyclic though all animals did not exhibit behavioural signs of estrus. [12] Referred the condition as "silent heat" and stated that some cows and heifers failed to show overt signs of estrus yet had normal cyclic activity.

## 2. Genital changes at different stages of estrous cycle in crossbred cows with normal estrus:

The normal estrus cows were examined rectally to record the status of genital organs beginning on day of estrus (day 0) and continued on day 5, 10, 15 and 20 (day 0 of next cycle) of the estrous cycle. The findings have been furnished in Table 2.

**Table 2:** Frequency of occurrence of genital changes at different stages of estrous cycle in normal estrous cows (n=20)

Genital changes	Frequency (%) at different days of estrous cycle				
	Day 0	Day 5	Day 10	Day 15	Day 20
<b>Vulva :</b>					
Swollen	100.00 (20)	0.00 (0)	0.00 (0)	0.00 (0)	100.00 (20)
<b>Colour of vulvar mucous membrane :</b>					
Pink	100.00 (20)	0.00 (0)	0.00 (0)	0.00 (0)	100.00 (20)
<b>Quantity of vulvar mucus:</b>					
Copious	60.00 (12)	0.00 (0)	0.00 (0)	0.00 (0)	70.00 (14)
Scanty	40.00 (8)	0.00 (0)	0.00 (0)	0.00 (0)	30.00 (6)
Absent	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
<b>Cervix:</b>					
Relaxed	100.00 (20)	0.00 (0)	0.00 (0)	0.00 (0)	100.00 (20)
<b>Uterine tone :</b>					
Good	70.00 (14)	0.00 (0)	0.00 (0)	0.00 (0)	90.00 (18)
Moderate	30.00 (6)	0.00 (0)	0.00 (0)	0.00 (0)	10.00 (2)
<b>Ovary :</b>					
Mature follicle	100.00 (20)	0.00 (0)	0.00 (0)	0.00 (0)	100.00 (20)
<b>Corpus luteum :</b>					
Mature	0.00 (0)	0.00 (0)	100.00 (20)	85.00 (17)	0.00 (0)

Figures in the parentheses indicate number of observation.

The swollen vulva and pink vulvar mucous membrane was recorded in all (100.00%) normal estrous cows on the day of estrus which remained same in next estrus also.

The copious discharge was 60.00 percent on the day estrus of normal estrous cows which increased to 70 per cent in next estrus. Likewise scanty vaginal discharge was 40.00 on the day estrus and reduced to 30.00 percent in next estrus.

The cervix was relaxed in all (100.00%) normal estrus cows on the day of estrus. The uterine tone was recorded as good and moderate in 70.00 and 30.00 per cent normal estrus cows

on the day of estrus, while the values were 90.00 and 10.00 per cent in next estrus.

Mature follicle was present in all (100.00%) normal estrus cows on the day of estrus. Corpus luteum was present in all (100.00%) normal estrus cows on day 10 of estrous cycle and 85.00 per cent animal on day 15 of estrous cycle.

Typical genital changes observed in vulva, vulvar mucous membrane, quantity of vulvar mucus, cervix, uterus and ovaries in the present study were similar with that reported by [9, 10, 14, 13, 1, 2, 8, 6, 11, 4].

### Conclusion

From the present study it could be concluded that the status of genital changes of silent estrus cows were similar to the changes of normal estrus cows during different days of estrous cycle. Though the silent estrus cows did not exhibit behavioural signs of estrus, but they are cyclic. Therefore, clinico-gynaecological examination of postpartum anoestrus cows at regular interval might be a diagnostic tool for detection of cyclicity in silent estrus crossbred cows in field condition.

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