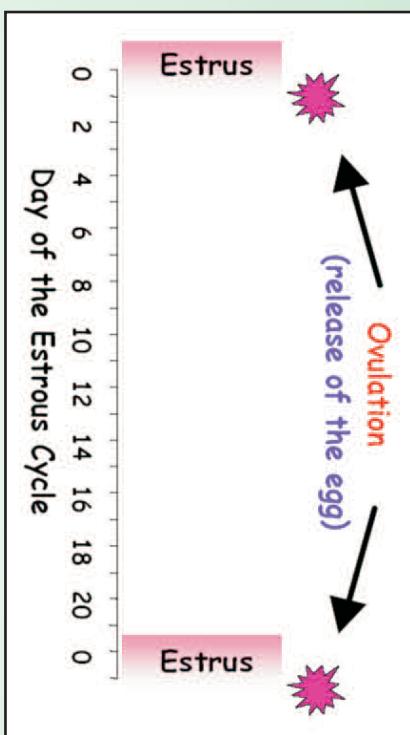


REPRODUCTIVE ORGANS AND HEAT DETECTION

- If she is in with other cattle, the hair over her rump, hipbones and tailhead will look ruffled.
- She may also have a bit of dirt or mud on the rear part of her sides from other cattle mounting her.



- She may attempt to ride other cattle, and stand for them to mount her. Putting her chin on the back or rump of another cow to test whether that cow will stand for her may be seen. If the cow stands, she's also in heat. If she does not stand that means she is not in heat.

- If there is a bull around, she will also mount the bull before she stands to let him mount and breed her. During her early heat period, she will often let other cows mount her before she lets the bull service her.

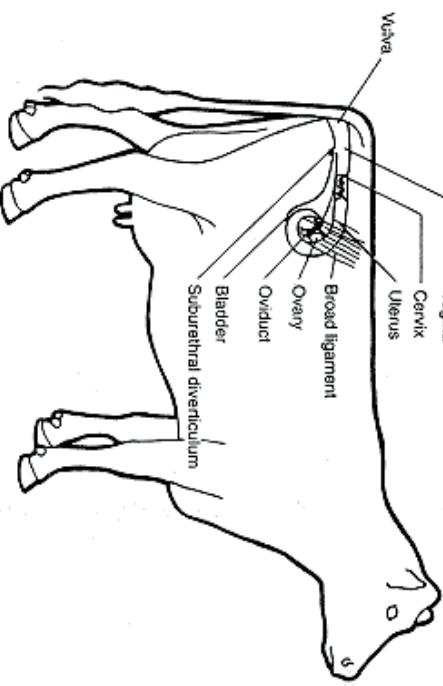
- During this time, before she lets him mount her, the bull will be sniffing and nudging her vulva region, and doing a Flehmen response (where he curls back his nose, raises his head in the air as high as it can go, smelling the pheromones she's emitting in her urine and vaginal secretions). He will also rest his chin on her rump or loins to test if she'll stand for him or not.

4. Physical signs of estrus

- Clear discharge from her vulva; the discharge would be so viscous it has the consistency of egg white. You will see it hanging from her vulva in a long string. Amount of discharge may vary from animal to animal.
- Hertail may be slightly raised and off to one side.
- Her vulva will also look enlarged and swollen red.

Duration of Estrous cycle and Estrus (Heat)

The cow is a non seasonal polyestrous species. The entire estrous cycle averages 21 days long, but can be as short as 18 days and as long as 24 days. However, the duration of standing heat (estrus) varies between 12 to 24 hours (average 18 hrs). Ovulation takes place 12 hours after the end of the estrus.



Compiled and Edited by:
M. H. Khan, P. Perumal, K. K. Baruah, Bhaskar Borah, Vidya Singh and C. Rajkhowa

For further information, please contact
National Research Centre on Mithun
Indian Council for Agricultural Research
Jharnapani, Medziphema
Nagaland-797106
Ph: 03862-247341
www.nrcmithun.res.in



गण्डीय मिथुन अनुसंधान केन्द्र
(प्रतीय कृषि अनुसंधान परिषद)
झरनापानी, मेडजीफेमा, नागालैण्ड - 797 106 भारत

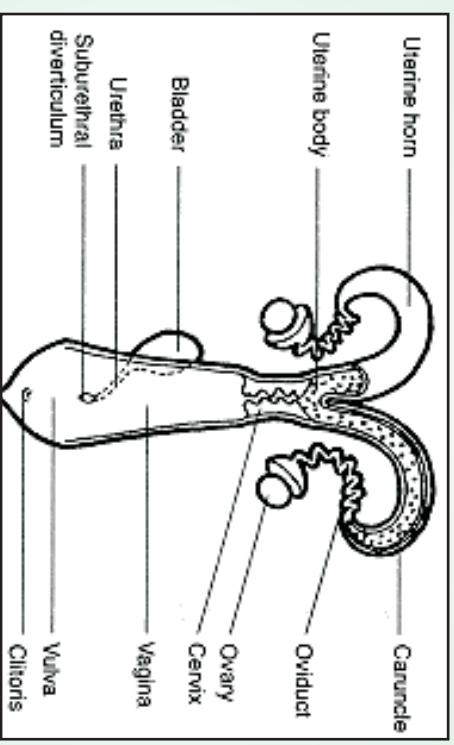
National Research Centre on Mithun (ICAR)
Jharnapani, Medziphema, Nagaland – 797 106
www.nrcm.res.in

Estrus: Estrus, also spelled oestrus is the period in the sexual cycle of female cattle / Mithun cows during which they are in heat; i.e., ready to accept a male and to mate with male.

Estrous Cycle: The period between two successive heat or estrus is called estrous cycle. A series of changes in the behavior as well as in the reproductive organs of female cattle / Mithun takes place during estrous cycle.

Reproductive system of Mithun cows

The female reproductive system consists of ovaries (2 nos), oviducts (2 nos), uterus (2 nos.), cervix, vagina and vulva (Fig.)



Uterus

Uterus is the major component of female reproductive system and it accounts for 80 – 90 % of the total length. The length of uterus may range from 35 to 60 cm in cattle / Mithun cows. At anterior side, it connects with oviduct while on the posterior side it connects with cervix. The main function of the uterus is to nourish the embryo, retain the fetus throughout the pregnancy period and finally to deliver the fetus after completion of the pregnancy period.

Cervix

It is thick-walled and inelastic, the anterior end being continuous with the body of the uterus while the posterior end protrudes into the vagina. The length will range from 5 to 10 cm with an outside diameter of 2 to 5 cm. It contains a canal which is the opening into the uterus. The primary function of the cervix is to prevent microbial contamination of the uterus; however, it also may serve as a sperm reservoir after mating. During estrus, thin, transparent stringy mucus secretes from the cervix which sometimes hangs outside the vagina. It is one

of the important sign to diagnose the female cattle in heat or estrus.

is divided into three segments. The funnel-shaped opening near the ovaries is the *infundibulum*.
The main function of oviduct is:

1. To collect the ova released by the ovary during or just after estrus / heat.
2. Storage of spermatozoa
3. Maturation of ova and spermatozoa
4. Site for union of sperm and ova leading to fertilization and zygote (fertilized egg/ova) formation.
5. Transport of fertilized egg into the uterus.

Vagina

The *vagina* is tubular in shape, thin-walled and quite elastic. It varies from 25 to 30 cm in length in the Mithun cow. Vagina is the female organ of copulation. The semen is deposited into the anterior portion of vagina in Mithun cows after natural mating. Anterior portion of vagina is connected with cervix.

How to observe the female in Heat or Estrus

1. The best time observe any behavior is in the morning and evening.
2. Find some place to sit where you can easily watch the behavior of your cows but at the same time, don't really attract the attention of your animals.
3. Look for behavioral signs of estrus

Estrus

Day of the Estrous Cycle	Estrus
0	2
2	4
4	6
6	8
8	10
10	12
12	14
14	16
16	18
18	20
20	0

Estrus

- She may be acting restless and moving a lot
- She will be wandering around the pasture in search of a mate
- She may travel thrice or four times as much as she does when she's not in heat
- Sniffing or nudging may occur in the vulva region between her and other cows
- More vigorous interaction may be observed between that female in heat and her herd-mates, from excessive licking to even fighting.

Oviduct

The *oviducts* also called as *fallopian tubes* are a pair of convoluted tubes extending from near the ovaries to and becoming continuous with the tips of the uterine horns. An oviduct, which is from 20 to 30 cm long for most farm species,