Introduction

Mithun cows generally exhibit silent estrus/heat. In this condition, cow will not show behavioral signs of estrus though the physiological symptoms of heat will be present. Although the general pattern of sexual behavior is almost similar to cattle and buffaloes but the intensity of expression of behavioral signs of estrus in mithun is markedly less pronounced. The behavioral sign of heat such as bellowing is absent and the heat is therefore termed as silent. In addition to this, the other behavioral signs of estrus such as mounting to fellow animals and allowing other animals to mount, restlessness may also be expressed in much diminished intensity. In mithun, estrus can be detected by parading a teaser bull and also by close observation by a trained person during early morning and evening hours. The incidence of silent heat is found to be more in those herds which are under stress and are kept on low plane of nutrition. If grouping of cows have been made without considering the ranks of cows in the herd, this will result in decrease in efficiency of heat detection as the submissive cows may avoid mounting to dominant cows.

Estrus or Heat

Heat (estrus) is simply the period of time when a cow or heifer is sexually receptive and receives a bull. During this time, an egg becomes mature and ready to be released in to the genitalia. Duration of estrus ranges from 36-72 hours but the standing estrus duration is generally short (12 – 18 hours). This heat period is repeated at every 19 – 23 days interval. In a natural breeding program, the bull is the one that determines when a cow is in heat. In an AI program, owner identifies the cow in heat. Heat detection is just another step in the more intensive management system that is part of artificial insemination. It is not difficult, but it demands both time and attention.

Estrous cycle

Heat or estrus in mithun cows is repeated every 19-23 days and it is called estrous cycle. During estrus cycle, eggs become mature and released in to the female genitalia, get fertilized by the sperm if natural mating or AI is done and animal becomes pregnant. If there is no natural mating or AI, mithun cow again comes in to heat/estrus after 19-23 days. This cycle keeps on repeating till animal becomes pregnant. Estrus cycle in mithun cows starts only when animal attains sexual maturity. Age of maturity of mithun cow ranges from 24-32 months. The animals should be watched carefully for heat symptoms for half an hour at least in the morning (5-6 AM) and evening (5-6 PM).

Signs of estrus - Primary heat signs in mithun cows:

Mounting behavior:
A cow in heat is being mounted by other cows in a herd (Remember that the cow that mounts may or may not be in heat).

i. Standing during mounting: (She may likely to have mud on her rump and sides due to mounting of by the other cows in a herd. Often you will notice that a bull calves or teaser bull in the herd attempting to mount her as well)

ii. Swelling of vulva: vulva become slightly swollen, soft to touch. Upon opening of vulval lips, pink color congested and moist mucosa will be seen.

iii. Frequent urination: it is generally seen just before estrus initiation but not well pronounced in mithun.

iv. Tail raising: Seen during standing estrus.

v. Occasionally mucus discharge from genitalia: Mucus discharge during estrus is thin, transparent and elastic which may hang from the genitalia for sometimes. Essentially, successful heat detection begins with understanding one simple fact that there is only one sure sign of heat - a cow stands while other animals mount her. This is appropriately termed as standing heat.

Secondary signs of heat:
Though primary heat signs are important for detection of heat but sometimes secondary heat signs also become important. They can appear as early as 48 hours before standing heat.

- A cow coming into heat may mount other cows, and she may urinate frequently.
- She may also lay her head over the back of her herd mates.
- A cow coming into heat can be off feed just before and during estrus.
- The lips of her vulva can also be red and slightly swollen.
- She may have watery mucous hanging in strings from her vulva.
- After the end of the heat, vaginal mucous will become thick, yellowish and rubbery.

Fern pattern of vaginal mucus
Take a drop of transparent, stingy and elastic mucus, occasionally found hanging from the vulva, and make a thin smear over a clean, dust free glass slide and allow to dry the smear in air. A characteristic fern like pattern will be seen in the dried smear when observed under magnifying lens (using cryscope) or it may also be observed by naked eyes by seeing the slide against black background. Presence of a fern pattern in vaginal mucus is sure sign of heat.
Why to detect estrus?
- Detection of heat is important to know whether animal is returning to heat or not after calving.
- It is also important to determine the exact time of AI.
- It is also important to reduce inter-calving interval and to get more calves during the life time of a cow.

What is Artificial Insemination (AI)?
AI is the technique in which semen is collected from the superior bulls and introduced into female reproductive tract at proper time with the help of AI instrument.

The major advantage of AI over natural mating is that it permits the Mithun farmer to use top proven sires for genetic improvement of his herd and controls venereal diseases. AI is also of tremendous value in making optimal use of different sires and enables Mithun farmer to breed individual cows to selected sires according to their breeding goal.

What is the ideal time for AI?
As a thumb rule, animals coming in heat in the morning should be inseminated in the next morning and those coming in heat in the evening should be inseminated in the next evening. The animals remain in heat for 36-72 hour. It should be inseminated 24 hrs after the onset of heat symptoms at least two times at an interval of 12 hrs apart.

Advantage of AI
1. Maximum utilization of superior male. Through natural mating, a Mithun can mate to 100 – 150 cows whereas in AI, a bull can inseminate about 1500 – 2000 cows.
2. Genetic improvement of a herd: Cows can be inseminated with the semen of superior bulls.
3. Reduces the incidence of sexually transmitted diseases.
4. Overall growth rate and productivity of the herd will improve.

Common Problems
Why a mithun cow fails to get pregnant after repeated services/ inseminations (AI)?
This could be due to:
- Genital infection
- Hormonal imbalance
- Nutritional deficiency
- Improper timing of AI

Why do some animals fail to come into heat for long period after parturition/ calving?
Lot of energy is required for milk production after calving. If mithun cow is not provided with sufficient ration (energy, protein and micronutrients), it will suffer from negative energy balance and fail to express heat signs.