

Everything You Always Wanted To Know About

HEAT DETECTION

But Didn't Understand

by Janet Mayer

Over the past two decades, artificial insemination (AI) has become a valuable breeding and management tool. It provides breeders with an economical, efficient method of making genetic progress by using superior progeny tested sires.

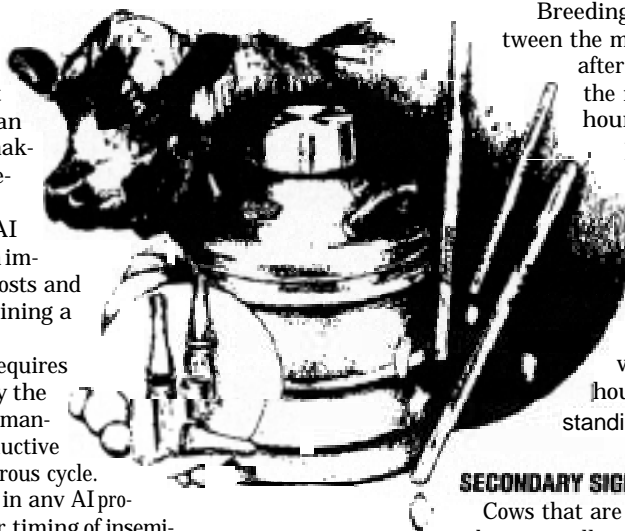
With a little extra effort, an AI program can pay high dividends in improved performance without the costs and problems associated with maintaining a variety of bulls.

However, a good AI program requires extra planning and dedication by the breeder with special attention to management, nutrition and the reproductive cycle — otherwise known as the estrous cycle.

One of the most crucial factors in any AI program is heat detection and proper timing of insemination. Because the bull is being replaced, it now becomes the job of the breeder to recognize and understand a cow's estrus (also called heat) signs.

To do this job efficiently, it is important to first understand the estrous cycle. Simply explained, heat is a short period of time during the estrous cycle when open cows and heifers are psychologically and physically sexually receptive to the male. This period of receptivity occurs every 18 to 24 days. Estrogen (a hormone) is produced when an egg develops inside a cow's ovary — the primary reproductive organ that produces the egg — a few days before standing heat. The release of the estrogen causes changes in the cow's reproductive, nervous and circulatory systems, resulting in her showing signs of heat, which are:

STANDING HEAT — Lasting about 15 hours, this primary and most reliable sign of heat is detectable when a cow allows other animals to mount her while she remains standing. Ovulation (the process of releasing eggs which travel down the fallopian tube from the ovarian follicle, a small blisterlike development on the surface of the ovary, to the uterus) is directly related to standing heat and occurs approximately 10 to 12 hours after standing heat.



Breeding should occur during the period between the middle of standing heat and six hours after its end. Sperm cells remain viable in the female reproductive tract for 18 to 24 hours. The fertile life of the egg is approximately 10 to 12 hours, with the most fertile period in the first few hours immediately after ovulation.

For highest fertility, cows should be inseminated in the last two-thirds of heat or within a few hours after they are out of heat which would be approximately 24 hours after the animal comes into standing heat.

SECONDARY SIGNS

Cows that are about to come in heat, or are already in heat, usually group together. They will mount other cows, bawl and exhibit restlessness and friendliness to other animals in the herd by licking and nuzzling.

The vulva (the fleshy folds of tissue that cover the external end of the vagina) can also exhibit signs of swelling and reddening accompanied by a clear stringy mucus discharge. Roughened hair on the tailhead and mud on the sides, shoulders or hips, are signs of her being ridden by other herd members. A bloody mucus discharge may be observed between the second and fourth days; this simply means the animal has been in standing heat several days before. This is a clear indication to watch for the next heat period in 15 to 20 days.

After ovulation the cow produces progesterone (a hormone). Levels of progesterone in the blood remain high from day six to 18 of the cycle, preparing the uterus (the organ in which the fetus develops during pregnancy) for pregnancy. If pregnancy occurs, progesterone levels will remain high throughout gestation; if it does not, progesterone levels decline and the cow returns in to the regular estrous cycle, initiating another heat.

Heat Detection Tips

Kansas Angus breeder Henry Gardiner has conducted a successful artificial insemination (AI) program for many years.

Gardiner believes time is of the essence when checking cows and heifers for heat during the AI breeding season. A few minutes looking out your pickup window is not sufficient. It takes 20 to 30 minutes of constant observation.

A Canadian study showed that 68 percent of mountings occur between 6 p.m. and 6 a.m. — 25 percent from 6 p.m. to midnight and 43 percent from midnight to 6 a.m. Therefore, late in the evening and early in the morning are best times to watch cows for heat.

Following are 21 signs of heat Gardiner has found useful in his beef operation.

Early Signs — Before Cow is in Standing Heat

1. A small string of mucus may drip from a reclining cow a day or two before she is in standing heat.
2. A heifer bawls when others are quiet. This sign is not often observed in cows.
3. She is more alert and observant, looking around and watching for other cows in heat.
4. She walks in a rapid, business-like manner. While other cows saunter, she walks as if she has places to go.
5. She may be standing up when all of her herdmates are lying down.

Signs of Standing Heat

6. She sniffs other cows much as a bull does when he checks for heat.
7. She stands to be ridden -the single best sign of heat.
8. She attempts to ride other cows.
9. She places her head on the back or rump of another cow, or throws her head as if attempting to mount. When she mounts, a copious string of mucus will often be expelled. If she is in heat, pelvic thrusts will be vigorous, much like a bull.
10. Mucus can often be seen on the tail or rump.
11. She will attempt to join other cows in heat. If a fence prevents this she will walk back and forth.
12. Cows in heat will stand closer together than normal.
13. She may be followed and/or ridden by bull calves as young as three to four months of age.

Late Signs — Cow Has Just Gone Out of Heat

14. She has wet or matted hair, particularly over the top of the shoulders.
15. Hair on the tail or rump may be slightly matted where mucus has dried.
16. There may be mud on the hips or hair rubbed off where other cattle have ridden.
17. If heifers have been branded several weeks earlier, the scab may be rubbed off during riding.
18. A cow that is tired from riding at night may be one of the few cows in the herd lying down.
19. If the cow has been in heat, mucus will often be expelled when a breeding tube is inserted.
20. If a cow has been in heat during the past few hours, the inseminator will note that the vagina is more slick and the cervix more dilated.
21. A string of blood on the tail or rump is an indicator that the cow was in heat two to three days earlier.

Other Signs of Heat

- Vulva is more swollen, moist and smooth than when the cow is not in heat.
- Lining of the vulva becomes dark pink or bright red in color.
- The cow butts heads with other cows.
- Udder and teats may become tighter because calf has not had an opportunity to nurse.

Editor's **note:** This article reprinted from Doane's Agricultural Report.

Exercise Caution with liquid Nitrogen

Many cattle breeders come into contact with liquid nitrogen on a daily basis during the breeding season. Despite the viability of the chemical being economically advantageous for preserving semen at -320 degrees F. indefinitely, liquid nitrogen is a hazardous material that must be used with an extreme amount of caution.

When handling liquid nitrogen, always remember to wear gloves and treat the chemical as if it were boiling water. Although rare, a problem encountered by some customers is when the neck tube stopper freezes in place. To avoid this situation, keep the dust cover closed when the refrigerator is not in use. When the cap is off, moisture and dust can accumulate between the stopper and the neck tube. Given the right conditions, the stopper might freeze.

When this happens, it is impossible to remove semen from the refrigerator. There is also the danger of an explosion. Gases from the slowly boiling nitrogen must be allowed to escape from the refrigerator.



To avoid serious injury when dealing with liquid nitrogen tanks, remember to keep your tanks looking like the one on the left.

It is extremely important to remove a frozen stopper as soon as possible. Use a screwdriver or similar object to pry the stopper out. Insert the screwdriver between the stopper lip and the top of the refrigerator neck tube, pushing it horizontally into the stopper. Be careful not to puncture the neck tube. Push down on the screwdriver handle to pry the stopper out. Again, avoid damaging either side of the neck tube.

If the stopper isn't loosened, you might have to break it up and remove it piece by piece.

Precautions, such as keeping the stopper in place and the dust cover closed when the refrigerator is not in use, are much easier and safer than trying to remove a frozen stopper. Proper care and maintenance will prevent this problem.

"Also, be certain to monitor your AI semen tanks regularly to determine the level of liquid nitrogen," says Donna Lueke, training manager at American Breeders Service, DeForest, Wis. "This will help protect your semen investment."

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