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Quick Lesson in Getting Cows Pregnant

Spring time for the spring calving cattle producer is one of the busiest and best times of year. There are many things that need to be done from delivering calves, to processing, to turning out on and managing grass. The focus this week will be to look at a process that lends itself to this ongoing cycle - reproduction. Specifically, talking about artificial insemination of cows. If you do not utilize this technology, I would encourage taking a look into the possibility of doing so. There is no better way to rapidly improve or use specific genetics in a cow herd.

When discussing timing of artificial insemination, standing heat (estrus) is often referenced. This is the period of time where estrus behavior of restlessness, congregation, swollen vulvas and most notably - mounting activity is observed. It is at this time where natural service occurs, but with artificial insemination (AI), the target time for insemination is nearer the end of standing heat. This is done to more closely align with ovulation, which occurs roughly 12 hours after standing heat ends. The duration of standing heat is somewhat variable at an average duration of 10-12 hours with a range of 6-24 hours.

For this very reason just detecting a cow in heat is not usually sufficient. For best conception results, one needs to know when the first standing heat occurred, because the ideal time to AI is 12 hours (plus or minus two hours) after that first standing heat. This is because ovulation occurs fairly consistently 24-26 hours after the onset of first standing heat. Identifying that first standing heat and using it as a guide for insemination timing will allow for maxim conception rates.

Typically, not knowing the time of first standing heat is why the old a.m./p.m. rule has been widely used. This has meant that if a cow is detected in heat in the a.m., inseminate her in the p.m. If a cow is detected in heat in the p.m., inseminate her in the a.m. This system works fairly well, when limited labor is considered. Also, keep in mind that much of the estrus behavior in the female is expressed in the very early morning or late night, so it can be difficult to accurately determine the first standing heat of the female without close supervision and/or heat detection aids.

Having said all this, why do we not inseminate near the time of ovulation? Sperm cells will live in the female reproductive tract from 18-30 hours. The viability decreases after 12-18 hours. The sperm cells must go through a process called capacitation - a term used to describe the changes undergone by the sperm cells in the female reproductive tract that allows for fertilization to occur. During this length of time, the weaker sperm cells die out. Also, the hormonal changes of the female after the last standing heat causes the reproductive tract to contract. This contraction process moves the semen up the tract to the oviduct, the site of fertilization.

This all takes time. The egg will only survive in the oviduct prior to fertilization for roughly 8 hours (or less). It's for this reason that the sooner after ovulation that fertilization takes place, the better. The ideal situation is to have the semen waiting on the egg in the oviduct. In natural service situations, bulls deposit a large volume of semen in the vagina of the cow during standing heat. Due to this large volume of millions of cells, there is a greater chance of sperm migrating to the oviduct. With the process of AI, only one-half or one-quarter cubic centimeter of semen is deposited in the uterine body. Because of the small volume of semen, timing is critical for fertilization to occur.

All of this reproductive timing for natural service or AI can be regulated with an estrous synchronization protocols, which allow the producer to have a better understanding of the estrous cycle of the female. To add to this, favorable results have been proven from protocols that incorporate a timed AI with estrous synchronization, as well as sexed-semen protocols. This can bring acceptable conception rates with little to no labor involved in heat checking. To learn more visit: https://beefrepro.org