

Steps to Successful Reproductive Management in Beef Cattle

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Reproduction is a critical aspect of any species' life cycle and plays a major role in food animal production. Since the implementation of artificial insemination (AI) in the beef cattle industry, researchers have strived to improve the efficiency of this process. Through research, estrus-synchronization protocols were developed to facilitate application of AI. However, practical problems involving increased time and labor are associated with improved conception rates with many estrus synchronization protocols. Over the years, research has focused on finding a balance between conception rates and time/labor costs to carry out an ideal estrus synchronization protocol.

Steps to Successful Reproductive Management

Step 1: Institute basic management programs (herd health and nutrition), a record keeping, and planning system that works best for your operation. Planning is the key to any successfully implemented reproductive management system. Between 25 and 70% of cattle are usually anestrus (not cycling) at the start of the breeding season. A sound nutrition program and monitoring of body condition scores can ensure more cows cycling at the onset of the breeding season. In order to plan, you must keep good records and, more importantly, use them.

Step 2: Establish a calving season that works best with your operation. Most producers in South Carolina are part-time farmers with full-time jobs; and, for that reason, different calving seasons may work best for different operations. Calving season should also depend on marketing strategies for the calves and grass or supplement availability. Calving seasons are usually classified into three categories: Winter (January - February), Spring (March - April), and Fall (September - October) calving. Calving in the winter season means calving in the coldest time of the year, but sets your calves up to wean on summer pasture, leading to higher weaning weights. The cow herd must be watched closely for calving and calf health



problems. Having a spring calving cow herd means increased nutritional needs of cows during the winter leading up to calving. Good winter grazing or access to economical feed-supplement is needed for a spring calving herd. Fall calving allows the use of summer pasture to keep the cow herd in good condition prior to calving. Calf health, however, will have to be watched closely as winter progresses.

Step 3: Logically, if you want a defined calving season, you need a controlled breeding season as well. Having a controlled breeding and calving season is an important tool to use for time management, marketing decisions, and herd efficiency. By controlling the breeding season, you can decrease cost, increase production, and increase profit. A controlled breeding season requires a set of strategies that will establish a specific window in which cows will get bred. After that time has passed, bulls will be removed and artificial insemination will stop. Open cattle will be sold or held over until next year's breeding season, depending on culling restrictions and decisions. Having a breeding season allows the nutritional requirements of the herd to be met more efficiently as the entire herd is at the same physiological stage (decreasing cost). Since the calf crop will be born in a certain time period, it offers a producer group marketing options (increasing price/increasing production). Reproductively unsound cows can be identified, allowing producers to make culling decisions based on reproductive performance (increase production).

Step 4: Implement reproductive technologies into breeding season to get more cattle pregnant in a shorter period of time. Artificial insemination (AI) is a procedure in which a small rod is passed through the cervix of the cow and semen is deposited in the uterus. AI takes advantage of the use of sires that are genetically superior and are not available for natural service. Estrous synchronization is a tool that is commonly used in tandem with AI and may be used to synchronize estrus and ovulation. This facilitates the breeding of multiple cows in a short time period. For estrous synchronization to be successful, the protocol must regress the corpus luteum, promote the growth of new follicles, and induce estrus or ovulation.

Many of us have full-time jobs by day and raise cattle by night; therefore, it is more feasible to implement management strategies to reduce time input. Timed insemination (TAI) protocols allow producers to have a pre-determined time of AI decreasing labor costs associated with heat detection. However, cost associated with handling and synchronizing may be increased. For some operations, the ability to control the timing of AI is very important and would take precedence over the slight increase in labor and time on the front side of the synchronization protocol. A timed AI protocol also gets a percentage of your cows pregnant on the first day of the breeding season. More cows pregnant early translates into more calves born at the beginning of the calving season. This, in turn, increases average weaning weight relative to calves born without using synchronization. For other operations, a standard heat detection protocol is better suited.

Synchronization is usually used to facilitate AI. In some cases, however, AI is not a viable option. Estrous synchronization can be used with natural service to shorten a breeding and calving season. For a herd that has typically had year round breeding seasons, synchronization and natural service may be the step before AI is used. The benefits listed above for estrous synchronization still hold true, but the time and labor associated with heat detection and AI are not a factor. Select a protocol in which heat detection is required (synchronizing estrus instead of ovulation) and turn your bull out before you start the protocol. We have to remember that when we use estrous synchronization with natural service, the concentration of cows showing estrus within a given period of days will be increased. Therefore, we should lower the bull to cow ratio to between 1:15 and 1:25 and make sure the bull has passed a full breeding soundness exam (BSE) before the breeding season. Use mature bulls that are proven breeders and decrease pasture size to cut down on the amount of energy spent on traveling.

Developing an AI program is a process and takes extensive planning and forethought. Your local extension agent can help you with developing an AI program while keeping in mind your operations labor/time needs. Numerous synchronization protocols and technologies exist to assist producers; however, it is left to each individual to determine which synchronization protocols and technologies will better their operation.

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