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"Beef Production Strategies" article

Consider Artificial Insemination

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Artificial insemination (AI for short) is one of the most underused, proven technologies that cow-calf producers can readily utilize to create value and improve profitability. According to the 1997 USDA National Animal Health Monitoring System beef production survey, only 7.1% of beef producers reported using AI, and almost nine out of ten of the producers using AI used it in combination with natural service. Embryo transfer, a similar technology designed to propagate superior female genetics, was used by only 1.8% of beef operations. Yet of the Southeastern producers surveyed, 97% of them agreed that AI works in beef herds. The potential for increased AI utilization in Mississippi is tremendous. In fact, artificial insemination is not just a good investment for seedstock breeders. The commercial cow-calf operation can benefit tremendously by incorporating AI into the breeding program.

AI Economics

Many articles have been written over the years attempting to persuade readers on the value of a good bull. Each author estimates the value of a good bull a little bit differently, but in the end the justification for improving herd genetics through the use of quality herd sires comes down to profitability. Whether the use of better genetics is through AI programs or just by selecting superior herd sire for natural service, genetic improvement pays.

A 2003 University of Kentucky study estimated a 73-pound weaning weight advantage with AI over natural service due to improved genetics and earlier calving. The study estimated an average of 23% more calves born in the first thirty days of the calving season when using AI versus natural service. This translates to increased returns from older, heavier calves at weaning. Furthermore, the Kentucky research reported an average improvement of nearly 110 pounds of calf weaned per cow exposed. When genetics improvements in many other traits such as carcass traits are considered, the value of using a good AI sire becomes even more pronounced. Additionally, long-term increased productivity will result from AI sired females entering the breeding herd.

For an individual producer, AI advantages leading to increased returns include heavier calves due to earlier average birth dates, improved genetics in calves for market and females raised for replacement, and increased calf crop uniformity with use of fewer sires and a shorter breeding season. Calves sired using AI can bring premiums when marketed. In the 2004 Mississippi BCIA Fall Bull Sale, for example, AI sired bulls brought over $250 per head more than natural service sired bulls of the same breed. Premiums for AI sired cattle can be and are often much greater than this. Purchasing and maintaining fewer bulls when AI is used can decrease costs and bull management

headaches as well. Use of a tighter breeding season and proven calving ease bulls as part of an AI program can also result in lower labor costs.

Advantages of AI

Genetically superior bulls can sire hundreds and even thousands of calves via AI programs. Collected and stored semen can be easily transported over long distances making the use of valuable genetics from across the nation and beyond very feasible. Even injured, ill, and deceased bulls can continue to sire calves if semen has been previously collected and stored. Semen collection can serve as a form of insurance on a bull's genetics. Semen can routinely be purchased from leading bulls in a breed at relatively low cost. Semen straws on beef bulls often cost $15 to $30 per straw. Straws on deceased bulls or high value semen can be much more expensive though. There may be a signing fee or certificate required to register calves in addition to the cost of the semen.

Genetic differences between animals can be more rapidly and accurately identified, since AI allows sires to potentially produce more offspring in more environments. The accuracy of EPDs on heavily used AI bulls is often much higher than natural service sires because more information is going into the calculation of EPDs. Therefore, the performance information on these high accuracy bulls is more reliable. This can accelerate genetic progress. Record keeping is also often improved when AI is used, since someone must be present at breeding. The need to keep bulls for natural service can be reduced or even eliminated. In most programs, however, use of some clean-up bulls will be necessary.

Utilizing AI

When asked for reasons why AI was not utilized by more producers, labor concerns topped the list with Southeastern producers in the latest NAMHS survey. Nearly four out of ten of these producers indicated that labor requirements were a reason not to use AI. Recent research on timed AI protocols reveals that it is a very viable alternative that can reduce heat detection needs. This makes AI a more attractive option for many producers. Producers can select from a wide variety of estrus (heat) synchronization protocols. Estrus synchronization can reduce the amount of time required for estrus detection. Protocols differ in number of times cattle must be worked, cost, and conception rates, but there are multiple options that will work.

Artificial insemination takes advance planning. Cattle must be in good nutritional and health status for acceptable AI conception rates. Adequate facilities need to be in place prior to beginning an AI program as well. A palpation cage before a squeeze chute with head catch is an ideal setup. Once an estrus synchronization protocol is chosen, heat synchronization drugs, insemination supplies, and semen must be acquired in advance. Another important planning step involves writing down calendar dates for the various steps in heat synchronization, heat detection, and insemination. This makes it easier to view the entire process to schedule around available labor and maintain desired breeding and calving dates.

Effective heat detection is critical for a successful AI program. This cannot be stressed enough. Heat detection is not a management practice that can be performed halfway for desirable AI conception rates to be achieved. Proper semen storage, handling, and insemination techniques are all vital in an AI program. Semen tank nitrogen levels must be kept at acceptable levels to maintain semen quality. Semen thawing and time from tank to cow must be managed carefully. The best technician cannot compensate for sloppy semen storage and handling. Artificial insemination schools are a great place to learn and practice these techniques.

The AI school offered each October cooperatively by the Mississippi State University Extension Service and the Mississippi Agricultural and Forestry Experiment Station is a great AI introduction and refresher course. The school provides participants with management knowledge to implement a successful AI program in addition to hands-on instruction of semen handling and insemination skills. The school emphasizes that the rewards of AI can only be achieved with sound management in place. Contact Extension Area Animal Science/ Forages Agent, Mike Howell, for more information on the annual AI school.

BCIA Bull Sale

Do not miss the Mississippi Beef Cattle Improvement Association annual fall bull sale on Thursday, November 10, 2005 at the Hinds Community College Bull Sale Facility in Raymond. Bulls will be available for viewing starting the afternoon of November 9, and the sale starts on November 10 at noon. The BCIA sale highlights many of the successful AI breeding programs in Mississippi. Bull breeds offered in the 2005 sale include Angus, Charolais, Gelbvieh, Hereford, Santa Gertrudis, and Simmental. This sale is a great opportunity to acquire genetics from sons of some of the leading AI sires in the country. For catalogs or more information on the BCIA bull sale go to *http://msucares.com/livestock/beef/mbcia/bcia_bullsale.html* or call Jane Parish at (662) 325-7466.

The theme for the 2006 Beef Improvement Federation meeting scheduled for April 2006 in Mississippi is "21st Century Genetics: Rising to the Challenge Southern Style." Increased implementation of AI is one of the most practical ways that Mississippi beef producers can "rise to the challenge" of improving herd genetics. Artificial insemination is a worthy undertaking that can improve individual producer profitability and make genetic progress that will be realized and recognized in our herds for years to come. County Extension offices are good local resources for information on beef cattle breeding or related topics.