

# Manage for Success



PHOTOS BY SHAUNA ROSE HERMEL



**Success depends on careful planning and execution of reproductive management.**

*by Katy Kemp, freelancer; & Troy Smith, field editor*

**M**anaging reproduction in the beef cow herd is serious business. That was the message delivered by Oklahoma State University (OSU) researcher Craig Gifford during the Applied Reproductive Strategies

in Beef Cattle (ARSBC) symposium in Stillwater, Okla., last fall.

“Approach it with the idea that everything you do wrong can negate everything you do right,” stated Gifford, emphasizing that

it is especially true with regard to estrus synchronization and artificial

insemination (AI). He emphasized three areas of management that demand attention:

- ▶ inseminator efficiency,
- ▶ herd fertility level and
- ▶ management after AI.

Discussing inseminator efficiency, Gifford said the choice of a hired technician to inseminate cows or heifers should be made carefully. Herd owners should then communicate with the inseminator and adapt to the technician’s procedural preferences.

“What works for them works for them. Adapt. Don’t try to change them,” advised Gifford.

If a producer or ranch employee is the designated inseminator, Gifford called it important for that person to know their own limitations, especially if they don’t frequently inseminate large numbers of cattle. Arm fatigue can cause problems.

“I’d advise against inseminating more than 20 head per day, unless you’re already accustomed to it,” said Gifford.



SPEAKER PHOTOS BY TROY SMITH

▶ OSU’s Craig Gifford said producers must remember that managing for successful reproduction is a year-round process.

Producers also must remember that managing for successful reproduction is a year-round process. By managing cattle well throughout the year, particularly with regard to nutrition, producers are managing their animals’ endocrine systems and the multiple hormones that influence fertility.

As rules-of-thumb, Gifford recommended managing spring-calving cows to achieve a body condition score (BCS) of 5 by the time of calving. BCS 5½ is the target for fall-calving cows, with a BCS of 6 recommended for first-calf heifers (see [www.cowbcs.info](http://www.cowbcs.info) for additional information on condition scores).

“Remember that body condition at calving impacts postpartum interval and subsequent

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pregnancy rate,” said Gifford, “and be sure to maintain adequate nutrition after calving.”

Avoiding stress due to inadequate nutrition or other factors is important to establishing and maintaining early pregnancy. Stress, said Gifford, can lead to higher incidence of embryo mortality, particularly during the first 42 days after insemination.

Gifford also advised managers to take care when planning and administering vaccination programs. Vaccination sufficiently in advance of administering a synchronization protocol and breeding is advised. Just because cattle are in a chute, said Gifford, does not mean it is a good time to vaccinate cows.

He recommended careful attention to label directions for the timing and dosage of vaccine administration. Keep good records, he added, not only for health management, but for all aspects of managing the breeding herd.

— by Troy Smith

### Planning assistance

The Iowa Beef Center (IBC) Estrus Synchronization Planner (ESP) simplifies choosing a synchronization protocol to fit individual needs. This estrus-management tool provides step-by-step guides for easier implementation of synchronized AI. It can reduce unexpected errors and help users stay in compliance with synchronized AI protocols, Sandy Johnson, Kansas State University (K-State) animal scientist, told attendees.

The Excel-based ESP features recommended synchronization protocols for cows and heifers customizable to the user’s inputs regarding system preferences of heat detection or fixed-time AI (FTAI), she explained. Once a user has entered their starting or ending date, along with the preferred system, the calendar view tab within the planner lists the steps needed by day to carry out the described protocol. If there are time conflicts, users can adjust



► The Excel-based Estrus Synchronization Planner features recommended protocols for cows and heifers customizable to the user’s inputs, said K-State’s Sandy Johnson.

the starting or ending date for better management.

Clients can input costs for an AI technician, synchronization products and semen to gain a better representation of total investment per pregnancy. According to Johnson, another useful feature is the cost analysis the ESP generates to compare estimated pregnancy costs for three different systems.

For any producer hesitant, thinking this tool is too complicated, Johnson said if you are familiar with Excel, the ESP spreadsheet is user-friendly. Her survey of users demonstrate a majority find the ESP easy to use, made scheduling easier and reduced errors in implementing protocols.

Additionally, “most users found the ESP helped achieve timelier planning and preparation,” explained Johnson.

The planner is available for download from the IBC website ([www.iowabeefcenter.org/estrus\\_synch.html](http://www.iowabeefcenter.org/estrus_synch.html)) for free. Users must register with contact information before downloading the planner. The purpose of registering is to provide a means to inform users of updates made to the planner.

The ESP is also now available on mobile and other handheld devices. EstruSynch is a collaborative effort between Southeast Cattle Advisor, IBC and the Beef Reproduction Task Force. It can be downloaded from [www.estrussynch.com](http://www.estrussynch.com). Johnson said this web-based application works much like the full version, with only minor differences in features.

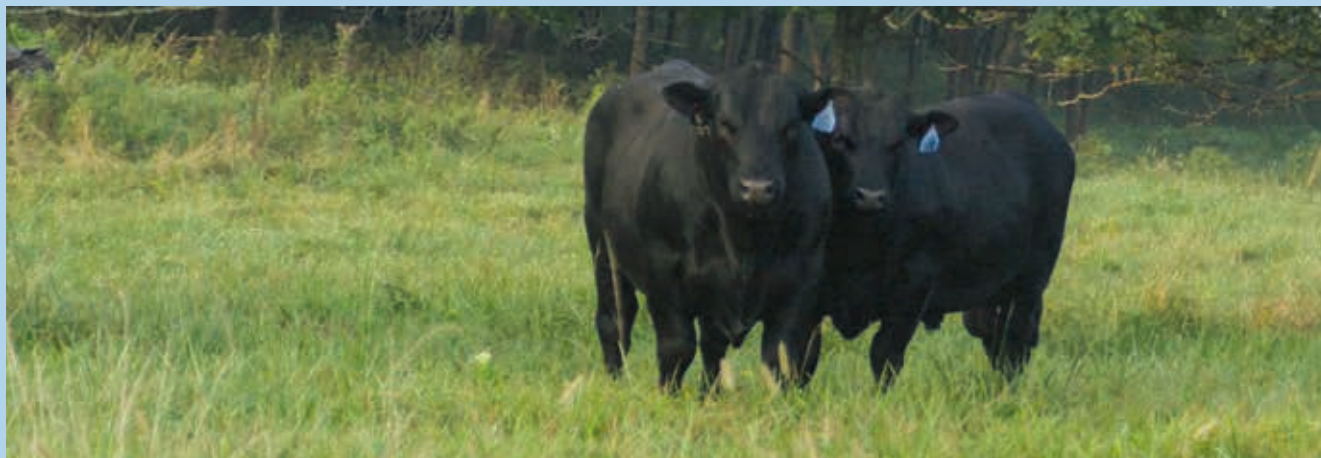
— by Katy Kemp

**Editor’s Note:** Gifford and Johnson spoke during Wednesday’s session focused on strategies for AI success. Visit the Newsroom at [www.appliedreprostrategies.com](http://www.appliedreprostrategies.com) to view their PowerPoints, read their proceedings or listen to their presentations. Compiled by the Angus Journal editorial team, the site is made possible through sponsorship by the Beef Reproduction Task Force and provides comprehensive coverage of the symposium.

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## Insemination factors affecting fertilization in synchronized females

Planning and implementing an estrus synchronization program prior to artificial insemination (AI) represents an investment of time and money by cow-calf producers. The last thing a producer wants is having that investment compromised by problems related to the actual insemination process.

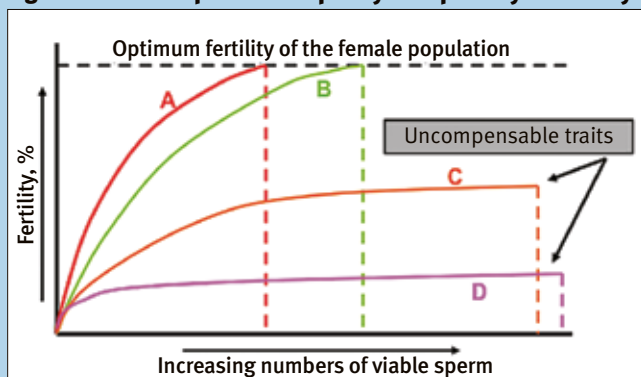
University of Idaho Reproductive Physiologist Joe Dalton talked about insemination factors that affect fertilization during the Applied Reproductive Strategies in Beef Cattle (ARSBC) symposium in Stillwater, Okla., last fall. He discussed potential problems stemming from semen quality, handling of semen, insemination technique and timing of insemination.

According to Dalton, differences in semen quality traits exist among bulls, including sires collected for AI. Reduced fertility in some bulls is due to compensable semen traits affecting the viability or morphology of sperm cells and making them unable to compete for fertilization of the ovum (egg). Dalton said compensable traits can be overcome or minimized by increasing the number of sperm delivered during insemination. Reputable AI organizations routinely adjust the AI dose when compensable deficiencies are known.

Dalton said low fertility also may be the result of uncompensable traits, usually related to damaged DNA. In this case, a bull's semen contains unacceptable levels of abnormal sperm, which can compete and are capable of starting the fertilization process, but are unable to complete it.

"The result is reduced fertility regardless of sperm dosage," explained Dalton. "We can double and even triple the dose and it will not improve the fertility of these bulls."

**Fig. 1: Relationship of semen quality and quantity to fertility**



Source: Adapted from Salisbury and VanDemark, 1961; Saacke et al., 1994.

Dalton said such bulls should not be collected and used for AI. To reduce risk, he recommended sourcing semen from only reputable AI studs.

Timing of insemination also affects fertilization success. Dalton explained that, following insemination, six to 12 hours are required for sperm transport to the fertilization site, and to gain the capacity to fertilize the ovum. However, an ovum that waits too long and becomes "aged" may ultimately yield a low-quality embryo. Insemination should occur near enough to the time of ovulation to maximize sperm access to the ovum, but not so late that an aging ovum waits in the oviduct.

"If anything, we want to err on the side of the sperm and have it waiting on an egg," added Dalton. "We don't want the egg waiting on the sperm to arrive."

Operator error is another factor that often affects fertilization. Dalton said technicians or producers faced with the challenge of inseminating numerous females in a short period of time should resist the temptation to thaw too many semen straws simultaneously.

"Thaw no more than you can use in 10 to 15 minutes. After that much time, semen quality goes off the cliff," warned Dalton, adding that proper semen handling and correct deposition of semen also are critical to successful fertilization. "We (all inseminators) should be retraining ourselves just like the major AI companies retrain their personnel."

Dalton concluded by advising producers using natural-service sires to make sure all bulls have undergone a complete breeding soundness examination, not just a semen test.

— by Troy Smith, field editor



► University of Idaho Reproductive Physiologist Joe Dalton explained the difference between compensable traits and uncompensable traits when evaluating semen quality.

**Editor's Note:** Dalton spoke during Wednesday's ARSBC session focused on strategies for AI success. For more information, visit the Newsroom at [www.appliedreprostrategies.com](http://www.appliedreprostrategies.com) to view his PowerPoint, read the proceedings or listen to the presentation. Compiled by the Angus Journal editorial team, the site is made possible through sponsorship by the Beef Reproduction Task Force and provides comprehensive coverage of the symposium.