Where Things Go Wrong

Insemination-related factors affecting fertilization can spell success or failure in estrus-synchronization program.

by ***Troy Smith***

While compliance with recommended hormone administration protocols is extremely important to the success of estrus synchronization programs, other factors are important, too. Speaking at the Applied Reproductive Strategies in Beef Cattle (ARSBC) workshop hosted in conjunction with the 2010 Cattle Industry Annual Convention and NCBA Trade Show in San Antonio, Texas, University of Idaho animal scientist Joe Dalton talked about insemination-related factors that have a significant influence on program results.

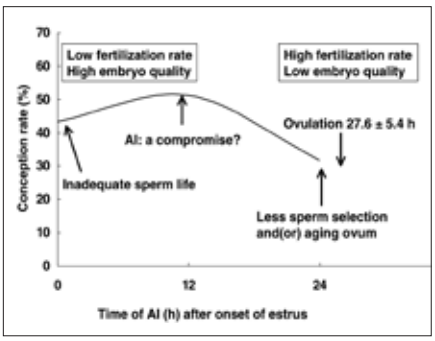
Dalton stressed the importance of proper semen handling. It is particularly important, he said, in situations where large numbers of cows or heifers must be inseminated on a given day, and technicians thaw multiple straws of semen simultaneously.

"I would recommend thawing only an amount of semen that can be used in 10 to 15 minutes," Dalton said. "And don't allow the straws to touch one another while thawing, or semen might freeze and thaw again, and become damaged."

Dalton also discussed compensable and uncompensable traits of semen. Compensable traits relate to the ability of sperm to reach the female's egg, but also the ability to bind and penetrate it. Uncompensable traits relate to the ability of sperm to complete the fertilization process

Fig. 4: Conception rate by time after onset of estrus at which cows are bred

AI at 12 hours after onset of estrus appears to be a compromise between the low fertilization rate and high embryo quality of early inseminations and the high fertilization rate and low embryo quality of late inseminations.



Source: Fig. 4 from conference proceedings. Adaptation of data from Dransfield et al., 1998, and Dalton et al., 2001, originally published by Saacke et al., 2000.

and sustain early embryonic development. Reputable semen processors routinely adjust the artificial insemination (AI) dose, increasing the number of sperm, when compensable deficiencies are known. Bulls that produce unacceptable levels of abnormal sperm typically are sources of semen with uncompensable traits. Such bulls, Dalton said, should not have semen collected for use in artificial insemination.

"If you see an advertisement for semen stating the sperm is 'double-strength,' you should question that statement," Dalton warned. "Doubling the number of sperm in a dose won't help if the bull's semen has uncompensable traits."

Also, Dalton added, there is a limit to how much sperm dosage can be increased in a practical commercial processing situation. It requires reduction in the amount of semen extender (carrier with preservatives) and that can have a negative effect on sperm ability to survive freezing and thawing.

Dalton reminded producers using natural service that bulls should be subjected to a semen test as part of a breeding soundness evaluation to minimize the risk associated with uncompensable semen traits.

Editor's Note: *The ARSBC program was developed by the Beef Cattle Reproduction Task Force to improve understanding and application of reproductive technologies, including AI, estrus synchronization and factors affecting male fertility. For additional coverage — including summaries, proceedings and audio for each presentation — visit the newsroom at* www.appliedreprostrategies.com. *For API coverage of the Cattle Industry Convention, visit the newsroom at* www.4cattlemen.com.