Breeding Soundness and Beyond

Is your bull doing his duty?

by ***Troy Smith***

Before there was bovine spongiform encephalopathy, the only BSE to worry about was the breeding soundness exam of bulls prior to breeding season. Surprisingly, however, many producers haven't concerned themselves with that kind of BSE and don't routinely test their bulls' readiness for the work ahead.

How important is it to evaluate breeding soundness? Well, it is at least as important as the time and effort devoted to genetic selection. After all, the extent to which a bull will distribute his genetics depends on his reproductive capability, and that differs markedly among bulls.

Peter Chenoweth, a professor of agricultural practices at Kansas State University (K-State) College of Veterinary Medicine, says at least 20% and perhaps as many as 40% of bulls have some sort of problem that may cause them to be subfertile or infertile. Chenoweth says the standardized breeding soundness exam procedures recommended by the Society for Theriogenology represent an effective pass-or-fail test for screening bulls. Relatively quick and economical to perform, an evaluation won't identify bulls that are superior breeders, but it will finger the freeloaders that fail to meet or exceed thresholds of acceptability.

PHOTO BY SHAUNA ROSE HERMEL

►Based upon a 6% increase in calf crop, K-State's Peter Chenoweth estimates an approximate return of $20-$25 per $1 invested in breeding soundness exams. However, that estimate does not factor in the fact that highly fertile bulls are likely to breed more cows earlier in the breeding season, which should result in increased weaning weights of older calves and additional profit potential.

More than a semen test

The breeding soundness exam does more than test semen quality, Chenoweth stresses, but collecting and examining semen for sperm motility and morphology is essential. Proper evaluation also includes overall physical examination, with particular attention to structural soundness and vision. An examination of the reproductive organs assures that specific "equipment" is structurally correct and in good working order, without growths, adhesions or other deformities. And a measurement of scrotal circumference (SC) should be included, particularly with young bulls.

This measurement remains underutilized, Chenoweth says, noting how only 15% of U.S. producers consider scrotal circumference of great importance to bull selection, and 19% regard it as being of no importance at all. Still, producers claim infertility as the chief reason for culling bulls.

"Scrotal circumference is important to fertility," Chenoweth states. "It is related to sperm production. It is related to female onset of puberty. And it is heritable."

In certain situations, special tests for sexually transmitted diseases, such as vibriosis or trichomoniasis, may be advised. Another potential add-on to the basic bull evaluation is testing for libido, or sex drive. This behavior trait can be measured in a test

CONTINUED ON PAGE 148

Breeding Soundness and Beyond CONTINUED FROM PAGE 147

setting by allowing the bull to have access to a female and observing the time required to mount and service her. Breeding soundness exams may not routinely include a libido test. At the very least, producers should observe bulls as they are introduced to breeding pastures and evaluate the bulls' eagerness to pursue their mission.

"Libido is particularly important to synchronized natural service, where bulls are in for a stressful couple of days," Chenoweth adds. "In that situation, producers need to take both soundness and libido into account."

Good timing

The best time to conduct a breeding soundness exam will vary, depending on the reason for the test. Logically, the best time is nearest to breeding season as possible — usually within a month of turnout — while allowing enough time to either retest or replace bulls that do not test satisfactorily.

Some bulls do deserve another chance. It is not uncommon for yearling bulls to exhibit temporary sperm abnormalities due to immaturity. Overly conditioned bulls, and particularly those that achieved rapid weight gains on high-grain diets, sometimes produce defective sperm. Older bulls also may produce a questionable sample and still be considered capable of improvement.

In some situations, improvement may occur within a very short time. Others may require months, and some bulls may never improve. A good policy for differentiating between temporary and permanent problems, Chenoweth suggests, is to retest in six to eight weeks.

Dollars-and-cents benefit

The breeding soundness exam offers peace of mind and opportunities for more profit. Research suggests bulls that are evaluated and found satisfactory have a 6% or greater fertility advantage compared to unevaluated bulls. That means more pregnancies and more calves at weaning time.

Based upon a 6% increase in calf crop, Chenoweth estimates an approximate return

of $20-$25 per $1 invested in breeding soundness exams. However, highly fertile bulls are likely to breed more cows earlier in the breeding season. That should result in increased weaning weights of older calves and additional profit potential.

Breeding management

Young bulls are used more widely than ever before. Estimates indicate that among breeding herds containing more than 50 females, more than half use bulls of less than 18 months of age. Young bulls are generally given lower mating loads than older bulls, and research tends to support this practice. According to surveys of U.S. producers, the bull-to-female ratios have changed little in recent years, averaging 1-to-17.5 for yearlings and 1-to-25 for mature bulls.

However, Chenoweth says the traditional ratios considerably underestimate the capabilities of competent bulls. For most operations, bull-to-female ratios of 1-to-20 for yearlings and 1-to-40 for mature bulls are adequate.

"I believe a competent, mature bull can easily handle 50 cycling females over a 60-day breeding season," Chenoweth adds. "The problem is that a lot of indifferent bulls are turned out in breeding pastures."

Pasture size and terrain do influence ratios, Chenoweth admits. Females tend to form a sexually active group when several are in heat or close to coming in heat at the same time. The group can be very mobile, but it tends to remain fairly close to the bull or bulls. In very large pastures, and especially when the terrain is quite rough, several groups may form — each with its own bull. Under these conditions it is difficult to make hard and fast recommendations for appropriate bull-to-female ratios.

Other breeding management recommendations include using bulls of similar size, age and breed type. It is suggested that bulls be allowed to establish their social ranking at least one to two weeks prior to the breeding season. While research data is lacking, rotating bulls during the breeding season often is recommended. The idea behind shaking up the bull battery is to limit harmful effects of social dominance while maximizing biostimulation. One approach involves use of mature bulls early in the breeding season, followed by younger bulls in the latter part of the season. Another method involves rotating mature bulls with younger bulls at two-week intervals.

Care of the team during the off-season should not be ignored, Chenoweth stresses. He emphasizes maintenance of bull condition and attention to health practices such as vaccination and treatment for parasites. Attention to nutrition often is handled best when mature and young bulls are grouped separately and fed diets that address their different needs.

"A postbreeding appraisal is good management, especially considering the attrition rate encountered by young bulls. This examination enables 'dud' bulls to be culled and fixable problems to be attended to during the off-season," Chenoweth offers. "During this time, they should be managed to ensure optimal performance in their next breeding season, so their reproductive life span is prolonged."