

Safeguard Sire Fertility

Stress hinders breeding performance.

by **Katie Maupin Miller**

With the average American bull covering 20-30 cows, conservatively, according to Jennifer Koziol, DVM, associate professor of food animal medicine and surgery at Texas Tech University School of Veterinary Medicine, herd sire fertility has an enormous impact on cow-calf producers' bottom lines.

Keeping herd sires healthy and happy is key to ensuring good conception rates and a solid calf crop for the coming year.

Yet, bull care and management often fall to the back of the mind until breeding season, which can cost producers. Koziol emphasizes the need to manage sires' health and nutritional status year-round, so they will be ready for service when needed.

"Putting our sires on the worst pasture is one of the most common mistakes I see producers make," Koziol says. "We forget about those bulls, and we tend to put those bulls on the worst, worst pasture. But we really need to make sure that we are meeting [the bulls'] nutritional needs and that they have adequate, proper nutrition and mineral status all year."



A bull battery should be properly managed year-round to make sure the sires are ready for service. Stressed sires are often sub-fertile, and bulls with access to proper nutrition, up to date on their herd health protocols and managed with herd hierarchy in mind are less stressed.

She encourages producers to keep sires in a body condition score of five or six all year long rather than scrambling to add weight to bulls shortly before they're needed. Proper herd health protocols, such as worming, vaccinations and mineral supplementation, and any required hoof trims, ensure sires will be ready for turnout.

Simply put, sires don't need to be stressed.

Stress less

According to Koziol, stress compromises a sire's fertility. Any sustained stress — greater than 48 to 72 hours — can negatively impact a bull's sperm morphology (shape) and motility.

"Whether that is from environmental stress — being really hot, really cold; nutritional stress — hunger for long periods of time or even low nutrition for a sustained period of time; or illness and things of that nature, when a bull's cortisol rises, it's going to decrease fertility," Koziol says.

More specifically, Koziol explains that increased cortisol levels decrease a bull's testosterone. This decrease in testosterone disrupts the sire's spermatogenesis, or sperm production, cycle.

"Anytime we have a decrease in testosterone and the other hormones that go along with testosterone, follicle stimulating hormone (FSH) and luteinizing hormone (LH), we can have

decreased sperm production or sperm production that is inappropriate, meaning the sperm are not going to be formed correctly," Koziol says.

The spermatogenesis cycle takes just over 60 days. Any insult to a bull's testicles or hormonal balance, such as stress or injury, will take about two months to recover, Koziol says. While sometimes a bull's fertility may improve before the 60-day mark, a complete recovery takes at least that amount of time.

It is also possible that a sire's fertility will not recover in a complete spermatogenesis cycle. A severe enough injury can result in testicular degeneration leaving the bull unable to regenerate healthy testicular tissue.

"We would see severe degeneration or even fibrosis, and that would be coupled with poor sperm motility and morphology scores," Koziol says.

These sorts of injuries can be easily spotted during a breeding soundness exam.

Money well spent

A breeding soundness exam is the cheapest insurance you can get for your calf crop, according to Koziol. The exams are designed to identify sub-fertile bulls before the breeding season, so producers can pivot their plans long before using sub-fertile bulls results in open cows.

She recommends cattlemen and women have breeding soundness exams done on their sires 30-45 days before breeding season. This allows time to find a different service sire if needed.

A complete breeding soundness exam includes a physical examination, "from nose to

tail," as Koziol says, in addition to a scrotal exam, scrotal circumference measurement and semen collection to look at both the morphology and motility of sperm cells.

"Sperm morphology really tells us the biggest story about the potential fertility," Koziol says.

But, breeding soundness examinations can't measure libido and vigor. While the exams will tell producers if their sire has acceptable semen and a normal reproductive tract, they can't say whether a bull will actively seek out and cover those cows.

Still, a routine breeding soundness exam is one of the most effective tools cow-calf producers have in their arsenal to ensure their cows get bred on time.

"Breeding soundness exams before every breeding season are a great investment with a high return on each dollar spent," Koziol says. "You know, for every dollar spent on the breeding soundness exam, you get somewhere between \$5 to \$8 in return, so I think that's a pretty good investment."

Postseason recovery

While a breeding soundness exam isn't needed postseason unless you're in an area with a large amount of Trichomoniasis ("Trich"), Koziol recommends producers evaluate their bulls. Give herd sires a onceover to check for any lameness or injuries. Lumps or bumps along the reproductive tract are common injuries a sire may suffer during the breeding season, along with musculoskeletal issues.

If your bull battery appears injury-free postseason, it is still essential to make sure their nutritional needs are met. Sires often lose weight over a breeding season, and their body condition scores will need to get back to the five and six range so that they will be ready for the next season.

Finally, hierarchy needs to be considered year-round when it comes to managing a bull battery. Don't just kick out the bulls together during the off-season. If possible, sires used in multi-sire pastures should stay together during the off-season. This helps prevent injuries to bulls from fighting.

"Those bulls are just going to hang out and live the good life until the next breeding season," Koziol says. **HW**

The Right Ratio

The bull-to-cow ratio varies significantly in the U.S., primarily due to the different geography and topography. After all, cattle on a 20-acre pasture have a much different experience than a herd grazing on a section. But typically, beef producers in America run one sire for every 20-30 cows, conservatively, according to Koziol.

To find the right ratio for your own herd, Koziol offers the following formulas.

Bulls less than 3 years old: One cow per month of age (*i.e., a 15-month-old bull can be placed with 15 cows*).

Bulls 3 years old or older: One cow per centimeter of scrotal circumference (SC) (*i.e., a 3-year-old bull with a 40-centimeter SC can be placed with 40 cows*).

Note: Aging sires, often between the ages of 6-8 years old, may begin to experience testicular senility. This means their sperm production will begin to decrease over time. A breeding soundness exam will tell a producer if sperm production is declining in an older bull. If so, these sires may still be utilized in a less rigorous manner, such as a clean-up bull.

Mature bulls, older than 3 years old, used for clean-up following AI: Typically, they are placed with 50 to 60 cows.

Bulls in multi-sire pastures: For every bull after the first bull, the additional sire can only cover half as many cows as he would be expected to service in a single-sire herd, due to bull overlap (*i.e. three, 3-year-old bulls with a 40-centimeter SC could cover 80 cows, because the first sire could cover 40 cows and the two additional sires could cover half that many or 20 each*).

Note: Multi-sire groups should always be equal in age. Producers shouldn't mix young and old bulls because of hierarchal concerns. **HW**