Before Turnout

Manage bull fertility prior to breeding season.

by Kacie McCarthy, University of Nebraska–Lincoln

As we prepare for the breeding season, or for those in the midst of the breeding season, it is important to think about how we can manage bull fertility and understand critical factors that can affect fertility.

There are many factors that can affect sperm production. However, the main factors that can decrease sperm production are disease, fever, injury and extreme environmental conditions.

We must keep in mind that spermatogenesis, the production of sperm, is a 61-day process in bulls. Therefore, it will take upwards of 60 days to have normal sperm again following an injury or insult. Therefore, it is important to monitor and identify if a bull has experienced frostbite, or any other injury to the scrotum/testis.

To ensure our bulls are prepared for the breeding season, bulls should be evaluated with a breeding soundness exam (sometimes referred to as a BSE) approximately four to six weeks prior to the breeding season. The American Society for Theriogenology has developed minimum guidelines for a bull to pass a breeding soundness exam. A veterinarian will evaluate the bull on the following criteria: a physical examination, scrotal circumference measurement, and evaluate semen quality for motility and morphology.

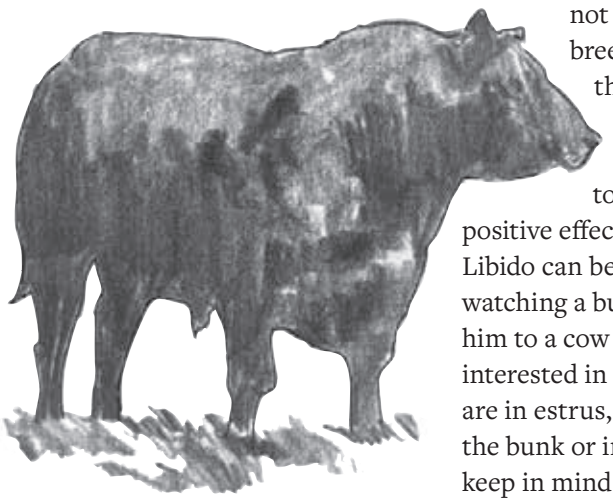
To successfully complete the exam, a bull must have at least 30% sperm motility, 70% normal sperm morphology, and a minimum scrotal circumference based on age. Bulls meeting the minimum requirements are classified as "satisfactory" potential breeders. If a bull does not pass one of these tests, he is either classified as a "classification deferred" (meaning it is recommended the bull be tested again) or as an "unsatisfactory" potential breeder.

The physical examination determines the bull's physical capabilities of successfully breeding a cow. A bull must be able to see, smell, eat and move normally to successfully breed cows.

Sound feet and legs are very important because if they are unsound, this can result in the inability to travel and mount for mating.

Evaluating bull body condition during the winter and prior to the breeding season is just as important as evaluating your cows. More information on meeting nutritional needs for your bulls can be found in the article "Evaluating and Preparing Bulls in Advance of the Breeding Season" available at *https://bit.ly/ABB-UNLrefer*.

The scrotal circumference tells us the testicular mass. As scrotal circumference increases, so does daily production of high-quality sperm. Scrotal circumference is also an important measure, since it is directly related to the onset of puberty in the bull and his female offspring.



Semen quality includes ejaculate volume, sperm cell motility and sperm cell morphology. Sperm motility evaluates the percentage of spermatozoa in an ejaculate that has progressive (headfirst) movement. Sperm morphology is calculated by evaluating the percentages of normal spermatozoa and sperm with abnormalities.

Sperm morphology can have larger effects on pregnancy success. Research from Wiltbank and Parish (1986) reported that bulls with 80% or more normal sperm had greater pregnancy rates compared to other bulls. Therefore, selection of bulls with a greater normal sperm percentage can increase overall pregnancy rates in a herd. It is important to note that substandard nutrition, extreme environmental temperature, and disease can reduce semen quality, and the quality of semen from a single bull may change over time.

Libido is one other factor that is not evaluated in a breeding soundness exam that can affect bull fertility. Libido refers to the desire to mate and has positive effects on pregnancy rates. Libido can be evaluated by closely watching a bull after introducing him to a cow herd. Is he more interested in detecting cows that are in estrus, or in finding food in the bunk or in the pasture? Also keep in mind that with younger bulls, observing them more frequently during the first five to seven days and at seven-day intervals is recommended to monitor mating activity and capabilities. Overall, bulls with diminished libido may require rest and recuperation during a competitive breeding season.

Under natural-service conditions, the social ranking of bulls within the herd hierarchy can influence reproductive performance. Dominance is expressed more strongly in older bulls (i.e., 3 to 4 years of age and older) and is more related to seniority than any other factor.

We may see greater effects of dominance where there are lower bull-to-female ratios and limited estrous activity within a herd. Keep in mind that dominant bulls may impregnate more cows, so subordinate bulls may have limited reproductive performance and fewer calves. Conversely, if dominance is associated with low semen quality or low sex drive, then herd fertility may be compromised.

Overall, it is important to remember that over time, the semen quality of an individual bull will change, and periodically evaluating a bull's mating ability and libido should be considered. Consult with your local veterinarian about performing breeding soundness exams in your herd bulls.

In conclusion, herd bulls have a large influence on profitability, calf crop and genetic improvement. With 90% of beef cows in the United States bred by natural service, managing bulls to optimize breeding performance matters to almost everyone.

Editor's note: Kacie McCarthy is a cow-calf specialist at the University of Nebraska–Lincoln. This article was first published in the *BeefWatch* newsletter available at *https://beef.unl.edu/beefwatch*.