

Cold Stress Effects on Bull Breeding Soundness Evaluations

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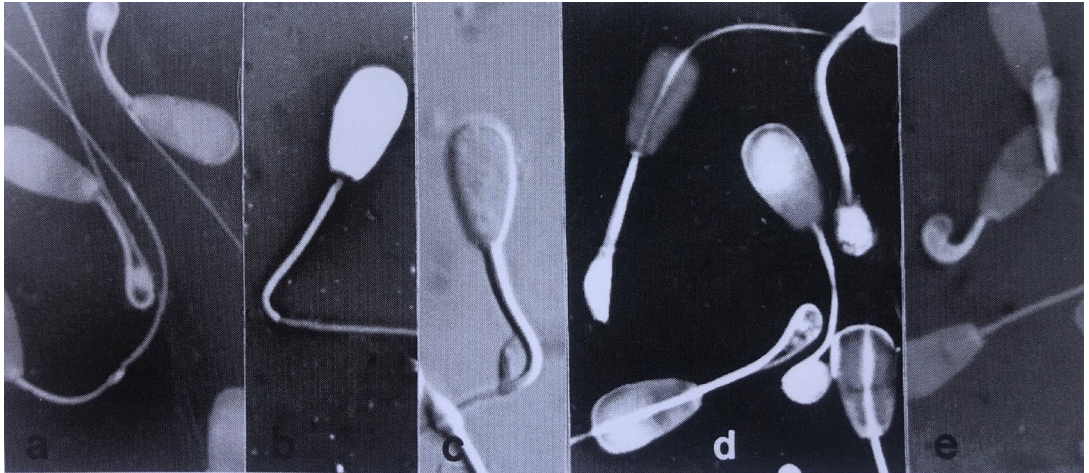
Spring is right around the corner, and as a cold intolerant Georgia girl, I'm certain that I share the same (maybe a tad more) gratitude as most folks in southern Alberta for the abrupt transition to warmer temperatures. Whether you're in the thick of your calving season or the tail end, the breeding season is on the horizon. Ensuring your bulls are reproductively sound is paramount prior to turnout with your cowherd. During the winter months, several factors such as cold stress, photoperiod, excessive or poor body condition, and reduced feed quality can contribute to poor semen quality. The persistent extreme cold temperatures we've experienced this late in the year may potentially have an impact on the spermatozoa of bulls that are evaluated for breeding soundness in the upcoming months.

Although the semen test is only a portion of the bull BSE, there are minimum semen quality requirements that must be met for a bull to pass. In this article, I will discuss the impact of cold temperatures on spermatogenesis, how that impacts the breeding soundness evaluation, and what you can do to mitigate and prevent the adverse effects of winter on your bulls' fertility.

How does cold weather effect semen quality?

Bulls that endure extreme cold and wind are at increased risk for scrotal frostbite that could have detrimental effects on semen quality. In a study performed in western Canada, they found that the overwhelming majority of frostbite cases occurred between January and February. They also found that the degree of severity of the frostbite correlated with semen quality.¹ Mild frostbite is considered 1 or 2 scabs at the base of the scrotum that are <2cm in diameter. Mild frostbite tended to have minimal effects on semen quality. However, severe frostbite was described as 1 or 2 scabs that are >2cm in diameter did have an adverse effect on semen quality.¹ Yearling bulls tend to be less affected by scrotal frostbite than mature bulls because their scrotums are not as pendulous, making the testicular blood supply less

susceptible to issues associated with thermoregulation.³ Frostbite causes inflammation of the scrotum leading to increased temperature of the testes, disturbing spermatogenesis. Common morphology defects associated with cold stress are distal midpieces reflex defects such as bent or folded midpieces and tails.³ In the picture below, it shows the typical distal midpiece reflexes (DMRs) seen when evaluating morphology of the sperm. These defects result in a decision deferred (DD).



Severe Frostbite

My bull has received a decision deferred (DD). What now?

Whether you have a bull sale coming up or you're about to turn your bulls out, having a deferred decision on any of your bulls can seem like a monkey wrench has just been thrown into your plans. It typically takes 2-3 weeks for bulls to recover from DMR defects. Delaying semen test or re-testing your bulls until a few weeks later in the spring may be beneficial for a positive outcome on semen evaluation. If you have a bull sale planned soon, you can still sell decision deferred (DD) bulls with the disclaimer that they have not officially passed a BSE along with the guarantee of reimbursement, a credit, or exchange if the bull does not pass semen re-test.



How do I prevent scrotal frostbite in my bulls?

There are several easy and economical ways to prevent scrotal frostbite in bulls housed outdoors in the winter. Since bulls tend to turn their back to the wind, they expose their hind ends to the wind, setting themselves up for frostbite. By constructing a shelter, it can shield these bulls from harsh weather making them less vulnerable. Additionally, providing adequate amounts of clean, dry bedding can protect bulls from developing scrotal frostbite.

References

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