



The Veterinary Link

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Breeding soundness examination of bulls

One of the primary goals of cow-calf producers is to get as many cows pregnant in a confined breeding season as possible, and to have almost all of those successful matings occur within the first 35-40 days of the breeding season. In order to accomplish this goal, the cows must be cycling at the start of the breeding season, and the bulls must be able to detect each cow in heat, mount her and deliver fertile semen to her reproductive tract. Failure of bulls to successfully accomplish their half of mating results in very poor reproductive efficiency.

BSEB helps avoid breeding problems

A breeding soundness examination of bulls (BSEB) is a comprehensive examination to estimate the bull's ability to successfully initiate pregnancy. Although not foolproof, many bull problems during the breeding season can be avoided by having a BSEB. Formal breeding soundness examinations have been done for about 50 years, but despite the importance of using fertile bulls to achieve high reproductive efficiency, just more than half of producers with more than 300 cows routinely have a BSEB performed on all their bulls prior to the start of breeding. Producers with smaller herds are even less likely to have a BSEB performed.

Research has shown that structurally and reproductively sound bulls can successfully mate as many as 50 to 60 cows in range situations. Despite this ability, the typical bull-to-female ratio is much lower, often as low as 1:25.

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This low bull-to-female ratio and the low utilization of BSEBs may be related. A bull with an unknown ability to successfully mate cows is more likely to fail during the breeding season. As producers experience bull failure, they tend to guard against future problems by increasing the number of bulls they use.

An alternative strategy is to place more selection pressure on the bulls so that failure is less likely to be a risk.

Prior to each breeding season, BSEBs are used to reduce the risk that breeding failure is due to inadequate semen volume, sperm cell fertilizing ability and semen delivery. Although individual situations vary, national reports indicate that 10%-20% of bulls will fail a

comprehensive BSEB.

A BSEB will evaluate the entire bull, not just his reproductive system. Because bulls detect cows in heat by observing mounting behavior, impediments to vision, such as scars from pinkeye, will diminish a bull's ability to be a successful breeder and are grounds for failure.

During the breeding season, bulls will

travel many miles per day. Sound feet and legs are essential for mating success. Foot and leg problems that are genetically transmitted, such as being post-legged or having screw-claws, should be avoided and will cause a bull to fail a BSEB. Respiratory disease and other ailments that limit a bull's ability to be a sexual athlete will cause him to fail a BSEB, as will structural problems with the penis.

The BSEB procedure and scoring system is most valuable to identify those bulls that are unsatisfactory and that are likely to increase the risk of having a high percentage of open cows at the end of the breeding season.

Scrotal circumference is measured in a BSEB as an accurate predictor of testicular size and weight and subsequently sperm output. Bulls that have a large scrotal circumference at a young age (yearling) will reach puberty earlier than similar bulls that have smaller testicular size, and older bulls with larger testicles will produce more sperm cells than bulls with smaller scrotal circumference. Because scrotal circumference is an accurate predictor of age at puberty for bulls and their daughters and of the number of sperm cells produced, fertility can be improved by selecting for larger scrotal circumference.

Semen examination

If a bull is determined to be free of noticeable problems when detecting heat, finding and following females that are in heat, and mounting and delivering semen to the female reproductive tract, the next step in a BSEB is to evaluate the semen produced. In the United States, semen samples are most often collected with the aid of an electroejaculator, although other methods are available.

Cold shock of semen samples makes accurate evaluation impossible; therefore, every effort should be made to protect semen from low temperatures while it's being collected, transported and examined under a microscope. Veterinarians who are skilled at BSEB will have equipment that keeps their collection apparatus, slides, stain and other utensils warm.

Semen samples are examined under a microscope to determine the amount of motility and structural correctness of the sperm cells. Motility serves as an indication of both the percentage of sperm that are alive and

the percentage that are correctly made. If sperm cells are alive but malformed, motility is often negatively affected. By killing all the sperm cells in a sample and then carefully examining the cells under high magnification, a skilled veterinarian can determine not only if the sperm cells have normal structure, but also the likely cause and prognosis if a high percentage of the cells are abnormal.

Limitations

The limitations of BSEB fall into three categories: (1) limitations of the procedure itself, (2) limitations due to the skill of the examining veterinarian, and (3) limitations because of the expectation and use of BSEB by cow-calf producers.

The BSEB procedure and scoring system is most valuable to identify those bulls that are unsatisfactory and that are likely to increase the risk of having a high percentage of open cows at the end of the breeding season. The procedure is not very effective at differentiating between moderately fertile and highly fertile bulls.

The scoring system used by most veterinarians who do BSEBs was developed by the Society for Theriogenology and was designed to be a minimum standard for acceptable fertility. If a producer and his or her veterinarian want to place more selection pressure on fertility, the standards for use in the herd must be raised.

Breeding soundness examinations require good facilities and equipment to allow for thorough examination of bulls and their semen. Appropriate chutes, semen collection equipment, slide warmers, microscopes and stains are required. Veterinarians can fail to provide a good BSEB if they are unable to adequately examine the bull to detect structural or health problems that would limit the bull's ability to detect heat or deliver semen properly, or if they incorrectly interpret a semen sample when assigning a bull to either the satisfactory or unsatisfactory classification. Misclassification of bulls is most often due to an incomplete examination.

Cow-calf producers can limit the usefulness of BSEBs by pressuring a veterinarian to pass a bull or by purposefully selecting examiners who rarely fail bulls.

Despite their limitations, BSEBs are a proven tool to remove a high percentage of problem bulls prior to the start of the breeding season and to improve herd and breed fertility by placing selection pressure on fertility. High bull fertility is an important component of high pregnancy percentages and herd productivity.



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