



Repro Tracks

► by **Cliff Lamb**, University of Florida

Breeding soundness examinations

As you read this edition of the Angus Journal, you may be seeing signs of spring. Pastures may be starting to turn green, and you may be anticipating putting cattle out to pasture for summer grazing. This is also a period of time where you are considering turning bulls out onto pasture.

With this in mind, you should be considering a breeding soundness examination (sometimes referred to as a BSE) for the bulls that you plan to use this summer. In fact, all bulls used for mating cows, regardless of age or how effective the bulls were in previous breeding seasons, should be exposed to a BSE. We receive numerous questions related to a BSE and why it is important. Hopefully, answering a few of these questions will help.

The scoop on breeding soundness exams

Could you please define a BSE?

A BSE is an examination performed by a veterinarian to assess the potential breeding ability of a bull. A complete examination includes a physical examination, reproductive organ examination, assessment of semen motility and an assessment of semen morphology. In general, based on data by the Society of Theriogenology, you should expect approximately 80% of yearling bulls to pass an initial breeding examination. Of the remaining bulls, approximately half will pass after an interval of 30 to 60 days. Therefore, expect approximately 90% of all yearling bulls to pass a BSE. Several producers fail to have a complete BSE performed, often failing to perform the physical or reproductive organ examination or only assessing motility.

Why is a physical examination important?

While an in-depth physical exam is not typically performed, an abbreviated physical exam should always be conducted. A bull that is not physically able to breed cows should not pass a BSE. This examination should include:

- Determination of temperature, pulse and respiration measurements that may indicate health concerns;
- Observation of nasal and ocular discharge;
- No evidence of pinkeye, trauma, tumors or infections; and
- No evidence of lameness, and hooves should be examined to rule out hoof wall cracks, corkscrew claws or other problems that may hinder breeding.

What does the reproductive organ examination consist of?

Both external (scrotum and penis) and internal (seminal vesicles, prostate, pelvic urethra and ampulla) should be examined visually or by palpation for abnormalities. The scrotum contains the testicles, epididymis, vas deferens, cremaster muscle and blood vessels that supply the testes. Functionally it is crucial for proper thermoregulation of the testicles and epididymis, as sperm development and maturation occur at a lower temperature than body temperature.

After palpation, the scrotal circumference should be measured. Scrotal circumference has been directly correlated to testicular volume and sperm output of bulls; therefore, scrotal circumference serves as a reliable assessment of semen-producing ability.

There are some standards used when determining minimum acceptable scrotal circumferences (see Table 1). This guide should be used when determining whether a bull is able to pass a BSE.

What is sperm motility?

Sperm motility is categorized in two ways, gross and individual motility. Gross motility is evaluated under a low-power microscope (100×) by placing a drop of raw semen onto a warm slide. Samples that are good have thick, rapid swirls that are a function of both sperm individual motility and concentration. Samples of semen with poor motility semen have little movement.

Individual motility is evaluated by diluting a fresh semen sample with warm sodium citrate and observing the sample under higher magnification (400×). Forward progressive movement of individual sperm is quantitated. It is desirable for a bull to pass a BSE to have greater than 30% individually motile sperm, but greater than 30% is more desirable.

Can you please explain semen morphology?

To evaluate semen morphology, a raw semen sample is diluted and stained. The sample is observed under high magnification (400×) to quantify normal and abnormal sperm morphology. A minimum 70% normal morphology is required for a bull to pass a breeding soundness exam.

There are numerous types of sperm defects, examples may be head-shape



PHOTO BY SHAUNA ROSE HERMEL

abnormalities, knobbed acrosomes, coiled tails, etc. It has been determined that semen with high concentrations of abnormal sperm have reduced opportunities for resulting in a pregnancy.

Why should we perform a BSE on all our bulls every year?

If you consider that pregnancy is approximately four times more economically important than any trait that you select for, it is essential that a bull is capable of breeding cows during the breeding season. A BSE provides some insurance against having a group of females fail to become pregnant during the breeding season, or have poor pregnancy rates during the breeding season.

A BSE may cost between \$40 and \$80 per bull, which is insignificant compared to females failing to become pregnant. For young bulls, a BSE is an opportunity to determine if the bull has attained puberty and is producing semen at a high enough quality. For older bulls, a BSE provides an opportunity to evaluate semen quality prior to the next breeding season.

Older bulls may have been exposed to extreme cold weather or extreme warm weather, or may have had an injury (such as another bull or cow stand on his testicles)

Table 1: Recommended scrotal circumference of bulls at various ages

Age	Very good	Good	Poor (fail)
12-14 months	>34 cm	30-34 cm	<30 cm
15-20 months	>36 cm	31-36 cm	<31 cm
21-30 months	>38 cm	32-38 cm	<32 cm
>30 months	>39 cm	34-39 cm	<34 cm

Source: Adapted from the Society of Theriogenology.

that went unnoticed. Therefore, a BSE should be considered every year on every bull.

When should I perform a BSE on my bulls?

It is usually recommended to perform a BSE on bulls approximately eight to 10 weeks before the breeding season. The reason for this interval is that semen being produced in the testes of a bull now will be ejaculated in about six to 10 weeks. Therefore, if the bull has suffered an injury or been exposed to extreme temperatures, that bull may be treated and have the opportunity to recover and produce high-quality semen prior to the breeding season. If the bull fails to respond to treatment, then a producer has sufficient time to identify and acquire a new bull.

I frequently hear comments from producers who indicate that their bulls failed

a BSE, but they still used the bull and he managed to get cows pregnant. In these cases, keep in mind that a BSE does not indicate that a bull will not get cows pregnant, but that a bull failing a BSE is less likely to have semen or the ability to breed a female that results in a pregnancy. Bulls passing a BSE have been determined to be capable of getting cows pregnant if they have the libido (or desire) to breed a female.



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