

Breeding Soundness Examination in Bulls: A Key to Successful Cattle Breeding

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Abstract

Breeding Soundness Examination (BSE) is an essential veterinary procedure used to assess the reproductive potential of breeding bulls. It involves evaluation of general health, physical fitness, reproductive organs, scrotal circumference, semen quality, and, when necessary, libido and mating ability. The examination helps identify infertile or sub fertile bulls before the breeding season, thereby improving conception rates and preventing economic losses. Although a BSE does not guarantee fertility, it is a reliable tool for selecting reproductively sound bulls and enhancing herd reproductive performance. Regular breeding soundness evaluation, combined with proper health care and management, contributes significantly to sustainable and profitable cattle production.

Introduction

The success of any cattle breeding program depends greatly on the fertility of the breeding bull. Although a single bull may serve 20–50 cows during a breeding season, an infertile or subfertile bull can lead to poor conception rates, prolonged calving intervals, fewer calves born, and significant financial losses. Many bulls appear healthy and strong but may have hidden reproductive problems that reduce their ability to sire offspring. For this reason, a **Breeding Soundness Examination (BSE)** has become an essential management practice in modern livestock farming.

A breeding soundness examination is a comprehensive health and fertility assessment performed by a veterinarian to determine whether a bull is physically and reproductively capable of breeding cows successfully. It is

- Select superior breeding bulls.

important to understand that the examination does not guarantee fertility; rather, it identifies bulls that have a high probability of achieving satisfactory reproductive performance under normal breeding conditions.

Why is a Breeding Soundness Examination Important?

Keeping an infertile bull in a breeding herd can have serious consequences. Every missed pregnancy represents lost income, delayed calving, reduced milk production, and fewer calves available for sale or replacement. Identifying reproductive problems before the breeding season allows farmers to replace unsuitable bulls in time and avoid these losses. A breeding soundness examination also helps:

- Improve conception and calving rates.
- Detect reproductive diseases at an early stage.

- Reduce unnecessary feeding and maintenance costs for infertile animals.
- Increase the overall profitability of the livestock enterprise.

When Should Bulls Be Examined?

Veterinarians recommend examining breeding bulls about **6–8 weeks before the breeding season**. This provides enough time to treat reversible conditions or obtain a replacement bull if necessary.

A breeding soundness examination is also advisable:

- Before purchasing a breeding bull.
- Every year for breeding bulls.
- After recovery from illness, injury, or heat stress.
- Whenever poor conception rates are observed in the herd.

Components of a Breeding Soundness Examination

1. Identification and History

The examination begins with collecting information about the bull, including its age, breed, previous breeding performance, health history, vaccination status, nutrition, and any past reproductive problems. This background information helps the veterinarian interpret the examination findings more accurately.

2. General Physical Examination

A bull must be healthy and physically fit to breed cows. Even bulls with excellent semen quality cannot perform well if they are unable to walk, mount, or complete mating.

The veterinarian evaluates:

- Body condition and nutritional status.
- Eyesight and hearing.
- Teeth and mouth for proper feeding ability.
- Heart and lungs.
- Legs, joints, feet, and hooves.

Signs of lameness, injury, fever, or systemic illness.

Good physical fitness is essential because breeding often requires bulls to travel long distances and mate repeatedly during the breeding season.

3. Examination of the Reproductive Organs

The reproductive organs are carefully examined for normal structure and function.

Penis and Prepuce

The penis is checked for injuries, inflammation, warts, persistent frenulum, abnormal curvature, or other defects that may interfere with mating. The prepuce (sheath) is examined for swelling, infection, wounds, or prolapse.

Scrotum and Testes

The scrotum should be symmetrical and free from injuries or swelling. Both testes should be equal in size, firm yet elastic, and freely movable within the scrotum.

Abnormal findings may indicate:
Testicular degeneration, Inflammation, Developmental defects,
Trauma and Reduced sperm production.

Epididymis

The epididymis stores and transports sperm. Swelling, blockage, or inflammation can interfere with fertility and reduce semen quality.

Accessory Sex Glands

Through rectal examination, the veterinarian evaluates the seminal vesicles, prostate, ampullae, and bulbourethral glands for enlargement, infection, or inflammation.

Measuring Scrotal Circumference

One of the most valuable parts of the examination is measuring the scrotal circumference using a special tape.

Scrotal circumference is closely related to:

- Testicular size.
- Daily sperm production.
- Semen quality.
- Earlier puberty in daughters.

Larger, normally developed testes generally produce more sperm. Mature bulls are usually expected to have a scrotal circumference of **34 cm or more**, although acceptable measurements vary with age and breed.

Semen Collection

Semen is collected using either:

- Electroejaculation, which is commonly used during field examinations.
- An artificial vagina, mainly used at semen collection centers where bulls are trained for semen collection.

The method chosen depends on the facilities available and the temperament of the bull.

Semen Evaluation

The collected semen is examined immediately.

Gross Examination

The veterinarian observes volume, color, consistency and presence of blood, pus, urine, or other contaminants.

Normal semen is creamy to milky white, depending on sperm concentration.

Microscopic Examination

The semen is examined under a microscope to evaluate:

Progressive Motility

This measures the percentage of sperm moving forward in a straight line. Good forward movement is essential for sperm to reach and fertilize the egg.

Sperm Morphology

The shape and structure of sperm cells are carefully assessed. Normal sperm should have a well-formed head, midpiece, and tail. Defective sperm may have bent tails, detached heads, abnormal heads, or damaged midpieces, all of which reduce fertility.

Sperm Concentration

This estimates the number of sperm present in each milliliter of semen.

According to commonly accepted breeding soundness standards, a satisfactory breeding bull generally has:

- At least **30% progressive sperm motility**.
- At least **70% morphologically normal sperm**.

Assessment of Libido and Serving Ability

In some situations, particularly under natural mating systems, semen quality alone is not enough.

The veterinarian may also evaluate, sexual desire (libido), willingness to mount, ability to complete mating and ability to achieve ejaculation.

A bull may produce excellent semen but still fail to breed cows because of poor libido, pain, lameness, or physical defects.

Classification of Bulls

After completing the examination, bulls are usually classified into one of three categories.

Satisfactory Potential Breeder

These bulls meet the minimum physical and semen quality standards and are considered suitable for breeding.

Unsatisfactory Potential Breeder

These bulls fail to meet the required standards because of reproductive abnormalities, poor semen quality, severe lameness, or other health problems.

Deferred

Some bulls cannot be classified immediately because temporary conditions such as fever, injury, nutritional stress, or young age may affect fertility. These animals are re-examined after several weeks.

Factors Affecting Bull Fertility

Even bulls that pass a breeding soundness examination may experience reduced fertility due to:

- Poor nutrition.
- Heat stress.
- Infectious diseases.
- Mineral deficiencies.

- Excessive breeding workload.
- Injuries during the breeding season.
- Poor herd management.

Therefore, regular health care, balanced nutrition, proper vaccination, and good management remain essential.

Conclusion

A breeding soundness examination is one of the most valuable preventive tools in cattle reproduction. By identifying infertile or sub fertile bulls before the breeding season, farmers can avoid costly reproductive failures, improve conception rates, and increase the number of healthy calves born each year. Since a single bull influences the reproductive performance of many cows, investing in annual breeding soundness examinations is a simple, economical, and scientifically proven practice that contributes to sustainable and profitable cattle farming.