

Bull Examination and Testing

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There are only two ways to accurately test the 'fertility' of bulls: by recording the number of calves produced from a single-sire mating of cows of a known breeding history, and by DNA-testing of calves to determine their parents in a multiple-sire breeding herd. However, both ways are impractical in most extensively-grazed, commercial herds. Nonetheless, there are other examinations and tests that will give an **indication of a bull's reproductive potential**. They are:

- physical examination;
- examination of the reproductive tract;
- semen tests; and
- serving capacity/ libido tests.

PHYSICAL EXAMINATION

Physical and structural soundness is essential for a herd bull so it can locate cows in oestrus ('heat') and properly inseminate them. The physical examination of bulls can be done whenever a breeding herd is worked through the yards. The result of a physical examination should be a major deciding factor for retaining or culling a bull.

A bull must have **sound eyesight, joints and feet**. The soundness of joints and feet is demonstrated by the capacity of a bull to move freely without signs of lameness or joint and muscle stiffness. When a bull walks, the rear hooves should land in the imprints of the front hooves and the legs should follow an even arc. A straight-legged bull tends to step short. Straight legs lead to jarring, arthritis and an inability to walk properly. Therefore, extremely straight-legged bulls should not be purchased. A sickle-hocked bull tends to overstep, but this is less likely to be a problem.

EXAMINATION OF THE REPRODUCTIVE TRACT

The **penis, sheath and testicles** must be examined for **obvious damage or abnormalities**. A more detailed examination of the testicles includes assessment of the relative testicle size and tone, plus measuring the **scrotal circumference**.

The scrotal circumference indicates the combined testicle size and is one of the easiest ways to estimate a bull's reproductive potential. Larger testicles of a normal tone have a greater capacity to produce semen and inseminate a larger number of cows. Because testicle size is highly heritable, larger testicles in yearling bulls are associated with early puberty and increased fertility in female relatives.

The minimum acceptable scrotal circumference will depend on a bull's age, environment and breed. More information on this can be found in *Agnote* K44 'Testicle Size – a Fertility Indication in Bulls'.

SEMEN TESTS

Research in bulls in northern Australia during the late 1990s (the *BullPower* project) looked at pre-mating predictors of fertility in *Bos indicus* (Brahman) and *Bos indicus* cross (Santa Gertrudis) bulls. The research results showed that in Brahman and Santa Gertrudis bulls with at least threshold levels of acceptable physical and reproductive soundness, the proportion of morphologically normal sperm was the only significant predictor of siring-ability. Bulls with less than 50% normal sperm sired fewer calves. This proved the importance of semen testing.



A reduction in bull numbers to a recommended 3% in a herd is only possible when bulls have **at least threshold levels of acceptable physical and reproductive soundness**, together with **more than 50% normal sperm**.

Bulls for breeding should be **purchased only** if they produce **at least 70% normal sperm**. An exception to this rule may be made for young bulls (up to two years old), if tests show that high semen abnormalities are due to immaturity.

An allowance should also be made for the negative effect of transport and relocation on sperm viability, especially in grain-fed bulls. In a classic scenario, a fat bull from a sale in Queensland is transported to a property in the NT but then sires no calves. Often the sperm of such a bull is viable when in Queensland but deteriorates after relocation to the NT. Such bulls may not recover until the following season. Therefore, the most reliable bulls to purchase are those which have been locally-bred, paddock-reared and are in store or forward-store condition.

SERVING CAPACITY/ LIBIDO TESTS

Serving capacity or libido tests measure the willingness and ability of a bull to mate cows in a yard situation over a given period of time. Such tests are extremely time-consuming and the relationship between the level of performance in the yard and the paddock is low in Brahman-type cattle.

CONCLUSION

Examinations and tests are recommended for bulls *before* purchasing and *before* mating. The more comprehensive the series of examinations and tests to indicate a bull's reproductive potential, the greater will be the certainty that a purchased or retained bull will be sound for breeding. This will not only improve overall herd fertility, but will also help identify some non-productive ('passenger') bulls for culling.

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