



# Vet Call

► by **Bob Larson**, Kansas State University

## Young bull health considerations

*Seedstock producers, bull buyers and veterinarians all have considerable interest in the breeding ability of yearling bulls and the ability of a breeding soundness examination to accurately predict that ability. It is expected that there will be a lot of variability among young bulls; but, in general, by about 10-11 months of age bulls will reach puberty.*

### Factors of a breeding soundness exam

At puberty, sperm cells can be detected in a semen sample, but production is limited and many sperm cells will have one or more defects, and the bull would not pass a breeding soundness examination. As bulls age past puberty, sperm production steadily increases and the percentage of abnormal sperm cells in a semen sample will decrease until the age of 16 months, when bulls should be sexually mature. Daily sperm production will increase until a bull is about 3-4 years of age, when testicular weight peaks.

Breeding soundness examinations consist of a complete physical, scrotal measurement as an indication of testicular size, and a semen evaluation. The need for breeding soundness examinations of bulls is based on the fact that many prospective breeding bulls are infertile, subfertile or unable to successfully mate.

The physical examination includes observing the bull as he moves — looking for inadequacies in movement, leg conformation and general body condition. The physical examination continues once the bull is confined in a squeeze chute — noting any abnormal conformation. The lungs and heart are evaluated and a rectal exam is performed to determine the health of internal reproductive organs. The penis should be extended and examined for indications of injury, warts, persistent frenulum or disease. The testes and epididymis are palpated for evidence of degeneration or inflammation.

An easily obtained and important measurement for evaluating young bulls is the scrotal circumference. Although bulls will reach puberty at a wide range of ages and weights, bulls of all breeds tend to reach puberty when the scrotal circumference is pretty close to 28 centimeters (cm). Remember that a bull that has just recently reached puberty will produce very few fertile

sperm cells, and he would not be expected to successfully breed more than a few heifers or cows.

Typically, young bulls between 10 and 16 months of age are described as “yearlings,” but testicular size and scrotal circumference increases rapidly during this period, so it would not be appropriate to directly compare young bulls that differ in age even by as little as a month.

A much more accurate way to compare young bulls that differ in age is to adjust the scrotal circumference to the measurement that would be expected when the bull is 12 months of age. In other words, bulls younger than 12 months of age will have their scrotal circumference adjusted upward and those greater than 12 months of age will have their scrotal circumference adjusted downward.

Once the physical examination is complete and the scrotal circumference has been determined with a tape measure, a semen sample is collected either with the aid of an electroejaculator, massage of the prostate, or use of an artificial vagina and a mount animal. The semen sample is evaluated for sperm motility and for the presence of excessive numbers of abnormal sperm.

Interpreting semen samples of young bulls less than 14 months of age can be difficult. While bulls 10-14 months of age can be evaluated for scrotal circumference and physical soundness, some veterinarians and seedstock producers choose to delay evaluating sperm quality until a bull is 14 months of age.

Bulls less than 14 months of age that have an excessive percentage of abnormal sperm may very well be too close to puberty, and if allowed to mature a little longer, will have more than 70% normal sperm cells and be considered a satisfactory breeder. However, if a 14-month-old or older “yearling” bull fails a breeding soundness exam because of excessive numbers of abnormal sperm cells, he is much less likely to pass a breeding

soundness exam if he is tested again at 16 months of age.

### Nutrition effects

Although there is still much to learn about the steps that should be taken to ensure that the greatest number of bull calves can become successful herd bulls, a number of studies have indicated that nutrition in the first few months of life prior to weaning has a tremendous impact on age at puberty, mature testicular size (and scrotal circumference), and mature sperm production. Energy or protein restrictions in young suckling bulls (usually due to limited forage availability or poor milk production by his dam) can permanently reduce fertility.

Another concern is that if young bulls suffer from any disease prior to weaning, the disruption of growth and health during critical periods of sexual maturation could have permanent negative effects on fertility. These concerns focus our attention on a herd-health plan that includes good sanitation, nutrition, parasite control, biosecurity and vaccinations to minimize the risk of disease.

In contrast to the importance of high-energy and protein diets very early in life, providing high levels of energy after weaning has not consistently shown any benefit to age at puberty or later fertility. In fact, if high-energy diets postweaning result in fat accumulation in the neck of the scrotum, fertility can be reduced, and bulls that become overconditioned postweaning are at increased risk of joint problems in their legs and possibly other problems.

A plan to ensure the health and adequate growth of bull calves prior to weaning and on through to yearling age is essential for optimum bull fertility. Because of the rapid changes that take place after a young bull reaches puberty, evaluating semen quality can be difficult and unproductive before a bull has had the opportunity to mature to the point where he can express his true fertility at about 14 months of age.

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