

Testicle Size - A Fertility Indicator in Bulls

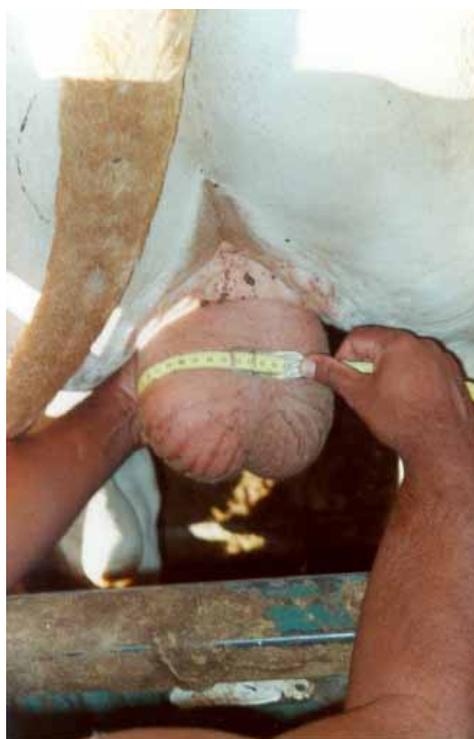
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Cattlemen have always wished for a simple method to predict sperm production potential in young bulls. They would then be able to select suitable bulls at an early age for their superior sperm producing potential, which relates directly to their fertility.

CONCEPTION RATES AND SCROTAL CIRCUMFERENCE

Research in *Bos taurus* (British breed type) bulls, in Victoria, indicates that in normal testicles, scrotal circumference, a measure of testicle size, is a relatively accurate indicator of bull fertility. It was found that conception rates in cows mated to bulls with a scrotal circumference of less than 30 cm were low; but were satisfactory in cows mated to bulls with a scrotal circumference of 30 cm or greater.

Research in Queensland has shown that this cut-off point of 30 cm in scrotal circumference can also be used in *Bos indicus* (Brahman type) bulls and crossbreds of *Bos indicus* and *Bos taurus*. Most beef bulls that are older than two years and which have a scrotal circumference of less than 30 cm will produce poor quality semen. Even if such bulls produce semen of satisfactory quality, they will have lower fertility due to insufficient sperm per ejaculate.



However, better fed bulls will have larger scrotal circumferences at a given age. For example, a 24-month old Brahman bull under feedlot conditions will have a scrotal circumference of 32 cm compared to 28 cm for a similar bull raised on native pasture.

For Northern Territory conditions it is recommended that you reject all *Bos taurus* bulls older than two years with scrotal circumferences of less than 30 cm and *Bos indicus* bulls older than two years with scrotal circumferences of less than 28 cm.

MEASUREMENT

Testicle size can be measured in a number of ways; however, scrotal circumference is the most related to sperm output. **This can be done by drawing both testicles down into the scrotum and measuring the circumference at the point of maximum width with a metal tape.**

Beef bulls two years old and over vary in scrotal circumference from 26 to 48 cm. The variations in testicular size, by age, for Brahman cross bulls in the Top End and the Victoria River District are shown in Figure 1. Any bull which falls beneath the bottom line should be culled as it would be in the bottom 10% of the population.

TESTICULAR GROWTH

Testicular growth is rapid around puberty (6 to 13 months of age) and is adversely affected by poor nutrition. As a bull ages from puberty through to maturity, its scrotal circumference increases until it is five to six years old. *Bos taurus* bulls achieve their mature testicle size at an earlier age than *Bos indicus* bulls. However, both *Bos taurus* and *Bos indicus* bulls attain mature testicle sperm production by 20 to 24 months of age. Some research has shown that after a bull reaches eight to nine years of age, the testes decrease in size and fertility decreases.

Remember, the testes must be normal and the bull must be free of diseases which impair fertility.

TESTICLE SIZE, FERTILITY AND HERITABILITY

In beef bulls, testicle size is likely to be improved by selection, since it is highly heritable. However, it is probable that maximum response to selection will only be achieved if bulls are well-fed during the pubertal spurt in testicular growth, from six to 15 months of age.

Also, it has been shown that **yearling** testicle size is well correlated with female fertility traits. There is a high genetic correlation between the scrotal circumference of bulls at 400 days of age and the earlier age at which their half-sib female relations reach puberty.

Bulls which have Breed-plan figures often have scrotal size estimated breeding values (EBVs). These are calculated for 400 days of age. Selection on scrotal size EBVs will enhance faster gains in scrotal size in male progeny and age of puberty in female progeny. It should be noted that at this age scrotal size will be between 18 and 30 cm. So selection at this time is to find the best bulls rather than for culling.

Therefore, to get maximum benefit from a breeding program, cattlemen should keep young bulls on good pasture during the pre-pubertal period and then select sires at 15 months of age.

USE THIS CHART FOR RANKING
BRAHMAN-CROSS BULLS IN THE VRD
ON THE BASIS OF SCROTAL CIRCUMFERENCE.

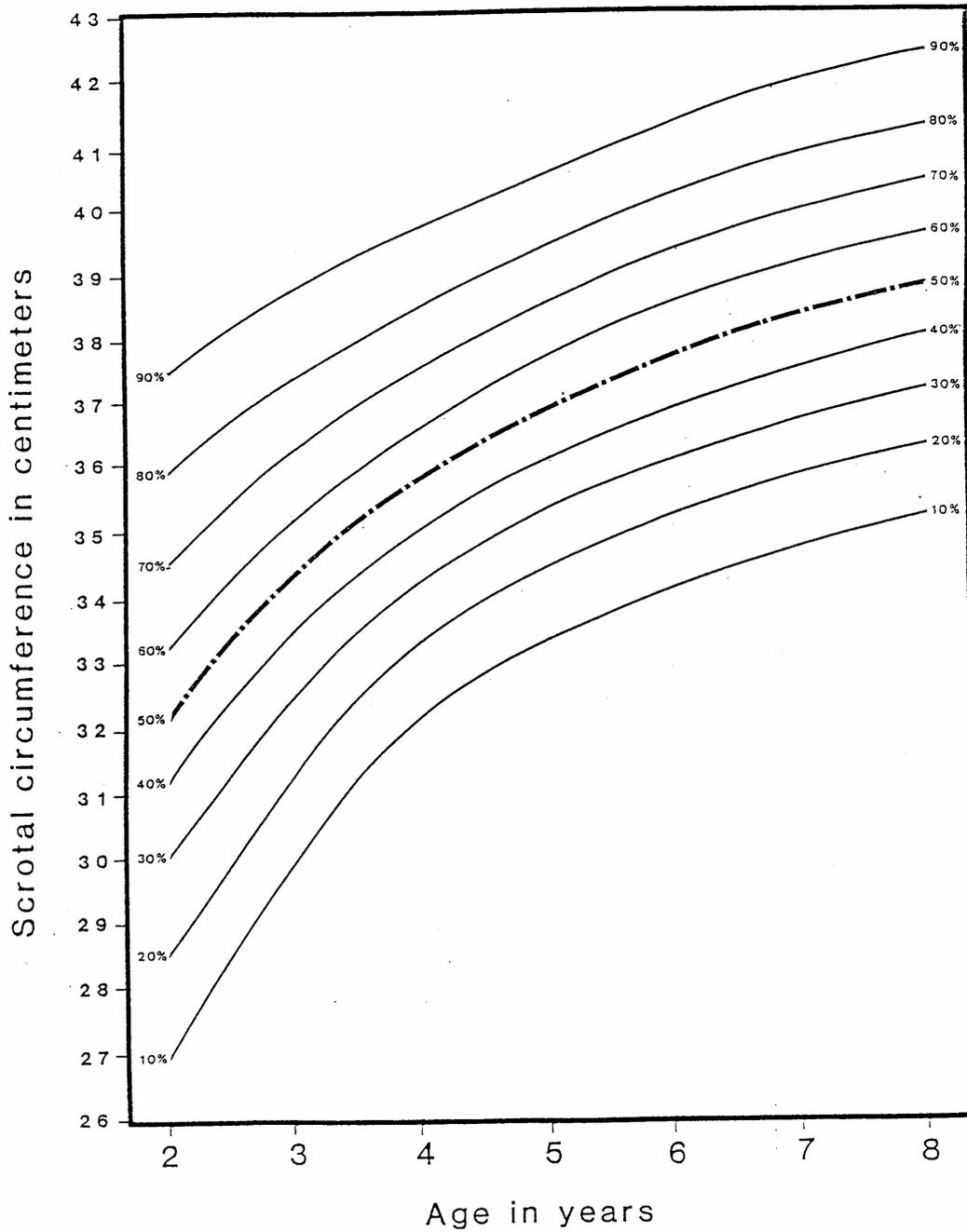
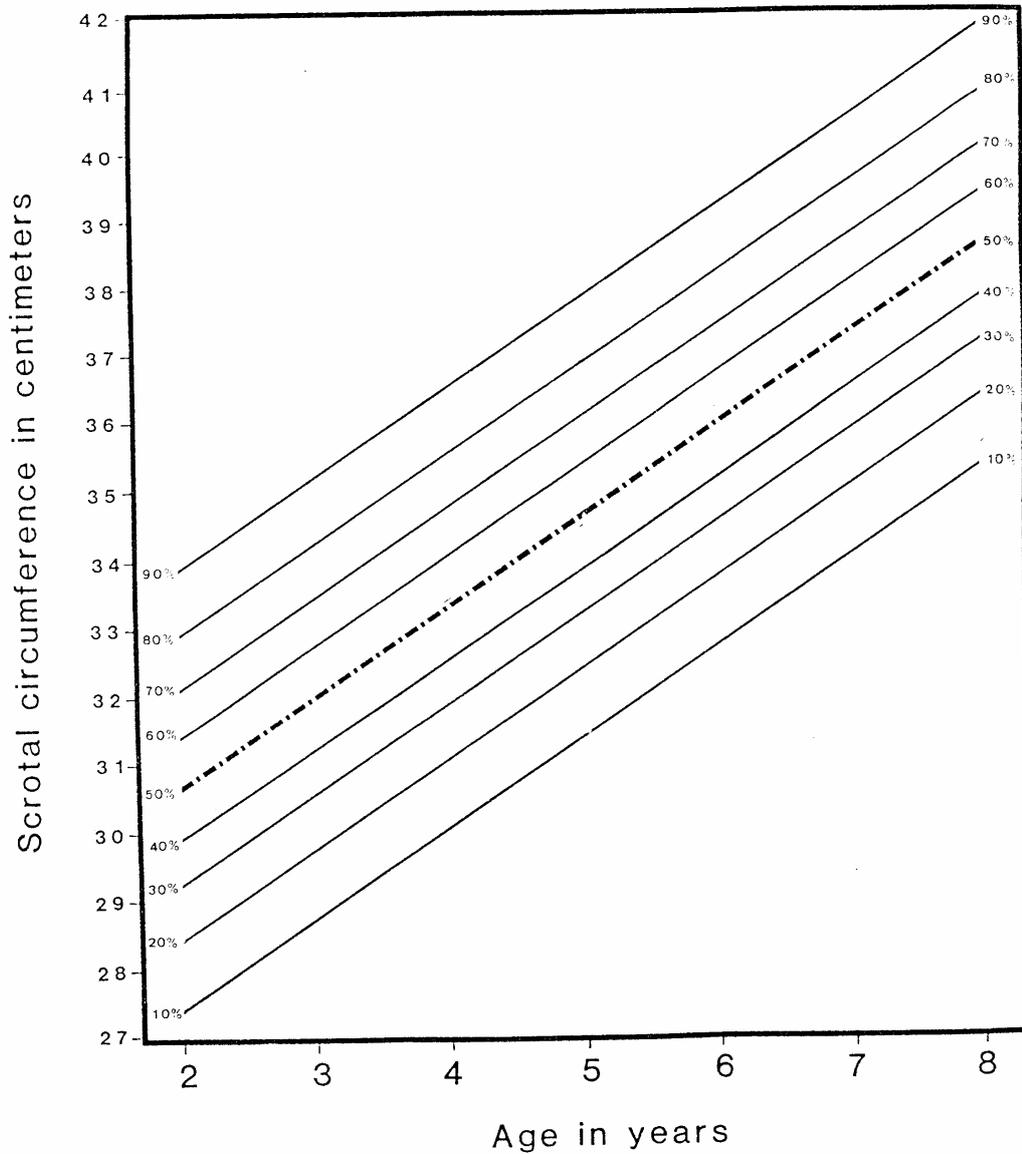


Figure 1. Testicular size and age

USE THIS CHART FOR RANKING
BRAHMAN-CROSS BULLS IN THE TOP END
 ON THE BASIS OF SCROTAL CIRCUMFERENCE.



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