



# Vet Call

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## Development of yearling bulls

*Appropriate bull selection and excellent reproductive performance is critical for both purebred and commercial cattle herds.*

### Careful management

If one considers economic factors such as purchase price, number of breeding seasons utilized, bull depreciation and interest costs — bull costs per cow exposed are less if bulls are purchased and used as yearlings rather than waiting until they are 2 years of age. But, because of inexperience and other factors, yearling bulls tend to settle fewer cows early in the breeding season compared to 2-year-olds. To gain the benefits of using yearling bulls while reducing the risk of poorer reproductive performance, bulls should be developed appropriately from weaning to yearling age and should be managed carefully during and after their first breeding season.

Bulls should reach puberty between 9-10 months of age, with puberty being defined as the age at which an ejaculate has a minimum of 50 million total sperm with 10% progressive motility. This level of sperm production is not considered acceptable for a breeding bull, but daily sperm production increases rapidly from very low production following puberty to levels that approach that of an adult by a couple of months after puberty.

Although bulls will reach puberty at a variety of weights and ages, scrotal circumference at puberty is fairly constant [ $27.9 \pm 0.2$  cm (centimeters)]. This provides an easily measured trait that allows the selection of males that reach puberty at a young age as well as bulls that have superior semen-producing ability.

### Nutritional balance

Nutrition from weaning to the first breeding season should allow bulls to express their full growth potential. Restricting energy, protein, vitamins or minerals can delay the onset of puberty of young bulls and possibly reduce daily sperm output. Gain needed during this period will depend on weaning weight and mature size, but generally will range from 1.75-2.75 pounds (lb.) per day.

Although bulls should be fed a diet that does not restrict nutrients, overfeeding young bulls should be avoided. Research has shown that bulls fed medium-energy diets from weaning to 2 years of age had greater reserves of sperm cells and higher-quality semen than bulls developed on high-energy diets.

Because heavily conditioned bulls had increased surface temperature at the top and bottom of the scrotum compared to bulls developed on medium-energy diets, researchers suspect that fatter bulls are not able to adequately cool the testicles, which increases the risk of heat-damaged sperm.

Because some bull buyers appear to prefer heavier-conditioned bulls, many bulls from bull tests and production sales will be in heavier condition than is desirable. These bulls should slowly lose weight prior to the start of their first breeding season.

Overconditioned bulls should be started on a ration that is similar to the one they are accustomed to, but at about 70% of their previous intake. The amount of grain can be reduced about 10% per week until the desired nutritional level is obtained. Dramatic nutritional changes can have an adverse effect on semen production, so it is important that these changes be made gradually.

### Breeding soundness

Beginning at least 60 days prior to their first breeding season, all yearling bulls should be evaluated for breeding soundness, should be in a body condition score (BCS) of 6 (on a nine-point scale) and should be gaining weight.

During the breeding season, bulls should be observed closely in order to make sure they are healthy. The scrotum should be observed to assure that the two testicles are the same size. If not, a veterinarian should examine the bull immediately. When one testicle is smaller and softer than the other, usually the smaller testicle is undergoing degeneration.

The testicles can also appear to be different sized if the epididymis alongside one of the testicles is enlarged. The epididymis may become enlarged due to inflammation, tumors, abscesses or blockage; and the prognosis for return to breeding is poor. Injuries to bulls during the breeding season are relatively common.

The penis can be injured in such a way that blood forms a large pocket around the penis (a hematoma) along the belly of the bull. This type of injury often leads to disruption of the nerve supply to the penis or adhesions between the penis and the prepuce, making breeding impossible. A veterinarian should be consulted to determine if surgical or medical treatment is warranted.

When a bull does become lame or incapable of breeding because of an injury to his reproductive tract, he needs to be removed from the breeding pasture and replaced by another bull.

Yearlings should be left with the cow herd for 60 days or less. Beyond that time, continued weight loss from strenuous exercise may have long-term negative effects on growth.

After being removed from the cow herd, yearlings should be kept separate from older bulls until they are 2 years of age. Yearlings should be placed on the best available forage, such as regrowth from hay fields or high-quality hay. Any bull that is thin and needs to gain extra condition, or who because of temporary injury is not able to compete with stronger bulls, should also be sorted and fed separately.

The bull pasture should be isolated away from cows so that the bulls will remain quieter and will be less likely to fight. The pasture should be of adequate size to encourage exercise and reduce confrontations between bulls. It is important to make sure the bulls have ample protection from extreme weather stress since frostbite of a bull's scrotum causes irreversible damage.

Yearling bulls are important investments that need to be developed and managed properly in order to optimize their use and longevity. They require special attention in the areas of nutrition, housing and evaluation before and during the breeding season. Neglecting a quality yearling bull can lead to unacceptable performance, a reduced calf crop, and younger calves at weaning.

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