

## Management Of The Beef Bull

F. David Kirkpatrick, Professor  
Animal Science Department  
University of Tennessee

The profitability of a cow calf operation is greatly influenced by percent calf crop weaned and weaning weight of the calf crop. A tremendous amount of emphasis has been placed on the nutrition and management of the cow herd in order to improve reproduction and profitability. Little emphasis has been directed toward the management of the bull who is expected to impregnate from 15 to 40 females during the breeding season and contribute to the genetic improvement of economically important traits of the calf crop such as growth, calving ease and carcass traits. His impact on the profitability of the operation is far greater than any individual cow. Therefore, it is imperative that consideration for management, nutrition and selection of the bull receive far more emphasis than any one cow in the herd.

The prohibitive cost of raising and developing two-year old bulls by purebred breeders to sell has limited their availability and confronted commercial producers with the situation of having to use yearling bulls in their operations. Proper management and nutrition of the yearling bull is essential in order for the commercial cow-calf producer to maximize both reproductive efficiency and genetic improvement of the calf crop.

The use of yearling bulls will offer producers an opportunity to make more rapid genetic improvement in economically important traits because there will be a greater number of bulls available from which to select. Increased emphasis on selection should be placed on factors affecting fertility in the yearling bull to insure a high reproductive rate.

### **Selection Factors-**

#### **Breeding Soundness Exam:**

All prospective bulls used in the herd should undergo an annual breeding soundness exam (BSE) prior to the breeding season to screen out high risk bulls from the standpoint of fertility. This is the single most important factor to assess a bull's fertility potential. It measures a bull's physical ability and sperm quality needed to impregnate females. However, it does not measure the bulls desire (libido) to mate with females. A BSE performed by a qualified veterinarian involves:

- Visual evaluation of eyes, feet, legs and external genitalia
- Internal palpation of accessory sex organs ( seminal vesicles and prostate)
- Electroejaculation for semen sample collection and sperm evaluation
- Scrotal circumference measurement and palpation of testicles
- Physical exposure and examination of the penis

#### **Scrotal Circumference:**

If only one single factor other than a BSE is to be used to determine fertility of young bulls, scrotal circumference may be the best criteria to use. It has a very high relationship to early onset of sexual maturity in a bull and is positively correlated to semen characteristics traits that affect fertility such as percent normal sperm, percent motility, volume, concentration and total sperm output. Based on research, bulls that have larger scrotal circumferences sire daughters that reach puberty earlier than daughters of bulls who have smaller circumferences. In addition those daughters produced by bulls with larger circumferences reach sexual maturity earlier than daughters of bulls with smaller circumferences.

The acceptable scrotal circumferences by bull ages recommended by the Society of Theriogenology is shown in the following Table 1.

Table 1. SCROTAL CIRCUMFERENCE BY BULL AGE

<u>Age</u>	<u>Minimum Acceptance</u>
12 - 15 months	30 cm
15 - 18 months	31 cm
18 - 21 months	32 cm
21 - 24 months	33 cm
over 24 months	34 cm

Scrotal circumference is a highly heritable trait and directional change in the trait can be realized by selection. Many breed associations have calculated EPDs in their National Cattle Evaluation for scrotal circumference to be used in identifying genetic differences. Positive scrotal circumference EPDs indicate the bulls ability to transmit genetics for larger scrotal circumferences. Negative scrotal circumference EPDs indicate the likelihood of reducing scrotal circumference in future progeny. Based on research at MARC, there is considerable breed differences and variability among animals within a breed for scrotal circumference.

#### **Management Factors-**

The bull's breeding capacity is usually taken for granted and his care and management during the non-breeding season is considered an inconvenience. In order to optimize reproductive efficiency of the bull, some basic management practices need to be followed at particular times. Management of yearling bulls can be divided into three basic periods.

#### **Pre-Breeding or Conditioning Management-**

Yearling bulls should be purchased in advance of the breeding season. Get the yearling bull on the farm at least 60 days prior to the breeding season. This will provide time for bulls to adjust to their new environment, overcome stresses of the sale and being moved to a new location. During this time, the bull should receive a complete health program as recommended by your local veterinarian. If he has not had a BSE performed, then it needs to be given at this time.

How the bull has been handled from weaning up to the time of purchase is an important item to consider in the feeding program. To do a good job of breeding, most yearling bulls should weigh no less than 1100 pounds at 13 to 15 months of age. If bulls were on a gain test and gained more than 3.5 pounds per day, they may be carrying excess body condition. This will not harm fertility when they are allowed to return gradually to moderate flesh and hearty physical condition during this period. The objective of the test was to measure genetics for growth and rank individuals for potential performance of their offspring. To let these bulls down, it is a good practice to start them on a ration similar to what they have been fed, but at about 60 to 70 percent of their previous intake.

The amount of grain can be reduced at the rate of about 10 percent per week until the desired level is achieved. At the same time grain is reduced, good quality hay may be substituted. Yearling bulls still need to gain about 2 pounds a day during this period. This can be accomplished by providing a ration with approximately 11 to 12 percent crude protein on a dry matter basis. The energy needs can be met with a 70 percent TDN ration or the equivalent of 6 to 10 pounds of grain and all the medium quality hay or excellent pasture.

The optimum body condition score for young bulls is "6" (bloomy but not too fat). Ideally, this letdown should be completed prior to the time the bulls are turned out to the limited number of

cows to which he will run. A young bull will use body stores of energy and lose over 100 pounds during the breeding season. This loss should come as energy stored in the form of fat rather than muscle tissue since the bull is still growing. Excessive rapid condition loss lowers the bull's fertility and libido and could be reflected in a reduced calf crop.

Exercise is a critical factor during this period. Bulls need to have lots of stamina, be very athletic and be able to travel many miles each day during the breeding season. It is important to condition bulls in a good exercise lot of approximately one acre in size. Placing the water and feeder at opposite ends of this lot will assist in the conditioning process. Sometimes a companion such as a steer in the lot will aid in exercise and adjustment to the new surroundings.

The most harmful thing that can occur during this period is to turn the bull out immediately with the entire cow herd. He will waste away in a short period of time and the percentage of cows that he impregnates will be small. This period is analogous to the period involved in breaking in a new car. A new car buyer would not take his brand new car and drive down the road at 100 miles per hour as soon as he drives off of the car lot. There is a necessary period for "breaking it in"

Two year old and mature bulls will not need as much attention during this period as yearlings. However they will still need some extra nutrition to get ready for the breeding season. Monitor their body condition closely and adjust feed to insure they reach the breeding season in a body condition score of 6. Bulls should have access to free choice of supplemental phosphorous year round. A mineral mix of ½ trace mineralized salt and ½ dicalcium phosphate can be provided. The addition of soybean meal to the mixture will encourage consumption.

### **Breeding Season Management-**

Three major goals during this period should be: (1) get the cows pregnant as early as possible in the breeding season, (2) get them bred to bulls with the highest genetic value and (3) achieve both with the least cost and fewest number of bulls.

The bull to female ratio is important in achieving these goals. However, this is difficult to define since it is affected by so many variables such as distribution of females and size of pasture(s), individual bull characteristics such as age differences and management decisions of the producer.

Management decisions have a big impact on the bull to female ratio. How long the breeding season is determined by the manager as well as amount of time for observation both influence health, care and nutrition during the breeding season. A good "rule of thumb" for bull to female ratio is one cow per month of age of the bull up to three years of age. For example, a 15 month old bull could be run with 15 females and a 36 month old bull could be run with 36 females.

In multi-sire pastures, take care to only run bulls together of the same size and age due to social dominance. An older bull running with a younger bull will most likely prevent the younger bull from mating with the cows. If the older bull is less fertile and of less genetic value, optimum reproduction and growth can be penalized. To avoid dominance and fighting problems in a multi sire pasture, bulls of the same size and age should be used together.

Young bulls are still growing and will need supplemental feed during the breeding season. Continue to feed 6 to 8 pounds of their ration during the breeding season in order to maintain their body condition. A bull feeding stall may be of value during this time to ensure they get their feed.

Keep a watchful eye on both bulls and cows during this time. Record heat periods for cows to be sure that they do not continue to return to estrus which could be a sign of problems with either the bull or the cow. Early detection of an injury or other problems and taking corrective actions are critical to getting cows bred early. Check the herd at least once each day for such problems.

### **Post-Breeding Management**

The care provided yearling bulls after the breeding season is critical if they are going to continue to have a long and productive breeding life. This is the time when many producers forget about the bull and let him make it on his own. During the breeding season a yearling bull can lose a lot of weight and condition. Failure to take care of the yearling bull during this period may have long range effects upon their growth and well being.

The manager should evaluate the bull's condition and, if needed feed and manage them such that they will be in moderate condition at the beginning of the next breeding season. They need to be fed so that they can achieve 65 to 70 percent of their mature size by the beginning of the next breeding season. Place the young bulls in a bull lot and manage their feed to accomplish the needed objectives for the following season. Severe undernourishment may cause irreversible testicular damage in younger bulls and decreased sperm production in mature bulls. Yearling bulls may do well with a companion in the bull lot with him. Do not put them in the same lot with older bulls.

Rations for an 1100 pound yearling bull to gain at various rates are outlined in the following table. Excellent quality pasture can substitute for silage and hay. Furthermore all bulls, especially yearlings, should continue to have access to a high quality mineral mix. Provide a health and parasite control program as outlined by your local veterinarian. Internal and external parasites should control should be provided the yearling bull to assure him the opportunity to recover from the rigors of the breeding season.

Table 2 POST-BREEDING SEASON RATIONS FOR YEARLING BULLS

Feedstuff <sup>1</sup>	Average Daily Gain						
	3.0	3.0	2.5	2.5	2.0	2.0	1.0
	Pounds						
Shelled Corn	19	14	15	6	11	0	4
Corn silage	--	24	--	42	--	54	--
Alfalfa Hay	7	--	10	--	14	--	21
Protein Suppl. (32%)	--	.5	--	.3	--	.3	--

<sup>1</sup>Bulls should also have free-choice mineral mix. Excellent quality pasture can be substituted for silage and hay.

**Summary-**

Following management and nutrition guidelines for bulls will ensure that they will have the best opportunity to contribute to the fullest production potential for reproduction and genetics. The purchase of yearling bulls will become a more common practice due to the reduced numbers of two-year old bulls available. Proper care and management of the yearling bull must be provided if their reproductive capabilities and genetic value are to be maximized.