UNIVERSITY OF GEORGIA
EXTENSION

BULL BUYER'S GUIDE

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Never underestimate the power of your bull. Selecting and purchasing a bull for your beef herd could be considered one of the most important decisions you make in your operation. Don't make a quick, unprepared decision on purchasing a bull. Never consider purchasing a bull without a proven record and a sound genetic background. Using a bull with poor performance and a weak genetic base could delay improvements in your herd for several years. The small expense you have in purchasing a bull is the difference between the purchase price of the new bull and the salvage value of the old bull (see Example 1). This investment will add efficiency and profitability to your herd for years to come.

Example 1. Cost of a bull purchase.

$3000 Purchase Price of New Bull
-2090 Salvage Value of Old Bull (1900 lb x $1.10/lb)
$ 910 Net Cost of New Bull

If the new bull sires 90 calves over the next 3–5 years, $910 ÷ 90 = $10.11 cost/calf. If the bull sires 90 calves that are 10 lb heavier at weaning and they sell for $1.09/lb (3-year average for 500-lb calves – GA Auction Markets, 2009–2011) at weaning, you will have paid for the bull.

The cost of purchasing a bull may seem high at a glance; however, that expense becomes relatively small when it is spread across your bull's calf crop for a 3- to 5-year period. Example 1 shows how you can turn an expense into a savings. Bull procurement decisions can greatly impact your future calf crops and herd genetics for many years. When you consider that the bull contributes one-half of the genetic makeup of your calf crop and may sire 25 to 40 or more calves per year, it is easy to see that he is the most important individual in the herd. Keep in mind that a bull that will improve a herd must have genetic superiority over both the cows in the herd and over previous bulls.

The best way to remain efficient in today's beef industry is continue to produce more pounds of product per cow exposed. That task can become hard to achieve without the help of a superior bull. Fortunately, weight at various ages is heritable. Birth weight and weaning weight are estimated to be about 30% heritable, while yearling weight is about 45% heritable. This means that a certain degree of birth weight, weaning weight and yearling weight is inherited from the parents and that progress can be made by selecting for these traits.

Selection Tools

Birth, weaning and yearling weights are normally used to evaluate breeding animals. Actual or adjusted weights may help in making comparisons between bulls in the same contemporary group (a group of animals from the same herd, year and season that is raised together under the same conditions). Since environmental factors like feed and weather affect weights, actual or adjusted weight can be misleading if bulls come from different contemporary groups. Within a herd, weight ratios help account for some of the environmental differences between contemporary groups. But, ratios can also be misleading if bulls come from different herds. Expected Progeny Differences (EPDs), on the other hand, are calculated across herds. A bull's EPD for a trait is a more accurate estimate of his genetic worth than his weight, adjusted weight or ratio. EPDs not only account for contemporary group and herd differences, they also include information on a bull's relatives as well as his individual performance. Breed associations report EPDs on weights and many other traits.

Most major breed associations have National Cattle Evaluation programs. Breeders who are involved in their breed's performance program should have birth, weaning and yearling weight EPDs available on yearling bulls. In all of these breeds, weight EPDs are expressed in pounds of calf. For example, if bull A has a weaning weight EPD of +45 and bull B has a weaning weight EPD of +35, the calves produced by bull A are expected to weigh, on the average, 10 lb more at weaning than those of bull B, assuming the bulls are bred to comparable cows.

Advances in National Cattle Evaluation have made estimating a bull's genetic worth more accurate than ever before. EPDs allow valid comparisons of all bulls of the same breed, but they do not allow comparison of bulls from different breeds. Since breeds have different average performance, base years and evaluation procedures, direct comparison of EPDs from different breeds can be extremely misleading. It should also be noted that a bull with an EPD of zero is rarely average. In most breeds, zero is the average of some base group of animals. Since breeds change over time, in some breeds it is possible to find bulls with positive weaning and yearling weight EPDs that are several pounds below the average of all yearling bulls in that breed. Current breed averages and information on how to use EPDs are included in breed association sire summaries, which are available on most major breed association websites.

Accuracy Values (ACC) are usually published with EPDs. The accuracy values indicate the reliability of the EPD, or how likely the EPD is to change as more information becomes available. Accuracies are usually expressed as correlations ranging from zero to one. The closer the accuracy is to one, the more reliable the EPD is. Yearling bulls normally have low accuracy values. Older AI sires can have very high accuracies.

Recommended Performance Standards

Weaning Weight – Yearling Weight

Commercial producers are paid for pounds of calf. Two very important traits to consider are weaning and yearling weights. However, single trait selection may result in problems with other traits. A good example is selecting for yearling weight alone, which results in increased birth weight because the two traits are genetically correlated. Select bulls that have an excellent combination of performance EPDs that are at or near the bulls' breed average. Desired genetic improvement involves a combination of several traits, including weaning and yearling weights.

Milk Production

Maternal ability within a breed can best be evaluated with milk EPDs; however, milk is not measured directly in beef cattle performance programs. It is measured in terms of how it affects weaning weight. Milk EPD on a bull is an estimate of pounds of calf at weaning produced by the bull's daughter due to her milking ability. For example, if bull A has a milk EPD of +5 and bull B has a milk EPD of +2, all other things being equal, bull A's daughters should produce calves that wean 3 lb heavier than those from daughters of bull B due to extra milk production. There is some variation in the terminology used by different breed associations in reporting maternal EPDs. An explanation of maternal EPDs is included in a breed's sire summary.

Producing extra milk requires that a cow consumes extra protein and energy. High milk production can affect a cow's ability to breed back after calving. For this reason, selecting for maximum milk production is not a good idea in most commercial herds.

Conformation

The cattle industry produces cattle of all breeds, sizes, ages and quality. There is a market for all of them. However, if you sell feeder calves or feed out your own cattle, consider the following points:

- Good quality cattle eat no more feed than low quality cattle and are just as efficient at converting feed to beef.
- Bulls should generally have a muscling score of one and be medium plus to large minus framed, according to the USDA feeder calf standards (Table 1). Such calves will bring a higher price than lower grade calves.
- Low quality cattle with poor conformation usually are more subject to price declines in years of overproduction than are high quality cattle. Small framed cattle mature early and are slow, inefficient gainers if fed past maturity.

Frame Score

Hip height in inches is used to give an indication of frame size. Most bull test stations and a large percentage of purebred breeders will have a yearling hip height for each animal. Table 1 gives the ranges of hip height as they relate to mature frame size. Remember, taller cattle do not necessarily grow faster or more efficiently, but they do have a later maturity pattern. Small-framed cattle are discounted in Georgia markets. A bull needs to have enough frame to produce calves that are at least USDA Medium.

Table 1. Hip height relative to mature frame size

	USDA Frame						
	Small			Medium		Large	
Frame score	1	2	3	4	5	6	7
7-month hip height (in.)	36	38	40	42	44	46	48
12-month hip height (in.)	41	43	45	47	49	51	53
Potential slaughter weight	800	900	1000	1100	1200	1300	1350+

Birth Weight

First calf heifers have the most calving problems, so buying a bull with a low birth weight EPD is extremely important when the bull is to be used on heifers. Birth weight is the single most important trait that influences calving difficulty. While many cattlemen look at actual birth weights on bulls, birth weight EPDs are the most accurate measure of a bull's potential calving ease.

Many breeds report Calving Ease EPDs that are calculated using birth weight and calving scores. These can also be helpful in selecting bulls. Refer to the breed association's sire summary for a description of how these are reported for a particular breed.

Scrotal Circumference
Research indicates that yearling bulls with large testicles sire daughters that show estrus at an earlier age than bulls with smaller testicles. Be sure the bull you select has a scrotal circumference that is at least 30 cm at 1 year of age.

Physical and Semen Evaluation
If the bull you are considering buying is 12 months or older ask for a physical and semen examination. This can be done by the local veterinarian and will increase your confidence that the bull will be able to settle cows.

Other Traits
Breed associations report EPDs for many other traits and this large volume of information can be overwhelming to the bull buyer, so focus on the basics listed above. You do not have to understand every aspect to be able to select a good commercial bull. When you become comfortable with the basics, consult the breed association website for updates on the most recent developments.

How Much "Bull-Power" Do I Need?
Several factors can help determine the number of cows that can be bred to one bull.

Age
The number of cows per bull will vary with the bull's age, condition and libido. Use an adequate number of bulls with good libidos. Bulls should be in good body condition, but not fat, at the beginning of the breeding season. Young, growing bulls may require extra feed during the breeding season to meet their protein and energy needs. A yearling bull should not be expected to breed more than 20 to 25 cows, while a mature bull with large testicles, good semen and good libido can breed 25 to 40 or more cows.

Condition
You cannot expect fat or thin bulls to perform up to the standards of properly conditioned bulls. Poor nutrition can influence semen quality. Fat bulls lack the stamina to breed enough cows.

Length of Breeding Season
Length of the calving season and number of calves born during each 21 day period of the calving season does have some influence on the number of cows that can be bred to one bull. Mature bulls can breed up to 40 cows during a 60- to 90-day breeding period and sire a high percentage of these calves in the first 40 days of the calving season. If cows are run in large groups, two bulls that are the same age and breed could run with 80 cows.

Breeding Systems
An artificial insemination (AI) program will not require as many bulls, but the quality of the bulls turned out after the AI period needs to be very high to ensure against poorer quality calves than the AI sired calves. Have a short AI program, no longer than 40 days, and then turn out the cleanup bulls.

Other Factors to Consider when Buying a Bull
- The bull you buy should be functionally sound -- a good breeder with a long life ahead -- and he should be structurally correct, with sound feet and legs and strong pasterns.
- The bull should not have swollen joints and should be able to move freely and easily.
- The bull should not be extremely nervous. A bull with a mean disposition is difficult to handle and he may pass on his nervousness to his offspring.

Be sure you do not buy disease when you buy a bull. Request a copy of the bull's health record. Place new bulls in an isolation paddock where you can observe them for 30 days before putting them with the herd.

Where to Buy a Bull

Many top cattlemen think where to buy a bull is the most important choice involved in their purchase. You need to know that records of birth dates, rate of gain, weaning weights and health conditions of a bull are just as the seller says. You need to know that the breeder will live up to his responsibilities. It has been said that records and pedigrees are as good or as poor as the integrity of the breeder. Here are some recommendations:

- Buy from a breeder whose integrity is above reproach.
- Buy from someone who has complete performance records on his cattle, and knows what those records mean.
- Buy from a place where you know the type of management under which the bulls were produced.
- Buy bulls from central test stations where all records are available.
- Buy bulls from performance oriented producer sales.
- Buy bulls from breed association sponsored sales.

Using Artificial Insemination

Artificial insemination increases your chances of promoting the important traits. Since many of the bulls in the AI studs have a great number of progeny with performance records, you can predict more accurately what their calves' performances will be in your herd. AI services also screen their bulls closely for any undesirable traits.

Whether you breed your cows by AI or not is a decision you must make based on your own labor and management situation. However, you can consider AI as one method of "buying a bull."

Selecting a Bull for Crossbreeding

It is just as important to select bulls for a crossbreeding program based on traits that are heritable as it is for other breeding systems. You can improve your herd by careful selection and produce hybrid vigor at the same time.

Determining a Bull's Worth

It is very difficult to predict the dollar value of a particular bull; however, the following factors can affect a bull's value:

- The number of calves the bull may sire.
- The performance level of the herd on which the bull is to be used. Almost any good bull will improve the performance of a poor herd, while only very superior bulls can help a high performing herd.
- The type of breeding system you select. Purebred breeders can usually justify a higher bull investment than can commercial producers.

Summary

Selecting and buying a herd bull is the quickest way to make genetic improvement in your herd. The selection process must include looking for those traits that are economically important and highly heritable. Your own herd records are necessary if you are to select a bull that will improve your genetic base. Demand and buy bulls with total performance that will improve your herd.

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