

Sire Selection

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Reflections of a middle aged bull buyer

Like most of you reading this article, my earliest memories of joy included the beef cattle industry. One of my fondest memories is my father's gift to me on my 12th birthday - taking me to a PX Ranch sale to purchase a herd sire. In 1969 the Charolais breed was changing the nation's beef industry, and on my 12th birthday, my Dad and I used all of the technology available to us; visual appraisal and adjusted weights. A decade later, I met Dr. Marvin Koger at the R.W. Jones Polled Herford Dispersal Sale. Dr. Koger was the legendary geneticist whose research generated the selection tools Adjusted 205-day weight and Adjusted 365-day weight. I joined Dr. Koger, Dr. Hargrove, and the father of visual livestock evaluation in the southeast - Don Wakeman at the University of Florida in the summer of 1979. Over the last 35 years I have learned from the nation's leaders through the Beef Improvement Federation, National Cattlemen's Beef Association and directly from the truck seat or saddle. The methods available to evaluate the genetic ability of bulls have changed. The diversity of cattle management systems and beef product requirements have increased to create new challenges. However, the goal of sire selection is the same; find the optimal combination of genetic worth to fit our ranch environment and provide the consuming public with what they want in a way that sustains our industry and creates adequate demand for the product.

Homework to complete before selecting specific bull(s).

Bull selection is not done in a void, but must be done after answering questions and determining specific factors that affect the decision of which bull to use.

1. What is the target?
What is the duty of the progeny that will be produced by the considered bull?
Are you producing replacement females, feeder cattle, carcasses, or all of the above?
2. What is your cowherd genetics?
What is your cows' genetic ability to produce your "target product", and thus what are their deficiencies that must be met by the sire of their progeny?
(mature size, milk level, fertility, etc.)

3. What is the environment that the bull's progeny will be "working in"?
If heifers, is the ranch in a tropical/temperate area, is the nutrition level high, are there special nutritional or health challenges, are there other requirements?
If stockers, will fescue be in the grazing program?
4. What breed should be used if in a commercial system?

To select a bull for a given situation, consider these suggestions;

1. Develop a list of criteria that a bull must meet to be "hired" for your "job".
Said differently, develop a **Job Description** for your bulls.
2. Find bulls in the appropriate Sire Summary that fit your Job Description, then search for the appropriate pedigree (semen of those bulls or progeny of those bulls).
3. Find a producer who not only has the genetics you desire, but uses a similar management system to yours, and in an environment in which you manage cattle.
4. Find breeders/bull producers who are likely to be in business for a long time, not a short-term hobby producer, thus they can continue being a source of the appropriate genetics to meet your herd's needs.

Importance of Sire Selection

There has always been a difference in the goals of the geneticists and the goals of the rancher. The bottom line difference is geneticists want to measure genetic change, and ranchers want to meet a desired level of profitability while sustaining the ranch over generations. However, the rancher must make genetic changes to meet the ever-changing DEMAND goals of the consuming world. Having said that, genetic evaluation and change is best done in a commercial herd through sire selection. Since most ranches produce their own replacement females, and require a high percentage of their heifers to be kept each year, the selection pressure applied to the female population is much lower than the selection pressure we use when buying bulls. Said in another way, many less than average heifers must be kept past weaning in order to create enough replacement cows.

Since a small number of bulls will provide the majority of the genetic potential in a herd over a decade, there is likely no more important decision made by a commercial cattlemen than which bulls to use as sires. Genetic change is a permanent change to cattle produced. Sire selection has a long-term impact, good and bad. A bull that is used for four years will have daughters in the herd for at least a decade, and

subsequent generations of offspring for up to twenty five years. Sire selection, bull buying, semen choices...long term investment in the profitability of the cow herd.

Can we still have fun with visual appraisal?

At least ten years ago I was with a ranching family selecting bulls when the statement was made “I wish it was still fun to go to sales and purebred farms to pick bulls. There is more information than I can utilize now.” This person was joking, but somewhat serious about the amount of data available in today’s industry. Twenty-five years ago most ranchers just wanted to select bulls that produced more weight at weaning, and they used adjusted weaning weight and visual evaluation to make their selections. Now we must consider calving traits, maternal traits, growth traits, carcass traits, feed efficiency traits, cow efficiency traits, reproductive traits, and the list continues. We have many economic indexes such as \$Beef, and genomic-enhanced expected progeny differences that are highly accurate in predicting the performance of future progeny of a given bull. Most traits of economic importance cannot be evaluated by visually evaluating a live bull between the ages of 12 and 24 months. However, it is still necessary that visual appraisal be a part of the selection process when buying bulls.

Steps in Selecting Bulls

Before I review the steps of selecting a bull, I will assume that we have identified the desired breed and breeder, as well as created a priority of desired traits/performance level. Now we know what we need, the question is how to find it (the best bull for our situation).

1. Acquire the sale catalog and/or other documents that provide all available data that can be used to predict progeny performance.
2. Create a list of “bulls of interest”; all bulls that fit your Job Description.
3. Go to the sale site or farm to evaluate the bulls. Only look at the bulls that genetically fit your Job Description! Do not allow visual impressions to force you into selecting a bull that does not fit what you need for your situation!
4. Visual Evaluation
 - a. Body Type/Mature Size indicators
 - b. Feet and leg soundness
 - c. Skeletal Design soundness
 - d. Scrotal and Penal soundness
 - e. Eye Soundness
 - f. Appropriate Body Condition Score for the Environment
 - g. Appropriate Hair for the Environment

Bull Categories or Bulls to be used for various purposes

1. Heifer - Minimize the risk of calving problems by using a high priority on direct calving ease(CED) and birth weight, as well as using high accuracy bulls. This does not mean to ignore the other economically important traits! Do not simply use the lowest CED bull in the breed if he has poor genetic merit for traits such as growth and carcass value.
2. Terminal - No heifers will be kept for breeding, so priority can be placed on growth and carcass value. Remember that terminal means to target how the progeny will be marketed; weaning, yearling/feeders, Quality Grade-based grid, Yield-based grid, or others. Indexes like \$Beef, \$Wean and \$Feedlot become very useful. A high growth, heavy muscled Charolais bull is often thought of as a terminal sire, but an Angus bull with a high Marbling EPD and low FOE EPD may also be used as a terminal sire.
3. Maternal - If a bull is to be used to produce replacement heifers, especially when sexed-semen is to be used, selection priority should be placed on daughter's mature weight, heifer pregnancy, scrotal circumference, milk, docility and other traits important to commercial cow/calf managers.
4. Many other special Job Descriptions can be created; Low Maintenance, Balanced Trait...

Special Note on Genomic-Enhanced Expected Progeny Differences

Expected Progeny Differences have been calculated since the early 1970s and are still the best genetic prediction method of the performance of an animal's offspring. These genetic predictors have been calculated using three types of data; the animal's own performance (*performance*), the performance of related animals (*pedigree*) and the performance of the animal's offspring (*progeny*). The EPD for a trait is associated with an accuracy value, which increases as more data are collected and used in the EPD generation. Logically, as an animal ages and is used more as a sire, there are more data to include in the EPD generation, and the accuracy is improved, making the EPD a more reliable predictor of future progeny's performance for that trait (examples; weaning weight, marbling score, docility).

A major challenge incurred by cattlemen is that accuracy is low for many traits for young bulls, and the vast majority of bulls being purchased are less than two years of age. During the last decade, significant progress has been made in mapping the cattle genome and using tissue samples to determine the genomic value of individual animals. These data are now being used to increase the accuracy of the EPDs for young animals. We now have GE-EPDs or Genomic-Enhanced Expected Progeny

Differences. The use of these genetic predictors are the same as they have always been, but they are now more powerful, more reliable, higher accuracy.

Closing Comments

Sire selection is very important, and is not something that should be done without great input, thought, and consideration. Start early, have a system, and do not be influenced by short-term fads. Know your cow herd, your market, your management environment, and your bull needs. Find a reliable source of bulls, select the bulls with the genetics you need, and visually select your purchase from that list. Buying bulls can still be fun, but it takes time, effort and knowledge to utilize all available data to make the optimal selection for your needs.