

Options for Incorporating Desired Genetic Change in Your Cow Herd

David L. Prichard

North Florida Beef Demonstration Unit
Chipley, Florida

Introduction

In recent years producers have been told how to improve calf predictability, uniformity, and operation efficiency. Producers have been told that the cattle industry must produce what the consumer wants. Lack of uniformity in our cow herds and our calf crops and in the final product (beef carcasses) is the result of both genetics and environmental differences (management and location). The recent National Beef Quality Audit stated that the greatest opportunities for the beef industry to improve its competitive position, through improvements in quality and consistency of product, traces to genetic management. Genetic selection and individual ranch-designed crossbreeding systems are the first steps in producing cattle that are predictable and uniform.

Individual ranch-designed crossbreeding programs are necessary for ranch profitability. Wide degrees of genetic change can be achieved quickly in a cow-calf operation today; however, it must not be at the expense of ranch profitability. Ideal crossbreeding programs consist of brood cows that fit their environment (management and location) and herd bulls that fit today's marketplace. As we consider possible genetic change in our cow herds, we should keep in mind ranch profitability and changes to benefit brood cow adaptability and calf marketability (desired production and carcass traits).

Options for Incorporating Desired Genetic Change

Wholesale Herd Replacement. This is an unlikely option for most Florida farms and ranches. This is especially true for those that have been us-

ing planned systematic crossbreeding programs and have long-range goals for their operations.

Partial Herd Replacement. This option can include several possibilities. Traditional culling of old (12 years and up) and low end (non-productive) cows, combined with purchase of genetically superior (higher fertility and higher productivity) females is one possibility. A second possibility would be the purchase of superior replacement heifers following the sale of your heifer calf crop. Keep in mind that the success of this option depends upon the purchase of superior replacements and whether the need to make genetic change in your cow herd fits both your short- and long-term goals. This option offers the potential for greatest economic gain (Table 1). Simply put, concentrating on the weaning rate of a cow herd is economically more (tenfold) important than weaning weight.

The purpose of using partial herd replacement to incorporate desired genetic change in your cow herd is to maximize profits. Income sources from most Florida ranches are weaned calves, and cull cows and bulls. Optimizing income from calves is a function and product of the number of breeding females * [weaning rate (%) - replacement rate (%)] * weaning weight (lb) * price per pound.

Purchase of Herd Bulls with EPDs. Today, *information*—along with time—means money to the cattle industry. Information that will assist cattle producers in improving calf crop predictability, uniformity, and thus marketability, in a shorter period of time has the potential to increase ranch profits. Expected Progeny Differences (EPDs) provide producers information on the genetic transmitting ability of potential herd sires, for a number of dif-

Incorporating Desired Genetic Change

ferent production and carcass traits. EPDs can also save considerable time when desired genetic change is needed, either in the short term or long term. Compared to adjusted weights and ratios, EPDs have been shown to be as much as nine times more accurate in predicting genetic differences.

If you do not know where you are going, any road will get you there. As market specifications narrow, the commercial cattlemen following “any road” with the same old breeding program will be left behind. Cattlemen can no longer afford to drive to a bull sale, spend a few minutes looking over individual lots, and take home herd sires that look promising. Even those cattlemen who have used performance data such as birth, weaning and yearling weights risk sliding into a hole, because targeting production toward a generic market is no longer adequate. To understand where seedstock selection is headed in an era of specification beef, commercial cattlemen must understand the most useful tools presently available to them—EPDs.

EPDs are reported as plus or minus values of the unit in which a trait is measured, such as pounds for birth weight. Each EPD is accompanied by an accuracy figure. Accuracy is a measure of the degree of certainty that an animal’s EPD will not change. The higher the accuracy, the higher the reliability of the EPD and the lower the level of risk.

EPDs are available through National Sire Summaries from various breed associations. Both commercial and seedstock producers should find sire summaries useful. Producers using AI can obtain semen from bulls that are superior in the traits of interest. Commercial producers who rely on natural service can use sire summaries to select bulls that are sons or grandsons of outstanding bulls that are listed in the summaries and have high accuracy values. Because a bull receives one-half of his genetic make-up from his sire, progeny of bulls with superior EPDs are more likely to have superior breeding values for the same traits. This is especially true if individual performance data correlates to

Table 1. Economic and genetic importance of various traits.^a

Trait	Relative Economic Value	% Heritable Variation
Reproduction	20	10
Production	2	40
Product	1	50

^a Wiltbank (1994).

that individual’s EPDs.

Simply stated, a sire summary is like a road map; you cannot use it until you know where you are and where you want to go. The first step is to know the performance history of your herd. The second step is to purchase bulls with known genetic and performance backgrounds that will improve your herd in the traits of interest.

Summary

The genetics of most Florida cow herds should, first, result in replacement heifers that will breed at the age desired by a particular operation. Next, replacement heifers must be sufficiently mature to rebreed within an acceptable interval while nursing their first calf. Thirdly, the cow herd—including the replacements—must produce offspring that will perform on grass and(or) in the feedlot and yield carcasses of acceptable value. The preceding should all be accomplished by the breeding scheme chosen, regardless of which breeds are used. Virtually all management decisions made by a cow-calf operator, including making genetic changes in a cow herd, derive directly or indirectly from these requirements, although criteria may vary from ranch to ranch.

References

Witbank, J.N. 1994. Challenges for improving calf crop. In: M.J. Fields and R.S. Sand (Eds.), *Factors Affecting Calf Crop*. Chapter 1, pp. 1-22. CRC Press, Inc.