

Dollars & Sense

by Vern Pierce, beef economist, University of Missouri-Columbia



The profitability of genetics

At least one objective of commercial cow-calf operations is to maximize profits. Part of the culture of the beef business is to monitor forecasts of calf prices as an indicator of when to sell and whether to retain ownership. Yet what we get in market forecasts are largely estimations of expected average prices for a given region.

Calves sold through the commodity-market system are exposed to prices that may vary greatly on a given day based on local supply and demand conditions. In many cases the range of auction prices that specific calves can receive on a given day is greater than the variation in average prices forecast throughout the year for the region.

However, it is this latter forecast — over which producers in a commodity market have little or no control — that is the focus of many business decisions. Its effect in terms of net return to the operation can be dwarfed by other factors that can be controlled, specifically genetic-selection decision making.

Genetic selection is one of those areas that has a great deal of potential to affect not only the profits of the cow-calf producer, but also everyone who owns the animal during its lifetime and anyone who eats the animal.

Dynamic system

Profit is determined by revenue *and* expenses, by the genetic and management inputs that are related to revenue and expenses, and by all possible interactions among those variables. Each factor needs to be evaluated when making decisions. In other words, any beef production system is dynamic, with a single change in genetics or management affecting on some level every other component in the system.

The interactions are so complex that scientists are turning to computer modeling to evaluate production outcomes when management and genetic inputs are altered. It is important to look at options to maximize profit through various genetic-selection programs. The effect of genetics on a producer's net profit is long-term. Decision makers and the tools used to

measure the potential effects of decisions often limit selection to single genotypic-trait selection rules or, in many cases, selection based on bull phenotype.

Consider an example in which a producer chooses to buy bulls having genetic profiles that suggest, with proper husbandry practices, they may increase the average weaning weight of the herd by 5 pounds (lb.). Assuming the producer sells all of the calves at the same time, there essentially would be one extra calf (in terms of pounds sold) for each 100 calves sold. If the calf market is at \$90/hundredweight (cwt.), that would add \$450 to farm income once the genetic effect had been fully realized in the calf crop.

The extra income could be used to offset the cost of the bulls and the associated changes in management implemented to fulfill their genetic potential in the herd.

However, the full effect of the genetic change can be assessed only by evaluating the interaction between the selection and the increased performance characteristics' effects on the calves and cow herd. The net value of a bull actually may be negative when all factors are considered.

Consider all factors

Mating systems, sire selection and management interact in many ways depending upon the resources and marketing structures that are used in a specific beef production system. Technology now exists that accounts for the dynamic interactions among genetic and management variables and that will allow producers to evaluate the outcome of a single management or genetic decision before it is made. To help producers evaluate these decisions and weigh the genetic trade-offs for their specific farms, some of us are developing software to help measure the effect of the genetic profile on the management system.

If profit is a beef operation's main objective, such technologies will have to be utilized to avoid reductions in profit margins. Our industry spends a great deal of

time developing and analyzing the genetic profiles of available seedstock. There is great potential for using that information in a manner that has substantially greater reliability than market forecasts in increasing future farm profits.

Last year Secretary of Agriculture Dan Glickman said, "The days when most farmers could make ends meet by simply bringing bulk commodities to market are over. That's why a new farm policy must highlight new and different ways for farmers to make money and capture a greater share of the consumer dollar."

That comment is relative on two fronts. First, I would suggest the old marketing system that allowed bringing bulk beef to market relied on a diverse, random phenotypic population to match all the perceived differences in meat quality based on a live, qualitative assessment of the animal. We now know that this has little to do with the variation in how the animal ultimately tastes. Our value-added marketing system will make that product more consistent.

Second, as the beef system prepares to go after the brand-loyal consumer, Glickman's revelation will have even greater truth as those who did not prepare for the coming identity-preservation system will be left out in the cold.

Cattle-Fax, one of the most respected forecasting organizations in our business, draws a great deal of producer interest when they hold a session projecting prices for the next few years based on the cattle cycle. They always fill the room with people wanting this vital information for planning purposes. It would be beneficial to engage that same curiosity toward a factor with a more controllable effect on profits — genetic selection based on the economics of a specific farm operation.

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