

## Efficiency Through Selection, Mating Strategies Can Combat Higher Costs

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Significantly higher costs represent a serious long-term threat to profitability for cow-calf producers. Thanks to global demand for oil, booming growth in ethanol production, drought and numerous other factors, the cost of land, forage, grain, fuel, labor and most other inputs is appreciably higher than just a few short years ago. By most accounts, those substantially higher costs are here to stay.

While management strategies offering some immediate relief do exist, investment in genetic inputs to combat rising costs is a longer-term endeavor because of generation interval, the accuracy of selection, and the shortage of reliable selection information for traits associated with inherent fertility, longevity and feed efficiency. Nonetheless, substantial opportunity exists, through exploiting the advantages of strategic crossbreeding and smart bull selection, to combat higher costs and improve net return.

Crossbreeding and selection for improved efficiency are the most powerful weapons for combating higher costs. It is important to wage the battle for genetic improvement in efficiency through selection on many fronts: reproduction; management ease; feed utilization; the production of liveweight into a quantity of safe, healthy, tender, tasty, sensibly-priced retail product; and mating systems that take advantage of hybrid vigor (heterosis) and breed complementarity.

### Reproduction

A sensible place to start the battle against costs is with high genetic merit for reproductive efficiency. For argument's

sake, we will define “reproductive efficiency” as affordable, replacement-heifer development and cow-maintenance costs that result in high pregnancy rates during a reasonably short breeding season with built-in cow longevity.

Because most reproductive traits have low heritability, the most powerful genetic tool for reproductive efficiency is maternal heterosis from adapted, carefully constructed crossbred cows. Add selection pressure for a variety of reproductive traits in the bulls you buy to produce replacements, and you are on your way to winning the battle against high replacement rates and feed costs. Traits that either directly or indirectly affect reproduction and its related costs include scrotal circumference, heifer pregnancy, stayability, milk, mature size, maintenance energy, dollar energy and visually evaluated functional traits (such as fleshing ability, structural soundness, and teat and udder quality).

### Management

Scarce or unaffordable labor represents a threat to most cow-calf enterprises. Selection might mitigate at least some of that risk, especially for important traits associated with calving. Selection for high fertility and calving-ease, which yield a short season free of labor-intensive observation and calving assistance, can reduce the need for added labor. Calves that are born easily (with sensible birth weights and accompanying vigor) from relatively docile, yet maternally-oriented cows (with optimum milk and sound teats and udders) help reduce headaches and the need for labor.

Bull selection based on expected progeny differences (EPDs) for moderate birth weight, high calving-ease (both direct and maternal), adequate-but not excessive-milk, calm docility, and attention to sound pedigrees for teat and udder quality equals less labor. With the average cow-calf producer just older than 55 years, he is sure to appreciate replacement heifers and cows with the genetics and heterosis for a short, hassle-free calving season.

### Feed

Genetic information that yields effective sire selection for efficient feed utilization—both the use of forage by the cow herd and of concentrates in the feedyard—is not widely available for most populations of beef cattle. That said, data and technology are emerging rapidly for traits associated with feed utilization. Although not yet validated by the National Beef Cattle Evaluation Consortium (NBCEC), at least two companies have DNA tests for efficiency, as measured by residual feed intake, in various stages of commercialization.

A growing number of research institutions, private bull tests and individual seedstock producers have installed equipment that measures feed intake and enables comparison of animals for conversion efficiency. Cow-calf producers should stay abreast of emerging technology related to that trait. As results are released, they need to be aware of the end points (for example, live weight, carcass weight, fat and marbling deposition, and retail-product yield) chosen to express feed conversion. They also need to

differentiate between tools that rank animals for forage conversion (for selecting efficient cows) and concentrate conversion (for feedyard efficiency).

Breed differences exist that enable producers to select for feed efficiency indirectly. For cow-calf producers, research from the U.S. Meat Animal Research Center (USMARC) demonstrates the Limousin breed's favorable maternal efficiency in low- and high-feed-availability situations. Generally, the breed's moderate size and milk contributed to its favorable rank, regardless of feed availability, when compared to British and other Continental breeds.

There are several selection tools available to facilitate selection for lower maintenance requirements. In the Angus and Red Angus breeds, the dollar energy (\$EN) and maintenance energy (ME) EPDs indicate genetic differences in the cost (Angus) and amount (Red Angus) of feed energy required. In the Angus breed, higher values indicate greater savings (preferable). In the Red Angus breed, lower values indicate less feed required (advantageous). Because those tools are derived from EPDs generated for milk and mature cow size (cow weights and condition scores), selection on the component traits and for moderate size (frame score 5 or 6) and milk EPDs should yield similar results.

## Carcass

The Limousin breed's primary strengths are muscularity and efficient

systemwide conversion of feed to nutritious, tender retail product.

On a liveweight basis, a 10 percent improvement in postweaning feed conversion (for example, from 6.6 pounds of dry matter to 6.0 pounds) over 600 pounds of live gain (that is, in-weight of 650 pounds and out-weight of 1,250 pounds) equals about \$30 per head difference in total feed cost. That is five cents per pound less expensive cost of gain (COG), assuming a ration cost of \$170 per ton. If selling finished cattle on a carcass-weight basis and the animals that are 10 percent more efficient also have 1.5 points higher dressing percentages (for example 64.5 percent versus 63.0 percent), that is another \$27 per head difference in value. Beyond conversion of feed to live and carcass gain, the Limousin breed has notable advantages in muscularity, yield grade and the associated retail-product yield.

Those breed strengths help combat higher costs. With the help of data generated from the North American Limousin Foundation's (NALF's) Visions Quest (VQ) cattle-feeding and carcass-discovery program, new tools that enable accurate individual animal selection for efficient, system-wide feed conversion are under development. In the meantime, VQ data have improved carcass EPDs' accuracies, enabling cow-calf producers to select Limousin and Lim-Flex® seedstock more effectively for adequate levels of ribeye area, which favorably affects dressing percentage and yield grade, and sufficient levels of

marbling (quality grade). Most efficiently converting feed into carcass value (that is, yield and quality grade) significantly enhances economic efficiency.

## Mating System

Arguably, the most profitable way to exploit all of crossbreeding's efficiency advantages (heterosis and breed complementarity) is to have efficient, moderate, fertile, long-lasting, productive crossbred cows adapted to the environment mated to high-performance, terminal sires with genetics for weaning and finished weights and carcass traits matched to the target market. With that system, producers can take advantage of maternal heterosis in the cows, thus minimizing replacement costs. Terminal sires maximize breed complementarity and allow high-performance growth and carcass genetics without needing the cow herd to support the added costs of such.

With oil prices currently more than \$100 per barrel; corn at \$4 per bushel; and prices for commodities, forages, pasture and other inputs climbing to new plateaus, the cost side of the beef-production equation is poised to affect genetic and management decisions significantly throughout the supply chain. Long-term, producers should not overlook selection and crossbreeding as powerful tools to combat higher input costs. **LW**