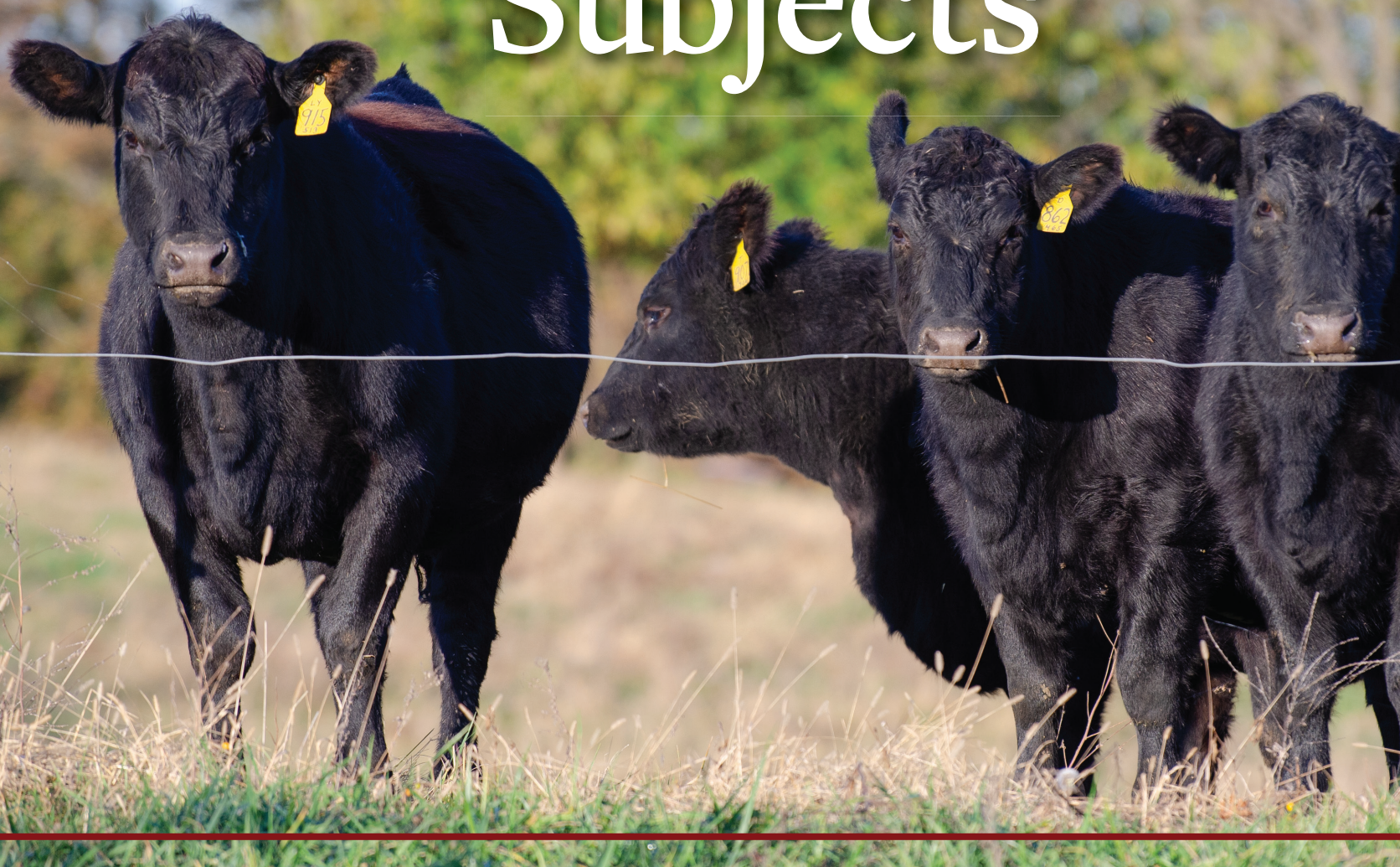


Touchy Subjects



Beef cattle geneticists challenge current genetic selection practices.

by Troy Smith, field editor, & Shauna Hermel

Good manners call for discretion when expressing opinions about a rancher's horse, dog or cows. Cattlemen are particularly proud of their breeding stock, which often reflect decades of genetic selection by multiple generations. Criticism aimed at the herd or the way the operation is managed can ruffle feathers.

The state of the industry suggests some constructive criticism is due — at least

Darrh Bullock and Matt Spangler think so. The beef cattle geneticists represent the University of Kentucky and the University of Nebraska, respectively.

Both men understand the personal pride that's often associated with building a breeding herd. However, both say cow-calf producers also have a personal interest in profitability.

Speaking at an Applied Reproductive

Strategies in Beef Cattle (ARSBC) meeting in San Antonio, Texas, last fall, Bullock and Spangler shared their views regarding ways the commercial cow-calf industry could increase reproductive performance and lower costs of production.

The speakers challenged their audience to consider whether some popular genetic selection practices might actually hinder reproductive performance.



Left: In herds where continued selection for heavier weaning and yearling weights is applied, heifers retained as herd replacements also achieve heavier mature weights, reminded Darrh Bullock.

Consequences

Producers were reminded that genetic selection for growth and milking ability can have unintended consequences. Producers who ignore proven tools for enhancing fertility and cow herd efficiency were admonished. Both speakers agreed, from an industry perspective, mature cow size is too big. They suggested these problems persist, at least in part, because too many cattlemen raise their own replacement females.

“My current pet peeve is how we are handling cow size,” stated Bullock. “A lot of producers probably think of it as frame size, but we need to be thinking about mature cow weight. The industry stopped chasing frame and brought it down, but we’re still making cattle bigger in terms of mature weight.”

In herds where continued selection for heavier

weaning and yearling weights is applied, heifers retained as herd replacements also achieve heavier mature weights, Bullock said. These females have higher nutritional requirements, so feed costs increase. The question is whether heavier cows with higher feed requirements produce calves that will earn enough added income to more than pay for the higher production costs.

Oklahoma State University research results published in 2018 suggest each additional 100 pounds (lb.) of mature cow weight may result in \$6-\$30 of additional calf income. However, the costs associated with each additional 100 lb. of mature cow weight added up to \$42.

Heavy milk production also demands more nutrition. According to Bullock, it requires approximately 275 lb. of additional forage dry matter to produce an additional 10 lb. of weaned calf due to increased milk production.

Bullock said selection for higher production in the form of increases in growth rate of calves and milking ability of cows comes with an obligation to increase nutritional resources needed for maintenance and production. While inadequate nutrition can result in loss of body condition and reproductive failure, it’s certainly possible to meet the requirements of cows that weigh heavy and milk heavily. But, at what cost?

“Profitability is important in genetic selection. It’s not a trait, but it is an outcome we should be selecting for,” stated Bullock, while advocating for optimization in selection for growth and moderation when selecting for milking ability. “Use a selection index that properly incorporates the additional costs associated with increasing growth and milk.”

Tried and true

Nebraska’s Matt Spangler agreed, listing selection indexes among the most underutilized tools for genetic improvement, along with expected progeny difference (EPD) values and heterosis. All three have been available for a long time, and all have been shown to be effective.

“We have these tools that work to decrease cost of production and increase consumer satisfaction, and it frustrates me to see the [relatively low] level of adoption by the beef industry,” stated Spangler.

He said breed associations have calculated EPDs for decades, and accuracies of these values have improved significantly. He lamented, however, how some producers refuse to use EPDs to aid selection, while some use them incorrectly.

Admittedly, using the growing number of EPDs associated with individual genetic traits and trying to select for multiple traits simultaneously can be cumbersome. It’s easier when using a selection index designed

to further a particular operation’s own breeding objectives.

Multi-trait indexes

Each index is different, including a different combination of trait EPDs associated with different economic values. EPDs are weighted by their economic values such that traits with greater influence on breeding objectives carry more weight. A producer must understand which index applies more or less emphasis on various traits in order to use that index to select bulls that will further production and marketing goals.

“The most popular selection index used in the industry today is the Angus ‘dollar beef’ (beef value index, or \$B), which is a terminal index,” said Spangler, offering a warning. “If you keep back replacement females, it’s the wrong one to use for sire selection. You should use a maternal index

that has a terminal aspect. Those should probably be labeled ‘general purpose.’”

Those indexes

are also available, noted Kelli Retallick-Riley, president of Angus Genetics Inc.

“While \$B has gained a lot of industry attention in the past decade, since 2020 the industry has had other indexes available from Angus, including \$M (maternal weaned calf value) and \$C (combined value), which is a combination of \$M and \$B,” she says. “Both of these indexes are gaining popularity, and both could be argued to be general-purpose indexes.”

Retallick-Riley explained that \$M is the most maternal-focused index available to those using Angus genetics. It includes cow-cost traits, placing a heavy emphasis on mature cow size complemented with additional traits like docility, calving ease, foot conformation and fertility.

“It works to balance cow cost with the main economic driver in the cow-calf space, which is, without a doubt, weaning weight,” she explained.

\$C is overtaking \$B as the most popular Angus index, and for good reason, said Retallick-Riley. “While \$C appears to be

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Darrh Bullock

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more correlated to \$B than is \$M, the combined value index puts bumpers up around mature cow weight while including signals from the feeder and packer segments for more carcass weight and higher quality grades, allowing the entire supply chain to reach its goals.”

Fertile fears

Spangler fears too many commercial cow-calf producers discount sire selection effects on female fertility, since reproductive traits are

considered lowly heritable. Calling it a mistake to think lowly heritable traits can't be changed, he reminded producers the bulls they choose drive change in all genetic traits. However, sire selection to improve fertility takes a long-term view. Unfortunately, terminal traits are most often used in sire selection, even when planning to retain replacement females.

Systematic approach

Commercial producers don't need big cows to produce big yearlings, Spangler emphasized, urging cow-calf producers to consider ways to have cows with lower maintenance requirements and breed them to bulls that will produce scale-tipping calves.

According to Spangler, large operations may have opportunity to manage two breeding programs — one to produce highly maternal females of moderate mature weight, from which replacement females can be kept for a second breeding program using terminal sires. Another strategy is to outsource replacement females

Right: \$B is a terminal index, emphasized Matt Spangler. “If you keep back replacement females, it's the wrong one to use for sire selection.”

from programs with a maternal focus.

“Small operators in particular could benefit from buying running-age, maternal-type cows and breeding them to terminal sires, or maybe artificially inseminate (AI) with sexed semen,” Spangler suggested.

“Second- and third-calf cows often sell at a discount to heifers.”

Another source of frustration to Spangler is the way many producers dismiss the well-documented advantages of

heterosis, including positive effects on reproductive performance. He noted the 20%-25% increase to productivity available when crossing different *Bos taurus* breeds and the potential 50% increase to productivity when crossing *Bos taurus* and *Bos indicus*.

It requires approximately 275 lb. of additional forage dry matter to produce an additional 10 lb. of weaned calf due to increased milk production.

“More than half of this effect comes from having crossbred females,” said Spangler, explaining that producers have the ability to capture both the additive genetics achieved through sire selection and heterosis.

Cattlemen may push back on using crossbreeding systems because of their complexity, larger birth weights and lower end product value.

Marketable product

“Genetics have never been more valuable when it comes to creating sustainable profitability in our business,” said Troy Marshall, noting the Angus breed has earned both an enviable and a challenging position in the beef industry. “We are seen as the undisputed leader in both maternal and terminal genetics.”

Director of commercial industry relations for the American Angus Association, Marshall said the selection tools provided today in terms of EPDs and dollar value indexes (\$Values) provide incredible

resources for selection in three key performance areas:

- ▶ reproductive efficiency;
- ▶ production efficiency; and
- ▶ meeting demands of the consumer and other industry sectors (feeder, packer).

“Once you have utilized the available tools and the right genetics, it becomes important to capture that value,” he said. The Angus Genetic Merit Scorecard® (GMS) is designed to help producers do that by accurately and objectively describing the genetic merit of a pen of feeder cattle.

“Successful business models today are built around creating the right combination of maternal and terminal traits, and also by providing consistency, uniformity and predictability, and the marketing tools to capture that value,” Marshall concluded. **ABB**



PHOTOS BY SHAUNA HERMEL

Editor's note: Troy Smith is a freelance writer and cattleman from Sargent, Neb.