

DROVERS

Hybrid vigor making a comeback?

By Walt Barnhart (3/17/2008)

Nobody's perfect. When it comes to the cattle they raise, many cattle producers operate under a similar philosophy: No breed is perfect.

It's the reason crossbreeding has been used through the years. Wanting to improve their cattle herds, producers have identified and combined traits to create a breed mix that better meets their production or marketing needs.

The technique utilizes principles called heterosis, or hybrid vigor, and breed complementarity to enhance the herd. Heterosis is the superiority in performance of a crossbred animal compared to the average of its straightbred parents. Breed complementarity is the combination of strengths of the breeds in the cross.

Beginning in the 1960s, numerous studies documented crossbreeding's effectiveness in improving lifetime productivity by more than 20 percent. Using the management strategy can be fairly easy to implement and has the potential for significant benefits.

So why has crossbreeding become less popular in recent years?

A rash of reasons

According to Dave Daley, a professor of agriculture at California State University, Chico, it's a combination of factors. Part of it was the poor planning that often went into crossbreeding, creating inconsistent cow herds with multiple breeds having diverse biological types.

Also, in the 1990s producers began focusing more on factors that led to increased consumer demand, such as quality grades. Angus cattle became the preferred breed as vertically coordinated marketing systems sought carcass traits that met consumer tastes, and producers adopted straightbred programs to ensure their animals met stringent carcass specifications.

But Daley, who is also a commercial as well as purebred Angus producer, believes it's time producers in all stages of production rethink the benefits crossbreeding can provide from an economic perspective. To do that, he says, new research has been needed to give producers a better idea of the benefits that crossbreeding may provide (see sidebar).

"Early research was outstanding, but needs to be re-evaluated using a current real-world environment, with real-world economics," Daley says. "For this to happen, sometimes you need to look beyond the end product to other important traits."

Larry Corah, vice president of Certified Angus Beef, says the industry should never put less focus on the end product. He does, however, agree there is less crossbreeding taking place today than three decades ago. He also thinks that as the industry has evolved "the merits of crossbreeding haven't changed. The scientific merit of heterosis is unquestioned," he says.

He believes, though, that it's precisely the economic aspect of the situation that has led some producers to focus on straightbred cattle. "To truly create the heterosis you want is not an easy logistic in many herds," he says. "It's just easier to select genetically for the traits you want and take advantage of the economics of a straightbred program. The question becomes, how functional can you work it (heterosis) into a cattle operation?"

Many producers find they can genetically select their animals for some of the attributes that heterosis can provide, Corah says, and make those part of their straightbred programs. They can then take advantage of the demand for their animals that has been generated through a consumer-driven marketing system.

For a few years that's what Lacey Livestock in California did. Up until the early 1990s the family had run a three-way breeding program based on Angus, Hereford and Continental breeds. Then in 1997 they started using solely Angus bulls in their program, generating the expected improvements in carcass quality.

But according to Mark Lacey, numerous generations of cattle on a straightbred program brought those improvements to a plateau, and the ranch found it had an increase in health-driven issues, a lack of fertility, a decrease in cow longevity and an increase in morbidity. "We've had to treat way more cattle in the last few years," he says.

"We were just not doing as well when we lost heterosis," Lacey says. "We may have been able to continue improving for a few years if we had been able to access the entire Angus gene pool, but in the end we were destined to stagnate."

According to Lacey, the cattle-raising environment in the West compounded the challenges the ranch found with a purebred cattle operation. Environmental conditions can be dramatic in his area of central California and "Angus are not the greatest of range cows," Lacey says. The cattle did not hold up that well structurally, and it was a challenge to continue the fertility rates, he says.

Lacey and his father, John, recognized the increased values being placed on strictly Angus cattle, but welcomed an opportunity to join in a study to investigate the advantages of crossbreeding throughout a vertically coordinated marketing system (see sidebar).

"We aren't inventing something new by crossbreeding," Lacey says. "We're just proving once again what the early research showed," and quantifying the benefits in a real-world application.

Charles Nichols has not had the advantage of a study on his operation near Arnett, Okla., but believes adherence to crossbreeding practices has benefited his ranch. "We have a pretty tough environment here," he says. "While we don't have a benchmark, we're confident in the research" that shows crossbreeding advantages.

Nichols has operated the century-old ranch for 35 years. The primarily cow-calf commercial operation has been using a 2X breed rotation crossbreeding program with Hereford and Angus bulls since the late 1950s. While Nichols concedes the system they use doesn't maximize heterosis, it does provide about two-thirds of the heterosis possible.

"We think we get better reproduction out of our crossbred females with the same amount of input," he says.

Crossbreeding vs. EPDs

Daley claims it's the lowly heritable traits that are difficult to measure — and often not identified through Expected Progeny Differences — that can make a big difference in crossbreeding programs. These include livability, age at puberty, survival to weaning and conception rate.

In fact, the amount of heterosis is largest for traits that are not very heritable, he says. Characteristics like carcass traits that are highly heritable will exhibit less heterosis.

"The (lowly heritable) traits can definitely make a difference at the cow-calf level and can add up to significant dollars on the bottom line," he says.

As the industry has moved more and more to vertically coordinated production and marketing systems, it has been easier and easier for producers to follow the market signals taking place, both Corah and Daley agree. "It's consumer-driven differentiation," Corah says.

Daley believes the industry's increased focus on a single breed that provides good carcass characteristics has been positive for the industry and consumers, but ignoring the benefits of heterosis in improving cattle production could be economically damaging for cattle producers.

Lacey thinks Daley is right. He says it all comes down to what works for an individual operation. "My factory is my cows, and if they're not efficient I can't compete," he says. "Maybe crossbreeding is one of the cheapest things we can do to be more profitable."