Making It Stronger, Proving It Better

The future of genetic evaluation lies in strengthening existing traits and building upon the breed's strengths.

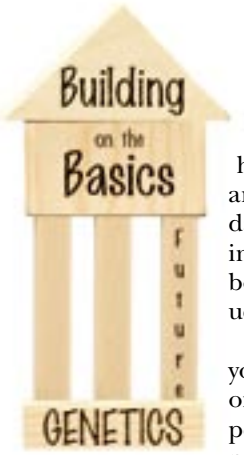
by ***Corinne Patterson***

Performance records for growth traits were some of the first expected progeny differences (EPDs) developed through the Hereford genetic evaluation. These highly heritable traits can be easily measured through birth, weaning and yearling weights.

While breeders have a good grasp of performance through EPD selection, the Hereford breed is known for producing great mother cows. Dan Moser, the American Hereford Association's (AHA) genetic advisor and associate professor at Kansas State University (K-State), says this is an area where the future of genetic evaluation is headed.

"Scrotal circumference is the reproductive trait that's currently available to breeders," Moser says. Scrotal circumference measures fertility and the age at puberty of sons and daughters. K-State is conducting research to develop additional reproductive EPDs. Moser adds, "We are looking at age at first calving and some measure of longevity — the ability of the cow to stay in the breeding herd and produce a calf every year."

Reproductive traits aren't highly heritable, he points out. They are less affected by genetics and more by management, but a live calf from a cow that has proven her worth makes more money in any herd.



"We've done a great job of describing the growth side, and in the last decade or so, we have really got to work on the carcass side," Moser says. "But Herefords are still primarily a maternal breed, and to most commercial customers of Hereford bulls, traits like reproductive rate of the cows and calving rate of the heifers are going to be the most economically important."

Jack Ward, AHA director of breed improvement, says the Association took a bold step seven years ago by implementing whole-herd reporting. Breeders are collecting more data on maternal traits, including cow weights, body condition scores and udder quality scores.

"When you do that, you get to collect data on why cattle haven't performed," Ward says, noting that disposal codes are being recorded. "We are looking at ways to incorporate that information into an index or an EPD for stability and survivability. It gives us an opportunity to look at some fertility issues that obviously are some of the big financial driving forces in commercial cow herds."

The driving force

Economics continue to drive the marketplace as cost of inputs climb.

"Each and every day, cattle producers and purebred producers

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are asked to become a little more efficient. They are asked to prove their genetics and to provide a product to the commercial cattleman that has some strength behind the data and some predictability," says Ward. "Anything that we can do to prove that our genetics are a little more efficient, a little more ideal for the commercial producer, then obviously we need to do that."

As the AHA builds and strengthens the current EPDs, putting a dollar value on traits through $Profit Indexes will continue to be explored. Indexes help grasp several traits, placing emphasis on a balance of values related to economic factors beyond simple threshold values. See "Applying Index Basics, Building Stronger Values," Page 56.

"It's always about profit, and assigning a dollar value to traits may make it a little easier for people to understand," Ward says. "The AHA $Profit Indexes put a dollar value on several traits at once. This allows a producer to pick a specific system and select the corresponding index to help make selections.

"In the future, maybe not in my lifetime, the indexes are going to be very, very beneficial because I think that individual producers will be able to have their own set of indexes," Ward continues. "In other words, they will be able to punch in the economic factors of their individual ranches, and they'll be able to come up with select indexes, which will allow their customers to make easier buying decisions."

Ward says breeders may be getting past the idea that maximizing EPDs is the most profitable plan. Maximizing traits doesn't necessarily maximize what's in the pocketbook the day the animal hits the market.

"If you put it in economic form and you determine if I increase an animal in a pound in this EPD, what's it going to do to my bottom line? It makes breeders sit down and think that maybe maximizing the EPDs is not the best way to do it," he says, adding indexes help weigh these factors. "The future lies in the indexes."

Profit markers

DNA-marker technology is moving forward on a daily basis, Ward says. Using it in genetic evaluation to find the good, young genetics that are going to be the movers and shakers within the breed is going to be very important.

The AHA is working closely with The National Beef Cattle Evaluation Consortium (NBCEC) and also DNA companies to validate the markers. A polled and horned DNA marker is currently being validated, and the AHA has already worked to validate the value of the carcass quality markers.

The next step is to work the markers into the genetic evaluation. The future is exciting, Ward says, because there could be markers available to measure efficiency, fertility, longevity or even health.

"We are trying to get closer to what really makes people money," Moser says. But one thing that will remain just as it has in the past is who the decision maker will be.

"Ultimately breeders are the ones who are going to make this thing go or not because they are the ones who are collecting the data," Ward adds. "There's just so much power in a sire summary and in the genetic evaluation. That's what separates us from some of the other species. Even though cattle move slowly, cattlemen still have a real opportunity to make their own decisions and to make their own selections through genetic evaluations no matter what breed you might have." **HW**

Validating the Hereford advantage

It's one thing for Hereford breeders and American Hereford Association (AHA) staff to anecdotally say Hereford cattle can do this and that for a commercial producer's bottom line, and quite another to be able to tell it true with scientific evidence. The AHA has set out to give the industry something to talk about by launching two major research projects.

Harris Ranch project — AHA staff is working with Harris Ranch Beef Co. and Lacey Livestock, a premier integrated beef alliance located in California, to utilize Hereford bulls in head-to-head, gate-to-plate comparisons with Angus bulls. The purpose is to demonstrate the economic effect of using Hereford bulls on predominantly Angus-based cows.

Twelve Hereford bulls and 12 Angus bulls, of the same breeding age, were turned out with 600 commercial Angus cows. Hereford-sired calves will be compared to Angus-sired calves all the way to the rail.

John and Mark Lacey, owners of the cow herd, have committed to three years of the study, which will also follow the replacement females through their first calving.

Amana Farms project — Amana Farms, which is a 2,200-head cow-calf operation, has committed to a study examining the economic effect of using Hereford bulls on Angus-cross cows. In 2006, breeders participating in the National Reference Sire Program (NRSP) delivered 11 bulls to Amana Farms. The young sires and two proven artificial insemination (AI) sires (for comparison) were used to breed Amana heifers. Birth, weaning, yearling and carcass data will be collected on the resulting calves.

Steers will be fed at the University of Missouri-Columbia, where researchers will collect feed efficiency data in an attempt to develop genetic or metabolic indicators related to the feed efficiency trait. The females will be retained at Amana Farms, as the managers want to improve cow herd disposition, longevity and efficiency. HW