

## It's in the genes

By Jennifer M. Latzke

Every year cattlemen make critical breeding decisions that will change the course of their herds for generations to come. They use a number of tools in matching the right dams with the right sires, whether it's expected progeny differences or "cowsense."

But the American Hereford Association is taking a leadership role in developing genetic evaluation tools for breeders from genomic markers found in the Hereford breed. Recently, the association hosted a media tour, "Data Drives Demand," at the headquarters of Olsen Ranches, Inc., Harrisburg, Neb., to discuss genomics, cattle improvement and the future of the Hereford breed.

Hereford genomics

In 1999 AHA began focusing on the genetics behind the breed, trying to find and isolate those genetic markers that would be valuable to purebred and commercial cattlemen. The association works with the National Beef Cattle Evaluation Consortium, the U.S. Department of Agriculture Meat Animal Research Center and other Hereford associations around the world.

Most cattlemen are familiar with EPDs--measuring traits like birth weight. What the Hereford association is trying to do is clearly identify which genes are responsible for those traits. They are doing this by looking at the genome, or the genetic material, of individual animals and comparing them. Today, the association has more than 1,200 high-accuracy sires 50K genotyped. By using these high-density 50K single nucleotide polymorphism arrays on animals that have shown reliable EPDs, as well as phenotypical information from thousands of other Herefords collected by breeders over the years, the association can now find EPDs for individual chromosome fragments that are passed onto offspring.

In the future, the association plans to add to its library of genomic analyses for its members. With more phenotype and genotype information gathered, the better this new genomic prediction will be. It's already in effect in the dairy industry, which is increasing the use of young, unproven bulls that have little to no progeny test results.

Improving Herefords

Jack Ward, AHA chief operating officer and director of breed improvement, spoke about how the association is leading the beef industry. The association is adding new EPDs and Profit Indexes to its genetic evaluation, including mature cow weight, heifer calving rate and sustained cow fertility. These traits are being evaluated today because of the increased use of Whole Herd Total Performance Record reporting that's strengthened Hereford's database of information, he added. With nearly 98,000 cows on inventory and more than 22 million animal records in the genetic analysis, it's helped researchers.

"Heifer calving rate is a sire model that evaluates the number of daughters from a sire that calve in their first calving," Ward said. Sustained cow fertility, he said, is similar to stayability that other associations use in their EPDs, but this Hereford trait looks at the cow's longevity and fertility within the breed, year after year.

The main difference, he said, is that these Hereford traits are evaluated from the first set of daughters that come into production from a particular sire--therefore that sire starts to get credit from the first set of daughters and not five or six years later. That can help build the sire's reputation and EPDs.

"It's always interesting, as we start talking about these traits and as we collect data, breeders are anxious to see them," Ward said. Today these traits are only released as research reports, and are not actually part of the breed's EPD trait lineup just yet, he added, but they are available online for breeders to see.

Status of the breed

Craig Huffhines, AHA's executive vice president, spoke about the status of the Hereford breed. He said the breed is experiencing a resurgence in popularity due to many factors, including its new focus on breed improvement and ongoing research into heterosis and carcass characteristics.



**COWS AND CALVES**--Hereford cows and calves graze on pasture at Olsen Ranches, Inc., of Harrisburg, Neb. Olsen Ranches is partnering with the American Hereford Association to test some of the leading genetics in the breed, through its participation in AHA's National Reference Sire Program. The ranch has tested 146 bulls and submitted data on more than 7,000 progeny since 1999. (Journal photos by Jennifer M. Latzke.)

"A survey in 2009 and 2010 showed commercial demand for Hereford range bulls doubled in five years," Huffhines said. During the fiscal year 2011 bull sales averaged \$3,937, while females averaged about \$3,033. The National Association of Animal Breeders reported that Hereford semen sales have increased 17 percent over last year, while the beef industry total increased only 2 percent. In this extreme drought that's affected parts of the High Plains, registrations remain steady with 2010, he added.

"The U.S. herd has declined, but in the last three years as the cowherd has declined about 3 percent per year, we've been consistent at about 100,000 Hereford registrations per year," Huffhines said.

"We have not seen the affect of the drought on registered cows yet, but we might in the spring." Ward said the fact that Hereford female registrations are stable in this contracting market is a positive note for the breed. "(The drought) does concern us a bit, but as we talk to breeders in those areas they are holding on and they can see the light at the end of the tunnel," Ward said.

The Hereford cow's reputation for longevity has been tested during this drought, and Ward said it's held firm.

"The heritage of that Hereford cow is that she's tough and she can withstand heat and tolerate drought and still come in with a good strong calf by her side and she's ready to breed again," Ward said.

"People are adding Hereford genetics to their commercial cowherds for those traits that they bring to the table, that fertility and longevity in bringing a calf each year."

Looking to the future of the breed means

encouraging youth to become active in the association, and Huffhines said AHA's youth program is the diamond in its crown.

"We have about 700 members showing 1,200 head of cattle at our Junior National show," he said. "We are looking at these kids returning to our industry, through not only the show ring, but he academic events that are included. We're training the young leaders of tomorrow."

Jennifer M. Latzke can be reached at 620-227-1807, or [jlatzke@hpj.com](mailto:jlatzke@hpj.com).

