by Jack Ward, chief operating officer and director of breed improvement

jward@hereford.org

Hereford: The First Breed To Develop, Market Its Own Genetic Predictions

Jack Ward

The September *Hereford World* each year is dedicated to the successes of Hereford youth. I got the opportunity to spend the whole week in Grand Island, Neb., at the Junior National Hereford Expo (JNHE), and, again, I was reminded of the quality of the kids, the dedication of the parents, the hard work of the Nebraska Hereford Association and the great American Hereford Association (AHA) staff.

It does seem a little like a marathon for the week, but to see the eyes of the juniors competing in various contests, showing cattle and just walking around and enjoying companionship with other juniors that they just met makes it all worthwhile. I tip my hat to all involved — it was another great event.

We recently finished another Hereford Research Foundation (HRF) auction, and I want to thank all of the buyers and consignors. This event will continue to help fund various research projects that will help with breed improvement and continue to create demand for Hereford genetics.

DNA lab update

It has been a very exciting time for the AHA Board and staff as we have transitioned from Maxxam Analytics to GeneSeek as the official AHA DNA lab.

The basic reason for this move was to change technology platforms from microsatellites to SNPs. This conversion keeps the very basics of parentage and genetic abnormality testing available, allows us to incorporate genomic information into the genetic analysis and also allows breeders to have access to a horned/polled test.

During the recent release of new expected progeny differences (EPDs) came the simultaneous release of GE-EPD (genomic-enhanced EPDs). Gathering the GE-EPDs has been a long process, but the information has so much potential for breeders to more quickly find high accuracy animals that will allow for quicker genetic improvement.

First off, Dorian Garrick and Mahdi Saatchi need to be thanked and congratulated for all of their help and support with this endeavor. The AHA approach is the first of its kind to work with the scientific community and the NBCEC (National Beef Cattle Evaluation Consortium) to build its own training and validation population. This approach is so important because the AHA now has access to all of the genotypes, phenotypes and pedigrees, which will allow us to continue to train and build a Hereford-specific panel.

Over the past few weeks, there has been a lot of information released concerning the costs, tests available and procedures for ordering the kits and finding the animals that have tests completed. All of these things can be found on *Hereford.org*, and there is a search engine on the EPD inquiry section of the website that allows you to find animals that have GE-EPDs. When an animal has been tested, you will find a GE-EPD logo below its EPD profile on its details screen.

Some other questions that breeders have been asking:

Q Will this replace the need to collect phenotypes?

A Absolutely not, a 50k test will only enhance the animal's current genetic profile and will be used to help support other information. Remember, today all genomic panels seem to work well within the population that they have been trained in.

So, if we want this to continue to get better, the training population will need to grow and will need to be specific. One side note to this would be for animals that come from a single contemporary group or maybe even embryo transfer (ET) animals, whose weight phenotypes are not used in the anaylsis. The GE-EPD becomes very useful on these animals early in their lives.

Q How is the information getting utilized in the genetic analysis?

A Today, we are using an interim model that uses the 50k test and the information will only affect the animal that

continued on page 7...

...Performance Matters continued from page 4

has been tested. So, when you test an animal, an MBV (molecular breeding value) will be calculated and then will be added to the animal's EPD. This addition will change its EPD number and accuracy.

With support from the science community, we are using the MBV in the EPD calculation and not reporting two different pieces of information in order not to confuse or overburden breeders and customers with an overload of information.

Q How good is the test, will it benefit me, and what animals should I test?

A It is difficult to answer this question, because we are affecting all traits measured, but at a different level. It depends a bit on your goals, and it will be important not only to test young animals with low accuracy EPDs but also to continue to test higher accuracy sires in order to increase our correlations and make the test more reliable. In addition, the methodology used in training will get better over time. This improvement will also increase our correlation. But, below is a table that will show the correlations that are used to date and how these can increase over time as we increase the correlations to the various traits.

These tables should clearly show how genomic information can truly help with genetic improvement and generational turns. It is an exciting time in the beef industry and specifically for Hereford breeders.

There has been a lot of commitment and resources put toward this project by the AHA Board and staff. Now, it is in the hands of the breeders, and we can build this Hereford panel to be the best in the industry, but it will take commitment by the membership.

We need to test not only young bulls and females but also high accuracy sires. Let's set a goal to get another 1,000 sires tested before the next genetic analysis. Can you imagine, if this happens, how important it will be to next spring's production sales. **HW**

Table 1: Trait correlations.

Trait	EPD ACC (BIF)	Corr. MBV and EPD	MBV Heritability	Trait Heritability	Enhanced BIF ACC	Effective Progeny
CED	.12	.33	.92	.10	.15	5
BW	.12	.40	.94	.43	.17	2
WW	.12	.34	.94	.20	.16	3
YW	.12	.33	.96	.36	.16	1
MM	.12	.21	.91	.10	.13	2
MCE	.12	.18	.76	.10	.13	1
SC	.12	.25	.88	.37	.14	1
Fat	.12	.43	.76	.30	.16	3
REA	.12	.25	.88	.26	.14	1
MARB	.12	.41	.89	.26	.17	3

Table 2: Effect on correlations as we grow our training population.

EPD ACC (BIF)	Corr. MBV and EPD	Trait Heritability	Enhanced BIF ACC	Effective Progeny
.12	.10	.30	.12	.1
.12	.20	.30	.13	.5
.12	.30	.30	.15	1.2
.12	.40	.30	.18	2.3
.12	.50	.30	.22	4.1
.12	.60	.30	.27	6.9
.12	.70	.30	.33	11.8
.12	.80	.30	.43	21.9
.12	.90	.30	.58	52.6