



# DNA Testing Update

Over the course of the past few months, the American Hereford Association (AHA) has transitioned to a new DNA lab, and we have tried to clear up as many misconceptions and concerns through *Hereford eNews*, *Hereford World* articles and a DNA testing procedure brochure that was available at the Annual Meeting.

However, I think it is good to again address any issues breeders may have on the topic, so I want to cover a few of the questions that keep surfacing.

First, I would like to reflect on the most current AHA Strategic Plan.

**Core Strategy 1:** Improve the overall quality, consistency, predictability and profitability of Hereford genetics.

**Objective A:** Increase the accuracy of breeding values in young cattle and manage functional defect rates by developing a plan for including genomic information into genetic evaluation.

**Tactics:**

- Build test populations for discovery purposes.
- Develop DNA tests for measurable traits (birth weight and calving ease are priorities).
- Collect DNA for cosmetic/function problems.

So, with this reminder, the reason for a lab change from Maxxam Analytics to GeneSeek Inc. was to enable the AHA to use the most comprehensive DNA technology at one spot in order to develop the type of tools necessary to reach our strategic goal without affecting the normal testing for parentage and abnormalities.

Maxxam could not develop a business plan that would allow them

to compete on the price schedule with this move. Maxxam was a very reliable service provider; they understood our position and the change was very amicable. All of the DNA that was stored at Maxxam was delivered to GeneSeek and has been properly cataloged.

Here are a few of the frequently asked questions about DNA testing. You can also find more at [Hereford.org/dnatesting](http://Hereford.org/dnatesting).

**Q. Why did the AHA change DNA labs?**

**A.** Over the course of the past few years, the AHA has been working closely with the scientific community and academia to develop a set of DNA markers that can be used to help enhance the pedigree, phenotypes and progeny phenotypes that are used to calculate expected progeny differences (EPDs).

This new tool utilizes SNP (single nucleotide polymorphism) technology versus microsatellite technology. In addition to this EPD enhancement, scientists at USMARC (U.S. Meat Animal Research Center) produced a set of SNP markers that could be used for parentage verification, and, in addition, Jon Beever, University of Illinois animal scientist, converted the abnormality markers to a SNP-based test. All of these things together allowed us to change the technology and to utilize one lab for all of the testing.

**Q. Do my AI (artificial insemination) and ET (embryo transfer) permits still exist on animals tested at Maxxam?**

**A.** All AI and ET permits are still honored on animals that were

tested at Maxxam and prior. We even have some that still exist on animals that were blood tested. However, the issue starts when you want to AI permit an animal born to a parent that was microsatellite tested. If this need occurs, we will try to upgrade the parents to a SNP profile first because this process makes the most sense to move forward. This upgrade is a \$15 expense to the breeder who wants an animal parent verified. If there is no DNA available but an animal has a microsatellite profile available, then it is still possible to get the progeny parent verified. This possibility is not the case with blood typing.

**Q. Why do I get various DNA statement reports on one animal?**

**A.** Today, we have several more tests available for each animal, and at GeneSeek this availability of multiple tests means you may have an individual test performed on a different day, and the AHA wants to get you the results as quickly as possible on each test performed. So, you may receive parentage results before H/P (horned/polled) results and that before GE-EPD (genomic-enhanced EPD) results.

It should be common practice to get DNA to the lab at least three weeks prior to needing any results. That does not mean order the kits three weeks ahead; it means have the DNA at the lab three weeks ahead.

**Steer papers**

The AHA Board voted to have all Hereford steers that show at an AHA-sponsored show need to be fully

registered starting in 2014. In the past a steer had to only be sired by a registered bull, and its dam needed to be either a registered or commercial Hereford cow.

This policy was adopted by the AHA and affects national and regional shows. We have seen many of the Midwest state fairs already adopt this policy and others that use no papers at all. We are only concerned with what will happen at the Junior National Hereford Expo and regional shows; we do not dictate the rules for any state or local shows.

We will still provide a steer certificate if that is what is needed. However, there have been some calls to the office asking why the dam of a steer will need to be parent verified before a steer is registered. That is not a rule, and a steer will go through the same registration process as a heifer or a bull.

There are lots of exciting changes; we have already seen a tremendous amount of utilization of the new DNA testing. We have literally just scratched the surface of what this will open up for AHA members and their customers.

By February we will have added many high accuracy sires to the training population. We have nearly 20 legacy sires scheduled to be sequenced, and we are looking at markers to predict feed intake.

If you have any further questions or concerns about DNA testing, please contact me at 816-842-3757 or [jward@hereford.org](mailto:jward@hereford.org). **HW**

## American Hereford Association National Reference Sire Program

**Responsibilities of Test Herd:**

- Select from nominated bulls
- Contact bull owner for semen shipping instructions
- Breed 55-60 cows at a random mating across genotypes
- Breed 30 cows to one reference sire that has been tested in previous years (at the cost of the test herd, semen and shipping at a commercial rate)
- Provide complete data on National Reference Sire Program (NRSP) forms
- Breeding data: Cow ID, specific breed makeup (based on percent), age of cow at breeding time, date bred and sire used
- Birth data: Calf ID, date of birth, weight and calving ease score
- Weaning data: Calf ID, date weaned and weight
- Interim data: Calf ID, date, weight
- Carcass data: Calf ID, carcass weight, marbling score, fat thickness, ribeye area, internal fat and yield grade
- Test herd must provide at least 55% conception rate
- Test herd must retain ownership or partnership at 50% or greater on cattle until they have been harvested

**Test Herd Cost:**

- All costs will be covered by test herd
- Test herd will pay for the reference sire semen for the 30 cows, and shipping semen will be priced at a commercial rate, data collection will be paid by test herd on all cattle

**Responsibilities of Bull Owner:**

- Nominate bulls for test sire
- Nominate bulls to American Hereford Association (AHA) by **March 1, 2013**
- Furnish 60 straws of semen and pay shipping cost to test herds
- Pay fees as required

**Bull Owner Cost:**

- Semen and shipment of semen
- Pay the test herd fee per bull tested when semen is shipped — contact Jack Ward for details

**Responsibilities of AHA:**

- Receive data and report all data back to bull owner and to test herd

**AHA Cost:**

There will be no cost to the test herd or the bull owner for the data reporting done by the AHA

**Benefits of Test Sires:**

- Obtaining high accuracy carcass EPDs (expected progeny differences)
- Obtaining performance data compared to other sires tested in herd contemporaries
- Opportunity to market semen as a NRSP reference sire, after nominated and selected
- Opportunity to test sires next to the top Hereford genetics in the breed

**For an application go to [Hereford.org/NRSP](http://Hereford.org/NRSP) or contact AHA at 816-842-3757**