

Genetic Testing Procedure Announced



Jack Ward

Genetic abnormalities are a common occurrence in all species of livestock. Deleterious genes, or genes that can cause harm to an animal's development or function, can be embedded and undiscovered in a population for generations.

In addition, it's known that genes can randomly mutate or change causing an abnormal and sometimes lethal development in an animal. In the past four years, the American Hereford Association (AHA) has discovered and listed two such abnormalities. One is referred to as diluter (DL) and the other is idiopathic epilepsy (IE).

DL gene

Diluter is a coat color abnormality that can be found when a Hereford bull that is a carrier of the DL gene is mated to a black cow. A certain number of the resulting calves are born with grey coats (approximately 50%).

The gene causing DL has been found to be a dominant gene; therefore, baldie calves that are expected to have a black coat color are born with a smoke color because the DL gene is dominant to the black gene. Diluter is not an abnormality that causes any issues with calf performance but can cause some economic disadvantage because of a

lack of uniformity of coat color in the calf crop.

IE gene

Idiopathic epilepsy has been listed as a Class 1 lethal abnormality (affected animals have not been able to reproduce) and is a simple autosomal recessive gene. Being a recessive gene, the IE gene must be present in both parents and passed on to the progeny in order to produce an affected calf.

If both parents are IE carriers, there is about a 25% chance of producing an affected calf and a 50% chance of producing a carrier while 25% of the animals will be non-carriers. If a non-carrier is mated to a carrier, the resulting offspring will never be affected, but there will be a 50% chance that the offspring will be a carrier.

AHA testing and disclosure procedures

- 1) The American Hereford Association (AHA) Board voted to test all artificial insemination (AI) sires and embryo transfer (ET) donors that requested a permit after July 1, 2008. If a member had an animal permitted between July 1 and Oct. 10, 2008, AHA will have that animal tested at no additional charge to the member.
- 2) AHA will report the test results on all Hereford animals tested at Maxxam Analytics. If you have an animal tested through AHA, the pedigree will be listed with the appropriate status. If your animal is listed free of the abnormalities, you will find FIE and FDL under the name on the pedigree and at the end of the animal's name on the AHA Web site. Carrier animals will be listed as IE or DL.
- 3) For genetic testing and a pedigree listing of the test results, the cost is \$32 per head (this is the current cost to have an animal genotyped for parentage verification through AHA).
- 4) If you have an animal that was AI or donor dam permitted prior to July 1, 2008, and you would like to have the animal tested for the genetic abnormalities with the result listed on the pedigree, you can request the animal be re-genotyped using the stored sample on file at Maxxam for \$32. If the sample is not at Maxxam, a new DNA sample will be requested.
- 5) To get an animal tested through Maxxam, you will use the same procedure as getting an animal genotyped for permitting purpose. Contact AHA at (816) 842-3757 or records@hereford.org to request a DNA kit. The test still requires hair follicles as the preferred method, but semen or blood can be used at a cost of \$35 per head.
- 6) Maxxam Analytics will give a bulk discount rate of \$27 on batches of 50 head or more turned in all at once utilizing the hair follicle sampling method.
- 7) If you have an animal that has a carrier in its pedigree and has been tested as FIE and FDL, you will still find the carrier listed in the pedigree but the animal itself will be listed as free (a non-carrier of the gene).
- 8) If you would prefer to have animals tested that do not require a permit and you are not concerned with listing pedigrees, then you may still have those animals tested through AgriGenomics. You can contact Jon Beever at agrigenomics@prairienet.net or the AHA at jward@hereford.org to request submission forms for testing at AgriGenomics. Beever may also be contacted for consultation. **HW**

Easy to manage through genetic testing

Modern genomic technology allows us to manage genetic problems without the archaic culling methods that have eliminated whole lines of valued genetics. AHA has been working with Jon Beever to discover the DNA markers to test Hereford cattle for these abnormalities. This discovery work is complete, and the test has been added to the parent verification platform at AHA's official DNA lab, Maxxam Analytics.

AHA is indebted to Beever and the members who have worked diligently to get this discovery work completed. With this new technology, Hereford breeders can use genetics with confidence to enhance or correct traits within their programs. **HW**