

Utilize Tools, Technology to Document Genetics

The mission of the American Hereford Association (AHA) is: "AHA will provide the leadership to record, protect, promote and facilitate the production and consumption of Hereford beef."

This statement reminds each of us at times the purpose and direction AHA breeders, Board and staff must maintain. In addition to the mission statement, a strategic plan was developed in 2005.

In the action plan, core strategy 3 states: "Increase the quality, consistency and reliability of Hereford genetics." And, objective 5 of core strategy 3 states: "Take advantage of validated new forms of technology." This simply means that the AHA should use all available tools and technology, including DNA markers, to document the safety and quality of Hereford genetics.

In fall 2003, 10 calves were reported with a condition referred to as epilepsy. Two university veterinarians conducted a biopsy on a portion of the calves, and David Steffen, University of Nebraska, examined the results.

Steffen has worked closely with several breed associations in the area of genetic abnormalities. The AHA works with Steffen to determine whether abnormalities are genetic or non-genetic in nature. Since the initial 10 calves were reported, the AHA has asked the membership to be aware of the problem and to report any calves that may be suspects.

Because of the number of calves reported to date having similar pedigrees, Steffen has determined this abnormality

is genetic in origin and it is recessive — both parents must be carriers in order to produce an affected calf. The AHA Board during its April 16, 2007, meeting, voted unanimously to label the abnormality as a genetic defect.

You can find a copy of the AHA's genetic defect policy in the *Hereford Handbook* included in this issue. The policy states that after an abnormality has been declared genetic, the AHA must designate the sire or dam that has produced at least two progeny with the abnormality or a single positive animal through DNA testing to be a confirmed carrier of a genetic defect.

Idiopathic epilepsy

The new genetic defect will be labeled as idiopathic epilepsy (IE). It is important that breeders refresh themselves on the basics of recessive genes. Some things to remember are:

- When two carriers are mated, there is a 25% chance that an affected calf will be produced.
- All cattle that are positive for this trait will pass it on to only 50% of their offspring and the other 50% will be non-carriers.

Developing a test

In the past, cattle would have been proven clean through progeny testing by mating sires to daughters. Today DNA testing is being conducted on many genetic defects. The AHA is working with Jon Beever, University of Illinois, to develop markers for IE and HY (hypotrichosis). A marker has already been found for

DL (dilutor). Once an animal has been verified as a non-carrier, it will never transmit the trait to its offspring nor will the trait ever occur again in its lineage.

When the DNA test is made available, breeders will be able to test cattle and determine which ones are carriers and non-carriers. This will allow for the possible elimination of this trait in Hereford cattle. Remember carriers will only pass this trait to 50% of their offspring and non-carriers will never transmit the trait to their offspring. This simply means that if you have used a carrier bull in your program, there is only a 50% chance that the offspring are carriers, and if they are carriers, their offspring only have a 50% chance of being carriers.

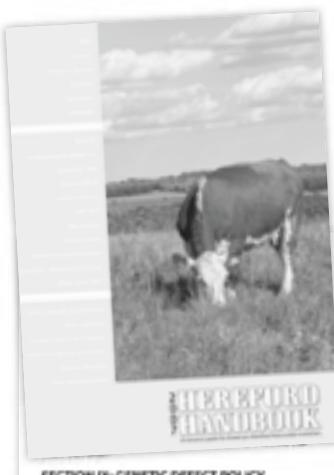
Until the DNA test is made available, breeders should try to mate carrier bulls to non-carrier females. This would result in never producing an affected calf. Using good, sound breeding practices will help facilitate the elimination of the trait, while still using the genetics that will move the Hereford breed in a positive direction.

As breeders, you should know that it is best not to avoid the situation but to strive to find ways to eliminate the trait. AHA encourages all breeders to educate themselves on policy and the facts about recessive traits.

If you think you have had a calf with epilepsy-type conditions or have further questions, contact me at jward@hereford.org, Craig Huffines at chuffin@hereford.org or call (816) 842-3757. **HW**



Jack Ward



SECTION 10: GENETIC DEFECT POLICY
Procedures for collecting abnormality data and reporting the information to the AHA membership.
Physical abnormalities are present in all herds of cattle. In order to reduce abnormalities in the Hereford cattle of America, Hereford Association promotes a collection of abnormality information from AHA members via a voluntary basis.
Specialist Dr. David Steffen, veterinarian for the University of Nebraska Veterinary and Biostatistics Department, has written a report on the incidence of various physical abnormalities. The AHA will be working with him to determine abnormalities as being genetic or non-genetic in origin.
Non-off abnormalities are genetic in origin. Some defects can be manifested in different or sometime Dr. Steffen needs to determine the true cause of the defect.

You can find a copy of the AHA's genetic defect policy in the *Hereford Handbook*, which can be found on Page 201 of this issue.