

# Mississippi Beef Cattle Improvement Association

Mississippi Beef Cattle Improvement Association—Productivity and Quality



## Upcoming events:

- June 16—Low-stress cattle handling workshop, Lauderdale County Agri-center, Meridian, MS, 6:00 P.M.
- June 17—Low-stress cattle handling workshop, Lee County Agri-center, Verona, MS, 6:00 P.M.
- August 3—MS Homeplace Producers Feeder Calf Board Sale, Southeast MS Livestock, Hattiesburg, MS, 7:00 P.M.
- August 20-21—Deep South Stocker Conference, Forrest County Agri-center, Hattiesburg, MS
- **September 1—Mississippi BCIA Fall Bull Sale nomination deadline**
- October 29-31—MSU Fall Artificial Insemination School, Mississippi State, MS
- November 12—Mississippi BCIA Fall Bull Sale, Raymond, MS, 12 Noon

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## 2009 Beef Improvement Federation Meeting Summary

The Beef Improvement Federation (BIF) held its Annual Research Symposium and Annual Meeting today in Sacramento, California, April 30 through May 3, 2009. It was themed “Beef Rush ‘09” and featured the latest information and advances in beef cattle genetic selection, technology and research. Topics discussed at the meeting included the bovine genome, DNA data in cattle selection, feedlot marker-assisted management, feed efficiency, crossbreeding, beef production in a high-cost economy, and management strategies for genetic defects.

Calyx Star Ranch represented Mississippi BCIA as a nominee for the 2009 BIF Seedstock Producer Award. Calyx Star Ranch is



owned and operated by MBCIA Treasurer, Robert Field, and family. Calyx Star Ranch is an 8,000-acre diversified agricultural operation with 1,500 acres in cattle production and the remainder in timber, row crop production, and commercial hunting. The cow herd is composed of 275 cow-calf units evenly divided between commercial and registered Brangus cattle.

Detailed summaries, slides, and audio of BIF 2009 educational presentations are available online at <http://www.bifconference.com>. This website also includes abstracts, proceedings papers, photo galleries, and award winner summaries from the conference. Missouri will host the 2010 BIF convention.

## Miss. Premium Heifer Development - Consignments Sought

The initial round of the “Miss. Premium Heifer Development” program was held at Broke-T Farms in Philadelphia. Broke-T is owned and operated by Johnny Thompson, current MBCIA Vice-President.

Sixty five heifers were consigned by Hunt Hill Cattle Co. (Woodville) and delivered in late November. On arrival, the heifers had been vaccinated for blackleg and respiratory diseases (modified live) and weighed an average of 701 pounds. Soon after delivery, they were vaccinated for Vibrio/Lepto to guard against poor fertility. Approximately 60 days into the program, a pelvic area measurement and reproductive tract score was taken.

Nutritional management was based on a total mixed ration of annual ryegrass baleage, commodity feeds and a complete mineral mix. Due to hybrid vigor and excellent management, the ADG exceeded 2 pounds.

The heifers were artificially inseminated (AI),

after estrous synchronization, and a clean-up bull introduced 7 days after AI. Pregnancy rate to AI was determined by ultrasound after 30 days (79.6%; 43/54). They will be returned 50 days after the latest pregnancy to avoid loss due to shipping stress.

Broke-T plans to take on another set of heifers in September to be AI-bred beginning November 15th. To consign heifers should be at least 11 months of age, 675 pounds, vaccinated for blackleg and respiratory diseases, and dehorned and healed. There is no minimum number of head requirement to consign if the heifers fit this breeding season.

The estimated cost for heifers delivered in September and returned in January ranges between \$300—\$350 per head (depending on feed cost). If you are interested in consigning, please contact Justin Rhinehart (662-325-7465) or Johnny Thompson (601-562-0701).

National  
**Beef Cattle Evaluation**  
Consortium

NBCEC provides genetics management information for beef cattle producers

## Genetic Validation Test Results Now Available Online

Results summaries of the National Beef Cattle Evaluation Consortium (NBCEC) validations for commercially-available DNA-tests for complex (quantitative or multigenic) traits in beef cattle are now available online at <http://www.nbcec.org/>.

The purpose of the National Beef Cattle Evaluation Consortium commercial test validation is to independently verify associations between genetic tests and traits as claimed by the commercial genotyping company using phenotypes and DNA from reference cattle populations. The genotyping company requests the validation of their claims and is responsible for genotyping DNA samples provided by the NBCEC. The NBCEC then analyzes the genotypes in conjunction with the relevant trait phenotype information to determine whether there is an association between the results of the genetic test and the phenotype for the claimed trait.

DNA marker is a term used to refer to a specific DNA variation between individuals that has been found to be associated with a certain characteristic (e.g., increased tenderness). These different DNA or genetic variants are known as alleles. DNA marker testing or genotyping determines which alleles an animal is carrying for a DNA marker(s). The use of this genotype information from DNA marker tests associated with simple traits is relatively straight forward. Such traits are often controlled by a single gene and a marker allele associated with that gene can perfectly predict the phenotype of that trait (the physical attributes of an animal). DNA tests for simple traits have been on the market for several years and include those for certain diseases, such as DUMPS (Deficiency of Uridine Monophosphate Synthase) and BLAD (Bovine Leukocyte Adhesion Deficiency), coat color, and horned status. However, most economically relevant traits (ERT) are complex, meaning they are controlled by many genes and are also influenced by the environment. Examples of complex traits include growth traits, carcass characteristics and reproductive performance. Any single DNA marker is associated with only one of the many genes that control complex traits.

Research to find DNA markers that are associated with complex traits often begins with a discovery population or research herd where cattle have been measured for a number of traits of interest. These animals are extensively genotyped using a large number of markers and then studies are performed to see if there is any association between alleles at these markers and phenotypes for traits of interest. Once an association has been identified, validation studies on independent populations are necessary to ensure that the association is real. That is, other groups of animals, independent of the original discovery population, are tested to see if the relationships identified in the discovery herd holds true for other animals. Validation studies can be internal validations performed by the DNA companies to further assess the efficacy of their tests, or independent validations performed by a third party.

Validation is necessary because false-associations between markers and the trait of interest can arise if breed composition or pedigree information is omitted from the discovery population analysis, perhaps because such information is unavailable as may often be the case in data from commercial cattle populations. This can lead to false-associations that are due to population stratification. For example, if a discovery population was made up of Angus and Brahman cattle, i.e., breeds which differ in their allele frequencies at many markers, it might appear that all marker alleles that have a high frequency in Brahman cattle are associated with having long ears and a hump, even though some of them are not genetically associated or linked with the genes that actually control those traits. Similar false-associations can also result from ignoring pedigree. It is also true that an association in one particular experimental study could occur by chance alone, and the verification of previous results has always been one of the prime motivators driving scientists to repeat experiments. Markers that cannot be validated have no value as tools for marker-assisted selection.

Source: Alison Van Eenennaam, Cooperative Extension Specialist, Univ. of California Davis

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*“...Markers that cannot be validated have no value as tools for marker-assisted selection.”*

## National Animal Identification System Myths and Facts

**Myth:** There are fines for producers who do not register in NAIS.

**Fact:** Participation in NAIS is voluntary at the Federal level. There are no Federal penalties or other "enforcement" mechanisms associated with the program. You will not be penalized by USDA at all if you choose not to participate in the program.

**Myth:** USDA wants to identify every animal in the United States, including pets, for NAIS.

**Fact:** The focus of NAIS is animal agriculture - livestock and/or poultry. Owners of the following species would benefit from and are encouraged to participate: cattle and bison; poultry; swine; sheep; goats; cervids (deer and elk); equines (horses, mules, donkeys, burros); and camelids (llamas and alpacas). Household pets (cats and dogs) are not included.

**Myth:** USDA wants to identify and track the movement of all livestock in the United States for NAIS.

**Fact:** Attempting to record all animals and movements is not practical, and that is not the intent with NAIS. Rather, the intent with NAIS is to prevent disease spread. The only animals recommended for identification are those that are moved from their premises to locations where they "commingle", or come into contact with, animals from multiple/ other premises. Due to the nature of their movements, these animals may pose a significant risk of disease transmission or have a greater impact on the spread of a potential disease. Animals with a "lower-risk" of, or "lower-impact" on, disease spread are not the focus of NAIS.

For example, the following situations are not applicable to NAIS:

- Livestock that never leave the premises of their birth, even if they move from pasture to pasture within that premises, do not need to be identified
- Animals that never leave their premises other than when they "get out"
- Animals that are only moved directly from their birth premises to custom slaughter
- The participation of animals in local trail rides

- The movement of animals to small local parades or fairs (Many local fairs and similar events may have their own animal identification requirements that are not affected by NAIS. You should check with animal health officials or event organizers for any such existing requirements.)

**Myth:** USDA will use the NAIS to provide "real-time" government surveillance of live-stock.

**Fact:** NAIS is not a "real-time" tracking system for animals. There is no constant or continuous observation of animals; comments implying otherwise are simply untrue. Rather, animal movement records will be established when the owner or caretaker of the animal chooses to report such information. This animal location and movement data will be held in multiple, secure databases managed by private industry groups and the States. Animal health officials will only request access to animal movement and location records in the case of a disease outbreak or other animal health event (such as an outbreak of avian influenza or brucellosis).

**Myth:** Producers can no longer provide comments or feedback regarding the NAIS.

**Fact:** NAIS continues to evolve to meet producer demands, and participant input to the program is critical. USDA has established an email address for NAIS, [animalidcomments@aphis.usda.gov](mailto:animalidcomments@aphis.usda.gov), and always welcomes comments. Comments can also be provided on the NAIS website. APHIS and its State and industry partners have also created NAIS Species Working Groups to provide the species-specific, ground-level information that is necessary to create an effective system. These groups represent another important avenue for people to provide input and help shape the development of NAIS. Producers, animal owners, and other stakeholders can submit comments to their Species Working Group through the NAIS Web site. As a leader in the development and implementation of NAIS, the Mississippi State Veterinarian also welcomes input on the program.

Source: <http://animalid.aphis.usda.gov/nais/index.shtml>

*"...The intent with the National Animal Identification System is to prevent disease spread."*

**NATIONAL  
ANIMAL  
IDENTIFICATION  
SYSTEM**

Beef cattle producers can provide feedback on NAIS through several means

*Mississippi Beef Cattle Improvement Association—Productivity and Quality*

Mississippi Beef Cattle Improvement Assn.  
Box 9815  
Mississippi State, MS 39762

Phones: 662-325-7466, 662-325-7465  
Fax: 662-325-8873

Email: [jparish@ads.msstate.edu](mailto:jparish@ads.msstate.edu)  
[jrhinehart@ads.msstate.edu](mailto:jrhinehart@ads.msstate.edu)



Send questions or comments to Jane Parish or Justin Rhinehart, Extension Beef Specialists, Mississippi State University Extension Service



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Visit MBCIA online at  
<http://msucares.com/livestock/beef/mbcia/>

## MBCIA Membership Application

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

County: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

(Check one) Seedstock:  Commercial:

Cattle breed(s): \_\_\_\_\_

Completed applications and \$5 annual dues or \$100 life-time dues payable to Mississippi BCIA should be mailed to:

Mississippi Beef Cattle Improvement Association  
Jane Parish, Extension Beef Cattle Specialist  
Box 9815, Mississippi State, MS 39762

## MBCIA Genetic Profit Tips – June 2009

### Rate of Genetic Improvement

Selection is the process breeders use to produce genetic change, realizing that genetic change and genetic improvement are not necessarily the same. There are many traits that the producer can change but that may not yield an “improved” animal. Improvement implies the production of superior animals, and the term “superior animals” means those with greater profitability.

The rate or speed with which breeders can improve a specific trait is determined by four factors: generation interval, genetic variability, selection intensity, and selection accuracy. Beef cattle producers have little control over genetic variability and limited control over generation interval. The generation interval, or the rate at which one generation of animals is replaced by the next, is largely limited by the reproductive rate (single births) and relatively late sexual maturity in beef cows and the need to generate replacements. The breeder has most control over the generation interval in males and over the remaining two factors: selection accuracy and intensity in both sexes.

The greatest accuracy of selection is achieved using EPD rather than actual performance. EPD are calculated using all available performance information from animals within a database. By using all available data rather than only individual performance, greater accuracy of selection is

achieved and, as accuracy increases, so does the rate at which genetic improvement is made. Use of EPD for selection decisions also improves the intensity of selection. Animals from different herds can be compared on a genetic level without sacrificing accuracy of selection because EPD account for genetic and environmental differences between contemporary groups. The ability to compare animals from different herds expands the pool from which producers can choose replacements; no longer are they limited to comparing animals from within the herd of a single seedstock producer.

Another way to envision the effects of an expanded pool of potential replacement animals is to take an example from high school athletics. If a team for any sport was chosen from a high school of only 100 students and then a team was selected from a high school of 2,000 students, likely the team from the school with 2,000 students would be superior. The team from the larger school would be subject to more selection pressure in forming their team. (This is why there are different classes for high school sports). The same concept is at work when making selection decisions; the use of EPD expands the pool from which to select, allowing fair comparison of animals from many different herds both small and large; the bigger the pool to choose from, the greater the intensity of selection and the faster the rate of genetic improvement.

Source: *National Beef Cattle Evaluation Consortium. 2006. Beef Sire Selection Manual.*