

**Cattle Business in Mississippi – June/ July 2008**  
**“Beef Production Strategies” article**

## **The Importance of Adaptability**

*Jane Parish, MSU Extension Beef Cattle Specialist*

Environments and management systems vary tremendously throughout the U.S. beef cattle herd. Relocation of cattle exposes cattle to different environmental challenges and management schemes. Cattle genotype (genetic make-up) interacts with environment. In other words, within an environment, some cattle are better adapted to perform optimally in that environment. With the relatively high temperatures and humidity, parasite loads, and related production challenges common in Mississippi, adaptability is an important topic for Mississippi beef cattle producers.

Cattle performance in an environment is affected by their response to stress. Stressors include nutrition, disease, weather/ climate, and topography. Nutritional stressors, for example, may include the presence of toxic plants in grazing areas and forage quantity or nutrient quality limitations. Adaptability refers to how well cattle handle these environmental stresses. Examples of traits of interest related to cattle adaptability include heat tolerance, hair shedding, and susceptibility to high-altitude disease. Both breed differences and differences among cattle within a breed are relevant when considering how “adapted” cattle are to an area. If resources used to support reproduction and survival are compromised, then rapidly increasing genetic potential for production could occur while decreasing genetic merit for adaptation. A focus on selection for adaptability is essential within current production systems and environments.

Prominent ranchers shared their thoughts on the importance of adaptability at a recent Beef Improvement Federation meeting. An emphasis on “pounds in the right package” was an approach suggested to allow cattle producers to produce cattle adapted to their environment while hitting economic targets. Another producer stated that adaptability to forage- and agricultural co-product- based diets was critical. A third producer noted that seedstock producers should produce high quality genetics that fit the different geographic areas where cattle are produced.

### **Heat Tolerance**

The ability to rank cattle appropriately for a specific environment or management system or key trait(s) critical to performance in that environment or management system is useful. Hot, humid environments induce heat stress in temperate breeds of cattle in particular, and can negatively affect their reproductive and growth performance. A heat tolerant animal can maintain a normal body temperature under ambient high temperatures (generally temperatures over 75 degrees Fahrenheit). The development of a heat tolerance EPD would provide producers with an economically relevant

selection tool for optimal production in areas with very high ambient temperatures and high humidity. Evidence supports the idea that a slick hair coat contributes to heat tolerance in beef cattle. Research is currently underway at the Mississippi Agricultural and Forestry Experiment Station to address hair shedding differences within three beef cattle breeds.

## **Region of Origin**

Specific steps can be taken to minimize the risk of adaptation problems in relocated cattle. First, purchase local produced cattle when possible. Do not sacrifice genetics when doing this. However, with use of artificial insemination and embryo transfer in many local herds, it is likely that there are sources of desirable and even superior cattle genetics nearby. Whether searching for seedstock for breeding or commercial cattle for production, Mississippi beef cattle producers offer quality genetics throughout the state. Advantages to purchasing local genetics include reduced freight costs, local customer service, and adaptability benefits.

Escalating fuel costs translate to higher livestock trucking expenses. Therefore, a significant difference in freight alone can allow producers to pay even more for locally produced cattle than cattle produced outside the region. As fuel prices rise, the economic advantages of sourcing locally produced cattle increases.

A large part of a seedstock producer's offering includes customer service. Having ready access to seedstock providers in the region allows interested customers the opportunities to easily visit the seedstock operations, entertain visits to commercial operations from seedstock producers, and to better understand production conditions of both the seller and buyer. Many times, similar production conditions will exist between buyers and sellers of locally produced cattle. Producers are often more likely able to select cattle prior to them being "picked over" when dealing with other producers in their area.

With regard to adaptability, numerous studies have shown real performance differences in cattle raised in a region compared with cattle introduced into a region. For example, comparisons of Florida-born Hereford bulls versus Montana-born Hereford bulls revealed that in Florida the locally born and raised bulls had a 33-pound advantage at weaning over the bulls introduced into Florida from Montana. Similarly, during the spring and summer months in Florida, bulls from Florida experienced lower decreases in testicular volume, semen volume, and sperm motility than Montana bulls. The Florida bulls increased sperm concentration, while the Montana bulls decreased sperm concentration. Thus, environment affected the reproductive development of Montana bulls in Florida.

Try to ship cattle from other areas to the local ranch when conditions are optimal at the local site. For instance, bring cattle in during periods of high forage availability and quality and low parasite loads. Avoid transporting cattle to the local ranch during adverse weather conditions including periods of high ambient temperature. Introduce

cattle to new environments slowly. Start by placing them in small pens or traps and then monitor them carefully as they move to larger pastures. When purchasing “unadapted” bulls consider buying yearlings and continue their development in the new environment. This allows for social adaptation as well. Consider the health programs and disease exposure of cattle from other regions before purchase. Disease risks in distance locations may be different from local disease concerns.

### **Information Sources for Local Genetics**

The Mississippi Beef Cattle Improvement Association (MBCIA) promotes local beef cattle genetics through various sale offerings. The annual Spring and Fall MBCIA Bull Sales are examples of quality seedstock offerings within the state. Evidence in the quality of the sale cattle shows through the increasing demand for MBCIA bulls throughout the region and in the sale results. The MBCIA also now hosts a seedstock beef cattle directory on its website: [msucares.com/livestock/beef/mbcia/seedstock.html](http://msucares.com/livestock/beef/mbcia/seedstock.html).

Additionally, the MBCIA, Mississippi Cattlemen’s Association, and Mississippi Farm Bureau Federation support the inaugural Mississippi Producers Homeplace Feeder Calf Board Sale set for August 4, 2008. This sale will provide commercial cattle producers an opportunity to showcase their value-added calf crops. It will also target expanding demand from buyers with uniform, truckload lots of calves and accurate descriptions of calf processing and value-added management.

Several breed-specific organizations are active in Mississippi and work hard to educate cattle producers on seedstock offerings and advantages of purchasing breeding cattle from within the state. Stay informed of breed association field days, producer tours, youth events, newsletters, and consignment sales held each year throughout Mississippi. State breed association leadership can assist producers in locating seedstock providers in the local area through membership lists and directories.

The Make Mine Mississippi program through the Department of Agriculture and Commerce promotes local purchases of Mississippi agricultural products. Consider participants in this program as potential sources of home-raised cattle and beef products. For more information visit the Make Mine Mississippi website at [www.mdac.state.ms.us](http://www.mdac.state.ms.us).

For more information on beef cattle adaptability or related topics, a list of Mississippi beef cattle breed associations, or to contact the Mississippi BCIA, visit a local office of the Mississippi State University Extension Service.