

Mississippi Beef Cattle Improvement Association

Mississippi Beef Cattle Improvement Association—Productivity and Quality



Upcoming events:

- August 1—MS Homeplace Producers feeder calf board sale, Hattiesburg, MS
- August 19—Deep South Stocker Conference, Shorter, AL
- August 27—Southern Producers replacement heifer sale, Hattiesburg, MS
- September 1—Fall BCIA bull and heifer sale nomination deadline
- September—Beef Cattle Genetics Learn at Lunch sessions
- September 22— Fall Grazing School, Poplarville, MS
- September 29— Fall Grazing School, Batesville, MS
- October 21—MS Fed Beef Conference, MSU
- October 27-29—MSU Artificial Insemination School, Mississippi State, MS
- November 10—Fall BCIA bull and heifer sale, Raymond, MS

Inside this issue:

Beef Cattle Research Update	2
MBCIA Membership Application	4
Multi-breed Evaluation	4

Beef Improvement Federation 2011 Convention Highlights

- ✓ Monogram Farms of Terry, Mississippi represented the Mississippi Beef Cattle Improvement Association as a nominee for the Beef Improvement Federation Seedstock Producer of the Year Award. Congratulations to Roland and Doug Preuss on their nomination and outstanding application.
- ✓ USDA-Agricultural Research Service researchers at Clay Center, Nebraska, detected the presence of Y chromosomes among “exposed” females that did not conceive when analyzing DNA from English-Continental females in the U.S. Meat Animal Research Center herd. Although only males are supposed to possess Y chromosomes, testing of *Bos indicus*-influenced females from Deseret Ranch in Florida resulted in discovery of fragments of Y chromosomes in up to 29% of open heifers. They have also found the Y chromosome and replication of regions along the genome that appear to be associated with fertility among heifers from the Rex Ranch in the Nebraska Sandhills. The researchers suspect a link to low fertility in females and are now looking at additional herds.
- ✓ Embryonic loss with estrus synchronization followed by artificial insemination is a problem. Research done at the USDA-Agricultural Research Service Miles City, Montana facility shows the follicle size only matters in the recipient cow. In addition, estradiol concentration at the time of breeding is the most important factor relating to fertility. It is followed, in order of importance, by the presence of progesterone on Day 7 following breeding, presence of progesterone prior to breeding, ovulatory follicle size, embryo quality, and days postpartum at breeding.
- ✓ According to Iowa State University researchers, the age of a dam influences the amount of antibodies transferred to her calf, with 5- to 9-year-old dams passing the greatest amounts of antibodies to their calves. The antibodies present in calves from younger cows start are lower levels and drop much more quickly than calves from older dams. For the first round of immunizations, older calves respond better to vaccines than younger calves.
- ✓ South Dakota State University researchers looked at how vaccine response against bovine viral diarrhea (BVD) might differ among calves by different sires. They found a link between sire and calf BVD vaccination response, suggesting that the response was at least partially controlled by genetics. They hope to discover which DNA markers are associated with BVD vaccine response in cattle.
- ✓ Residual feed intake (RFI) is the difference between actual feed intake and expected feed intake based on body weight, with lower values being more desirable. It is a highly heritable trait, so lower-RFI dams tend to produce lower-RFI offspring. Cattle producers can use this information when making bull and heifer selection decisions to significantly reduce feed costs. Cattle with lower RFI have lower heat production, lower heart rates, higher nutrient digestibility, less carcass fat, more-efficient muscle mitochondria, more-efficient liver mitochondria, produce less methane, and spend less time eating per day.
- ✓ Montana State University researchers showed using data from recent Midland Bull Test sales that buyers are paying nearly \$400 per head more for bulls for every 1 pound improvement in residual feed intake.

Beef Cattle Research Update



Capturing maximum preconditioning premiums requires use of appropriate marketing strategies

Preconditioning beef calves prior to sale by cow-calf producers

Preconditioning is designed to reduce incidence of bovine respiratory disease by increasing the immunity of the calf in preparation for the stress of weaning and shipping as calves move from their birth location through the stocker and feedlot phases of the beef production cycle. Results summarized from various studies indicate buyers paid more for preconditioned relative to nonpreconditioned calves (premium values ranged from \$1.43 to \$6.15/100 pounds for studies that assessed statistical significance of values); however, premiums paid for preconditioned calves do not necessarily result in increased net profit for cow-calf producers (net profit values ranged from -\$89.92 to \$53.71/calf). To realize the greatest monetary benefit from preconditioning, cow-calf producers should develop a reputation for integrity and market calves through special preconditioning sales.

Source: Thrift and Thrift. 2011. *Prof. Anim. Sci.* 27:73-82.

Effect of feeding frequency on feedlot steer performance

Two-hundred seventy crossbred yearling steers with an average initial body weight of 700 pounds were used to determine the effect of feeding frequency on feedlot performance and carcass characteristics. Steers were stratified by body weight and randomly assigned to pens. Pens were then randomly assigned to 1 of 3 treatment groups: once-daily feeding (1X), twice-daily feeding (2X), or 3-times-a-day feeding (3X). Steers were fed a standard high-concentrate steam-flaked-corn based finishing ration for 170 days. Steers were housed in pens measuring 20 × 60 feet. Feed was delivered to steers in fence-line (12 feet in length) concrete bunks (1 foot per steer). Pen served as the experimental unit, and cattle were slaughtered at a constant days on feed. Average daily gain was similar for steers fed 1X or 2X per day; however, average daily gain and average daily feed intake were greater in steers fed 3X when compared with steers fed 1X or 2X. Feed efficiency was similar for all 3 treatment groups. Steers fed 3X had a greater hot

carcass weight than did steers fed 1X or 2X. No differences were detected between the treatment groups for USDA quality grade or yield grade. These data indicate similar performance between feeding 1 or 2 times per day. However, feeding 3 times a day increased average daily gain, average daily feed intake, and hot carcass weight. Source: Schutz et al. 2011. *Prof. Anim. Sci.* 27:14-18.

Economic effects of bovine respiratory disease on feedlot cattle during backgrounding and finishing phases

Bovine respiratory disease (BRD) can cause significant economic losses for cattle producers. This research assessed the economic effects of BRD in backgrounding and finishing phases. Three-hundred thirty-seven crossbred heifers with expected high risk of BRD were assembled at a Kentucky order buyer facility and delivered to Stillwater, Oklahoma, in September 2007. The heifers were monitored daily for signs of BRD during a 63-day backgrounding phase. After backgrounding, one-hundred ninety-three heifers were allocated to finishing pens according to number of BRD treatments received: never treated (OX), treated once (1X), treated twice (2X), treated 3 times (3X), and chronically ill (CX). Net returns decreased in the backgrounding phase and the combined backgrounding and finishing phases as number of BRD treatments increased. On average, the OX, 1X, 2X, and 3X groups had \$111.12, \$92.51, \$59.98, and \$20.62, respectively, greater net returns than CX during backgrounding. When combining backgrounding and finishing phases, the 3X and CX groups lost \$72.01 and \$143.20 more than the OX group.

Source: Brooks et al. 2011. *Prof. Anim. Sci.* 27:195-203.

Use of soybean hulls with or without corn by-product protein sources in feedlot backgrounding diets

Grain and oilseed by-products are potential feedstuff alternatives to grains and oilseed meal in feedlot diets. Two hundred newly weaned Angus steer calves with an average initial body weight of 591 pounds were used to evaluate the replacement of dry-rolled

“...Soybean hulls with or without corn co-products (corn gluten feed or dried distillers grains) can substitute for dry rolled corn and soybean meal in backgrounding diets.”

Research Update (Cont.)

corn (starch-based energy) with soybean hulls (fiber-based energy; SBH), and soybean meal (SBM) with corn by-products on feedlot backgrounding performance. Steers received oat silage-based diets containing dry rolled corn plus SBM (C-SBM), SBH plus SBM (H-SBM), SBH plus dried corn gluten feed (H-DCGF), or SBH plus dried distillers grains with solubles (H-DDGS) for 52 days. Compared with C-SBM, H-SBM steers had greater dry matter intake during the initial 28 days and overall but no differences in average daily gain or gain to feed ratio. No differences were detected for dry matter intake, average daily gain, or gain to feed ratio when comparing H-SBM steers with steers receiving corn-origin protein (average of H-DCGF and H-DDGS). The H-SBM steers had greater urea nitrogen concentrations on days 28 and 52 compared with steers on corn-origin protein diets, indicating potentially greater protein degradability. Compared with H-DCGF steers, H-DDGS steers had greater average daily gain during the initial 28 days but were similar overall. The H-DCGF steers had greater concentrations of glucose and nonesterified fatty acids on day 28 compared with H-DDGS steers but were otherwise not different. Based on performance and blood metabolites, SBH with or without corn by-products can be a substitute for dry rolled corn and SBM in feedlot backgrounding diets.

Source: *Mueller and Boggs. 2011. Prof. Anim. Sci. 27:228-234.*

Comparison of long-term progestin-based protocols to synchronize estrus before fixed-time artificial insemination in beef heifers

Two experiments were conducted to compare pregnancy rates resulting from fixed-time AI after administration of 1 of 2 long-term controlled internal drug release (CIDR)-based protocols. Heifers were assigned to treatment by age, body weight, and pubertal status. The CIDR Select-treated heifers received a CIDR (1.38 grams of progesterone) from day 0 to 14, followed by 100 µg of GnRH, intramuscularly (i.m.) 9 days after CIDR removal (day 23) and PGF2α (25 mg, i.m.) 7 days after GnRH treatment (day 30). Heifers assigned to the Show-Me-Synch protocol received a CIDR

from day 0 to 14, followed by PGF2α 16 days later (day 30). Artificial insemination was performed at 72 or 66 hours after PGF2α treatment for the CIDR Select- and Show-Me-Synch-treated heifers, respectively, and each heifer was given GnRH (100 µg, i.m.) at the time of AI. The diameter of dominant follicles on day 23 at PGF2α and on day 30, and the estrous response after PGF2α treatment up to the point of fixed-time AI did not differ between CIDR Select- and Show-Me-Synch-treated heifers. Concentrations of progesterone in serum at PGF2α were greater in Show-Me-Synch- than CIDR Select-treated heifers (6.0 vs. 4.8 ng/mL, respectively). Pregnancy rates of heifers resulting from fixed-time AI did not differ between CIDR Select- and Show-Me-Synch-treated heifers (CIDR Select, 59%; Show-Me-Synch, 70%). Fixed-time AI pregnancy rates tended to be greater in Show-Me-Synch-treated (62%) than in CIDR Select-treated (51%) heifers. Pregnancy rates at the end of the breeding season did not differ (CIDR Select, 85%; Show-Me-Synch, 83%) between treatments. Pregnancy rates resulting from fixed-time AI were comparable for heifers assigned to each of the 2 long-term progestin-based protocols. The reduced treatment cost and animal handling associated with administration of the Show-Me-Synch protocol offer distinct advantages over the CIDR Select protocol despite similarities in pregnancy rates resulting from fixed-time AI. Source: *Mallory et al. 2011. J. Anim. Sci. 89:1358-1365.*

Exit velocity in suckling calves

Exit velocity was determined as the rate of speed of a calf traversing 6 feet after being released from a working chute. Exit velocity of temperamental calves increased at a faster rate with age compared with intermediate and calm calves. Exit velocity is a useful and viable indicator of temperament classification. Results suggest that temperamental calves increase their EV at a faster rate and may be identified before weaning, which may enhance the ability of producers to select against temperamental animals.

Source: *Burdick et al. 2011. J. Anim. Sci. 89:233-236.*

“...*Temperamental calves can be identified before weaning*”—*Dr. Rhonda Vann and research colleagues*



Consider differences in drug and animal handling costs when comparing AI protocols.

Mississippi Beef Cattle Improvement Association—Productivity and Quality

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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

Multi-breed Evaluation

Traditionally, genetic evaluations have been performed within breed. This means that only bulls from the same breed could be directly compared. If a producer wanted to compare two bulls of different breeds for use in his/her herd, it was impossible to do so using traditional within breed EPD.

Researchers at the USDA Meat Animal Research Center in Clay Center, Nebraska have developed Across Breed EPD adjustment factors. These additive adjustments can be used to adjust EPD from different breeds in order to compare bulls. These values are updated annually and are made available each year on the Beef Improvement Federation's website located at www.beefimprovement.org/proceedings.html. The latest update was presented at the BIF annual meeting on June 2, 2011.

Expected in the future is the generation of EPD bringing together animals from several breeds in a format that allows people to compare animals of several different breeds without having to additively adjust the EPD. Current research is being conducted to calculate EPD using multi-breed analyses. Results from these analyses would provide EPD for animals from all breeds included in the analyses on one common base so that animals can be directly compared.

Besides being able to compare different breeds of bulls, there are other advantages to a multi-breed evaluation. Bulls that have calves represented in several different breeds, such as Angus bulls that have sired crossbred calves from Simmental or Charolais cows, for example, can have all of that information included in one analysis to increase the accuracy of their EPD. Also, crossbred bulls, that may not typically be evaluated in a normal genetic evaluation, can be included in multi-breed evaluations.

Although there are many benefits to a multi-breed evaluation, there are also some drawbacks. **Results from a multi-breed analysis may not be suitable for choosing bulls for a crossbreeding scenario as heterosis effects are taken out of the data prior to calculation of the EPD values.** As an example, comparing Red Angus versus Gelbvieh bulls for use on Red Angus cows would not be a valid comparison as the Gelbvieh bulls would also introduce heterosis that the Red Angus bulls would not provide.

Source: *Beef Sire Selection Manual*. 2nd edition. 2010. National Beef Cattle Evaluation Consortium.

Note: The 2011 across-breed EPD tables should only be used with EPDs current as of June 2011 because of potential changes in EPD calculations from year-to-year.