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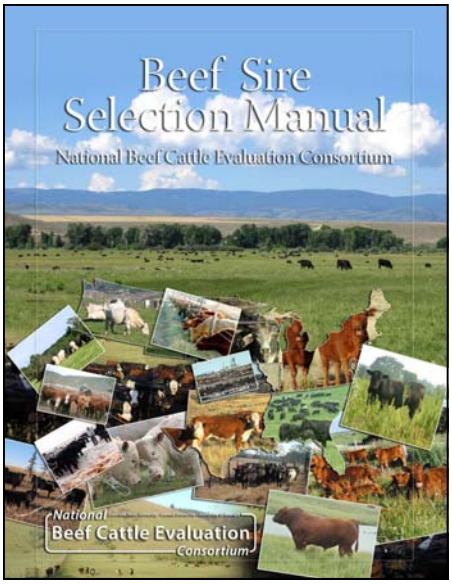
Mississippi Beef Cattle Improvement Association

Mississippi Beef Cattle Improvement Association—Productivity and Quality

2nd Edition of Beef Sire Selection Manual Released in 2010

The second edition of the Beef Sire Selection Manual is now available to producers. This comprehensive manual was sponsored by the National Beef Cattle Evaluation Consortium (NBCEC) and features a variety of research and genetic technology that producers can apply to their farms and ranches.



The first edition of the Beef Sire Selection Manual was printed in 2005. The Consortium released the second edition in 2010. A talented set of beef genetics experts from across the USA have authored the chapters. We are indebted to their abilities to present sometimes challenging materials in clear form that is easily understood by readers with a wide array of backgrounds. Many others have reviewed and critiqued the authors' efforts.

This second revised edition of the sire selection manual builds on the successful first edition and provides many details as to the important aspects of beef cattle improvement. The manual should be of interest to stakeholders in all sectors of the beef industry, those bull breeders and bull buyers involved directly in animal management and selection, those that assist them in this task, including breed associations, sales representatives, extension agents, and aspiring students looking for career opportunities in any of those areas.

A new chapter appears near the end of the second edition, adding new developments in the utilization of molecular information in beef cattle selection decisions. Some chapters have remained quite similar to the initial version, while others have been updated and improved. There has been some reordering of chapters too.

Whether a seedstock breeder, a commercial breeder, a provider of selection decision tools, an educator or simply a casual reader, we believe everyone will gain from the manual. Sire selections are the premier selection decisions that all cattle breeders make, whether in a seedstock situation or in a commercial, crossbreeding one. Understanding the concepts and the tools is the first step in increasing chances of business success.

The NBCEC is an organization of universities that have been involved in beef cattle genetic evaluations over the last several decades, plus affiliate universities doing research critical to beef cattle selection and evaluation. The consortium, which started operations in 2000, is funded by a Special Research Grant from the Cooperative State Research, Education, and Extension Service of the USDA. The focus of the NBCEC is research and an active extension program in beef cattle genetics.

The updated manual is available online at:

http://www.nbcec.org/producers/sire.html

OR

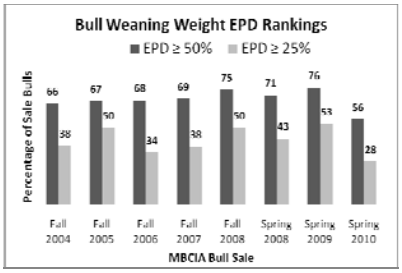
http://msucares.com/livestock/beef/beefpubs.html

Upcoming events:

- January 20—Mississippi BCIA Spring Bull Sale nomination deadline
- February 11—MBCIA Annual Membership Meeting, Jackson, MS
- March 3—Hinds CC Bull Test Sale and Mississippi BCIA Spring Bull Sale, Hinds Community College Bull Sale Facility, Raymond, MS
- March 15—Applied Cattle Nutrition Workshop, MSU
- March 17-19—MSU Artificial Insemination School, Mississippi State, MS
- April 5—Cattlemen's Exchange Feeder Calf Board Sale, Winona, MS
- April 8—Beef Cattle Boot Camp, Prairie, MS
- April 15—Beef Cattle Boot Camp, Poplarville, MS

Inside this issue:

Recent EPD Trends for MBCIA Bulls Sales



MBCIA bull sales are a consistent source of bulls with high EPD profiles for a wide range of traits

The Mississippi Beef Cattle Improvement Association (MBCIA) Bull Sale Program has a 42-year history of promoting beef cattle improvement within Mississippi. The present study explores recent MBCIA sale history from 2004 to 2010 to determine expected progeny difference (EPD) trends of bulls consigned to this marketing program.

From 2004 to 2010, only two out of the 298 bulls catalogued for MBCIA bull sales lacked WW, YW, or MILK EPD. The percentages of bulls with SC EPD reported tended to be higher during the 2008 to 2010 period than during the 2004 to 2007 period. Similarly, the percentages of bulls with end product (IMF/Marbling, REA) EPD reported tended to increase after 2005. This coincided with the change to MBCIA bull sale eligibility requirements effective starting with the Fall 2006 MBCIA Bull Sale such that at least one of the following 1) ultrasound EPD, 2) carcass EPD, or 3) ultrasound body composition scan results were required for sale bulls.

The MBCIA bull sales consistently attract bull consignments in the top half and quarter of the respective breeds for growth traits. Over half of the bulls in all 8 sales analyzed from 2004 to 2010 ranked within the top half of their breeds for WW EPD. In excess of one-quarter to over one-half of bulls were in the top quarter of their breeds for WW EPD. The same results held for YW EPD. This indicates a strong selection emphasis on growth traits for bulls consigned to these sales.

A widely used maternal trait genetic selection tool throughout the U.S. is MILK EPD. In seven of the eight MBCIA sales evaluated, 70% or more of the bulls catalogued had MILK EPD in the top half of their breeds. On average, over one-third of all bulls catalogued for these sales ranked in the top quarter of their breeds for MILK EPD.

Scrotal circumference EPD is important from the standpoint of selecting sires for reduced daughter age at puberty as well as bull semen producing capacity. The SC EPD levels indicated that MBCIA sale bulls were on par with national averages for SC EPD percentile rankings. However, less selection emphasis was placed on achieving high SC EPD in the MBCIA bull consignments during this period compared to WW, YW, and MILK EPD.

The percentages of bulls with IMF EPD or REA EPD in the top half and/or top quarter of their breeds tended to vary more from sale to sale than the other traits analyzed. Yet, despite genetic antagonisms between intramuscular fat and ribeye area, the sales that offered higher proportions of bulls in the top half and/or quarter of their breeds for IMF EPD also tended to be the same sales in which higher proportions of bulls were in the top half and/or quarter of their breeds for REA EPD. For the spring sales, there appears to have been slightly more emphasis placed on selection for high IMF EPD compared with selection for high REA EPD. On average, MBCIA sale bulls were on par with national averages for both IMF and REA EPD percentile rankings. In addition, in 5 of the 8 individual MBCIA sales assessed, the majority of the bulls offered exceeded breed averages for IMF EPD. The same held true for REA EPD.

Mississippi BCIA has a long history of promoting beef cattle improvement and quality genetics through annual bull sales. Review of EPD profiles of bulls in recent MBCIA sales show EPD reporting increasing over time for scrotal circumference and end product traits among consignments. Also, high proportions of consignments have growth, maternal, and end product EPD in the top half and/or quarter of their respective breeds. There is evidence of strong selection emphasis placed on growth traits and milk production, in particular, among sale consignments. The degree to which these selection decisions are being made in response to bull customer feedback is unknown. These findings indicate that the MBCIA bull sales are a consistent source of bulls with high EPD profiles for a wide range of economically relevant traits.

The complete report on MBCIA Bull Sale EPD Trends is available in the Mississippi State University Animal and Dairy Sciences 2010 Annual Report online at *www.ads.msstate.edu*.

"…There is evidence of strong selection emphasis placed on increased growth traits and milk production among sale consignments."

Fundamentals of EPDs—Part 3

EPDs are not a perfect science, and sometimes yield incorrect results. Assume that the bull's true genetic potential is depicted in Chart 1, with the average of his sperm resulting in 500 lbs of genetic potential. If we had all of this information and conducted the genetic evaluation then we would get a correct EPD.

However, let's assume this is a young sire and he has only produced 5 calves. Let's further assume that the 5 calves he produced happened to get his best mix of genes and averaged 550 lbs, instead of the expected 500 lbs. Because of other information that goes into the computation of the bull's EPD he would not end up with an EPD that was 50 lbs larger than correct, but it could be significantly larger than his true genetic potential.

Under this scenario let's assume that many other producers use semen from this bull and the next analysis he has 100 calves represented and the average of these calves would likely be closer to the expected 500 lbs, resulting in a much smaller weaning weight EPD, but more correct and with a higher accuracy.

Accuracy is a reflection of the potential unexplained variation associated with EPDs and is dependent on the amount of data available for the computation of the EPD. The methodology used to compute accuracy is irrelevant to most beef producers, but knowledge on how to use this information may be beneficial in the risk management of selection decisions.

In beef cattle genetic evaluations the accuracy value is a reflection of the range of potential change in the EPD as it approaches true genetic merit. Each breed prints a potential change table in their sire summary to indicate the range of potential change for each accuracy value.

As an example, let's assume that a bull has a birth weight EPD of +3.0 lbs and an accuracy of .10. The potential change for birth weight associated with an accuracy of .10 is ±2.7 lbs. In reality, this means that there is a 2/3 probability that the bull's true EPD for birth weight is between +.3 lbs and +5.7 lbs. If management dictated that a 4 lb birth weight EPD was the greatest that should be used in this herd, then there is potential that this bull would exceed that.

As additional information is gained on an animal the accuracy values of their EPDs also increases, which results in a decrease in potential change. Let's assume that a second bull with a 3.0 lbs birth weight EPD had an accuracy value of .70. Now the 2/3 probability of potential change is ±.9 lbs for a range of +2.1 to +3.9 lbs for the true birth weight EPD. Even though the two bulls had the same EPD of 3.0 lbs the second bull could be used with greater confidence of not exceeding the 4.0 lbs birth weight EPD maximum for this scenario.

For most commercial producers the purchase of young, unproven, sires is reality and low accuracy values should not be a discouragement from using EPDs in selection decisions. Low accuracy EPDs are still the best source of information available for making selection decisions on that trait. However, they can be used to help manage risk on traits that are of extreme importance to the beef cattle operation. In cases where there is little room for error it is sometimes necessary to go to greater extremes on the EPDs for certain traits when using low accuracy bulls.

Expected Progeny Differences provide beef producers with a reliable tool to make selection decisions. They are not perfect and there is error associated with all EPDs; however, every EPD has an accuracy value associated with it to help producers manage the level of risk they are willing to take for each trait they are selecting for. The methodology for computing EPDs will likely change over time and could incorporate genomic information in the future; with all of the successes associated with genetic evaluations there is potential that they can become even better and more accurate in the future.

Source: Darrh Bullock, Extension Professor, University of Kentucky , National Beef Cattle Evaluation Consortium, www.nbcec.org

"…Low accuracy EPDs are still the best source of information available for making selection decisions on young, unproven sires."

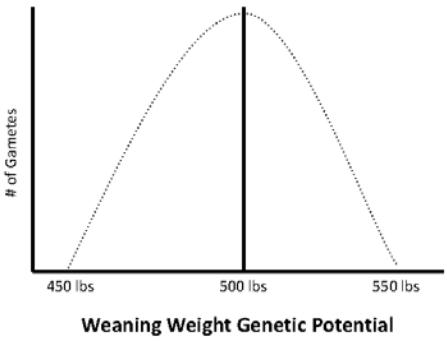


Chart 1. Example distribution of genetic potential of individual gametes produced by an animal.

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Email: jparish@ads.msstate.edu

Send questions or comments to Jane Parish,
Extension Beef Cattle Specialist,
Mississippi State University Extension Service

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 lifetime 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

Retained Placenta

The bovine placenta, or afterbirth, is normally expelled within a few hours after calving. A "retained placenta" occurs if the afterbirth is not expelled within 12 hours. Retained placentas normally occur in 3 to 12 percent of all calvings.

Closely evaluate your herd's nutrition if you are experiencing a more frequent occurrence of retained placentas. Energy or protein deficiency during pregnancy, Vitamin A deficiency, Selenium deficiency, Iodine deficiency, or Vitamin E deficiency can contribute to the occurrence of retained placenta. Stress from poor nutrition or obesity can also lead to cases of retained placenta. Cows with retained placentas will often be slower to breed back.

Predisposing Factors for Retained Placenta

• Inducing parturition (calving) prematurely greatly increases the incidence of retained placentas. Fortunately, there is rarely a need to induce parturition in cattle.

• Abortions or premature births
  - ♦ No retained placenta before 120 days of gestation
  - ♦ 15 percent if 121 to 150 days of gestation
  - ♦ > 50 percent if 240 to 270 days of gestation

• Dystocia (difficult births)

• Nutritional deficiencies, especially hypocalcemia (low blood calcium). Poor nutrition results in weak uterine contractions that are necessary to expel the placenta.

Treatment

• Do not forcefully pull out the placenta as this will often leave pieces of the placenta in the uterus that will further delay the cow from rebreeding.

• Time. The recommended treatment for a retained placenta is to "let mother nature take its course," and eventually the placenta will fall out. This may take up to a week (and will smell bad), but be patient. If the placenta is hanging extremely low, it may be advisable to twist the placenta into a knot around the cow's hocks to prevent her from stepping on it or catching it on some object. Watch the cow closely to ensure that she is eating, drinking, and feeling healthy.

• When in doubt, call your veterinarian. Veterinarians will occasionally prescribe hormonal treatment if indicated. Your veterinarian will also prescribe antibiotics if the cow becomes systemically ill.

Source: ANR-1323. Alabama Cooperative Extension System.