By the Numbers

►by **Sally Northcutt,** *American Angus Association*

EPDs: The gold standard

With a spring bull-sale season in our sights, before long you will be paging through sale books and considering a barrage of numbers to make genetic selections for your herd. It's important to have a basic game plan as you review the data at hand. Let expected progeny differences (EPDs) be your primary selection tool for genetic decisions. Here's why.

The gold standard

EPDs are the most comprehensive selection tool presented on a trait since all sources of information on an animal are included. EPD calculations use performance data, pedigree and genomic results, with all of these sources boiled into one piece of information. The values, presented in units of measure for the trait and reported with an accuracy, allow cow-calf and seedstock producers to rank or compare the relative genetic merit of animals.

In many cases this tool is used to select sires for economically important traits that will leave future progeny meeting the desired characteristics for the producer's breeding program. Sire search tools are available online at *www.angus.org/Nce/SireEvaluationDefault.aspx.* Angus breeders use EPDs heavily throughout their herd selections on both the male and female side and capitalize on the online tools available through AAA Login.

Supporting tables providing percentile ranks and breed averages are available electronically through *www.angus.org* to allow breeders to compare animals directly against the breed population and to chart their course for making genetic improvement.

Pieces of information

Pedigree. The pedigree is one of the components in the EPD calculations. Most trait EPDs are computed with a four-generation pedigree.

Trait phenotypes. Phenotypes are weights or measures collected and reported by a breeder within a set of cattle of the same gender, managed and treated alike; thus, the animals make up a contemporary group.

Genomic results. Results from DNA trait tests, also sometimes referred to as genomic results, are included in the genetic evaluation system as an indicator trait.

Just as it's not beneficial to solely use raw phenotypic measures (e.g., birth weights, weaning weights, scan results), the same caution applies with genomic results. DNA tests have value in genetic selection when incorporated with all other available forms of performance information for economically important traits in national cattle evaluation (NCE), and when communicated in the form of an EPD with a corresponding accuracy.

The weekly genetic evaluations provide business-minded cattle producers the most up-to-date EPDs available to further characterize Angus genetics in a timely fashion.

If some form of an EPD is available for the trait through the Association, then the EPDs should be considered the selection tool of choice. The Igenity profile scores are a simple categorical ranking on a 1-to-10 scale, until EPDs are available for a trait. Profile scores do not predict actual phenotypes. Likewise, the same applies to Pfizer percentile ranks (1-100) from genomic results.

Prior to 2009, breeders had to wait for EPD updates to occur on a six-month time frame. Today, the weekly genetic evaluations provide business-minded cattle producers the most up-to-date EPDs available to further characterize Angus genetics in a timely fashion. For example, the weekly genetic predictions for carcass merit encompass carcass, ultrasound and genomic databases. Ultrasound, carcass, genomic and pedigree databases are boiled down into one seamless set of genomic-enhanced carcass EPDs for Angus breeding programs.

Perspective on $Values

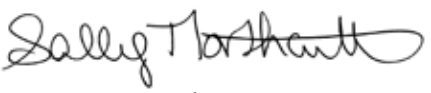
One would be remiss not to mention the $Value selection tools. While Angus breeders use EPDs to fine-tune their breeding program strategies for particular traits, most breeders and commercial bull buyers can benefit from the bioeconomic indexes for maternal and end-product traits.

Maternal index. The Weaned Calf Value ($W) was designed to assist with selection decisions for a breeding plan of calves marketed at weaning and replacement heifers retained. Emphasis traits and economic weightings are included for live calves born, weaning growth, maternal milk and cow size. To learn more about $W and other indexes go to *www.angus.org/Nce/ValueIndexes.aspx.*

End-product index. The Beef Value ($B) is geared toward calves with a terminal end point and no replacements retained. It is best-suited for breeding objectives of retained ownership from feedlot through harvest. Traits receiving economic weightings include values associated with carcass weight and marbling, along with red meat yield and postweaning growth.

Since the index values of $W and $B include the EPDs in the math, then the genomics is also seamlessly folded into the results via the EPDs.

The continued evolution of selection tools available for producers utilizing Angus genetics rely on a consistent and simplified method to characterize these genetics. Using the language of EPDs and the associated accuracies allow us to use the established "language" of the industry. Stay on course with the gold standard of EPDs along with application of indexes for you and particularly your customers.



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Editor's Note: *"By The Numbers" is a column by Association performance programs staff to share insights about data collection and interpretation, NCE, genetic selection and relevant technology and industry issues. Sally Northcutt is director of genetic research for the American Angus Association. If you have questions or would like to suggest a topic for a future column, contact Northcutt, Bill Bowman or Tonya Amen at 816-383-5100.*