By the Numbers

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Why use the EPDs?

Sale books, advertisements and web pages are full of cattle performance measures. Advancements in genomic tests for incorporation into expected progeny differences (EPDs) have further expanded the list of information bits provided to characterize Angus cattle. But which selection tools should you use for genetic improvement?

Information, please

More importantly, if you had a new customer interested in purchasing seedstock from your program, what would you tell them to use for genetic improvement? Which selection tools would you tell them are most effective? And, if they asked you if EPDs were the resource they should incorporate into their breeding strategy, what would you say?

The following sections are designed to help better inform your customers about the importance of EPDs and their role in characterizing Angus cattle.

EPD basics

EPDs are a beef cattle selection tool for cow-calf and seedstock producers to rank or compare the relative genetic merit of animals. These tools are used to select seedstock for economically important traits that will leave future progeny meeting the desired characteristics for the producer's breeding program.

The EPDs are reported in the units of measure for the trait — in pounds, for example, for birth, weaning, yearling or carcass weight; or in square inches for carcass ribeye area.

Unlike individual animal measures such as weights and ratios, EPDs can be compared across animals of different ages, herds, management groups and geographical areas of the country within the Angus breed. EPDs are the common language of the beef industry to allow relative ranking comparisons of Angus seedstock for economically relevant traits.

Scope as selection tools

EPDs provide a benchmark of genetic performance that is comparable across the American Angus Association database. Where weights and measures vary by season and animal age, as well as breeder and management routines, EPDs are genetic values with the environmental differences adjusted out. This allows comparison of EPDs breed-wide.

EPDs incorporate varying sources of information on an individual animal and its relatives, such as pedigree, genomics, and the Association's weights and measures database for the trait of interest.

EPDs incorporate varying sources of information on an individual animal and its relatives, such as pedigree, genomics, and the Association's weights and measures database for the trait of interest. These EPD genetic values allow breeders to compare animals directly against the breed population and chart their course for making genetic improvement.

Genomic-enhanced EPDs

Genomic results are used as indicator traits in the procedures to compute EPDs. These DNA tests are one piece of the EPD system and do not completely describe the variation in the traits. That's why it's important that the genomic test results be included in the EPDs along with all other available forms of performance information and pedigree.

EPDs should be considered the selection tool of choice if available for the trait through the Association. Even if trait scores or ranks for genomics are provided, the EPDs are the most informative. The Igenity profile scores (1-to-10 scale) and the Pfizer percentile rankings (1-to-100 scale) are simple categorical rankings, until EPDs are available for a trait. Scores and rankings do not predict actual phenotypes. The categorical rankings reflect the animal's genetic potential for that particular trait based on the combination of the DNA markers analyzed. EPDs are more comprehensive and include all available information on the animal of interest.

What is an Angus $Value?

The Angus $Values are selection index tools designed with the commercial bull buyer in mind to simplify genetic decisions for future calf crops. Indexes are challenging to develop, but they are easy to use and multi-trait by design. The $Values take into account the outputs considered on the revenue side of the profit equation, but they also consider the input, or expense, side associated with the production area of interest. The $Values incorporate both genetic components (EPDs) and economic terms relevant to feedlot performance, carcass merit and cow-calf production.

Weaned calf value ($W) is geared toward the preweaning performance and maternal traits of the cow herd. It includes:

- ▶ birth weight EPDs;
- ▶ weaning weight EPDs;
- ▶ milk EPDs;
- ▶ mature cow weight and height EPDs; and
- ▶ yearling weight and height EPDs (depending on the accuracy and availability of mature size EPDs).

In contrast, the beef value ($B) is a terminal trait index made up of feedlot value ($F) and grid value ($G) to improve postweaning performance and carcass trait merit.

$F considers:

- ▶ weaning weight EPDs; and
- ▶ yearling weight EPDs.

$G can be used wholly or broken down into its quality grade ($QG) and yield grade ($YG) components.

$QG includes:

- ▶ marbling EPDs;

$YG includes:

- ▶ carcass ribeye and fat EPDs;
- ▶ carcass weight EPDs; and
- ▶ yearling weight EPDs.

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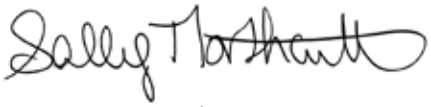
Availability of EPDs, $Values

Weekly genetic evaluations provide Angus enthusiasts the most up-to-date EPDs and $Values available to further characterize Angus genetics in a timely fashion. For example, the weekly genetic predictions for carcass merit will encompass carcass, ultrasound and genomic databases. Ultrasound, carcass and genomic data along with multiple generations of pedigree are boiled down into one seamless set of genomic-enhanced carcass EPDs for Angus breeding programs.

The continued evolution of selection tools available for producers utilizing Angus genetics rely on a consistent and simplified method to characterize these genetics.

To read more about EPDs, $Values and genomic resources, go to *www.angus.org*.



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