GE-EPDs and Calibration 5 - Common Questions

Angus Genetics Inc. (AGI) will release its fifth calibration of genomic-enhanced expected progeny differences (GE-EPDs) April 8, 2016. The process further refines how DNA test results are incorporated with pedigree, performance measures and progeny data into selection tools released through the weekly American Angus Association® National Cattle Evaluation (NCE).

Why calibrate GE-EPDs?

Calibration allows AGI, in partnership with scientists at Zoetis, to update the equations used to incorporate genomic test results into GE-EPDs. As AGI receives new DNA test results, as well as new data on tested animals, it allows both AGI and Zoetis to further train the models used to generate GE-EPDs. The result is increased accuracy of genomic predictions for animals within the Association's growing database.

Why now?

Calibration is a process familiar to the American Angus Association. When GE-EPDs were first introduced in 2010, the equations used to derive them used the genotypes of just more than 2,200 animals. In 2012, when the process was again conducted, that number increased to more than 11,700; then again in 2013 to more than 38,000; and more than 57,000 in 2014. This latest calibration, Calibration 5, used the genotypes of more than 108,000 animals in the training population, a nearly 88% increase from the previous calibration.

How much time is required to calibrate GE-EPDs?

Calibration is an extensive process between two organizations that typically requires about 9-10 months. Collaboration between AGI and research partner Zoetis began in June 2015 and required similar time commitments to the most recent calibration released in September 2014. Once calibration results were thoroughly reviewed and approved by AGI, new information was incorporated as quickly as possible to provide the most accurate, powerful GE-EPDs in a timely manner. Computing technology has kept pace despite the need to accommodate more DNA data.

How much will this calibration affect Angus GE-EPDs?

Each consecutive calibration results in further accuracy but with generally less incremental change from one calibration to the next. When the process was first introduced six years ago, for example, genomic data was available on fewer animals with which to train the equations that derive GE-EPDs. As the process evolves and Angus breeders successively record additional genomic and phenotypic measures, AGI is able to refine GE-EPDs to add accuracy and allow for more powerful genetic predictions on animals.

For the vast majority of animals, producers likely won't notice any significant shifts in GE-EPD values. For proven animals with large amounts of progeny data submitted, changes will be fairly minimal. Lower-accuracy animals with little or no progeny that have been tested with available genomic tests (Zoetis HD50K or i50K; GeneSeek GGP-HD or GGP-LD) will potentially change to a greater degree than those considered proven animals.

Heifer pregnancy (HP EPD) may show slightly more change than other traits, given more available data than previous calibrations. The number of animals with phenotypic and genomic data for HP nearly doubled since the last calibration. Increased numbers permit AGI to better understand the amount of variation explained by individual markers, allowing for appropriate re-estimation of allele effects. In all cases, new GE-EPDs are more accurate than the values they replace.

Will percentile ranks provided with genomic testing change?

Percentile ranks for animals tested with the Zoetis HD50K and i50K, or GeneSeek GGP-HD and GGP-LD tests will be updated to reflect the larger pool of animals that have been tested since the last calibration. Animals tested prior to Calibration 5 will have their percentile ranks updated, so animals tested in the future can be compared to those tested previously.

Will dollar indices like weaned calf value ($W) and beef value ($B) change?

Dollar indices like $W and $B are calculated from an animal's EPD, so as the EPD changes, dollar indices will change as well. For example, if an animal has a significant change in its carcass weight (CW) EPD, its $B could change as well since CW has a substantial effect on $B. However, the changes seen in Calibration 5 are reduced from past calibrations, so realized changes will be far less.

Are the economic assumptions for $Values changing?

Not at this time. The economic assumptions, such as carcass grid prices and annual cow costs, are updated annually in July, a format which began in 2015.

Does this affect GeneMax?

Immediately, no. Even though GeneMax scores are calculated using information from calibration, values from Calibration 4 will continue to be used for GeneMax for now. The GeneMax family of tests are undergoing some updates, to be released in midsummer. Once these updates are ready for release, results from Calibration 5 will be incorporated in the calculation of GeneMax scores and indices. At that time, animals will be reassigned percentile rankings to allow for animals that have been tested on GeneMax Advantage in the previous year to be compared to newly tested animals.

Where can I find more information?

Visit *www.angus.org* to access additional information regarding GE-EPDs; or contact Dan Moser, AGI president, at dmoser@angus.org or Kelli Retallick, genetic service director, at kretallick@angus.org.

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