



The Front Gate

► by **Allen Moczygemba**, CEO, American Angus Association

Advancing our genetic evaluation

On July 7, the Association implemented its new genomic evaluation using single-step methodology. The development of the new software by the team at Angus Genetics Inc. (AGI), however, had been ongoing for several years.

Multiple changes

The new evaluation is the most significant advancement to the American Angus Association's weekly genetic evaluation since genomics were incorporated in 2010. Single step allows for all pedigree, performance and genomic information to be used every week, eliminating the need for routine calibration. This will enable breeders to make selection decisions with more confidence. Importantly, it eliminates the practice of using genomic results of newly tested animals that are predicted from previous information.

While there were changes in animal rankings within the single-step evaluation, there were other updates in the evaluation that have resulted in a re-ranking of some animals.

Specifically, updates to our carcass model have had an impact on the re-ranking of individuals for carcass traits and the beef value index, \$B. As most know, \$B is an economic index that combines several different component traits, including growth, carcass and feed intake expected progeny

differences (EPDs). Both weaning weight and yearling fat were incorporated into the carcass model to give breeders a more accurate depiction of carcass merit.

Weaning weight was included in order to rid the evaluation of selection bias. Typically, the high performers at weaning are selected to be kept as breeding stock, then go on to be scanned by ultrasound, while the low performers are sorted off. Ignoring weaning weight in the carcass evaluation resulted in the below-average performers in a contemporary group being unfairly penalized for their carcass weight predictions. This was due to inadvertently ignoring the fact that they were already selected as high performers at weaning time.

Yearling fat was added to the index as it is an indicator of maturity in the carcass analysis. For example, if there are two animals that have the same ultrasound scan weight, but one is significantly fatter than the other, we would expect the fatter animal to have a lighter carcass weight because it will mature

more quickly and have a smaller carcass, whereas the leaner animal should grow to a heavier carcass weight.

Testing the model

As one would expect, the AGI team tested the new software extensively prior to its release on July 7 to ensure that it was more accurate and reliable than the existing multi-step software that the Association was using. Over the last several months, AGI ran a number of comparative tests between the new systems.

The tests consisted of choosing a specific date in time and then running each of the software programs in tandem to evaluate which system was better at predicting the actual performance data submitted by members. For example, the database was truncated as if it were 2015; all data after this point in time was ignored. An evaluation to predict EPDs was done on both the new (single-step) and old (multi-step) systems. It was found that the EPDs generated by the single-step software were better at predicting the performance data submitted to the Association after 2015.

In summary, test after test verified that the single-step genomic evaluation is superior in its ability to more accurately predict future progeny performance. More importantly for members, values will remain more consistent as additional data and genotypes are added to the Association's database.

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