

BY THE NUMBERS

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Expanding Genetic Predictions Beyond U.S. and Canadian Borders

The American Angus Association has a long-standing history of being the purveyors of Angus genetics around the globe.

In 2000 the American Angus Association and Canadian Angus Association took the bold step to combine the U.S. and Canadian Angus performance data and pedigrees in a singular genetic evaluation that compares registered animals out of the American Angus Association and Canadian Angus Association herd books.

This direct comparison of expected progeny differences (EPDs) has facilitated a strong partnership between the organizations by combining phenotypes and genotypes for a better description of Angus cattle. More importantly, however, it promotes international commerce of registered Angus genetics.

With the ongoing influence of American Angus genetics in every corner of the world, many look to American Angus and Angus Genetics Inc. (AGI) as a leader in providing the most accurate genetic descriptors of registered Angus cattle.

In 2018 the World Angus Secretariat (WAS) discussed an initiative to pursue a global Angus evaluation. At that time, the Association, alongside AGI, stepped up to explore this idea. What started as a WAS initiative quickly shifted to a strategic partnership among the three most dominant Angus associations: the American Angus

Association, Angus Australia and Canadian Angus Association.

With this partnership in place, a multiple year research project was employed to understand the feasibility of a World Angus Evaluation. The first major step in describing global Angus genetics was released in 2019, when the three associations released a joint evaluation for both foot angle and claw set EPDs.

This global collaboration is set for expansion with 11 additional traits to be released Friday, Oct. 13, 2023.

Why now?

This long-term research project started in 2018 and required meticulous analysis to determine if traits were suitable for a joint evaluation. Multiple tests and validations were performed to ensure trait measurements were compatible across databases and environmental differences such as age and contemporary groups could be properly modeled within country. These tests ensured high-quality, accurate records and adequate models are used for the betterment of the overall genetic evaluation.

With the testing complete, the evaluation is ready to allow users and promoters of Angus genetics to take full advantage of this advancement.

Most notable changes to the genetic evaluation occur during the annual update in the spring. However, because this update is simply a result of additional data coming into the genetic evaluation, the Association Board and staff chose to release this update to the membership sooner. This allows for individuals to take advantage of the increased accuracy precision of EPDs for late-fall and spring breeding seasons. Otherwise, those breeding decisions would have already been made before membership had the opportunity to take advantage of the additional data in the evaluation.

What is the benefit of the World Angus Evaluation?

The American Angus Association's Board of Directors aims to promote our Association's national cattle evaluation as the global currency for describing Angus genetics as one of the long-range strategic tactics to drive breed improvement. Collaborating with the Angus associations in Canada and Australia helps achieve this goal.

Collaborating with Angus Australia increases the number of phenotypes and performance records in the genetic evaluation, which increases the prediction accuracy of individual EPDs. This collaboration

also provides the ability to directly compare registered Angus seedstock animals across multiple herd books, enabling more international commerce.

One major benefit to the World Angus Evaluation is the increased number of high-quality carcass data records being added to the evaluation from Angus Australia.

The Australians are known for their large sire benchmarking project, in which they include American Angus bulls each year. These data will have a positive effect on the characterization of carcass genetics.

In general, this collaboration will increase our carcass data records by nearly 10%, while growth traits increase on average by 13%, calving ease scores by 14% and scrotal circumference records by 9%. In addition, we will add more than 200,000 genotypes into the weekly genetic evaluation from Angus Australia.

Promoting international commerce and breed diversity is important for American Angus genetics, as they are considered some of the best in the world. Curating a common currency for describing Angus genetics makes it easier to understand their value globally. American Angus Association members can also seek genetics from other regions of the world to benefit their breeding programs at home.

How is this possible?

When looking to combine data sets, some important features in the data must be present. First, similar data collection strategies must be in place to ensure data collected through each association can be compared. In this case, the American Angus Association, Canadian Angus and Angus Australia have very similar data collections strategies.

While some data, specifically from Angus Australia, may be captured at slightly different windows for traits like weaning or yearling weight, age adjustments and specific within-country data edits were executed to ensure the direct comparison of this data could take place.

Next, the populations must have overlap or links with each other through pedigree and genomic relationships. Figure 1 represents the overlap in the populations focused on the genotype of animals. This plot shows a large clump of dots that represent individual animals from all three countries, which shows how closely these individual populations overlap.

You do not see one individual color, or country clumped together by themselves, which supports that even though these animals have been in different herd books, the relationships among these animals are strong. This means the data being shared is valuable to inform genetic

predictions of animals in differing countries.

Are you planning to collaborate with other countries in the future?

It is a possibility we can collaborate and bring other countries in the World Angus Evaluation.

Good candidate associations for inclusion in the World Angus Evaluation are those with well-established data pipelines with alignment of the traits and tools being used across countries.

Continue to page 154 for a deeper look into the effects of the additional data in the World Angus Evaluation. Tune in to the Association's Angus University webinar on Tuesday, Oct. 10, which will cover the ins and outs of this expanded World Angus Evaluation. [A](#)

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Figure 1: Represents the overlap in genotyped animals in the World Angus Evaluation (black = USA, green = AUS, blue = CAN, and purple = NZ animals registered in the Angus Australia herd book).

