



By the Numbers

by Kelli Retallick, Angus Genetics Inc.

Selecting commercial-Angus replacements

Replacement-heifer selection is one of the most challenging and costly decisions a commercial cow-calf producer makes each year. The significance of these decisions ultimately affects all phases of not only individual operations but the entire beef production supply chain.

It is predicted that a producer does not turn a profit on an individual until at least more than four calves are produced. Because of this, it is critical the right females are selected to be developed. In order to make the most informed decisions possible, GeneMax[®] Advantage[™] (first released in 2014) has been updated to accommodate producer needs.

GeneMax Advantage updates

Made available through the partnership between Angus Genetics Inc. (AGI), the American Angus Association, Certified Angus Beef LLC (CAB) and Zoetis, this genomic test is specifically manufactured for prospective replacement females that are 75% or greater Angus. GeneMax (GMX) Advantage complements other sources of information used in commercial-heifer selection, including phenotypic evaluation, age, pedigree information and dam productivity. This genomic test provides valuable insight into the genetic value of individual animals, which may not be realized with other sources of information.



GeneMax Advantage is intended to provide commercial users of Angus with the most advanced genetic tools possible for making selection, breeding and marketing decisions. This genomic test is the only commercial test to be periodically updated with the latest calibration reported by the American Angus Association. This means the current version was developed from Calibration 5, which included more than 108,000 genotyped animals integrated into the national cattle evaluation (NCE).

Individual trait reporting

The updated version of GeneMax Advantage not only delivers three economic

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index scores, but also has added genomic predictions for 10 individual traits. Customizable smart outlier reporting for three traits along with the Sire Match option for HD50K- and i50K-tested sires are still available. These 10 individual traits are the drivers for the Cow, Feeder and Total Advantage indexes.

- ▶ Cow Advantage describes maternal genetics contributing to differences in profitability from heifer development to the sale of weaned progeny.
- ▶ Feeder Advantage defines genetics from dams contributing to differences in performance of feeder-calf progeny from weaning to *Certified Angus Beef*[®] (CAB[®]) brand carcass.
- ▶ Finally, Total Advantage designates profitability differences across all economically relevant traits captured in the two component indexes.

Table 1: GeneMax[®] Advantage[™] trait scores and interpretation

Trait score	Score interpretation
Calving ease maternal	Higher score — easier calving
Weaning weight	Higher score — heavier
Heifer pregnancy	Higher score — higher probability
Milk	Higher score — more milk
Mature weight	Higher score — heavier
Cow Advantage score	Higher score — more profit
Gain	Higher score — higher gain
Carcass weight	Higher score — heavier
Marbling	Higher score — more marbling
Ribeye area	Higher score — larger ribeye
Fat thickness	Higher score — less fat
Feeder Advantage score	Higher score — more profit
Total Advantage score	Higher score — more profit

Like the indexes, individual traits are transformed into normally distributed scores ranging from 1 to 100. A genomic score of 50 represents average and a higher score predicts greater genetic potential. These scores are benchmarked against a reference population that includes 37,519 previously tested animals. Table 1 shows the newly included individual trait scores and their interpretations.

Smart outlier reporting

Outlier reporting is still available for traits in which the economic impact is difficult to define, but still warrant special considerations due to their impact on profitability. Through AAA Login, customers

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may set limits (i.e., top 5%, bottom 10%, top 15%, etc.) to see desired rankings of individual animals against the reference population.

Cow cost, docility and tenderness are all reported using smart outliers. Cow cost is included to select away from high cow maintenance and production feed costs associated with genetics for combined mature cow size and milk.

Docility flags can be placed to find females with less desirable docility or temperament genetics, and tenderness outliers can be placed to find the least desirable animals for tenderness as determined by genomic predictions for Warner-Bratzler shear force.

Sire Match option

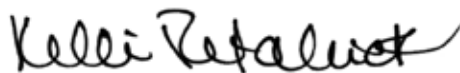
GeneMax Advantage also matches registered, transferred Angus sires to tested heifer progeny. It is important seedstock operations continue to transfer all registered-Angus bulls to commercial customers so they can take advantage of this tool.

This feature allows for producers to actively manage inbreeding with mating selected heifers by verifying individual sires to each calf. Along with that, producers may be better able to make decisions on animals they would like to develop into females or market at earlier ages. This feature is available for producers whose bulls are tested with the i50K or the HD50K. In order to receive Sire Match results, producers must be able to provide a list of potential sires that have been genomically tested.

Conclusion

GeneMax Advantage is a collaborative effort between AGI and its research partners to provide the most reliable tool to users of Angus genetics. It is not intended to be used for registered-Angus bulls or females. The predictions obtained with this commercial test are not incorporated into the Association's NCE and will not influence genomic-enhanced EPDs of registered animals in any way.

For more information on GeneMax Advantage or any other genomic tests, contact Dan Moser at dmoser@angus.org, or Kelli Retallick at kretallick@angus.org, or phone 816-383-5100.



EMAIL: kretallick@angus.org