Sorting Gate

Get an intensive look into genetic merit of replacements.

by Kelli Retallick-Riley, Angus Genetics Inc.

During the past several decades, the beef industry has seen a dramatic shift from being a commodity-driven industry to a quality-based industry aimed at fulfilling the wants of the consumer eating our product. In fact, producers have seen the percentage of USDA Choice and Prime carcasses increase from 55.5% in 2000 to 81.9% in 2022 (see Fig. 1).

It is no surprise that Angus has been a driving force in the U.S. beef industry's quality movement. These changes have been driven by better management coupled with better genetics to meet the needs of this growing demand for tasty, quality beef.

Astute bull suppliers equipped with highly accurate genetic tools, including expected progeny differences (EPDs) and dollar value indexes ($Values), have fed highly sought-after Angus genetics into the cow-calf sector, providing widespread beef industry improvement.

In addition, tools for commercial cow-calf selection, including GeneMax® Advantage™ (GMX), have positioned commercial operations to continue to drive this genetic improvement in their own herds. A recent study (see *https://bit.ly/MU-AA*) out of the University of Missouri (MU) shows just how well GeneMax Advantage, Angus's flagship genomic test for commercial heifers, does at predicting calf performance when their commercial dams are tested and selected with GeneMax Advantage.

Study design

A group of females from the MU Thompson Research Farm were profiled with GeneMax Advantage to investigate the ability of the test to predict their calves' performance and profitability. Specific traits, including weaning and carcass weight, maternal milk, marbling, fat and ribeye area were the focus. For each one of these traits, the cow's GeneMax scores, which ranged from 1 to 100, were compared to the actual performance of their offspring.

For all traits, the correlation, or relationship between dam genetic merit (GMX score) and calf performance was significant. This means that as GMX scores on the females continued to improve, calf performance also improved.

Fig. 2 (see page 54) depicts the Pseudo-R^2 values for each trait. This value explains how much of the variation in age-adjusted calf performance was described by the GMX score prediction, with a higher value being more descriptive. The strongest relationships existed for marbling, ribeye area and carcass weight, while weaker links were seen for fat and maternal milk.

Overall, the study concluded that GeneMax Advantage genomic predictions:

- accurately predict a commercial animal's genetic merit;
- match average progeny performance; and
- provide more information than only knowing an animal's pedigree (ancestry).

Take advantage

Producers looking to break barriers on their own cow herd can use GeneMax Advantage. The test delivers producers 17 individual traits and three

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Fig. 1: Percent of carcasses grading USDA Choice and Prime, 2000-2022

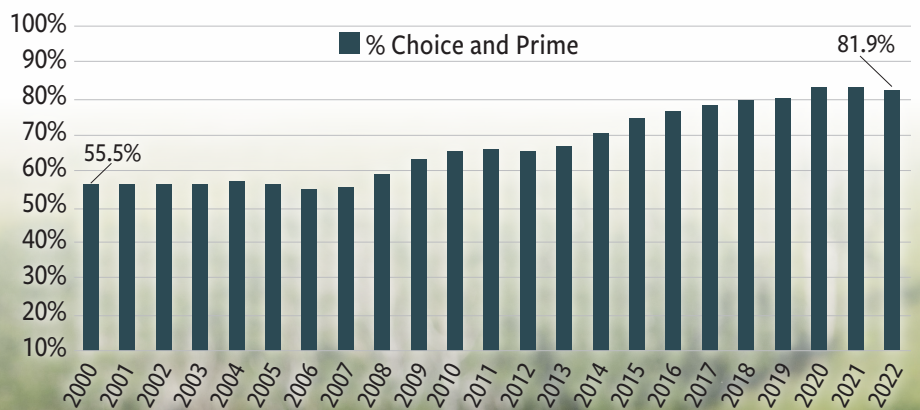


PHOTO BY SHAUNA HERMEL

economic index scores to target improved progeny performance.

Cow Advantage scores focus on maternal traits and rank females for net return from heifer development/breeding to a progeny weaning phase of production. Both revenue from the sale of weaned calves and costs associated with production are included.

Individual traits driving Cow Advantage scores include:

- birth weight (BW);
- calving ease maternal (CEM);
- weaning weight (WW);
- yearling weight (YW);
- heifer pregnancy (HP);
- foot conformation: claw and angle composite (CAC);
- mature weight (MW);
- cow cost;
- docility (DOC); and
- milk.

Feeder Advantage scores zero in on genetics transmitted from tested females to offspring for net returns from feedlot (growth and feed efficiency) and carcass merit, assuming animals are marketed on a *Certified Angus Beef*® (CAB®) grid.

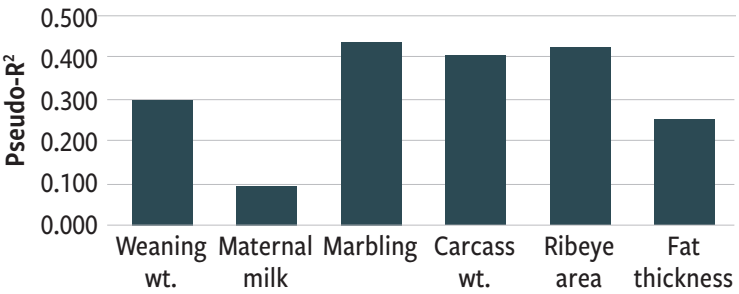
Individual traits reported driving Feeder Advantage scores include:

- gain (postweaning);
- feed to gain (F:G);
- carcass weight (CW);
- marbling (MARB);
- ribeye area (RE);
- fat; and
- tenderness (TND).

Total Advantage scores predict differences in profitability from genetic merit across all economically relevant traits captured in the Cow Advantage and Feeder Advantage index scores.

For only $28 per animal, a commercial cow-calf producer can have an intensive look into the genetic merit of their replacement heifer candidates. Cattlemen also have the ability to Sire Match these females, which is valuable in itself. Not only does this test help to select replacement females, but it also allows operations to avoid inbreeding through the Sire Match tool and to better mate individual females. Using this tool may help a producer select which bulls they will use on their heifers, whether in an artificial insemination (AI) program or by natural service. ABB

Fig. 2: Pseudo-R^2 values for respective traits



Editor's note: "Sorting Gate" is a regular column featuring herd improvement topics for commercial producers using Angus genetics. Kelli Retallick-Riley is president of AGI. For additional information on performance programs available through the American Angus Association and AGI, visit *www.angus.org* and select topics under the "Management" tab. For more information on GeneMax specifically, visit *https://www.angus.org/AGI/CommercialTests.*