

Sorting Gate

Build a foundation through genetic selection.

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A well-managed, profitable cow herd is a goal all cattlemen strive to achieve. It is

estimated a commercial cow does not become profitable until roughly Year 6. Some cows will remain in the herd for some time after Year 6, only getting culled once the quality of their calf stops meeting expectations. Others may leave the herd early for issues pertaining to fertility, structural soundness, temperament or udder quality.

These foundation traits are more than the convenience they may have been referred to in the past. They have a definite effect on your bottom line. While strict culling pressure can rid the herd of these issues, if females are leaving the herd prior to covering their cost of development, it is a losing game for the producer.

Investing in the genetics that decrease the risk of early culling can set commercial cattlemen up for success.

Selecting for today

The Angus breed offers a plethora of tools that allow cattlemen to mitigate risk of early culling during the selection process. These tools include expected progeny differences (EPDs) for heifer pregnancy to predict fertility, and for foot angle and claw set to indicate structural soundness. Docility based on yearling temperament scores can be utilized to affect long-term management.

Heifer pregnancy

There is nothing worse than purchasing genetics, creating females and selecting potential replacement females meticulously, only to come up short because they lack fertility. The heifer pregnancy (HP) EPD predicts the probability of a sire's virgin daughters getting pregnant in their first breeding season.

This tool is useful for cattlemen selecting sires that will produce more fertile females. However, it is lowly heritable, around 12%. That means this fertility trait is more due to environmental factors (i.e., nutritional or breeding program management) than to genetics.

Nonetheless, selecting for increased heifer pregnancy in herds should not harm the overall outcome. Selecting on lowly heritable traits doesn't mean genetic progress won't be made. It will be slower, so disciplined selection is warranted.

Structural soundness

Foot angle (Angle) and claw set structure (Claw) were added to the Angus toolkit in 2019. These two EPDs help to select animals with proper foot structure.

Angle identifies genetics that target pastern angles of 45° with appropriate heel depth. This tool works to decrease the chances of creating females with severe angle to their pasterns, very long

toes, and shallow heels that could cause lameness that warrants early culling.

Claw focuses on the curl of the toes. Cattle with too much curl could end up with toes crossing over one another, causing soundness issues. This issue, too, can cause lameness issues in the cow herd with the added risk of early culling.

At 0.25 heritability, these traits are more controlled by genetics than heifer pregnancy is. In other words, differences in foot angle and claw set are 25% genetic and 75% environmental.

Remember, not all foot issues are proven to be genetic. Traits like corkscrew claw or heel cracks, while foot issues, have no data in the Angus database to support whether they are genetic.

Docility

Docility (Doc) is one of the oldest traits in this category and the most heritable, estimated at 0.44.

This trait has gained much popularity over the years as labor shortages have forced cattlemen to have the ability to work cattle in an efficient and safe manner. Docility is recorded by seedstock producers on a 1-to-6 scale, with a 1 representing cattle with mild dispositions and favorable

temperaments and a 6 describing cattle that are very aggressive.

When selecting on the EPD itself,

a higher EPD predicts a sire's calves will have a higher probability of a docile temperament.

More on the way

The current toolkit for foundational traits is robust and continues to gain accuracy each day. The traits described are newer traits that take both time and commitment of seedstock producers to inform.

As the demographic in the cattle industry changes, labor shortages continue to create problems and margins continue to tighten, further reinforcing that these foundation traits are no longer just a convenience.

The work is not done. The group at Angus Genetics Inc. continues to work alongside the American Angus Association, breeders and commercial cattlemen to bring forward tools that will enhance the bottom line. Research on new tools surrounding udder quality and longevity are in high gear.

Udder quality

Angus has always been a trait leader in maternal function and, in most cases, udder quality has followed along. However, with the grand use of artificial insemination (AI) and the idea that many bulls are purchased without inspection of dams, tools to genetically select for udder quality, specifically teat size and udder suspension, have merit.

The first 24 hours of a calf's life are crucial for not only survival, but long-term fitness. Ensuring the calf can get up and nurse

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Table 1: Number of phenotypes, or records, informing each trait

Traits	No. of records
Heifer pregnancy	147,864
Foot scores	179,635
Docility	381,723

quickly to take in the necessary colostrum is pivotal. Teat size and udder suspension look to tackle some of this nuance, ensuring a calf can suckle effectively.

Teats too large or udders suspended too low can create problems during the calving season, which could require intervention to get the calf to nurse. Worse, a calf not receiving the optimal nutrition requirements in that first part of life could lead to much more dire outcomes.

Heritability estimates for teat size and udder suspension linger around 0.32, meaning genetic progress for each of the traits can take place. Data recording shows the number of extremely large and misshapen teats and the number of udders with poor suspension is

low. Fewer than 1,000 of the nearly 57,000 reported scores land within those extreme categories, but that doesn't discount the value these tools could have in the long game.

Longevity

For years, Angus breeders have worked to build their whole-herd inventory-reporting database, recording what happens to each individual cow year in and year out. With this data, AGI is now working toward a tool that could predict how many calves a sire's daughters are expected to produce during their lifetime.

This tool comes in very useful when we get back to our earlier considerations that females break even in the herd at Year 6.

Much like heifer pregnancy, initial research indicates this trait is lowly heritable, but genetic progress can still take place.

Commercial cattlemen can continue to rely on Angus to lead the way in providing accurate genetic predictions that bolster the bottom line. Using these individual tools, as well as the economic selection indexes, or dollar values (\$Values) — specifically \$M (maternal weaned calf value) in conjunction with \$C (combined value) — commercial producers can build a better cow herd foundation with the use of Angus genetics. **ABB**

Editor's note: "Sorting Gate" is a regular *Angus Beef Bulletin* column featuring herd improvement topics for commercial producers using Angus genetics. Author Kelli Retallick-Riley is president of AGI.

Digital EXTRAs

Learn more about expected progeny difference (EPD) values and the American Angus Association's dollar value indexes (\$Values) by following these links.



Find "tools for hiring the right bull" along with tips for how to use them.



Learn how to build a genetic game plan for your herd with this series.



Use this resource providing descriptions of Angus EPD values, including whether a higher or lower value is desired.