

# BY THE NUMBERS

by Stephen Miller, Angus Genetics Inc.

## Introducing Angus-on-Dairy \$Values

*The American Angus Association developed indexes to help dairy farmers choose the best bulls to breed their cows and strengthen the positioning of registered Angus genetics in the beef-on-dairy market.*

America's dairy cattle have always been one source in the beef supply chain. In recent years, this source of beef has been evolving due to a convergence of factors. Sexed semen has been revolutionary in dairy cattle, where breeders can target replacement heifers from their best cows and breed the remainder for beef production. Before sexed semen, the feeding of straight Holstein steers was common, and although this practice remains, there has been a movement towards less demand for these from packers, increasing incentives for breeding dairy cows to beef bulls. Jerseys are gaining market share but their straight Jersey male calves have very little value, making beef breedings even more attractive. Low milk prices and contraction in the dairy industry reduces the demand for surplus replacements, again pushing the incentive for more beef matings.

When it comes to picking a beef bull for mating dairy cows, Angus sires have been the preferred choice among dairy farmers. With this in mind, the American Angus Association Board of Directors set in place a project for Angus Genetics Inc. (AGI) to reengage with the consulting firm AbacusBio to develop dollar value indexes (\$Values)

as specific crossbreeding tools for Angus bulls on dairy cows. With a lot of Angus genetics getting used in the dairy industry, it would seem prudent to present tools to allow the most profitable genetics to be identified. This project was initiated in September 2019, and the two new \$Values were released in July 2020. \$Angus-on-Holstein value (\$AxH) and \$Angus-on-Jersey value (\$AxJ) are now available to help dairy farmers identify the most profitable Angus sires for those markets.

The development of these new \$Values included study of the beef-on-dairy supply chain including conversations with USDA dairy genetic scientists and those involved in the calf rearing, feeding and packing sectors. Understanding how the production of a finished Angus-cross dairy steer is different to a typical Angus-beef steer allowed the team to adjust the bio-economic models behind Angus's familiar \$Value indexes such as feedlot (\$F), grid (\$G) and beef value (\$B) to suit the dairy-cross scenario.

What is different about the production of an Angus cross steer from a dairy cow?

**Calving Ease** – Calving ease is an

important factor for dairy farmers. Calving difficulty has obvious costs, but the reduced milk production and increased chances of a cow subsequently being culled associated with calving difficulty makes calving ease an important trait to include in this tool for dairy farmers. Calving ease is already a part of economic selection indexes for dairy bulls, and these base factors, as determined by USDA dairy cattle geneticists, were used. Calving ease is not included in the current \$B.

**Feeding and grading** – The growth curve of a dairy-cross steer is different to a straight Angus steer with dairy-cross steers growing slower with poorer feed conversion. The growth of the dairy-cross animal is modeled from birth to slaughter, whereas the beef steer in \$F and \$B are modeled from weaning. Longer days on feed increases the emphasis on growth and feed efficiency. For the most part, quality grade does not differ greatly as dairy genetics tend to be acceptable for marbling.

**Muscling** – As one might expect, there is a major difference in carcass conformation in terms of muscling in the dairy crosses. This slack muscling creates two problems. The term

“sunken strips” is used to describe the problem of some steak cuts, like strip loins, that are undesirable from a visual, “plate appeal” standpoint.

These poorly muscled animals also create a problem in the live animal as it is a way for the marketplace to visually distinguish animals from the dairy industry, even when they are solid black. To prevent discounts in the market, these beef animals resulting from the beef-on-dairy cross need to look like beef animals and not the stereotypical “narrow” dairy character. Muscling is most important with the Jersey crosses. A genetic estimate of muscling was developed for use in the Angus-on-dairy \$Values where the animal’s genetic merit for ultrasound ribeye area is considered in conjunction with their genetic estimate for live weight at the same time (approximately yearling). To rank high for muscling an animal needs to have a large ribeye area relative to their weight.

**Height** – Carcass length can be problematic in packing plants with Angus-Holstein crosses, whereas in Angus-Jersey crosses length is not an issue. With a positive relationship between height and weight and since weight is positively weighted in \$B, a positive relationship between \$B and yearling height (YH) expected progeny difference (EPD) (.47 correlation) exist. On the contrary, \$AxH discounts steer progeny from the highest YH sires resulting in the correlation being neutralized (almost 0) between \$AxH and YH.

For both muscling and height, the economic weight for each trait was determined in a similar manner used to discount over-weight carcasses in today’s \$B model. Discounts are modeled for carcasses that are too long and also for those with poor muscling. YH will determine what

proportion of carcasses fall over the threshold where this discount applies. Similarly, the muscling EPD determines what proportion of carcasses from a sire will be discounted for lack of muscling. To better understand the mix of traits in each of Angus’s \$Values, see Table 1.

Figure 1 presents the relative emphasis placed on each trait segment in the two new \$Values compared to \$B. In both dairy cross \$Values the emphasis on marbling and yield have been replaced with emphasis on the new traits including calving ease, muscling and height in the \$AxH index.

Overall, these indexes are fairly balanced with no one sector of traits overwhelming the index. The dairy indexes have more emphasis on ribeye area (REA) EPD than \$B due to the added emphasis on muscling. These new indexes, although related to \$B in many ways, are quite different and these differences are reflected in the bull rankings. The correlation between \$B with \$AxH and \$AxJ is 0.67 and 0.72, respectively. The correlation between \$AxH and \$AxJ is 0.95, which is high but breeders will see enough differences in the rankings to warrant both indexes.

The Angus breed has taken a leadership position in this area. The research has shown that separate indexes are justified for crossing on dairy cattle and that the best animals for \$B may not be the best for use on dairy cows. In some instances, those best to cross on Holsteins are not the best to cross on Jerseys or vice versa. The \$Values developed will help dairy farmers choose

the best bulls to breed their cows, removing some of the guess work in sire selection and strengthen the positioning of registered Angus genetics in this market.

With that, \$AxH and \$AxJ are available to create and support marketing channels of Angus genetics into the dairy segment which continues to grow Angus’s market share in the beef industry. [AJ](mailto:smiller@angus.org)



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Editor’s note: If you have questions, please contact the AGI team at 816-383-5100.

**Table 1: Traits included in three American Angus Terminal \$Value indexes**

	\$B	\$AxH	\$AxJ
Calving Ease		✓	✓
Growth to weaning		✓	✓
Post-weaning growth	✓	✓	✓
Post-weaning intake	✓	✓	✓
Dressing Percent	✓	✓	✓
Yield Grade	✓	✓	✓
Quality Grade	✓	✓	✓
Muscling		✓	✓
Height		✓	

**Fig. 1: Relative emphasis on each trait segment in \$B, \$AxH and \$AxJ (working from center out)**

