

American Angus Association® Carcass EPDs

The American Angus Association National Cattle Evaluation (NCE) includes integrated carcass expected progeny differences (EPDs). These genetic predictions for carcass merit encompass both carcass and ultrasound databases, which previously generated separate EPDs for each datasource.

The carcass EPDs from the combined analysis includes single EPDs for carcass weight, marbling score, ribeye area and fat thickness. The units of measure are in carcass trait format and analyzed on an age-constant basis.

Marbling EPDs

A marbling EPD is a prediction of differences in future progeny performance relative to carcass marbling score. In most cases, comparisons are between future offspring performance of sires in order to make directional change in carcass marbling. Marbling EPDs allow a relative ranking of sire genetics to be assessed, and then sires to be chosen that best fit the producer's marketing objectives and breeding program.

The important application of these tools is to compare differences between sires to determine their effect on future progeny, rather than focus on the absolute numerical value of the EPD.

The unit of measure for the marbling EPD is marbling score. Marbling score is the primary component of the U.S.

Department of Agriculture (USDA) beef quality grading system. Traditionally, it has been subjectively assessed by the USDA grader when the USDA Quality Grade is being assigned.

As a review, the degree of marbling and numerical score are presented in Table 1. The degrees of marbling help describe quality grade. Selection pressure to improve the average marbling score would be expected to improve quality grade. Thus, marbling EPDs can be used to make genetic progress in cattle for a more desirable quality product.

Table 1: USDA Quality grading system & marbling score

Quality Grade	Degree of Marbling	Numerical Score
Prime +	Abundant	10.0 - 10.9
Prime	Moderately abundant	9.0 - 9.9
Prime -	Slightly abundant	8.0 - 8.9
High Choice	Moderate	7.0 - 7.9
Average Choice	Modest	6.0 - 6.9
Low Choice	Small	5.0 - 5.9
Select	Slight	4.0 - 4.9
Standard	Traces	3.0 - 3.9
Standard	Practically devoid	2.0 - 2.9
Utility	Devoid	1.0 - 1.9

Carcass EPD example

The following two bulls have new carcass EPD profiles. Assume that both sires have similar accuracies and are mated to comparable females. Calves are fed out, managed and harvested under the same conditions:

Expected Progeny Differences (EPDs)

	Cwt	Mrb	RE	Fat
Sire A	6	.23	.20	.010
Sire B	8	-.10	.50	.010
<i>Difference</i> (Sire A minus Sire B)	-2	.33	-.30	.000

On average, we would expect the carcasses from Sire A's calves to have 0.33 higher marbling score than the carcasses from Sire B's progeny.

What could this potentially mean on the rail at grading time? Assume sires were randomly mated and progeny were managed and harvested in the same environment. If we collected the data from both sire groups and Sire B's average marbling score was 5.8 (or Small80; low-Choice; see Table 1), we would expect that Sire A's progeny carcasses would have an average marbling score of about 6.1 (or Modest10). This improvement in marbling score would qualify these carcasses for acceptance into the *Certified Angus Beef*® (CAB®) brand provided other CAB specifications are met.

The expected result of using the EPDs is that the average marbling score of future progeny carcasses will improve by selecting the higher-marbling-EPD sire. This simplified, single-

trait example illustrates the ability to select for carcass merit through the available genetic tools.

It is important to note that the seedstock breeder and commercial bull buyer must consider a variety of economically important traits for their particular operation. Even in this example, no consideration was given for the difference in ribeye genetics, favoring Sire B over Sire A. On average, the carcasses out of Sire B would be expected to have nearly a one-third-square-inch (sq. in.) ribeye area advantage compared to the carcasses of Sire A progeny.

Carcass EPD layout

The general layout of Carcass EPDs is depicted below. When available, the carcass group/progeny counts and ultrasound group/progeny counts are also included.

Carcass					
Cwt Acc	Mrb Acc	RE Acc	Fat Acc	Carc Grp Carc Prog	Usnd Grp Usnd Prog
+19	+.44	+.48	+.031	110	148
.81	.83	.80	.79	472	214

The carcass genetic evaluation is designed to simplify selection tools for commercial bull buyers using Angus genetics. The evaluation is enhanced to include carcass performance data and to simultaneously incorporate ultrasound performance data on bulls, heifers and steers. Ultrasound traits are analyzed as indicator traits for carcass merit. The outcome of this analysis is a single set of EPDs, simple to interpret in carcass units, relevant to commercial producers and the industry.