By the Numbers

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Marbling EPDs revisited

With the new carcass EPD release just around the corner, now's a good time to review the meaning of a marbling EPD.

Integrated evaluations

The Fall 2008 National Cattle Evaluation (NCE) to be released in July by the American Angus Association will include new carcass expected progeny differences (EPDs). These genetic predictions for carcass merit will encompass both carcass and ultrasound databases, which previously generated separate EPDs for each data source.

In contrast, the new carcass EPDs from the combined analysis — or integrated evaluation of the ultrasound and carcass phenotypic databases — will include single EPDs for carcass weight, marbling score, ribeye area and fat thickness. The units of measure would be in carcass trait format and analyzed on an age-constant basis.

The existing ultrasound EPDs will no longer be published. The end point based on age is unchanged from the existing analyses as published in the Association's NCE.

Table 1: USDA quality grading system and 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
Avg. 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

Fig: 1: Example of carcass EPD layout

Production						Maternal					
CED Acc	BW Acc	WW Acc	YW Acc	YH Acc	SC Acc	CEM Acc	Milk Acc	MkH MkD	MW Acc	MH Acc	$EN
+6 .90	+5.4 .97	+35 .97	+68 .97	+.8 .94	-.20 .92	+5 .92	+9 .97	2132 5754	+63 .91	+.9 .91	+11.04

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

$Values					
$W	$F	$G	$QG	$YG	$B
+5.18	+13.81	+28.07	+21.25	+6.82	+47.37

What is a marbling EPD?

A marbling EPD is a prediction of differences in future progeny performance relative to carcass marbling score. In most cases, we are comparing 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.

Marbling score units

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 more desirable quality product.

EPD example

The following two bulls have new carcass EPD profiles. Assume that both sires have similar accuracies; are mated to comparable females; and 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
Difference (Sire A – Sire B)	–2	.33	–.30	.000

On average, we would expect the carcasses from Sire A's calves to have 0.33 higher

marbling scores 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 Small[80]; 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 Modest[10]). This improvement in marbling score would qualify these carcasses for acceptance into the *Certified Angus Beef*® (CAB®) brand provided other CAB specifications are met.

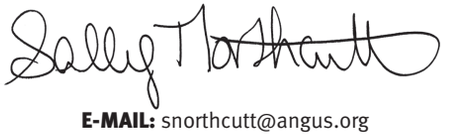
The expected result of using the EPDs is that the average marbling score of future progeny carcasses will improve by selecting the higher-marbling-EPD sire. This simplified, single-trait example illustrates the ability to select for carcass merit through the available genetic tools.

What about ribeye?

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, we have not yet given consideration for the difference in ribeye genetics, favoring Sire B vs. Sire A. On average, the carcasses out of Sire B would be expected to have nearly a ⅓-square-inch (sq. in.) ribeye area advantage compared to the carcasses of Sire A progeny.

Layout of new carcass EPDs

When the new carcass EPDs are released with the fall 2008 NCE, the general layout depicted in Fig. 1 will be used. When available, the carcass group/progeny counts and ultrasound group/progeny counts will be presented separately.



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Editor's Note: *"By the Numbers" is a column by Association performance programs staff to share insights with Angus members about data collection and interpretation, the NCE, genetic selection, and relevant technology and industry issues. If you have questions or would like to suggest a topic for a future column, contact Sally Northcutt, director of genetic research, or Bill Bowman, director of performance programs, at 816-383-5100.*