

SORTING GATE

Comparing EPDs across breeds

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Since their inception in the 1970s, expected progeny differences (EPDs) have proven to be

a valuable tool in advancing genetic change in the cattle industry. EPDs, which are generated through a national cattle evaluation (NCE) to predict average performance differences in the future progeny of an animal when compared with the future progeny of other animals, allow for more-informed decisions when selecting between animals of the same breed. However, because breed associations use different evaluations and different performance information, the EPDs of animals evaluated through different breed NCEs cannot be directly compared.

This is problematic for commercial cattle producers who use multiple breeds or who are trying to compare prospective herd bulls from different breeds. To address this problem, the U.S. Meat Animal Research Center (USMARC) in Clay Center, Neb., began publishing across-breed EPD adjustment factors in 1993.

Establishing adjustments

For more than 50 years, USMARC has been quantifying performance differences between breeds of cattle through the Germplasm Evaluation (GPE) program. By placing multiple breeds within a common environment, the GPE



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allows performance differences between breeds to be observed. By relating these observed differences to the EPDs of the sires that have been used in the GPE, EPD adjustment factors can be calculated to allow for comparison across breeds.

Using adjustment factors

Table 1 lists across-breed adjustment factors that can be used to adjust the EPDs of 18 breeds to a common Angus base. Because breeds have different base years (the year in which the average EPD for commonly measured growth traits within the breed is zero) and different rates of genetic change

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Table 1: December 2019 adjustment factors to estimate across-breed EPDs

Breed	BW	WW	YW	Milk	Marb	REA	Fat	CW
Angus	0.0	0.0	0.0	0.0	0.00	0.00	0.000	0.0
Hereford	1.0	-16.1	-44.0	-10.4	-0.32	0.06	-0.075	-67.3
Red Angus	2.5	-19.5	-29.8	2.7	-0.13	0.24	-0.049	-14.4
Shorthorn	4.2	-32.5	-44.0	2.9	-0.05	0.55	-0.025	7.2
South Devon	2.3	-27.0	-68.1	4.4	-0.38	0.40	-0.181	-72.5
Beefmaster	4.0	21.3	-3.8	9.5				
Brahman	9.7	49.8	10.8	18.8		0.01	-0.164	-36.6
Brangus	2.7	14.2	0.5	15.8				
Santa Gertrudis	4.9	37.5	34.9	20.8	-0.46	0.14	-0.091	-10.8
Braunvieh	1.9	-19.4	-42.4	4.8	-0.65	1.05	-0.107	-51.7
Charolais	6.2	29.6	24.7	8.7	-0.31	0.82	-0.200	8.8
Chiangus	2.5	-21.0	-36.0	4.2	-0.47	0.57	-0.140	-17.8
Gelbvieh	3.3	-11.6	-19.6	12.4	-0.52	0.92	-0.102	-5.3
Limousin	2.2	-17.2	-48.6	-2.1	0.01	0.65	-0.021	-3.1
Maine-Anjou	1.6	-30.0	-63.1	-4.3	-0.46	1.02	-0.184	-32.9
Salers	0.6	-9.9	-41.8	7.1	0.09	1.16	-0.179	-43.0
Simmental	2.5	-13.0	-18.7	1.7	-0.08	0.48	-0.049	-5.4
Tarentaise	2.5	19.1	-15.8	22.4				

^aMarbling score units: 4.00 = S1⁰⁰; 5.00 = S^{m00}.

SOURCE: U.S. Meat Animal Research Center.



since that base year, they also have different breed average EPDs, or bases.

The adjustment factors in Table 1 reflect not only the relative performance differences that have been observed at USMARC, but also the base EPD differences between breeds. For this reason, these adjustment factors do not represent a direct comparison among the different breeds within the table. Rather, they must be added to the EPDs of different breeds in order to form a comparison.

Table 2 features an example where an Angus, a Hereford and a Simmental bull have identical EPDs for birth weight (BW), weaning weight (WW), yearling weight (YW) and milk within each of their respective evaluations. By applying the adjustment factors found in

Table 1, across-breed EPDs (AB-EPDs) are calculated that allow for direct comparisons to be made between the bulls.

Though all three bulls had identical EPDs within their respective evaluations, the AB-EPDs reveal the Simmental bull to have the highest genetic estimate for milk, and the Angus bull to have the lowest BW and the highest WW and YW estimates.

To obtain the most recent adjustments, visit and bookmark beefimprovement.org.

A valuable tool

For commercial producers wishing to understand how individual sires from different breeds may complement their operations, AB-EPD adjustment factors can serve as a valuable tool. Though they are published annually by USMARC, the December 2020 adjustment factors had not yet been released at the time of this writing. To obtain the most recent

Table 2: Example of using across-breed adjustment factors to compare bulls from three different breeds

Bull and breed	BW	WW	YW	Milk
1. Angus				
Angus evaluation EPDs	2.0	60	100	25
Across-breed adjustments	0.0	0.0	0.0	0.0
Across-breed EPDs	2.0	60	100	25
2. Hereford				
Hereford evaluation EPDs	2.0	60	100	25
Across-breed adjustments	1.0	-16.1	-44.0	-10.4
Across-breed EPDs	3.0	43.9	56.0	14.6
3. Simmental				
Simmental evaluation EPDs	2.0	60	100	25
Across-breed adjustments	2.5	-13.0	-18.7	1.7
Across-breed EPDs	4.5	47	81.3	26.7

adjustments, visit and bookmark beefimprovement.org.

using Angus genetics. Authored by staff of Angus Genetics Inc. (AGI), regular contributors include Joel Cowley, president; and Kelli Retallick, director of genetic and genomic programs. 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.

Editor's note: "Sorting Gate" is a regular *Angus Beef Bulletin* column featuring herd improvement topics for commercial producers