

# 2025 Across-Breed EPD Table and Improvements

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Across-Breed EPD (ABEPD) Adjustment Factors: National Cattle Evaluation (NCE), and the resulting Expected Progeny Differences (EPDs), have resulted in substantial genetic change since their inception in the 1970s. However, EPDs are generally only comparable within breed because of differences in the genetic base. Since 1993, the U.S. Meat Animal Research Center (USMARC) has produced a table of factors to adjust the EPDs of cattle so that the merit of individuals can be compared across breeds. Adjustment factors for carcass traits have been calculated since 2009 and carcass weight was added in 2015; to be included, breeds must have carcass data in the U.S. Meat Animal Research Center (USMARC) database and report their carcass EPDs on an actual carcass basis using an age-adjusted endpoint.

Bulls of different breeds can be compared on the same EPD scale by adding the appropriate adjustment factor to the EPDs produced in the most recent

genetic evaluations for each of the eighteen breeds. Normally, the EPDs of animals from different breeds cannot be compared because many breed associations compute their EPDs in separate analyses and each breed has a different base point. The across-breed adjustment factors allow producers to compare the EPDs for animals from different breeds for these traits; these factors reflect both the current breed difference (for animals born in 2021) and differences in the breed base point. The AB-EPDs are most useful to commercial producers purchasing bulls of more than one breed to use in cross-breeding programs. For example, in terminal cross-breeding systems, AB-EPDs can identify bulls in different breeds with high growth potential or favorable carcass characteristics.

The factors are derived by estimating breed differences from the USMARC germ plasm evaluation program and adjusting these differences for the EPDs of the sires that were sampled in the system. Traits for which factors are estimated are birth weight, weaning weight, yearling weight, maternal weaning weight (milk), marbling score, ribeye area, backfat depth (fat), and carcass weight (Table 1). The factors adjust the EPDs to an Angus base (chosen arbitrarily).

As an example, suppose a Red Angus bull has a carcass weight EPD of + 20.0 lb and a Hereford bull has a carcass weight EPD of + 72.0 lb. The across-breed adjustment factors for yearling weight (see Table 1) are -6.6 lb for Red Angus and -61.6 lb for Hereford. The AB-EPD is  $20.0 \text{ lb} - 6.6 \text{ lb} = 13.4 \text{ lb}$  for the Red Angus bull and  $72.0 \text{ lb} - 61.6 = 10.4 \text{ lb}$  for the Hereford bull. The expected carcass weight difference of offspring when

both are mated to cows of another breed (e.g., Braunvieh) would be  $13.4 \text{ lb} - 10.4 \text{ lb} = 3 \text{ lb}$ . Brahman EPDs for marbling score are reported on a different scale than the other breeds with marbling score EPDs. For Brahman  $400 = \text{SI}00$  and  $500 = \text{Sm}00$  whereas for the other breeds,  $4.00 = \text{SI}00$  and  $5.00 = \text{Sm}00$  meaning the Brahman EPDs are reported on a scale that is 100 times larger in magnitude. As a result, EPDs from other breeds need to be multiplied by 100 after being adjusted to Brahman, and Brahman EPDs need to be divided by 100 prior to applying the adjustment factors. For instance, to adjust a Simmental bull with a marbling score EPD of 0.15 to compare to Brahman bulls using the factors from Table 1, add the Simmental factor, subtract the Brahman factor, and then multiply by 100:  $(0.15 + (-0.12) - (-0.70)) * 100 = 73$ . Similarly, to adjust a Brahman bull with a marbling score EPD of 40 in order to compare to Simmental bulls using the same factors, first divide by 100, then add the Brahman factor, and subtract the Simmental factor:  $40 / 100 + (-0.70) - (-0.12) = -0.18$ . Please note that as of 2024, yearling weight EPD adjustment factors are derived using a BIF adjusted post weaning gain and weaning weight as separate traits which is consistent with most national cattle evaluations. Thus, these factors directly relate to EPDs from national cattle evaluations.

**TABLE 1: JANUARY 2025 ADJUSTMENT FACTORS TO ADD TO EPDs OF EIGHTEEN  
DIFFERENT BREEDS TO ESTIMATE ACROSS BREED EPDs**

Breed	Birth Wt. (lb)	Weaning Wt. (lb)	Yearling Wt. (lb)	Maternal Milk (lb)	Marbling Score <sup>a</sup>	Ribeye Area (in <sup>2</sup> )	Fat (in)	Carcass Wt.(lb)
Angus	0.0	0.0	0.0	0.0	0.00	0.00	0.000	0.0
Hereford	0.8	-11.5	-22.3	-10.9	-0.29	0.04	-0.067	-61.6
Red Angus	2.2	-21.8	-26.9	1.4	-0.01	0.24	-0.038	-6.6
Shorthorn	4.4	-18.5	-22.0	0.2	-0.10	0.36	-0.040	5.9
South Devon	2.9	-24.6	-44.4	4.4	-0.07	0.56	-0.070	3.4
Beefmaster	3.5	25.1	16.4	7.1				
Brahman	8.3	63.1	29.5	7.6	-0.70	0.12	-0.132	-21.5
Brangus	3.3	29.7	22.8	12.0				
Santa Gertrudis	4.7	43.6	52.9	19.1	-0.39	0.26	-0.063	15.3
Braunvieh	1.9	-13.1	-33.1	17.3	-0.07	0.39	-0.071	6.0
Charolais	7.7	7.4	-9.1	-2.5	-0.28	0.91	-0.194	17.1
Chiangus	2.7	-12.4	-21.6	-0.5	-0.46	0.52	-0.116	-19.4
Gelbvieh	3.1	-4.9	-11.2	5.9	-0.45	0.65	-0.101	-8.7
Limousin	1.8	-1.2	-12.2	-7.4	-0.37	0.68	-0.078	1.8
Maine-Anjou	2.4	-23.7	-33.4	-4.8	-0.46	0.95	-0.164	-24.0
Salers	2.6	-6.0	-12.2	3.0	-0.22	0.57	-0.066	0.6
Simmental	2.4	-9.8	-11.9	0.8	-0.12	0.55	-0.058	7.8
Tarentaise	2.2	32.8	11.1	15.4				

<sup>a</sup>Marbling score units: 4.00 = S1<sup>00</sup>; 5.00 = S<sup>m</sup><sup>00</sup>. Note that Brahman EPDs for marbling are reported on a scale where 400 = S1<sup>00</sup> and 500 = S<sup>m</sup><sup>00</sup>. When converting sires from other breeds to a Brahman basis, the adjusted EPD should be multiplied by 100. Likewise, when Brahman EPDs are adjusted to other breeds, the EPD should be divided by 100 before adding the adjustment factor.

It is important to note that the table factors (Table 1) do not represent a direct comparison among the different breeds because of base differences between the breeds. They should only be used to compare the EPDs (AB-EPDs) of animals in different breeds. To reduce confusion, breed of sire means (i.e., one half of full breed effect; breed of sire means predict differences when bulls from two different breeds are mated to cows of a third, unrelated breed) for animals born in 2023 under conditions similar to USMARC are presented in Table 2.

**TABLE 2: BREED OF SIRE MEANS FOR 2023  
BORN ANIMALS  
UNDER CONDITIONS SIMILAR TO USMARC**

Breed	Birth Wt. (lb)	Weaning Wt. (lb)	Yearling Wt. (lb)	Maternal Milk (lb)	Marbling Score <sup>a</sup>	Ribeye Area (in <sup>2</sup> )	Fat (in)	Carcass Wt.(lb)
Angus	84.9	541.4	984.2	520.7	6.29	13.78	0.671	926.6
Hereford	87.2	518.0	930.6	510.6	5.33	13.55	0.607	879.4
Red Angus	84.0	516.6	940.3	522.2	5.92	13.45	0.633	887.0
Shorthorn	89.5	499.9	906.2	516.9	5.39	13.74	0.531	875.5
South Devon	87.3	509.4	909.6	515.7	5.41	13.91	0.503	869.2
Beefmaster	87.5	525.5	917.6	510.8				
Brahman	94.1	554.9	925.7	508.1	4.80	13.49	0.529	869.1
Brangus	87.2	524.3	927.9	515.3				
Santa Gertrudis	88.5	528.3	930.1	513.7	5.15	13.36	0.586	884.3
Braunvieh	87.6	510.3	898.2	528.1	5.47	14.21	0.480	862.5
Charolais	90.2	543.5	967.3	516.6	5.33	14.68	0.473	911.9
Chiangus	88.2	512.0	916.6	509.2	5.34	14.00	0.515	880.2
Gelbvieh	86.5	539.6	961.0	523.6	5.33	14.26	0.530	894.9
Limousin	86.7	539.2	955.0	512.3	5.29	14.53	.533	902.3
Maine-Anjou	87.3	491.6	886.4	509.9	5.15	14.33	0.461	860.3
Salers	85.9	525.5	936.3	516.2	5.32	14.22	0.525	882.7
Simmental	87.6	541.7	967.7	518.4	5.54	14.46	0.523	905.8
Tarentaise	86.4	520.4	899.0	511.5				

<sup>a</sup>Marbling score units: 4.00 = SI<sup>00</sup>; 5.00 = Sm<sup>00</sup>

The adjustment factors in Table 1 were updated using EPDs from the most recent national cattle evaluations conducted by each of the eighteen breed associations (current as of January 2025). The breed differences used to calculate the factors are based on comparisons of progeny of sires from each of these breeds in the Germplasm Evaluation Program at USMARC in Clay Center, Nebraska. These analyses were conducted by USMARC geneticists Larry Kuehn (email: [Larry.Kuehn@ars.usda.gov](mailto:Larry.Kuehn@ars.usda.gov); ph: 402-762-4352) and Mark Thallman (email: [Mark.Thallman@ars.usda.gov](mailto:Mark.Thallman@ars.usda.gov); ph: 402-762-4261).

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