

2014 ACROSS-BREED EPD TABLE

The table of adjustment factors to be used to estimate across-breed expected progeny differences (AB-EPDs) for eighteen breeds was released at the Beef Improvement Federation Annual Meeting in Lincoln, NE on June 20 (see Table 1). Across-breed adjustment factors have been calculated for growth traits and maternal milk since 1993. Adjustment factors for carcass traits have been calculated since 2009; 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. 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 be used to identify bulls in different breeds with high growth potential or favorable carcass characteristics.

As an example, suppose a Gelbvieh bull has a weaning weight EPD of + 68.0 lb and a Hereford bull has a weaning weight EPD of + 46.0 lb. The across-breed adjustment factors for weaning weight (see Table 1) are -19.4 lb for Gelbvieh and -4.2 lb for Hereford. The AB-EPD is $68.0 \text{ lb} - 19.4 \text{ lb} = 48.6 \text{ lb}$ for the Gelbvieh bull and $46.0 - 4.2 = 41.8 \text{ lb}$ for the Hereford bull. The expected weaning weight difference when both are mated to cows of another breed (e.g., Angus) would be $48.6 \text{ lb} - 41.8 \text{ lb} = 6.8 \text{ lb}$.

Most breed associations publish EPDs at least on an annual basis. These EPDs predict differences expected in performance of future progeny of two or more bulls within the same breed for traits including birth weight, weaning weight, yearling weight, and maternal milking ability (as reflected in progeny weaning weights). Normally, the EPDs of bulls from different breeds cannot be compared because most 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 2012) and differences in the breed base point. They should only be used with EPDs current as of June 2014 because of potential changes in EPD calculations from year-to-year.

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., when sires from two different breeds are mated to cows of

a third, unrelated breed) between 2012 born animals under conditions at USMARC are presented in Table 2.

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 March 2014). 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; ph: 402-762-4352) and Mark Thallman (email: Mark.Thallman@ars.usda.gov; ph: 402-762-4261).

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

Breed	Birth Wt.	Weaning Wt.	Yearling Wt.	Maternal Milk	Marbling Score ^a	Ribeye Area	Fat Thickness
Angus	0.0	0.0	0.0	0.0	0.00	0.00	0.000
Hereford	2.7	-4.2	-23.6	-17.7	-0.31	-0.08	-0.051
Red Angus	4.1	-22.1	-29.9	1.5	-0.34	-0.02	-0.027
Shorthorn	6.2	9.9	27.8	21.7	-0.19	0.23	-0.135
South Devon	3.3	-5.2	-24.4	1.3	-0.11	0.23	-0.135
Beefmaster	6.4	37.2	33.3	6.4			
Brahman	11.0	44.8	10.1	23.9	-0.85	-0.08	-0.150
Brangus	4.4	15.4	5.2	2.1			
Santa Gertrudis	7.0	40.6	43.5	13.0	-0.67	-0.09	-0.103
Braunvieh	2.3	-23.4	-47.7	1.9			
Charolais	8.8	37.9	40.9	6.7	-0.43	1.04	-0.213
Chiangus	2.2	-19.5	-45.6	1.0	-0.43	0.46	-0.145
Gelbvieh	3.4	-19.4	-24.9	3.2	-0.35	0.67	-0.131
Limousin	3.8	-0.8	-38.7	-7.0	-0.71	1.08	
Maine-Anjou	4.9	-19.0	-41.5	-7.1	-0.72	0.93	-0.224
Salers	2.2	-5.1	-24.6	3.6	-0.10	0.82	-0.206
Simmental	3.4	-6.4	-13.6	0.5	-0.41	0.46	-0.149
Tarentaise	1.9	30.7	10.3	25.1			

^aMarbling score units: 4.00 = SI⁰⁰; 5.00 = Sm⁰⁰

**TABLE 2: BREED OF SIRE MEANS FOR 2012 BORN ANIMALS
UNDER CONDITIONS SIMILAR TO USMARC**

Breed	Birth Wt.	Weaning Wt.	Yearling Wt.	Maternal Milk	Marbling Score ^a	Ribeye Area	Fat Thickness
Angus	87.0	574.3	1051.3	563.3	6.10	13.19	0.639
Hereford	91.3	568.6	1017.2	540.4	5.34	12.92	0.580
Red Angus	88.0	558.1	1018.4	558.8	5.67	12.83	0.598
Shorthorn	93.5	551.3	1018.0	563.2	5.44	12.92	0.485
South Devon	91.1	564.1	1020.9	564.6	5.89	13.18	0.503
Beefmaster	91.8	573.4	1012.6	547.7			
Brahman	97.9	587.0	1000.4	569.2	4.76	12.72	0.489
Brangus	90.3	565.9	1014.0	552.5			
Santa Gertrudis	92.3	570.4	1014.0	552.5	4.93	12.68	0.527
Braunvieh	90.2	542.1	979.6	574.2			
Charolais	94.4	589.8	1052.0	553.7	5.20	13.97	0.416
Chiangus	91.1	545.2	990.4	550.4	5.39	13.25	0.494
Gelbvieh	89.3	571.4	1033.6	570.5	5.27	13.81	0.447
Limousin	90.6	571.4	1009.9	554.9	4.88	14.35	
Maine-Anjou	91.8	546.1	1001.7	552.3	5.09	13.81	0.401
Salers	88.9	562.1	1020.8	561.9	5.71	13.56	0.422
Simmental	90.8	584.1	1044.9	563.5	5.32	13.93	0.420
Tarentaise	88.9	573.0	1004.2	565.0			

^aMarbling score units: 4.00 = SI⁰⁰; 5.00 = Sm⁰⁰