

2011 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 presented at the Beef Improvement Federation Annual Meeting in Bozeman, MT, on June 2 (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 sixteen 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-breed 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 Charolais bull has a yearling weight EPD of + 41.3 lb and a Simmental bull has a yearling weight EPD of + 61.2 lb. The across-breed adjustment factors for yearling weight (see Table 1) are 48.9 lb for Charolais and 24.5lb for Simmental. The AB-EPD is $41.3 \text{ lb} + 48.9 \text{ lb} = 90.2 \text{ lb}$ for the Charolais bull and $61.2 \text{ lb} + 24.5 = 85.7 \text{ lb}$ for the Simmental bull. The expected yearling weight difference when both are mated to cows of another breed (e.g., Red Angus) would be $90.2 \text{ lb} - 85.7 \text{ lb} = 4.5 \text{ lb}$.

Most breed associations publish EPDs 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 2009) and differences in the breed base point. They should only be used with EPDs current as of June 2011 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 2009 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 May 2011). 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	2.8	-1.5	-17.1	-18.7	-0.32	-0.07	-0.051
Red Angus	2.3	-1.5	-8.7	-1.5	0.00	-0.12	-0.038
Shorthorn	5.9	17.9	41.7	19.6	-0.10	0.24	-0.151
South Devon	4.2	3.8	-4.9	-5.8	0.08	0.13	-0.113
Beefmaster	6.8	36.4	37.9	2.6			
Brahman	11.4	40.4	4.5	21.4			
Brangus	4.1	14.9	14.0	1.3			
Santa Gertrudis	7.8	34.2	24.8		-0.64	-0.18	-0.146
Braunvieh	5.7	18.5	22.6	30.0	-0.25	0.92	-0.171
Charolais	8.5	40.1	48.9	4.6	-0.40	0.87	-0.222
Chiangus	3.6	-14.5	-33.9		-0.38	0.59	-0.172
Gelbvieh	3.8	3.9	-10.4	10.2			
Limousin	3.6	0.9	-31.3	-13.4	-0.69	1.06	
Maine-Anjou	4.3	-9.8	-28.5	-3.7	-0.77	0.96	-0.209
Salers	2.0	-0.3	-10.5	0.5	-0.13	0.81	-0.217
Simmental	4.8	25.9	24.5	15.3	-0.51	0.95	-0.218
Tarentaise	1.8	34.8	22.5	22.97			

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

**TABLE 2: BREED OF SIRE MEANS FOR 2009 BORN ANIMALS
UNDER CONDITIONS SIMILAR TO USMARC**

Breed	Birth Wt.	Weaning Wt.	Yearling Wt.	Maternal Milk	Marbling Score ^a	Ribeye Area	Fat Thickness
Angus	91.8	594.9	1031.3	585.1	5.80	12.77	0.578
Hereford	96.2	590.4	1002.2	561.4	5.09	12.70	0.517
Red Angus	92.1	578.3	997.8	578.3	5.44	12.51	0.494
Shorthorn	98.1	582.0	1014.8	585.1	5.25	12.87	0.405
South Devon	96.8	594.3	1020.7	580.2	5.76	12.90	0.463
Beefmaster	97.0	604.1	1000.2	567.7			
Brahman	103.1	604.1	976.6	590.9			
Brangus	94.7	586.4	1007.1	575.1			
Santa Gertrudis	98.1	587.1	978.1		4.73	12.38	0.420
Braunvieh	95.4	573.5	983.1	593.5	5.24	13.58	0.510
Charolais	98.9	613.2	1039.5	574.1	4.98	13.61	0.343
Chiangus	95.5	566.3	973.9		5.08	13.16	0.404
Gelbvieh	94.9	593.8	1012.8	591.3			
Limousin	95.2	592.6	997.2	570.6	4.64	14.10	
Maine-Anjou	96.0	578.8	997.9	578.9	4.80	13.66	0.358
Salers	93.6	588.8	1015.1	583.1	5.34	13.40	0.349
Simmental	95.5	606.9	1030.7	582.0	5.01	13.61	0.363
Tarentaise	93.5	597.6	999.4	585.7			

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