

2008 ACROSS-BREED EPD TABLE

The table of adjustment factors to be used to estimate across-breed expected progeny differences (AB-EPDs) for sixteen breeds was presented at the Beef Improvement Federation Annual Meeting in Calgary, Alberta on July 2 (see attached table). Across-breed adjustment factors have been calculated for growth traits and maternal milk since 1993. This year adjustment factors for carcass traits have been calculated for eight of the sixteen breeds for the first time. In order to be included, breeds had to 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 expected progeny differences (EPDs) produced in the most recent genetic evaluations for each of the sixteen breeds.

As an example, suppose a Hereford bull has a weaning weight EPD of + 35.0 lb and a South Devon bull has a weaning weight EPD of + 32.0 lb. The across-breed adjustment factors for weaning weight (see table) are -2.9 lb for Hereford and 3.6 lb for South Devon. The AB-EPD is $35.0 \text{ lb} + (-2.9) \text{ lb} = 32.1 \text{ lb}$ for the Hereford bull and $32.0 \text{ lb} + 3.6 \text{ lb} = 35.6 \text{ lb}$ for the South Devon bull. The expected weaning weight difference when both are mated to cows of another breed (e.g., Angus) would be $32.1 \text{ lb} - 35.6 \text{ lb} = -3.5 \text{ lb}$.

The AB-EPDs are most useful to commercial producers purchasing bulls of more than one breed to use in cross-breeding programs. In terminal cross-breeding systems, AB-EPDs can be used to identify bulls whose progeny would have the highest growth potential when mated to a third, unrelated breed (e.g., choosing between a Simmental and Charolais bull when mated to an Angus female). Birth weight AB-EPDs are useful for selecting bulls for use on first calf heifers to decrease the likelihood of dystocia. The carcass adjustment factors can be used to determine which bull's progeny would have more marbling and larger ribeye areas or reduced backfat. Uniformity from one generation to the next can also be improved by selecting bulls with similar AB-EPDs. Selection for uniformity is especially important in rotational cross-breeding systems for traits such as birth weight to manage calving difficulty and for traits related to cow size and milk production to effectively manage feed requirements in cow herds.

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 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 2006) and differences in the breed base point. They should only be used with EPDs current as of July 2008 because of potential changes in EPD calculations from year-to-year.

The adjustment factors in the table were updated using EPDs from the most recent national cattle evaluations conducted by each of the sixteen breed associations (current as of July 2008). 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).

**ADJUSTMENT FACTORS TO ADD TO EPDs OF SIXTEEN
DIFFERENT BREEDS TO ESTIMATE ACROSS BREED EPDs**

Breed	Birth Wt.	Weaning Wt.	Yearling Wt.	Maternal Milk	Marbling Score	Ribeye Area	Fat Thickness
Angus	0.0	0.0	0.0	0.0	0.00	0.00	0.000
Hereford	2.7	-2.9	-12.8	-15.3			
Red Angus	2.8	-5.2	0.9	-3.9	-0.02	-0.13	-0.062
Shorthorn	6.5	31.0	44.1	18.1			
South Devon	3.3	3.6	-5.7	-5.6	-0.57	0.07	-0.008
Braunvieh	6.2	29.4	17.8	25.3			
Charolais	9.6	39.0	47.3	2.9	-0.79	0.43	-0.355
Gelbvieh	4.4	5.0	-22.4	7.0			
Limousin	4.0	-3.8	-27.8	-11.9	-1.08	0.58	
Maine-Anjou	7.0	-3.6	-31.6	-6.0	-1.08	0.84	-0.305
Salers	4.2	30.3	43.4	13.1	-0.10	0.52	-0.276
Simmental	5.4	23.3	16.9	13.9	-0.84	0.67	-0.335
Tarentaise	3.0	31.5	18.2	20.5			
Beefmaster	9.2	45.1	45.1	-2.1			
Brahman	12.5	38.0	2.5	27.5			
Brangus	5.8	27.4	28.8	-3.9			