2010 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 Columbia, MO, on June 30 (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 2008; 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 Shorthorn bull has a weaning weight EPD of + 19.2 lb and a Red Angus bull has a weaning weight EPD of + 38.9 lb. The across-breed adjustment factors for weaning weight (see Table 1) are 20.6 lb for Shorthorn and -2.3 lb for Red Angus. The AB-EPD is 19.2 lb + 20.6 lb = 39.8 lb for the Shorthorn bull and 38.9 lb - 2.3 = 36.6 lb for the Red Angus bull. The expected weaning weight difference when both are mated to cows of another breed (e.g., Hereford) would be 39.8 lb – 36.6 lb = 3.2 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 2008) and differences in the breed base point. They should only be used with EPDs current as of July 2010 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 2008 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 2010). 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	3.4	0.5	-15.5	-17.6	-0.33	-0.14	-0.050
Red Angus	2.6	-2.3	-5.5	-4.2	-0.06	-0.06	-0.051
Shorthorn	6.4	20.6	47.4	22.4	-0.10	0.20	-0.158
South Devon	4.8	4.6	-4.0	-8.0	-0.03	0.11	-0.118
Beefmaster	7.3	41.0	42.9	3.2			
Brahman	12.5	42.0	2.6	24.4			
Brangus	4.9	20.9	20.6	3.6			
Santa Gertrudis	7.4	27.5	23.9		-0.60	-0.30	-0.137
Braunvieh	7.3	25.6	26.8	30.9	-0.31	0.89	-0.165
Charolais	9.3	41.9	50.8	3.1	-0.42	0.75	-0.233
Chiangus	5.0	-16.7	-39.4		-0.48	0.60	-0.155
Gelbvieh	4.3	5.7	-10.2	8.3			
Limousin	4.2	1.4	-29.1	-15.5	-0.75	1.05	
Maine-Anjou	4.8	-9.2	-25.0	-2.3	-0.88	1.06	-0.208
Salers	2.6	2.2	-5.5	-0.1	-0.20	0.80	-0.214
Simmental	5.2	28.4	28.3	11.8	-0.55	0.94	-0.224
Tarentaise	2.2	34.2	23.4	22.7			

[a]Marbling score units: $4.00 = Sl^{00}$; $5.00 = Sm^{00}$

TABLE 2: BREED OF SIRE MEANS FOR 2008 BORN ANIMALS
UNDER CONDITIONS SIMILAR TO USMARC

Breed	Birth Wt.	Weaning Wt.	Yearling Wt.	Maternal Milk	Marbling Score[a]	Ribeye Area	Fat Thickness
Angus	91.5	601.1	1020.2	591.6	5.62	12.58	0.538
Hereford	96.4	599.1	993.2	569.0	4.97	12.46	0.477
Red Angus	92.3	584.9	989.2	582.9	5.27	12.40	0.474
Shorthorn	98.1	592.2	1011.1	595.3	5.15	12.66	0.353
South Devon	96.8	601.8	1010.9	583.8	5.54	12.72	0.417
Beefmaster	97.2	605.6	993.7	575.8			
Brahman	103.7	612.6	964.4	601.0			
Brangus	93.9	598.5	1000.6	581.4			
Santa Gertrudis	97.3	588.0	968.6		4.67	12.10	0.388
Braunvieh	96.6	588.1	977.0	601.9	4.96	13.30	0.361
Charolais	99.3	622.5	1031.7	580.4	4.88	13.33	0.293
Chiangus	95.6	581.9	976.3		4.93	12.92	0.390
Gelbvieh	95.0	603.2	1003.5	597.0			
Limousin	95.2	600.6	989.9	576.6	4.52	13.82	
Maine-Anjou	96.1	587.5	992.6	588.5	4.59	13.62	0.317
Salers	93.9	599.7	1011.4	590.4	5.17	13.22	0.312
Simmental	95.8	616.1	1022.7	586.9	4.85	13.45	0.311
Tarentaise	93.6	606.7	990.7	594.0			

[a]Marbling score units: $4.00 = SI^{00}$; $5.00 = Sm^{00}$