2013 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 Oklahoma City, OK on June 14 (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 Red Angus bull has a weaning weight EPD of + 62.1 lb and a Charolais bull has a weaning weight EPD of + 21.0 lb. The across-breed adjustment factors for weaning weight (see Table 1) are -23.2 lb for Red Angus and 38.1 lb for Charolais. The AB-EPD is 62.1 lb – 23.2 lb = 38.9 lb for the Red Angus bull and 21.0 + 38.1 = 59.1 lb for the Charolais bull. The expected yearling weight difference when both are mated to cows of another breed (e.g., Hereford) would be 38.9 lb - 59.1 lb = -20.2 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 2011) and differences in the breed base point. They should only be used with EPDs current as of June 2013 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 2011 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 2013). 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	-3.5	-23.6	-17.1	-0.32	-0.09	-0.050
Red Angus	3.4	-23.2	-27.9	-3.9	-0.30	-0.08	-0.029
Shorthorn	5.8	11.3	38.8	20.2	-0.16	0.21	-0.142
South Devon	3.2	-4.8	-6.6	-0.3	0.08	0.16	-0.111
Beefmaster	6.3	35.7	29.5	9.9			
Brahman	11.0	42.8	5.9	23.2			
Brangus	4.5	14.6	6.0	5.8			
Santa Gertrudis	6.6	36.2	48.3	12.4	-0.66	-0.05	-0.116
Braunvieh	1.9	-21.6	-42.3	0.1	-0.67	0.22	-0.102
Charolais	8.6	38.1	45.3	6.9	-0.44	1.02	-0.220
Chiangus	2.2	-20.5	-40.2	4.7	-0.45	0.45	-0.157
Gelbvieh	2.7	-18.2	-25.6	3.6	-0.41	0.78	-0.136
Limousin	3.8	-1.8	-35.9	-8.7	-0.71	1.09	
Maine-Anjou	4.2	-15.3	-36.7	-6.8	-0.84	0.95	-0.229
Salers	1.8	-4.8	-19.5	2.2	-0.10	0.79	-0.207
Simmental	3.7	-5.9	-10.9	-0.8	-0.42	0.53	-0.141
Tarentaise	1.7	30.3	20.3	24.1			

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

TABLE 2: BREED OF SIRE MEANS FOR 2011 BORN ANIMALS

UNDER CONDITIONS SIMILAR TO USMARC

Breed	Birth Wt.	Weaning Wt.	Yearling Wt.	Maternal Milk	Marbling Score[a]	Ribeye Area	Fat Thickness
Angus	87.3	577.0	1045.3	565.3	6.09	13.12	0.611
Hereford	91.7	571.5	1009.7	543.2	5.36	12.87	0.552
Red Angus	88.1	561.5	1013.0	558.3	5.71	12.77	0.570
Shorthorn	93.7	556.5	1022.9	564.8	5.45	12.98	0.448
South Devon	91.4	566.0	1030.0	564.9	6.11	13.07	0.500
Beefmaster	92.1	575.6	1002.9	554.2			
Brahman	98.3	587.7	989.3	571.9			
Brangus	90.8	568.2	1008.4	559.3			
Santa Gertrudis	92.6	570.5	1013.9	555.4	4.96	12.66	0.487
Braunvieh	89.9	549.4	981.8	576.4	5.46	13.63	0.432
Charolais	94.7	592.4	1047.7	556.1	5.22	13.92	0.381
Chiangus	90.9	546.2	987.0	557.9	5.37	13.24	0.449
Gelbvieh	89.6	575.4	1027.1	571.4	5.26	13.78	0.422
Limousin	90.8	574.7	1007.7	555.7	4.90	14.33	
Maine-Anjou	91.8	554.1	1000.8	555.2	4.99	13.80	0.372
Salers	89.0	566.4	1019.5	564.0	5.73	13.52	0.394
Simmental	91.5	586.1	1038.8	564.4	5.29	13.82	0.402
Tarentaise	89.1	576.2	1008.2	567.0			

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