

Across-Breed EPDs

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Most breed associations publish EPDs on an annual or bi-annual basis. These EPDs predict differences expected in performance of future progeny of two or more bulls within the same breed for various traits. 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.

In order to compare individuals across-breeds, adjustments are needed for the within breed EPDs. Computation of the adjustment factors requires direct comparison of progeny of sires of those breeds when all sires are mated to dams with the same breed composition. Those comparisons are only available from the Germplasm Evaluation Program at the U.S. Meat Animal Research Center (USMARC). Across-breed adjustments for growth traits and maternal milk have been calculated on an annual basis at USMARC since 1993. Adjustment factors for carcass traits have been calculated since 2008. In order for a breed to be included in carcass adjustment factors, the breed must have carcass data in the 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 adjustment factors listed in Table 1 are the most recent and should only be used with EPDs current as of July 2010 because of potential changes in EPD calculations from year-to-year.

Across-breed EPDs (AB-EPDs) are used to compare EPDs of animals of different breeds on the same scale. Across-breed EPDs are most useful to commercial producers purchasing bulls of two or more breeds for use in a systematic crossbreeding program. They can be used by commercial producers as a tool to optimize performance levels in commercial herds that implement crossbreeding systems to exploit heterosis and match genetic potential to environment, feed resources, climate and market targets. Uniformity of across-breed EPDs should be emphasized in selection of bulls for use in rotational crossbreeding systems to improve uniformity of calves produced in successive generations of the rotation.

As an example, in comparing a Simmental bull that has a Birth Weight EPD of 2.1, with a Gelbvieh Bull that has a Birth Weight EPD of 1.0, you would add the appropriate breed adjustment factor to each bull's actual EPD and then compare them. The Simmental's bull Across Breed Adjusted Birth Weight EPD would be 7.3 (2.1 + 5.2) and the Gelbvieh's Across Breed Adjusted Birth Weight EPD would be 5.3 (1.0 + 4.3) . The expected difference in birth weight when both are mated to cows of a different breed would be 2.0 pounds (7.3 - 5.3 = 2.0).

Breed	Actual EPD	Adjustment	Across Breed EPD
Simmental	2.1	+5.2	7.3
Gelbvieh	1.0	+4.3	5.3
Difference			2.0

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	0.0	0.0	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			

^aMarbling score units: 4.00 = S1⁰⁰; 5.00 = Sm⁰⁰