



New Across-Breed EPD Adjustment Factors Presented

by Troy Smith

How would you like to go back to the days before expected progeny difference (EPD) values? This selection tool has been available long enough and so widely used, among purebred breeders and commercial cattlemen alike, that many young producers probably have a hard time imagining a time before EPDs. The gray-haired veterans remember.

Back in the day, plenty of commercial cow-calf producers were leery of EPDs. It's usually that way when new technologies are introduced. It's to be expected, and a little skepticism is a healthy thing. But EPDs proved their worth as a means of comparing bulls based on the estimated difference in their future progeny's performance with respect to various production traits. And as the genetic evaluation programs for various breeds incorporated ever more performance data representative of more sires, the accuracy of prediction improved.

With the influence of more individual, pedigree and progeny information, EPDs change. Consequently, most breed associations publish sire summaries annually, listing updated EPDs. However, because each breed association computes its EPDs in a separate analysis and because each breed has a different

base point, EPDs are breed-specific. In other words the EPDs of bulls from different breeds cannot be compared directly. This comparison problem presents an obstacle to commercial cow-calf producers who purchase bulls of more than one breed for use in crossbreeding programs.

During the late 1980s, the Beef Improvement Federation

adjustment factors for 16 breeds were computed. That year also marked the first time adjustment factors for carcass trait EPDs were included, for eight breeds.

Customarily, a new table of across-breed EPD adjustment factors is introduced at the annual BIF Annual Meeting and Research Symposium.

During the 2009 conference

reference breed for adjustment to AB-EPDs. Respective adjustment factors are added to the EPDs of animals of different breeds adjusting their EPD values to an Angus equivalent. The adjustment factors, given relative to an Angus equivalent of zero for each trait, take into account breed differences as well as differences in breed average EPDs and base year. Animals of various breeds can then be compared on the same EPD scale.

"As an example," Kuehn said, "suppose a Gelbvieh bull has a weaning weight EPD of +42 lb. and a Simmental bull has weaning weight EPD of +24 lb. The across-breed adjustment factors for weaning weight are 1.7 lb. for Gelbvieh and 25 lb. for Simmental. The AB-EPD is 43.7 lb. (42 + 1.7 lb.) for the Gelbvieh bull and 49 lb. (24 + 25 lb.) for the Simmental bull. The expected weaning weight difference when both are mated to cows of another breed would be 43.7 lb. minus 49 lb. or -5.3 lb."

As noted earlier, EPDs change, so across-breed adjustment factors are updated annually using the most recent national cattle evaluations conducted by each breed. The breed differences used to calculate the adjustment factors are based on comparison of progeny of sires, representing each of these breeds, in the Germplasm Evaluation Program at MARC. The factors reflect both the current breed difference and difference in the breed base point. Kuehn emphasizes that they should only be used with EPDs current as of July 2009. Serious errors may occur if the new adjustment factors are used with EPDs derived from earlier genetic evaluations.

Kuehn said the model for computing continues to evolve. The inclusion of more phenotypic data makes for more improved estimates. Of course, EPDs are not perfect. Accuracies certainly vary. The accuracies of AB-EPDs depend primarily on the accuracies of within-breed EPDs of individual bulls being compared. **HW**

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(BIF) pushed for a remedy — a method of estimating across-breed EPDs (AB-EPDs) — prompting development of across-breed adjustment factors by animal scientists at the U.S. Meat Animal Research Center (MARC), Clay Center, Neb. Since 1993 across-breed adjustment factors have been calculated for growth traits and maternal milk.

Initially the effort focused on 12 breeds with genetic evaluation programs. Additional breeds have been added, subsequently, but only data from progeny of sires with current genetic evaluations have been included in MARC analyses. By 2008

in Sacramento, Calif., MARC geneticist Larry Kuehn presented the latest adjustment factors calculated for 18 breeds (See Table 1). For each of those breeds, adjustment factors were computed for growth traits including birth, weaning and yearling weights plus maternal milk. Adjustments for carcass traits, including marbling, ribeye area and fat depth, were computed for 11 breeds with genetic evaluations for carcass merit.

According to Kuehn, because of the volume of records used in its genetic evaluation program, the Angus breed is used as the

Table 1: Adjustment factors to add to EPDs of 18 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	2.9	-2.8	-16.1	-17.5	-0.36	-0.24	-0.057
Red Angus	2.9	-5.4	-4.4	-3.0	-0.01	-0.21	-0.045
Shorthorn	6.1	19.9	52.8	23.1	0.06	0.12	-0.133
South Devon	4.5	6.9	-1.4	-6.5	-0.32	0.39	-0.131
Beefmaster	7.7	44.2	44.0	2.6			
Brahman	11.2	36.3	2.2	29.0			
Brangus	4.7	21.9	19.9	2.4			
Santa Gertrudis	8.1	17.1					
Braunvieh	7.5	21.4	12.8	30.6	-0.26	0.78	-0.149
Charolais	9.7	38.2	51.9	5.6	-0.50	0.63	-0.244
Chiangus	4.1	-19.6					
Gelbvieh	4.5	1.7	-12.6	9.9			
Limousin	4.2	-3.4	-28.6	-14.2	-0.80	0.93	
Maine-Anjou	5.5	-10.7	-22.8	-0.8	-0.92	1.07	-0.197
Salers	3.4	22.7	52.3	13.1	-0.11	0.78	-0.224
Simmental	5.5	25.0	22.4	13.7	-0.60	0.92	-0.193
Tarentaise	2.5	29.7	17.9	22.2			