the verbiage gets excessive, so various states of confusion set in. Whatever the trait, always remember that the basic EPD concept does not change. Similar to molding clay, a producer slowly massages the work in progress until the end product desired is achieved.

As measured by EPDs, adding some DNA for this or some DNA for that is what brings success. Understanding EPDs is pertinent to all breed associations that publish the different values. Each year, new information is added to a breed association's database. The data may come in the form of simple handwritten sheets for birth weights, calving dates or any other traits. On a higher level, a producer may use one of the many electronic opportunities that are available to submit data. The data entered could be as sophisticated as using blood or tissue analysis results from a laboratory to obtain DNA information.

With time, all data points help paint a picture of what genetics actually reside in each member of the herd. Interestingly, all data are important, so new data do not replace the old. As time moved on, better attention to data collection and transfer, and the organizing of the growing database have improved the accuracy of selection and the confidence producers have in the data.

Newer technology, expanded analyses of DNA samples and a more intense data analysis have built more confidence in what the data are telling us. Again, all this leads us to using EPDs. Some would say this is old news. Unfortunately, EPD usage across the industry is far from saturated. How does one know? Just listen to a few conversations by those selling or buying bulls.

Three things can help beef producers during the bull-buying season. First, look up and know the average EPD value for the traits of interest for the breed. Second, look up and know the average EPD value for the traits of interest of the bulls that have been purchased previously. Then compare the two sets of numbers. The comparison will indicate if the traits of interest within the breed one is working with are average, above average or below average for the breed.

Now ask yourself if the offspring of the bulls are selling with gusto or fervid gusto. If only with gusto, then more can be done to purchase better sires, so get to work and start the third step. The third step involves identifying sires with EPDs for the traits of interest that are ahead of the breed average and of the old bulls.

Also, remember to buy stronger EPDs with fervid gusto.

May you find all your ear tags.

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Adjustment factors to estimate across-breed EPDs

Researchers at the Roman L. Hruska U.S. Meat Animal Research Center (USMARC) in Clay Center, Neb., develop breed adjustment factors annually so that expected progeny difference (EPD) values can be compared across breeds. This process allows the estimation of across-breed EPDs, sometimes referred to as AB-EPDs.

The AB-EPD concept was introduced in the late 1980s and continues to spark interest with commercial bull buyers using more than one breed of bull. This is mostly due to the fact that without adjustments, the within-breed EPDs cannot be used to directly compare animals of different breeds, since the values are typically computed separately for each breed.

Table 1 presents the most recent USMARC adjustment factors that can be 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 measured in the Germplasm Evaluation Project at USMARC, as well as differences in breed average EPDs and base year.

Animals of various breeds can be compared on the same EPD scale after adding the specific adjustment factor to EPDs produced in the most recent genetic evaluations of the representative breeds.

Use of these factors does not change differences in EPDs among bulls within a breed. However, it does affect differences among bulls of different breeds. The example in Table 2 illustrates EPDs for Angus and Red Angus bulls after across-breed adjustment factors have been applied to estimate AB-EPDs. The AB-EPDs for Red Angus Bull #002 are on an Angus-equivalent scale and can be directly compared with values for Angus Bull #001.

Animals of various breeds can be compared on the same EPD scale after adding the specific adjustment factor to EPDs produced in the most recent genetic evaluations of the representative breeds.

It is important to remember that EPDs are not perfect when comparing bulls, even within a breed; therefore, AB-EPDs are somewhat less accurate when comparing animals of different breeds. AB-EPDs are most effective for selecting bulls of two or more breeds for use in systematic crossbreeding.

When evaluating the potential application of AB-EPDs as a tool for a particular breeding program, commercial cow-calf producers must first examine the needs of their individual operations. Producers must diligently review their breed choices and crossbreeding systems in order to provide the best sire selection match to cow genetic type, environment, feed resources and market targets.

Table 2: Example of using across-breed adjustment factors to convert noncomparable within-breed EPDs to comparable across-breed EPDs

		BW	WW	YW	Marb	REA
Angus	AB adj. factors[1]:	0.0	0	0	0.00	0.00
Bull #001	EPDs[2]:	1.8	47	83	0.46	0.42
	AB-EPDs[3]:	1.8	47	83	0.46	0.42
Red Angus	AB adj. factors[1]:	3.4	-23.2	-27.9	-0.30	-0.08
Bull #002	EPDs[2]:	-1.2	54	84	0.39	0.12
	AB-EPDs[3]:	2.2	30.8	56.1	0.09	0.04

[1]AB adj. factors are the across-breed adjustment factors from Table 1.
[2]EPDs are the within-breed EPD values from the breed's genetic evaluation for the bull of interest.
[3]Across-breed EPDs after adjustment factors are applied to within-breed EPDs.

Table 1: Adjustment factors to estimate across-breed EPDs

Breed	BW	WW	YW	Milk	Marb	RE	Fat
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			

Source: 2013 BIF Proceedings, Oklahoma City, Okla.