

Herd Improvement Begins with Sire Selection

by
BARB BAYLOR ANDERSON



PHOTO BY SHAUNA ROSE HERMEL

Once goals are established, producers can evaluate sire data, says Doug Parrett, University of Illinois Extension beef cattle specialist.

Improving the cow herd begins with targeted bull selection. Doug Parrett, University of Illinois Extension beef cattle specialist, says producers must identify what would make their herds better, and then follow a process to obtain the bulls that fit those criteria for their operations.

“Beef producers are entering an era of producing known quantities of beef, not just commodity beef,” Parrett stated during the Beef Sire Selection & Management Seminar in southern Illinois. “The steps toward selecting the best sire should begin with identifying your current herd’s level of production, your market goals and prioritizing your herd’s needs.”

Evaluating sire data

Once goals are established, producers can evaluate sire data. Parrett says performance testing identifies superior

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 across-breed 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 Simmental bulls after across-breed adjustment factors

have been applied to estimate AB-EPDs. The AB-EPDs for Simmental Bull #002 are on an Angus-equivalent scale and can be directly compared with values for Angus Bull #001.

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 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	2.8	-1.5	-17.1	-18.7	-0.32	-0.07	-0.051
Red Angus	2.3	-1.5	-8.7	-1.5	0.00	-0.12	-0.038
Shorthorn	5.9	17.9	41.7	19.6	-0.10	0.24	-0.151
South Devon	4.2	3.8	-4.9	-5.8	0.08	0.13	-0.113
Beefmaster	6.8	36.4	37.9	2.6			
Brahman	11.4	40.4	4.5	21.4			
Brangus	4.1	14.9	14.0	1.3			
Santa Gertrudis	7.8	34.2	24.8		-0.64	-0.18	-0.146
Braunvieh	5.7	18.5	22.6	30.0	-0.25	0.92	-0.171
Charolais	8.5	40.1	48.9	4.6	-0.40	0.87	-0.222
Chiangus	3.6	-14.5	-33.9		-0.38	0.59	-0.172
Gelbvieh	3.8	3.9	-10.4	10.2			
Limousin	3.6	0.9	-31.3	-13.4	-0.69	1.06	
Maine Anjou	4.3	-9.8	-28.5	-3.7	-0.77	0.96	-0.209
Salers	2.0	-0.3	-10.5	0.5	-0.13	0.81	-0.217
Simmental	4.8	25.9	24.5	15.3	-0.51	0.95	-0.218
Tarentaise	1.8	34.8	22.5	23.0			

Source: 2011 BIF Proceedings, Bozeman, MT.

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

		BW	WW	YW	Milk
Angus	AB adj. factors ¹ :	0.0	0	0	0
Bull #001	EPDs ² :	2.9	42	83	16
	AB-EPDs ³ :	2.9	42	83	16
Simmental	AB adj. factors ¹ :	4.8	26	25	15
Bull #002	EPDs ² :	0.8	31	59	7
	AB-EPDs ³ :	5.6	57	84	22

¹AB adj. factors are the across-breed adjustment factors from Table 1.

²EPDs are the within-breed EPD values from the breed’s genetic evaluation for the bull of interest.

³Across-breed EPDs after adjustment factors are applied to within-breed EPDs.



PHOTO BY BARB BAYLOR ANDERSON

“We have better genetic predictors to use and greater statistical analysis that is linked to greater computing power and more accurate genetic estimates,” says Parrett.

and inferior sires and dams for operations. Objective measures can be used for decision making as to where breeding can be improved. He advises producers to consider:

● **Birth weight and calving ease.** As birth weights (BW) increase, so does calving difficulty. Weight is influenced by many factors, but is a good indicator

of calving ease. In general, heifers must be bred to lighter bulls. Mature cows can have larger calves. He adds that calving ease (CE) predictions include BW and are becoming more accurate.

● **Weaning weight (WW)** is the weight of the animal adjusted to 205 days. Most calves are sold at weaning and adjusted for age of dam and milking ability. If you compare in contemporary groups, Parrett says WW indirectly will provide a dam’s milking ability.

● **Optimum milk production** is important and will vary by operation. Generally, more milk means a heavier calf at weaning. If feed is limited, heavy-milking cows will get too thin and may not rebreed. Parrett says match feed resources to desired milk and calf weights.

● **Yearling weight (YW)** is the best measure for growth and should be comparable within contemporary groups. Bulls should be 1,000-1,300 pounds (lb.), and heifers 700-1,000 lb.

Meet your herd’s needs

“Superior carcass traits also should be important because producers sell a high-protein, nutritious product. Realize that beef production is the goal. A weaned calf is not the finished product,” he says. “Think about live calves that grow, cows that milk and breed back, and low costs.”

Parrett stresses that almost 80% of the change in a herd comes from sires chosen. Sires influence 50% of each calf, and the influence continues through replacement females.

“Gather EPD rankings for the breed, select bulls whose EPDs best fit your needs, purchase bulls whose phenotype fits your goals, and pay for predictable genetics.”

— Doug Parrett

“We have better genetic predictors to use and greater statistical analysis that is linked to greater computing power and more accurate genetic estimates. You don’t have to understand the calculations, you just need to follow and use them,” he says. “EPDs (expected progeny differences) offer producers the best opportunity for comparative shopping. Look for bulls with advantages that meet the criteria you initially established for your herd.”

Parrett says purebred breeders should aspire to produce predictable, reliable genetics that meet higher commercial customer expectations. EPDs are the best guide for bull selection.

“Accuracy value provides a risk management aid to assist in how extensively animals are used,” he explains. “Bio-economic value EPDs and \$Value EPDs also are important, while DNA analysis can enhance EPD accuracy, particularly for young cattle. Producers should expect genetic testing information when buying expensive young bulls or using AI from young bulls.”

Finally, Parrett notes that phenotypic

traits, such as soundness and capacity, cannot be ignored. Select a sire based on EPDs and then evaluate the bull for functionality.

“Proper skeletal soundness is essential for cattle to function efficiently in their production environment. A wide range of acceptable levels of soundness exists, but unsoundness causes impaired mobility, and loss of performance and longevity. Bulls affect the soundness of replacement females and their longevity, as well. Evaluate front and rear leg conformity, take polled versus horned into consideration, along with color/pigmentation, disposition and muscle score.

“Gather EPD rankings for the breed, select bulls whose EPDs best fit your needs, purchase bulls whose phenotype fits your goals, and pay for predictable genetics,” Parrett concluded.

