

## HOW TO USE EPDs IN SIRE SELECTION DECISIONS

Each breeder must set his own selection goals, based on the needs of his operation, the situation for that trait in his herd, and his production environment.

It would be easy if we could assume that the highest EPDs are the best. Unfortunately, like most decisions, using EPDs for sire selection involves tradeoffs. For example, bulls with high growth EPDs may sire calves with a higher birth weight as well. And there may be other impacts on your operation to consider.

To give some examples: for heifers, bulls with lower birth weights are advised, so a breeder may want to pay special attention to birth weight EPDs. If calves are being sold for slaughter, the milk EPD would generally not rate much attention. Yearling weight will be important if you want to ensure finished steers in the appropriate weight range.

In addition, reaction to selection can differ from trait to trait. This is because some traits are more "heritable" than others, and are more easily passed to offspring "Like father, like son". Growth traits, for instance, respond faster than milk production.

A balance of traits is required, and the perfect balance for you will depend on your climatic, nutritional and economic environment, as well as the management goals you have set for your herd.

One way to select for several traits is to set minimum and maximum acceptable levels for each trait, and then choose sires that meet that criteria. Another method would be to rank all sires, on each trait, then develop a weighted index which ranks each bull from one (most desirable) to five for each trait. The bull with the lowest total score would be your first choice.

### A SAMPLE SIRE SUMMARY EVALUATION

Sire	Birth Weight		Weaning Weight		Yearling Weight		Milk	
	EPD	Ace.	EPD	Ace.	EPD	Ace.	EPD	Ace.
A	6.6	.75	31.3	.75	39.5	.68	-5.6	.58
B	.1	.82	14.6	.83	24.6	.80	6.0	.73
C	0.0	.89	.3	.89	11.1	.88	18.9	.87
D	-5.9	.87	-3.8	.87	-14.4	.86	10.3	.85

**Producer #1** wants a sire to use on heifers; he wants a bull with a low birth weight and he wants to keep some replacement heifers. His main concern is not performance. The sire that fits his needs is **Sire D**. He has a low birth weight EPD and above-average milk EPD.

**Producer #2** has a sound breeding program, he wants a sire that will maintain performance and milking ability. He will select a bull for multi traits that increase performance and milk while maintaining calving ease. **Sire B** is his choice.

**Producer #3** has a herd of above-average frame mature cows and is not planning to keep any replacement heifers. He wants a bull that will give him the most profit at weaning and/or yearling (slaughter) as he will sell his calves at weaning or at 12 to 14 months. **Sire A** will give him the best result in weaning weight or yearling weight. If heifers are kept they will, on average, be inferior for maternal milk.

**Producer #4 wants** to maintain his calving performance and growth performance but would like to increase the milking ability in his females. **Sire C** is his choice.

## UNDERSTANDING ACCURACY

EPDs are designed to change so that we can continually include the new information that is collected as more progeny are born. Like the weather, the more information you have about past performance, the easier it is to try to get a picture of future performance. To evaluate how good a predictor the EPD will be, we assign it an accuracy value. :

Again, it is important to stress that an EPD is simply a prediction of how the offspring of a breeding program may perform. Think of accuracy as the tool that helps you assess risk by telling you how much information is going into the creation of the EPD -whether the EPD estimate of future performance is based on lots of data or whether it really is just a guess at this point.

Accuracies do not tell us how variable an animal's offspring will be. Nor does it reflect the quality of the information used. If a breeder is using incorrect management group definitions, this will affect the quality of the EPD, but will not affect the accuracy.

The accuracy value has a range from 0 (very poor) to 99% (extremely accurate). 99% means the EPD is the almost exact correct measure of the bull's ability to produce offspring with the given trait, and zero means there is no information available for making such a prediction.

Generally, accuracy values of about 80% or higher are considered high accuracy, meaning the EPD is a pretty good predictor of performance, which is to say that there is little risk that the progeny performance of an animal with high accuracy will be very different from the prediction. Accuracy values between 60 and 80% are moderate and an accuracy value below 60% is considered low, and the likelihood of the outcome mirroring the EPD value is less.

Rick Bourdon of Colorado State University breaks up accuracy values this way, passing final judgment on the bull.

Low	< 40%	Unreliable, but still a guess
Med/Low	40 to 60%	Worth looking at, but risky
Med/High	60 to 80%	Quite trustworthy, make comparisons with confidence
High	> 80%	Good accuracy, compare with confidence

If an animal has low accuracy, it means data, maybe from its progeny, are not there to support the EPD. It also means that the chances of the EPD changing in the next sire summary are greater, because adding more data increases the ability of the EPD to predict performance and in turn boosts accuracy.

However, it doesn't mean that the bull is no good, only that you would want to see EPDs with a little more accuracy before passing final judgement on the bull. As more of the bull's daughters report more progeny, the predictive value of EPD will become more reliable and this is reflected in a higher accuracy value.