

UNDERSTANDING EPDS & HOW TO USE THEM

Expected Progeny Differences

(EPDs) may be used to estimate how future progeny of the subject animal will compare to progeny of other animals within the breed. The key words are estimate, future, compare and within breed. EPDs are not designed to predict the performance of one or two progeny of a sire, but rather should be used to compare bulls based on estimated progeny performance. EPDs predict differences, not absolutes. They describe the genetic value of an animal much like a feed tag describes the contents of a feed sack.

EPDs are computed as part of the American Gelbvieh Association National Cattle Evaluation (NCE) program. The NCE program represents the application of the most recent genetic and computing technology for calculating EPDs for beef cattle. The Gelbvieh NCE program incorporates all available performance into the prediction of an individual's EPD for a specific trait. An EPD may be derived from any combination of individual performance, pedigree, and progeny and grand progeny performance information. In addition, sire EPDs are more accurate than anything previously available because they account for the following factors:

- Genetic value of cows a bull is bred to.
- Environmental differences affecting contemporary groups.
- Quality of other sires in the contemporary group.
- Genetic trend.

GELBIEH EPDS DEFINED

Following are short definitions for what each Gelbvieh EPD measures and the unit it is measured in. For the updated average EPDs for the Gelbvieh breed, visit www.gelbvieh.org.

Calving Ease Direct (CE): an EPD that is expressed as a ratio, with a higher ratio representing better (easier) calving ease. This value represents the direct influence a sire has on calving ease. Only first-calf heifer data is included.

Birth Weight (BW): predicts the difference, in pounds, for birth weight.

Weaning Weight (WW): predicts the difference, in pounds, for weaning weight (adjusted to age of dam and a standard 205 days of age). This is an indicator of growth from birth to weaning.

Yearling Weight (YW): predicts the expected difference, in pounds, for yearling weight (adjusted to standard 365 days of age). This is an indicator of growth from birth to yearling.

Milk (MK): the genetic ability of a sire's daughters to produce milk expressed in pounds of weaning weight.

Total Maternal (TM): a value that combines growth and milk information and a prediction of the weaning weight performance of calves from a sire's daughters. This value does not have an accompanying accuracy value.

Gestation Length (GL): this EPD is expressed in days and measures the days under or over normal gestation length a sire's daughters can be expected to calve

Calving Ease Daughters (CED): an EPD expressed as a ratio for a sire's daughters' calving ease with a higher ratio being a more favorable calving ease. This value represents the calving ease that a sire transmits to his

daughters. Only first-calf daughters are considered in calculations the EPDs.

Scrotal Circumference (SC): value is expressed in centimeters of adjusted yearling scrotal circumference.

Stayability (ST): predicts the genetic difference, in terms of percent probability, that a bull's daughters will stay productive within a herd to at least six years of age. Stayability EPD is one of the best measures currently available to compare a bull's ability to produce females with reproductive longevity.

Carcass Weight (CW): expressed in pounds of carcass weight adjusted to a constant fat endpoint.

Rib Eye Area (RE): expressed in square inches of rib eye muscle area adjusted to a constant fat endpoint.

Marbling (MB): expressed in degrees of marbling score, a determinant of USDA Quality Grade. Value is adjusted to a constant fat endpoint.

Days to Finish (DtF): expressed in days to reach a constant fat endpoint, which is commonly used in the feedlot to determine when an animal is finished with the appropriate amount of fat cover. When evaluating two potential sires with comparable EPDs for other traits, the sire with the lesser value for DtF will produce progeny that will finish sooner with potentially lower feed costs.

Feedlot Merit (FM): expressed in dollars per head, value passed to progeny. The Feedlot Merit EPD measures the dollar value associated with the expected gain and feedlot efficiency of progeny when fed in a "typical" feedlot arrangement.

Carcass Value (CV): expressed in dollar value per head, comparing progeny of one animal to another in dollar differences when progeny are sold on a grid. This value is a true

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economic comparison; it is not grid merit at a standard carcass weight as many breeds calculate. Projected carcass weight, penalties for “out” weight carcasses (too heavy or light), quality grade and yield grade premiums and discounts are all included in calculating this \$EPD value.

How to Use EPDs

To understand how to use EPDs in sire selection, let’s take a look at the following examples on this page.

TABLE 1. Weaning Weight EPD is the best estimate of pre-weaning growth while Yearling EPD is the best estimate of growth through one year of age.

On the average, we would expect the progeny of Sire A to weigh 14 pounds more at weaning and 25 pounds more at a year of age compared to the progeny of Sire B. This assumes that both bulls are mated to comparable cows and that all resulting progeny are managed alike.

	Growth Traits	
	Weaning Weight EPD	Yearling Weight EPD
Sire A	48	84
Sire B	34	59
Difference	14 lbs	25 lbs

TABLE 2. Sire A excels in growth compared to Sire B. However, the difference in the Milk EPDs suggests that daughters of Sire B will provide more milk to their calves in an amount equal to 10 pounds of weaning weight over a 205-day lactation period.

The Total Maternal EPD expresses the combination of what a sire transmits to his daughters in the form of genetics for growth and genetics for milking ability. Total Maternal EPDs are calculated by adding one-half of the Weaning Weight EPD to the Milk EPD.

	Milk and Growth		
	Weaning Weight EPD	Milk EPD	Total Maternal EPD
Sire A	48	11	35
Sire B	34	21	38
Differences	14 lbs.	10 lbs.	3 lbs.

TABLE 3. According to EPDs in Table 3, the Sire B progeny can be expected to be born easier not only because of the 6.5-pound lighter birth weight, but also because of the 12 percent advantage in Calving Ease EPD.

Maternal calving ease (Daughter’s Calving Ease) relates to the ability of a sire’s daughters to have a calf unassisted. Consequently, we would expect the daughters of Sire A to be easier calving than the daughters of Sire B.

Gestation Length is important as it relates to the amount of time a cow will have to rebreed following calving. Cows bred to shorter gestation sires will have more time to recover before breeding season. A day or two may not be very significant, but four to five days year after year can have a big impact on a cow’s lifetime efficiency. In the above example, we would expect the progeny of Sire B to be born 1.5 days earlier, on the average, than progeny of Sire A.

	Birth Weight, Calving Ease & Gestation Length			
	Birth Weight EPD	Calving Ease EPD	Daughters’ Calving Ease EPD	Gestation Length EPD
Sire A	5.8	99	105	0.0
Sire B	-0.7	111	97	-1.5
Differences	6.5 lbs	12%	8%	1.5 days