

## **The EPD Encyclopedia**

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In order to make truly good Balancer cattle, producers need to understand EPDs from the breed associations involved: American Gelbvieh Association, American Angus Association, and Red Angus Association of America. All producers need to remember that the values used to calculate EPDs are most useful if multiple sires are represented in a single contemporary group for the most valid comparison.

### **Gelbvieh EPDs**

**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):** expressed in percent, prediction of the ability of a cow to produce a calf after the age of six. Stayability EPD is the best indicator currently available for measuring reproductive performance.

**Carcass Weight (CW):** expressed in pounds of carcass weight.

**Rib Eye Area (RE):** expressed in square inches of rib eye muscle area.

**Marbling (MB):** expressed in degrees of marbling score, a determinant of USDA Quality Grade.

**Fat Thickness (FT):** expressed in inches of fat measured between the 12<sup>th</sup> and 13<sup>th</sup> ribs of a carcass.

**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.

**Grid Merit (GM):** expressed in a dollar value per head associated with marketing progeny on a value-based grid. Used to estimate how future progeny of one animal compare to progeny of another animal within the same breed. The Grid Merit EPD predicts the carcass value associated with selling carcasses on a grid based on quality, yield grade and fitting weight specifications. The performance measured is the dollar value associated with marketing progeny on a value-based grid.

### **Angus EPDs**

**Calving Ease Direct (CED):** is expressed as a difference in percentage of unassisted births, with a higher value indicating greater calving ease in first-calf heifers. It predicts the average difference in ease with which a sire’s calves will be born when he is bred to first-calf heifers.

**Birth Weight (BW):** expressed in pounds, is a predictor of a sire’s ability to transmit birth weight to his progeny compared to that of other sires.

**Weaning Weight (WW):** expressed in pounds, is a predictor of a sire’s ability to transmit weaning growth to his progeny compared to that of other sires.

**Yearling Weight (YW):** expressed in pounds, is a predictor of a sire’s ability to transmit yearling growth to his progeny compared to that of other sires.

**Yearling Height (YH):** expressed in inches, is a predictor of a sire’s ability to transmit yearling height compared to that of other sires.

**Scrotal Circumference (SC):** expressed in centimeters, is a predictor of sire’s ability to transmit scrotal size compared to that of other sires.

**Calving Ease Maternal (CEM):** is expressed as a difference in percentage of unassisted births with a higher value indicating greater calving ease in first-calf daughters. It predicts the average ease with which a sire’s daughters will calve as first-calf heifers when compared to daughters of other sires.

**Maternal Milk (Milk):** expressed in pounds of calf weaned, is a predictor of a sire's merit for milk and mothering ability as expressed in his daughters compared to daughters of other sires. In other words, it is that part of calf's weaning weight attributed to milk and mothering ability.

**Mature Weight (MW):** expressed in pounds, is a predictor of the difference in mature weight of daughters of a sire compared to the daughters of other sires.

**Mature Height (MH):** expressed in inches, is a predictor of the difference in mature height of a sire's daughters compared to daughters of other sires.

**Cow Energy Value (\$EN):** expressed in dollar savings per cow per year, assesses differences in cow energy requirements as an expressed dollar savings difference in daughters of sires. A larger value is more favorable when comparing two animals (more dollars saved on feed energy expenses). Components for computing the cow \$EN savings difference include lactation energy requirements and energy costs associated with difference in mature cow size.

#### **Carcass Traits**

**Carcass Weight (CW):** expressed in pounds, is a predictor of the difference in hot carcass weights of a sire's progeny compared to progeny of other sires.

**Marbling (Marb):** expressed as a fraction of USDA marbling score, is a predictor of the difference in marbling of a sire's progeny compared to progeny of other sires.

**Rib Eye Area (RE):** expressed in square inches, is a predictor of the difference in rib eye area of a sire's progeny compared to progeny of other sires.

**Fat Thickness (Fat):** expressed in inches, is a predictor of the difference in external fat thickness at the 12<sup>th</sup> rib (as measured between the 12<sup>th</sup> and 13<sup>th</sup> ribs) of a sire's progeny compared to progeny of other sires.

**Percent Retail Product (%RP):** is a predictor of the difference in pounds of saleable retail product of a given sire's progeny compared to progeny of other sires.

#### **Ultrasound Carcass Traits:**

**Intramuscular Fat (%IMF):** is a predictor of the difference in a sire's progeny for percent intramuscular fat in the rib eye muscle compared to other sires.

**Rib Eye Area (RE):** expressed in square inches, is a predictor of the difference in ultrasound rib eye area of a sire's progeny compared to the progeny of other sires.

**Fat Thickness (Fat):** expressed in inches, is a predictor of the difference in ultrasound fat thickness at the 12<sup>th</sup> rib of a sire's progeny compared to the progeny of other sires. It

includes the weighted average of 60% of the rib fat measurement and 40% of the rump fat measurement.

**Percent Retail Product (%RP):** is a predictor of the difference in pounds of saleable retail product as derived from ultrasound measures of a sire's progeny compared to progeny of other sires.

#### **\$ Value Indexes:**

**Weaned Calf Value (\$W):** an index value expressed in dollars per head, is the expected average difference in future progeny performance for pre-weaning merit. \$W includes both revenue and cost adjustments associated with differences in birth weight, weaning direct growth, maternal milk and mature cow size.

**Feedlot Value (\$F):** an index value expressed in dollars per head, is the expected average difference in future progeny performance for post weaning merit compared to progeny of other sires.

**Grid Value (\$G):** an index value expressed in dollars per head, is the expected average difference in future progeny performance for carcass grid merit compared to progeny of other sires.

**Beef Value (\$B):** an index value expressed in dollars per head, is the expected average difference in future progeny performance for postweaning and carcass value compared to progeny of other sires.

#### **Red Angus EPDs**

**Birth Weight (BW):** predicts the difference, in pounds, for birth weight, and is also used in the calculation of Red Angus' Calving Ease Direct (CED) EPD.

**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 (Milk):** predicts the difference in maternal production of an individual animal's daughter as expressed by the weaning weight of their calves.

**Total Maternal (TM):** predicts the rancher's actual observation of weaning weights of calves raised by an animal's daughters. TM includes the daughters milk EPD plus half of her genetic contribution to her calf's weaning weight EPD. This formula for TM EPD is:  
$$\text{TM EPD} = \text{Milk EPD} + \frac{1}{2} (\text{WW EPD})$$

**Marbling Score (MARB):** predicts difference for carcass marbling score as expressed in marbling score units. Higher marbling scores are positively correlated with higher carcass quality grades.

**Rib Eye Area (REA):** predicts differences of carcass rib eye area between the 12<sup>th</sup> and 13<sup>th</sup> rib. Rib eye area is positively correlated with carcass yield grade, which also considers fat thickness and carcass weights.

**12<sup>th</sup> Rib Fat Thickness (FAT):** predicts differences for carcass fat depth over the 12<sup>th</sup> rib, as expressed in inches. Fat thickness is negatively correlated with carcass yield grade, which also considers rib eye area and carcass weights.

**Calving Ease Direct (CED):** predicts the probability of calves being born unassisted out of two year-old heifers. Red Angus' CED EPD is the best predictor of calving ease – including genetic factors such as gestation length, calf shape, etc.

**Heifer Pregnancy (HPG):** predicts the probability of heifers conceiving to calve at two years of age.

**Calving Ease Total Maternal (CETM):** predicts the probability of a given animal's daughters calving unassisted at two years of age. It includes not only the predisposition for a female to calve unassisted, but also her contribution to her calf's traits (birth weight, calf shape, etc.) that make it more likely to be born assisted.

**Stayability (STAY):** predicts the probability that a bull's daughters will remain in the herd until at least six years of age.