



### Using EPDs for Bull Selection

EPDs are calculated using pedigree, performance and genomic data. Canadian Angus members participate in the voluntary Performance Program through which they collect and submit performance data on fertility, calving ease, growth, structure, carcass quality, and feed efficiency for their calves. A big thank you to all our members who take the time to measure and record this data; without you we cannot generate the genetic selection tools that we do. Many members have started measuring and submitting phenotypes for the new traits introduced here. As you start calving, please do not forget to record teat and udder scores on your cows.

*EPDs are a genetic selection tool that some producers appreciate and use to select their bulls.*

### Canadian Angus Association Genetic Evaluation Definitions

#### Production EPDs:

**Calving Ease Direct (CED) EPD** describes the percentage of expected unassisted births when a bull is exposed to first-time heifers. The higher the number, the higher the probability that first-time heifers bred to the bull in question will calve with no assistance. The EPD 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 EPD (BW) EPD** describes in pounds the difference in expected progeny weight, on average. A bull with a BW EPD of +4 will, on average, sire calves that are 2 pounds heavier than a bull with a BW EPD of +2 (given equal management).

**Weaning Weight EPD (WW) EPD** describes in pounds the difference in expected weaning weight in progeny, on average. WW EPD is a predictor of a sire's ability to transmit weaning growth to his progeny compared to that of other sires. A bull with a WW EPD of +50 will sire calves that are, on average, 20 pounds heavier at weaning than a sire with a WW EPD of +30 (given equal management).

**Yearling Weight EPD (YW) EPD** describes in pounds the difference in expected yearling weight in progeny, on average. YW EPD is a predictor of a sire's ability to transmit post weaning growth to his progeny compared to that of other sires. A bull with a YW EPD of +100 will sire calves that are, on average, 30 pounds heavier at weaning than a sire with a WW EPD of +70 (given equal management).

**Residual Average Daily Gain (RADG) EPD** describes an animal's ability to grow post weaning on a constant amount of feed. RADG EPD, expressed in pounds per day, is a predictor of a sire's genetic ability for postweaning gain in future progeny compared to that of other sires, given a constant amount of feed consumed. A bull with an RADG EPD of +1.5 will sire calves that, on average, will grow 1 extra pound per day more than calves from another bull with an RADG EPD of 0.5—on the same amount of feed.

**Dry Matter Intake (DMI) EPD** describes the feed intake potential for weaned calves from one sire compared to the feed intake potential of calves from another sire. This EPD is expressed in pounds per day. Weaned calves from Sire A with a DMI EPD of 0.50 will eat approximately 0.5 pounds of dry matter a day more than weaned calves from Sire B with a DMI EPD of 0.00. This EPD should also be used in conjunction with a growth EPD, such as YW EPD, as unlike RADG EPD, it does not include a growth component. Used independently of a growth EPD the DMI EPD selects solely for appetite.

**Scrotal Circumference EPD (SC) EPD** describes the difference in average scrotal circumference in sons. Expressed in centimetres, a sire with an SC EPD of 1.2 will, on average, have sons with scrotal circumference that is 1 centimetre larger than the sons from a sire with an SC EPD of 0.2. SC EPD has also been correlated with daughter's age at puberty and progeny fertility.

**Docility (Doc) EPD** is expressed as a difference in yearling cattle temperament, with a higher value indicating more favourable docility. It predicts the average difference of progeny from a sire in comparison with another sire's calves. In herds where temperament problems are not an issue, this expected difference would not be realized.

**Claw Set (Claw) EPD** is expressed in units of claw-set score, with a lower EPD being more favourable indicating a sire will produce progeny with more functional claw set. Ideally, toes are symmetrical, even and appropriately spaced.

**Foot Angle (Angle) EPD** is expressed in units of foot-angle score, with a lower EPD being more favourable indicating a sire will produce progeny with more ideal foot angle. The ideal is a 45-degree angle at the pastern joint with appropriate toe length and heel depth.

#### **Carcass EPDs:**

**Carcass Weight (CW) EPD** is expressed in pounds and is a predictor of the differences in hot carcass weight of a sire's progeny compared to progeny of other sires. A bull with a CW EPD of +30 will sire calves that, on average, will result in 10 pounds more hot carcass weight than the progeny of a bull with CW EPD of +20.

**Marbling (Marb) EPD** describes the marbling potential of calves from one bull compared to the calves from another bull, given the same management. This EPD is expressed as the difference in grade score. Given the same management, the calves from a bull with a Marb EPD of 0.6 will marble  $\frac{1}{2}$  a grade score better than the calves from a bull with a Marb EPD of 0.1.

**Ribeye Area (RE) EPD** describes in square inches the difference in ribeye area of a sire's progeny compared to progeny of other sires.

**Fat Thickness (Fat) EPD** expressed in inches, describes the differences in back fat thickness at the 12th rib (as measured between the 12th and 13th ribs) of a sire's progeny compared to progeny of other sires.

**Maternal EPDs:**

**Heifer Pregnancy (HPG) EPD** is a selection tool to increase the probability or chance of a sire's daughters becoming pregnant as first-calf heifers at first exposure. A higher EPD indicates a higher probability of conception.

**Calving Ease Maternal (CEM) EPD** describes the probability of not requiring assistance when a bull's daughters calve for the first time. The higher the EPD, the higher the probability that a bull's daughters will not require assistance at calving time.

**Milk EPD** describes, in pounds, the portion of a calf's weaning weight attributed to milk and mothering ability. On average, daughters from a bull with a Milk EPD of +20 will contribute 5 pounds more to their calves' weaning weight than the daughters of a bull with Milk EPD of +15. Milk EPD is a threshold trait that should be maintained at a moderate level dependent on the management and environment of the herd.

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