Using EPD's *for selection*

Cattle Evaluations use the term Expected Progeny Differences (EPD) to express genetic transmitting ability of a sire for the various traits listed. An EPD is a prediction of how future progeny of a sire are expected to perform in a particular trait relative to other sires in the analysis. The key word is "difference". The EPD itself does not imply "good" or "bad" performance. But rather, the EPD gives a prediction of the average difference to expect in the performance of a sire's progeny relative to other sires in the same analysis.

The EPD for a given trait on each animal in the analysis is compared to every other animal in the analysis. The EPD is reported as a plus or minus value in the unit which the trait is measured.

Each EPD reported is accompanied with an Accuracy (ACC) value. ACC is a measure of reliability regarding the EPD evaluation for a performance trait. Accuracy is reported as a decimal number between zero and one: large values indicate greater accuracy and more certainty the EPD will show little change as additional progeny information is obtained.

Birth Weight EPD (BW) The expected difference in average birth weight (pounds) of progeny. Birth weight reflects prenatal growth.

Calving Ease Direct (CE) is expressed as a difference in percentage of unassisted births in first calf heifers. A higher value indicates greater calving ease. It predicts the average difference in unassisted births with which a sire's calves will be born when bred to first-calf heifers.

Calving Ease Maternal (MCE) is expressed as a difference in percentage of unassisted births in first calf daughters. A higher value indicates greater calving ease. It predicts the average difference in unassisted births with which a site's daughters will calve as first-calf heifers when compared to daughters of other sires.

Weaning Weight EPD (WW) The expected difference in average weaning weight of calves. The evaluation reflects the genetic influence on pro-weaning growth rate.

Yearling Weight EPD (YW) The expected difference in average yearling weight of progeny. The evaluation reflects genetic influence on both pro-weaning and post-weaning growth rate.

Maternal Milk EPD (MK) The genetic ability of a site's or dam's daughters to express in pounds of weaning weight in her calves due to her maternal ability through mothering instinct and milk.

Total Maternal EPD (MTNL) A value to predict the weaning weight performance of calves from a animal's daughters due to genetics for growth and maternal ability. Total Maternal is calculated by adding 1/2 the WWT EPD to the Maternal Milk EPD.

Scrotal Circumference EPD (SC) The expected difference in scrotal circumference (expressed in centimeters) of a bull's or dam's male offspring at yearling compared to progeny of all other animals evaluated. Research has also indicated a relationship between increased SC EPD and decreased age at puberty for daughters.

Carcass records are adjusted to an age constant endpoint. Therefore selection based on any or all of the carcass merit EPD are comparable among cattle at the same age endpoint. For example selection based on increased EPD for carcass weight will result in heavier carcass weights than those animals with lower EPD for carcass weights when the cattle are harvested at the same age.

Carcass Weight EPD (CW) Expected progeny differences for Carcass Weight is a predictor of pounds of retail product at a constant age endpoint. Selection for increased values should result in heavier carcasses, while selection for decreased values should result in lighter carcass weights at the same age endpoint. Carcass Weight EPD are expressed in pounds and is a predictor of the differences in hot carcass weight between parents progeny at an age constant endpoint.

Ribeye Area EPD (REA) Ribeye area is measured from a cross-sectional area of the longissimus dorsi muscle at the 12th rib. Ribeye area is a major component of the USDA yield grade equation and selection for increased ribeye area should result in larger ribeyes and lower yield grades between animals with the same carcass weight. Ribeye area has a positive relationship with weight, the larger the animal the larger the ribeye area. Ribeye Area EPD are expressed in square inches and is a predictor of differences in ribeye area between parents progeny at a constant age end-point.

Fat Thickness EPD (FAT) Fat thickness is measured at the 12th rib and is the primary component to the USDA Yield Grade equation. Fat thickness has a negative relationship to cutability; therefore, selection base on decreased fat thickness should result in lower yield grades and leaner cattle given the same age endpoint. Fat Thickness EPD are expressed in inches and are a predictor of differences in fat thickness between parent's progeny at an age constant endpoint.

Marbling Score (MARB) Marbling is a subjective measure of the amount of intramuscular fat in the ribeye muscle. Marbling score is the primary component of USDA Ouality grade and selection for increased Marbling Score EPD should result in cattle with higher quality grades at the same age endpoints. Marbling score has a small genetic correlation with fat, therefore producers may select for increased marbling score EPD while not changing external fat thickness when cattle are harvested at the same age-constant endpoint. Marbling EPD is a prediction of the differences in the USDA subjective marbling score between parent's progeny at an age constant endpoint.

Performance Data: BW – actual birth weight. WW – adjusted 205 day weaning weight. YW – adjusted 365 day weight. Rib Fat – adjusted 365 day rib fat thickness at 12th rib taken by ultrasound. Adj. REA – adjusted yearling ribeye area in sq. inches. % IMF – percentage of ribeye area that is actual marbling taken by ultrasound, adjusted to yearling. Rump Fat – actual measurement of inches of fat on rump taken by ultrasound, adjusted to yearling. SC – actual scrotal circumference in centimeters on July 15, 2010.