AMERICAN ANGUS ASSOCIATION SELECTION TOOLS

Expected Progeny Difference (EPD), is the prediction of how future progeny of each animal are expected to perform relative to the progeny of other animals listed in the database. EPDs are expressed in units of measure for the trait, plus or minus. Interim EPDs may appear on young animals when their performance has yet to be incorporated into the American Angus Association National Cattle Evaluation (NCE) procedures. This EPD will be preceded by an "I", and may or may not include the animal's own performance record for a particular trait, depending on its availability, appropriate contemporary grouping, or data edits needed for NCE.

Accuracy (ACC), is the reliability that can be placed on the EPD. Accuracy will range from 0 to 1 with an accuracy closer to 1.0 indicating higher reliability. Accuracy is impacted by the amount of information that is included in the analysis including individual genotype and performance records as well as number of progeny and ancestral records.

PRODUCTION
Calving Ease Direct (CED), 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.

Residual Average Daily Gain (RADG), feed efficiency expressed in pounds per day, is a predictor of a sire's genetic ability for post-weaning gain in future progeny compared to that of other sires, given a constant amount of feed consumed.

Dry Matter Intake (DMI), expressed in pounds per day, is a predictor of difference in transmitting ability for feed intake during the post-weaning phase, 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 the difference in transmitting scrotal size compared to that of other sires.

MANAGEMENT
Claw Set (Claw), expressed in units of claw-set score, a lower EPD is more favorable, indicating a sire will produce progeny with more symmetrical, even and appropriately spaced toes compared to another sire.

Foot Angle (Angle), expressed in units of foot-angle score, a lower EPD is more favorable, indicating a sire will produce progeny with an angle closer to 45 degrees at the pastern and appropriate toe length and heel depth compared to another sire.

Docility (DOC), expressed as a difference in yearling cattle temperament, with a higher value indicating more favorable docility in a sire's offspring compared to another sire.

Pulmonary Arterial Pressure EPD (PAP), expressed in millimeters of Mercury (mmHg), with a lower EPD being more favorable indicating a sire should produce progeny with a lower PAP score to decrease the risk of progeny contracting high altitude disease most commonly experienced at 5,500 ft or greater in elevation.

Hair Shed EPD (HS), expressed in units of hair shed score, with a lower EPD being more favorable. This indicates a sire should produce progeny who shed their winter coat earlier in the spring and has improved environmental adaptability in heat stressed areas and grazing endophyte-infected (hot) fescue.

MATERNAL
Heifer Pregnancy (HP), is a selection tool to increase the probability or chance of a sire's daughters becoming pregnant as first-calf heifers during a normal breeding season. A higher EPD is the more favorable direction, and the EPD is reported in percentage units.

Calving Ease Maternal (CEM), 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 genetic merit for milk and mothering ability in his daughters. In other words, it is the part of the calf's weaning weight attributes 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.

CARCASS
Carcass Weight (CW), expressed in pounds, is a predictor of the differences in hot carcass weight of a sire's progeny compared to progeny of other sires.

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

Ribeye Area (RE), expressed in square inches, is a predictor of the difference in ribeye area of a sire's progeny compared to progeny of other sires.

Fat Thickness EPD (Fat), expressed in inches, is a predictor of the differences in external 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.

$VALUE INDEXES
$Value Indexes, expressed in dollars per head, are multi-trait selection indexes where a higher value suggests more profit. The $Value is an estimate of how future progeny of each sire are expected to perform, on average, compared to progeny of other sires if sires were randomly mated to cows and if calves were exposed to the same environment.

Maternal Weaned Calf Value ($M), expressed in dollars per head, predicts profitability differences in progeny due to genetics from conception to weaning by decreasing mature cow size and improving docility, foot structure and fertility while maintaining weaning weights consistent with today's production.

Weaned Calf Value ($W), expressed in dollars per head, provides the expected difference in future progeny pre-weaning performance from birth to weaning.
Energy Value ($EN), expressed in dollar savings per cow per year with a larger value being more favorable. It assesses differences in cow energy requirements, due to maternal milk and mature cow size.

Feedlot Value ($F), expressed in dollars per head, is the expected average difference in future progeny performance for post-weaning feedlot merit (growth and feed efficiency) compared to progeny of other sires assuming producers retain ownership of cattle through the feedlot phase and sell on a carcass-weight basis.

Grid Value ($G), expressed in dollars per carcass, is the expected average difference in future progeny performance for carcass grid merit, including quality and yield grade attributes, compared to progeny of other sires.

Beef Value ($B), expressed in dollars per carcass, represents the expected average differences in the progeny post-weaning performance and carcass value compared to progeny of other sires. This index assumes commercial producers wean all male and female progeny, retain ownership of these animals through the feedlot and sell on a carcass merit grid.

**Combined Value ($C),** expressed in dollars per head, which includes all traits that make up both Maternal Weaned Calf Value ($M) and Beef Value ($B) with the objective that commercial producers will replace 20% of their breeding females per year with replacement heifers retained within their own herd. The remaining cull heifer and steer progeny are then assumed to be sent to the feedlot where the producers retain ownership of those cattle and sell them on a quality-based carcass merit grid.