

Managing Herefords

Hereford EPDs



The American Hereford Association (AHA) currently produces expected progeny differences (EPDs) for 15 traits and calculates four profit (\$) indexes. Research is ongoing to develop traits for fertility, feed intake and docility.

A comprehensive sort of Hereford sires can be done online at Hereford.org. Utilizing the AHA website to look up EPDs allows breeders to efficiently research and sort performance information. The EPD lookup utilities and animal search features used in conjunction with the EPD Trends & Distributions Report files that are available on Hereford.org can help producers evaluate their herd or help when making breeding decisions.

Hereford breeders have the option to utilize genomic information to enhance the accuracy of Hereford EPDs. The GE-EPD test evaluates the genetic merit of animals.

DNA marker tests reveal the genotype of an animal for specific DNA markers for a particular trait. AHA blends marker information with phenotypic information and pedigree to produce an EPD that will allow breeders and commercial producers to select animals with less risk due to the increase in accuracy. Animals with GE-EPDs have a GE-EPD logo below their EPD profile on the animal detail screen on Hereford.org.

The current suite of Hereford EPDs and \$ indexes includes:

Calving Ease – Direct (CE)

CE EPD is based on calving ease scores and birth weights and is measured on a percentage. CE EPD indicates the influence of the sire on calving ease in females calving at 2 years of age. For example, if sire A has a CE EPD of 6 and sire B has a CE EPD of -2, then you would expect on average if comparably mated, sire A's calves would be born with an 8% more likely chance of being unassisted when compared to sire B's calves.

Birth Weight (BW)

BW EPD is an indicator trait for calving ease and is measured in pounds. For example, if sire A has a BW EPD of 3.6 and sire B has a BW EPD of 0.6, then you would expect on average if comparably mated, sire A's calves would come 3 lb. heavier at birth when compared to sire B's calves. Larger BW EPDs usually, but not always, indicate more calving difficulty. The figure in parentheses found after each EPD is an accuracy value or reliability of the EPD.

Weaning Weight (WW)

WW EPD is an estimate of pre-weaning growth that is measured in pounds. For example, if sire A has a WW EPD of 60 and sire B has a WW EPD of 40, then you would expect on average if comparably mated, sire A's calves would weigh 20 lb. heavier at weaning when compared to sire B's calves.

Yearling Weight (YW)

YW EPD is an estimate of post-weaning growth that is measured in pounds. For example, if sire A has a YW EPD of 100 and sire B has a YW EPD of 70, then you would expect on average if comparably mated, sire A's calves would weigh 30 lb. heavier at a year of age when compared to sire B's calves.

Maternal Milk (MM)

The milking ability of a sire's daughters is expressed in pounds of calf weaned. It predicts the difference in average weaning weights of sires' daughters' progeny due to milking ability. Daughters of the sire with a +14 MM EPD should produce progeny with 205-day weights averaging 24 lb. more (as a result of greater milk production) than daughters of a bull with a MM EPD of -10 lb. (14 minus -10.0 = 24 lb.). This difference in weaning weight is due to total milk production during the entire lactation.

Maternal Milk & Growth (M&G)

Maternal Milk & Growth reflects what the sire is expected to transmit to his daughters for a combination of growth genetics through weaning and genetics for milking ability. It is an estimate of daughters' progeny weaning weight. A bull with a 29 lb. M&G EPD should sire daughters with progeny weaning weights averaging 19 lb. heavier than progeny of a bull's daughters with a M&G EPD of 10 lb. (29 minus 10 = 19 lb.). It is equal to one-half the sire's weaning weight EPD, plus all of his MM EPD. No accuracy is associated with this since it is simply a mathematical combination of two other EPDs. It is sometimes referred to as "total maternal" or "combined maternal."

Maternal Calving Ease (MCE)

MCE EPD predicts how easily a sire's daughters will calve at 2 years of age and is measured on a percentage. For example, if sire A has a MCE EPD of 7 and sire B has a CE EPD of -3, then you would expect on average if comparably mated, sire A's daughters would calve with a 10% more likely chance of being unassisted when compared to sire B's daughters.

Mature Cow Weight (MCW)

The MCW EPD was designed to help breeders select sires that will either increase or decrease mature size of cows in the herd.

The trait was developed after years of cow weight data collection and the EPD relates directly to the maintenance requirements of a cow herd. An example of how the MCW EPD allows breeders to compare sires: If sire A has a MCW EPD of 100 and sire B has an EPD of 85, then you would expect the females of sire A, if mated to similar cows, to be 15 lb. heavier at mature size.

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Udder suspension (UDDR)

Scores range from 9 (very tight) to 1 (very pendulous) and represent assessments of udder support. Weak udder suspension results in pendulous udders that make it difficult for a calf to nurse.

Weak suspension in the udder indicates a lack of support in the ligament that ties the udder to the cow's body wall. Over time, weakness in this ligament will allow the udder to hang down too far from the body and may subject the udder to serious problems and increased potential for injury.

UDDR EPDs are reported on the scoring scale. Differences in sire EPDs predict the difference expected in the sires' daughters' udder characteristics when managed in the same environment.

For example, if sire A has a UDDR EPD of 0.4, and sire B has a UDDR EPD of -0.1, the difference in the values is 0.5, or one-half of a score. If daughters of sires A and B are raised and managed in the same environment, you would expect half a score better udder suspension in daughters of sire A, compared to sire B.

Teat size (TEAT)

Scores range from 9 (very small) to 1 (very large, balloon shaped) and are subjective assessments of the teat length and circumference. Oversized teats are difficult for newborn calves to nurse, and the calf may not receive adequate colostrum. This could lead to a higher incidence of scours or decreased immunity levels in the newborn calf.

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For example, if sire A has a teat size EPD of 0.4, and sire B has a teat size EPD of -0.1, the difference in the values is 0.5, or one-half of a score. If daughters of sires A and B

are raised and managed in the same environment, you would expect half a score smaller teat size in daughters of sire A, compared to sire B.

Scrotal Circumference (SC)

Measured in centimeters and adjusted to 365 days of age, SC EPD is the best estimate of fertility. It is related to the bull's own semen quantity and quality, and is also associated with age at puberty of sons and daughters. Larger SC EPDs suggest younger age at puberty. Yearling sons of a sire with a .7 SC EPD should have yearling scrotal circumference measurements that average 0.7 centimeters (cm) larger than progeny by a bull with an EPD of 0.0 cm. In the Hereford genetic analysis, a multiple-trait model was used for scrotal circumference. Weaning weight was used as a predictor variable to increase the prediction accuracy of SC EPDs. Therefore, an animal with a weaning weight EPD should also have a SC EPD.

Carcass Weight (CW)

Carcass weight is a beneficial trait when considering the impact that pounds have relative to end product value. At the same age constant endpoint, sires with higher values for carcass weight will add more pounds of hot carcass weight compared to sires with lower values for carcass weight. For example, if sire A has a CW EPD of 84 and sire B has a CW EPD 64, then you would expect the progeny of sire A, if harvested at the same age constant endpoint, to have a 20-lb. advantage in terms of hot carcass weight.

Rib Fat (FAT)

The FAT EPD reflects differences in adjusted 365-day, 12th-rib fat thickness based on carcass measurements of harvested cattle. Sires with low, or negative FAT EPDs are expected to produce leaner progeny than sires with higher EPDs. Ultrasound measures are also incorporated into this trait and have been shown to be highly

correlated with the performance of slaughter progeny. All data is expressed on a carcass scale.

Ribeye Area (REA)

REA EPDs reflect differences in an adjusted 365-day ribeye area measurement based on carcass measurements of harvested cattle. Sires with relatively higher REA EPDs are expected to produce better-muscled and higher percentage yielding slaughter progeny than will sires with lower REA EPDs. Ultrasound measurements are also incorporated into this trait and have been shown to be highly correlated with the performance of slaughter progeny. All data is expressed on a carcass scale.

Marbling (MARB)

MARB EPDs reflect differences in an adjusted 365-day marbling score (intramuscular fat, [IMF]) based on carcass measurements of harvested cattle. Breeding cattle with higher MARB EPDs should produce slaughter progeny with a higher degree of IMF and therefore higher quality grades. Ultrasound measurements are also incorporated into this trait and have been shown to be highly correlated with the performance of slaughter progeny. All data is expressed on a carcass scale.

Baldie Maternal Index (BMI\$)

BMI\$ is a maternally focused index that has a production system based on 1,000-Hereford x Angus females with a progeny harvest endpoint directed toward Certified Hereford Beef (CHB®). This index is more critical of CE than the Brahman Influence Index (BII\$) and also has significant weight on fertility. There is positive weight on WW and a slightly negative weight on YW, which promotes early growth and then a slow down on growth to keep mature size manageable. The emphasis of IMF is greater than the emphasis of REA. This is true because of the price difference of the Choice-Select spread

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and the fact that there is very little incentive to produce cattle better than a Yield Grade 3. This index is geared to service any commercial program that has British-cross cows.

Calving Ease Index (CEZ\$)

This is a general purpose index that focuses on identifying bulls that can be used on heifers and then ultimately the calves will be marketed through the CHB program. As you might expect, CE and MCE carry significant weight in this index along with fertility. There is very little weight put on growth traits and less emphasis on carcass. Remember, this is a general index that is specifically designed to be used in a heifer program.

Brahman Influence Index (BII\$)

BII\$ is a maternally focused index that is based on a 1,000-head cow herd of Brahman x Hereford cows.

The progeny for this index will be harvested in a commodity-based system since CHB does not accept Brahman-influenced cattle into the program. This index has less emphasis for CE than any of the other indexes. There is emphasis on both REA and IMF since the cattle will be harvested through a commodity market. The largest emphasis is in fertility, which is measured solely by SC at the present time. Obviously, the target for this index is the producers in the Southern regions of the U.S. where the bulls are typically sold to commercial cattlemen that have Brahman-influenced cow herds.

Certified Hereford Beef Index (CHB\$)

This is a terminal sire index that is built on a production system where Hereford bulls sire calves for the CHB

market. There is some pressure put on CE and then positive weight on both WW and YW. Remember that all offspring in this index are harvested, so they need to be born alive and then grow fast at all stages of life. Of course, we have much more emphasis on fat in this index, as we want the cattle to stay lean. There is also a significant weight on both REA and IMF with more emphasis again on IMF. This index would be used by producers who have a target of producing bulls for a terminal breeding program. It could be used heavily in the Midwest where bulls are used in rotational breeding programs to produce cattle in a retained ownership program or are simply sold to backgrounders. This is the only index that has no emphasis on fertility. Remember that nothing is retained in the herd.