

Managing Herefords

Understanding Calving Ease EPDs



As spring approaches, calving ease is on the minds of many Hereford breeders and their commercial bull customers. Surveys find calving ease as one of bull buyers most important selection criteria. The obvious labor requirements of assisting cows during calving and the economic cost of lost calves are the primary reasons.

Also, whether because of injury, stress or other reasons, cows experiencing calving difficulty are less likely to claim their calves and take more days to breed back. Calves born with difficulty are less healthy later in life, probably because they consumed less colostrum.

For many years, birth weight expected progeny differences (EPDs) were the primary tool used to select for reduced calving difficulty. However all major U.S. beef breeds now calculate calving ease EPDs, which report sire differences in percentage of unassisted calving instead of calf birth weight. Calving ease EPDs have several advantages compared to birth weight EPDs and are the more effective selection tool.

One of the major advantages of a genetic evaluation for calving ease is the division of the trait into direct and maternal components, like weaning weight is divided into direct (growth) and maternal (milk) effects.

Direct calving ease is the genetic contribution of the calf to its own ability to be born unassisted, primarily because of its size and length of gestation. Shape of calf may have a minor contribution to calving ease, but research has shown weight to be a much more significant factor to calving difficulty than any measurement of calf shape. That contribution is, in turn, a result of the genes for those traits inherited from the sire and dam.

The dam also affects the calving ease of her newborn through her own pelvic size, her ability to relax the pelvis and the ability of her uterus to limit fetal growth to a manageable size (maternal effect on birth weight). These factors are a result of the cow's

genes, not the calf's. They would, in turn, be inherited from the cow's sire and dam.

The genetic model for calving ease includes both direct and maternal genetic effects and produces direct calving ease (CE) and maternal calving ease (MCE) EPDs. Anytime a seedstock or commercial producer envisions keeping daughters of a sire as replacements, both direct and maternal calving ease EPDs should be considered. When a producer is selecting bulls to mate heifers, special attention should be paid to direct calving ease, but maternal calving ease would not be a consideration for a commercial producer selecting terminal sires.

Another advantage of calving ease EPDs is that they place the correct relative emphasis on calving ease scores and birth weights. It's important for Hereford breeders to understand that calving ease EPDs are calculated from both calving ease scores and birth weights. In fact, birth weights are just as important as calving ease scores in the calculation of calving ease EPDs, so it's imperative that breeders continue to submit accurate birth weights along with calving ease scores.

Birth weight is a more heritable trait than calving ease, meaning it is less influenced by management practices and other environmental influences and more influenced by genetics. Among contemporary group mates with identical calving ease scores, birth weight helps rank the animals to identify the genetics most likely to minimize calving difficulty.



However, because birth weight is used in the calving ease EPDs' calculations, the most accurate selection for calving ease occurs when producers use calving ease EPDs but ignore birth weight EPDs. It's human nature to want to use every bit of available information, leading some producers to seek out bulls with both favorable (high) calving ease EPDs and (low) birth weight EPDs. But doing so will result in less genetic improvement than using calving ease EPDs alone. In effect, those producers are over-emphasizing the birth weight data and underemphasizing the calving ease scores. Some geneticists have questioned whether birth weight EPDs should continue to be published when calving ease EPDs are available.

Calving ease direct (CE)

CE EPDs are based on calving ease scores and birth weights. The EPD indicates the influence of the sire on calving ease in purebred females calving at 2 years of age.

Maternal calving ease (MCE)

MCE indicates how easily a sire's daughters will calve at 2 years of age when compared to the daughters of other sires.

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Just as weaning weights and birth weights are adjusted for the age of the dam, calving ease scores are similarly adjusted so that a calf born assisted to a heifer is penalized less than one born assisted to a mature cow. Unique to calving ease is the concept that differences among sires depend on the age of female to which they are mated. For example, if one sire is 2 lb. lower than another for birth weight EPD, you would expect that to be the average difference in birth weight of their progeny, whether they were mated to heifers or to older cows. However, an easier calving sire might have a significant advantage in percent unassisted births compared to an average sire when both were used on heifers but much less difference when used on mature cows.

Calving ease EPDs are published on the heifer scale, since mating heifers is the time when calving ease is of greatest concern. So if one sire has a two-unit advantage in direct calving

ease EPD (+3 vs. +1, for example), you would expect 2% greater unassisted births when used on heifers. When sires are mated to mature cows, the difference in unassisted calving would likely be less.

The same is true with maternal calving ease EPDs. If a sire has a five-unit advantage for MCE EPD (+4 vs. -1, for instance), you would expect his daughters to calve unassisted 5% more of the time as heifers compared to the daughters of the other sire. The difference in daughter calving ease will decrease in mature cows, but again, calving heifers is the time when commercial producers are most concerned about calving ease, because that is when the likelihood of calving difficulty is greatest.

It's important for Hereford seedstock suppliers to remember that while heterosis has many favorable effects, for calving ease, it is sometimes unfavorable. While heterosis generally improves maternal calving ease by

increasing pelvic area, it reduces direct calving ease by increasing birth weight in the crossbred calf.

Commercial producers using their first Hereford bulls after several generations of straight breeding with another breed may experience calving difficulty because of the increased birth weights due to heterosis, plus the loss of maternal heterosis in the straightbred commercial cow.

Calving ease should be superior in the Hereford-sired half-blood daughters. Hereford breeders should understand that it takes a higher level of calving ease genetics to avoid problems in a commercial crossbred herd, compared to what is required in a purebred herd.

In recent years, the long-term trend of increasing calving difficulty has flattened, but increased selection for direct and maternal calving ease is needed to maximize Hereford's market share in the beef industry.