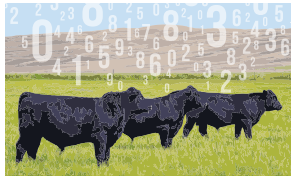# BY THE NUMBERS

by Kelli Retallick, AGI director of genetic service

What's a heifer bull?

Whether producers are purchasing a new herd sire or selecting bulls for artificial insemination (AI) programs, this commonly asked question is often a topic of conversation. While no one can definitely state the one perfect cutoff to be used across the industry, producers can rely on the information available to them to make the best decisions.

What is calving ease direct?

Calving ease direct, or CED, is the most effective tool when deciding which bulls to mate to first-calf heifers. Expressed as a probability percentage, CED aims to predict the percentage of unassisted births a bull will produce when mated to heifers. A higher number is more favorable in terms of decreasing the amount of calving dystocia witnessed in the calf crop.

For example, compare two bulls: Bull A has a CED expected progeny difference (EPD) of +2 and Bull B has a CED EPD of +7. When mating these two bulls to similar groups of heifers, both phenotypically and genetically, one would expect, on average, bull B to produce 5% more unassisted births than Bull A.

How is CED calculated?

Scores collected by breeders are

utilized to predict the CED EPD. These scores range from 1 to 5, where 1 would indicate a birth with no assistance. Only scores taken and reported on first-calf heifers are used in the prediction of the CED EPD. Mature female scores, while they can be reported, are not used in the national cattle evaluation (NCE) as not enough variation, or differences

Fig. 1: *The percentage of assisted births seen when bulls of varying CED EPDs are bred to breed-average calving-ease genetics (CED EPD = +5, CEM EPD = +8).*
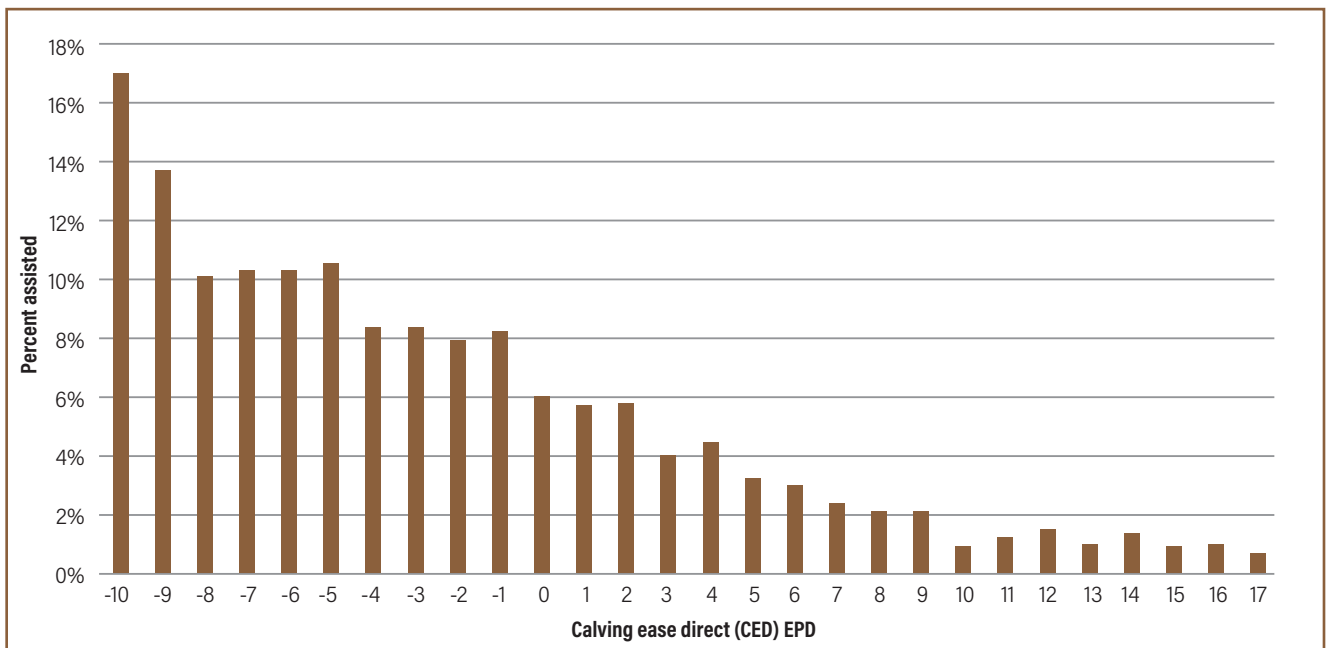
among reported scores, exists to add value to CED predictions.

Birth weight is used as a correlated trait in the calving-ease evaluation. The correlation, or strength of relationship, between calving ease and birth weight is -0.65, which is a moderately strong negative relationship. A negative correlation suggests that as one trait goes up, the other goes down. Therefore, in most cases, as calving ease increases, birth weight tends to trend downward.

These scores and weights are then evaluated together in a threshold model. With the threshold model, it is important to understand that an underlying assumption about the amount of existing calving difficulty is made. When predicting a decreased number of assisted births in a population, a percentage of assisted births is assumed.

In the case of Angus's CED EPD,

this threshold model was designed to help lower the level of assisted births present in a mixed-breed commercial cow herd, which in most cases would have a higher incidence of calving difficulty than a purebred, registered Angus herd. This is why patterns in the data representing the percentage of assisted and unassisted births of the purebred Angus herd do not always fall in a completely linear formation as you move up or down the CED scale.

Fig. 1 breaks out the percentage of assisted births recorded for each CED EPD possessed by the sire when bred to a breed-average Angus female. As the CED EPD of the sire increases, the number of assisted births decreases. However, the decrease may not be by an entire percentage point as expected. The reason? Mating Angus sires to Angus females that are breed average for both CED and calving ease maternal (CEM) is

not the expected industry average mating.

Conclusion

The bottom line: What can be utilized as a heifer bull in one herd may not be the best fit for another. The best advice is to understand the cow herd in which these bulls will be utilized.

If a customer's bull battery used on first-calf heifers has averaged a +6 for CED EPD for several years and he has yet to pull a calf, then a +6 CED bull is a "heifer bull" for him. If another customer has bought +10 CED bulls repeatedly for years and is still pulling a higher percentage of calves from first-calf heifers than is desirable, then that customer may need to increase his or her threshold. For more information, visit the Association's website, *www.angus.org,* or contact us at the office at 816-383-5100. AJ