

## A few things breeders need to know and remember about EPD's

EPD's are expected progeny differences or deviances. They only try to predict future performance differences based on reported past differences. One record by its self is of no use, as it has no contemporary group to compare to and no difference to measure. Also 50 animals in the same group with all the same measurement are of no use and are edited out because there was no measured difference or deviation.

It is easy to see that growth traits like BW, WW and YW are always going to have differences, thus breeders only have to worry about your CG (contemporary group). And that the sires you have in that CG tie your herd data to the broad data base, and thus your data ties into the broad data set. Including a couple of AI sired progeny in the CG goes a long way in increasing the accuracy of your own sire's data.

CE scores are a little more subjective. There are 5 scores to choose from (U, E, H, S, and M) and only two categories; heifers or cows. Again, to get better results you need pedigree ties to the broad data set (a couple of AI sires represented) and a difference in scores recorded. Malpresentations and multiple births are edited out for obvious reasons. That leaves U, E, H and S for cows and 1<sup>st</sup> calf heifers. Since the days of Prairie Boy and the like being used on smaller framed British cows have long gone by, the calving ease scores for cows have been reduced to near 0 assistance. In 1999 the CSA discontinued printing a cow CE EPD on the pedigree. Pre 1999 there used to be both H CE and C CE printed on the pedigree.

The newer AGI (animal model) evaluation only uses heifer scores. The ASA (sire MGS) model, uses both heifer scores and requires the use of cow scores and because the sire MGS model doesn't directly use the dam in the equation, essentially, we now have a heifer calving score. Now we are down to U, E, H, and S on heifers only. The AGI model divides the data one step further and only compares unassisted to assisted (E, H and S are all now the same) and the ASA model uses a weighted score for U, E, H, and S. I see flags going up, but there is actually no difference here yet because the whole data set uses the same definition of difference in its own evaluation. Where the cut off of the assisted and unassisted in the E's doesn't matter (Remember direct comparisons are only ever made within a CG), what could matter is if there is a difference in the incidents of E's recorded in the larger US data set vs. the smaller Canadian data set. If the average Canadian breeder has randomly recorded more incidents of easy births that the US breeder due to cold weather convenience, climate or environmental issues coupled with the overwhelming size difference in the two data sets, this could be giving the Canadian pedigree a predisposed disadvantage in a North American evaluation. The only way to observe this is to run a Canadian data set only and evaluate the numbers and make your own decision.

The differences in the models don't stop here. The animal model (AGI) has an added component that takes in subsequent birth weights from daughters as cows, (*SEE EXAMPLE ONE*) and it also accounts for the genetics of the service sire used on the 1<sup>st</sup> calf heifer. (*SEE EXAMPLE TWO*). The ASA model doesn't account for these effects in these areas.

But the biggest difference is the data sets. Now we are seeing what a smaller group of US cattle are doing in the Canadian population, not what a smaller group of Canadian cattle are doing in a US population. The larger data set will tend to overwhelm the smaller set in both CE and growth, even when the data is contradictory. Which one is more relevant to the commercial cattleman you are selling bulls to?

Feel free to e-mail or phone me with any questions pertaining to this or any other Breed Improvement issues.

I thank you for reading.

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E.g. One: Breeder X reports to us that one of his herd sires (sire A) has dropped substantially in CE and also that his neighbors sire (sire B) has gone the other way. How can this be right? We now have access to the driving data

not just the source data; we can look into what is actually driving the EPD. When we look into what was driving the EPD we first notice that sire A had a CE of -3.4 .31acc and in the 99 percentile ranking of the NA population with the EPD for that trait being +16.8 high to a low of -13.8 and an ave. of +5.0. New EPD is now a -8.6 .36acc and in the 95 percentile ranking of the Canadian population with the EPD spread going from a high of +27.4 to a low of -29.6 and an ave. of +2.7. Sire A has actually ranked higher in the Canadian population than in the NA population (the spread of the trait must also be taken into account). Sire A is now ranked higher for CE, not lower. Also note that sire A ranked in the 1 percentile ranking for both growth traits in the old evaluation and the new one. We looked further to check the driving data (records entered) and this search revealed the EPD to be calculated correctly. Sire A is a performance bull and was never mated to heifers, so the driving data was his pedigree info, then his own individual data (no 1<sup>st</sup> calf heifer data) and then the subsequent daughters birth wt data (to get a gauge of this influence look at the Herds and progeny column and then the Herds and DIP, Daughters In Production - we did not have access to this data before). Now conversely sire B went from a +13.6 .92 acc 1 percentile ranking to a +21.4 .77 acc and also in the 1 percentile ranking. Remember the range changes, the rating number itself went up by what seems a substantial amount but there is no difference in the percentile ranking within the two different data sets. Remember to compare apples to apples. Also of note, sire B is in the 99 percentile ranking for both growth traits in the new evaluation and he is in the 90 and 99 percentile rankings in the NA population.

E.g. Two: Breeder Y reports to us that one of his herd sires (sire C) has dropped substantially in MCE. He had followed the NA evaluation closely for many years and he believed this new number to be falsely represented. On top of that he had checked out every 1<sup>st</sup> calf heifers' input data and he believed the problem was a service sire (sire SS) used on sire C's daughters. This was a very well thought out and comprehensive search on the breeder Y's part, and was definitely worth checking into.

So we did an extensive search that took some time and money to complete. This process has brought out some important points for breeders to consider. Every time we have looked into the driving data it has proven that the evaluation was calculated correctly with the data that was there. The data that we analyze here is the exact same data we would have sent down to ASA to be used in the NA evaluation. Sire C's MCE would have dropped in the NA evaluation also, as there were no heifers calved out in the US (how much is a guess at best). This study pointed out to me that the old model has a zero adjustment for the effect of the service sire used on the 1<sup>st</sup> calf heifers. This brings more into question the accuracy of the old MCE and not the new one, especially on bulls with less data or use. Best example is your own herd bull. You pick out a new young AI sire to AI all your heifers to and he turns out to be a hard calver. Your sire will never be used in the AI industry, so there is only going to be one, maybe two heifer crops to get data from. There is no adjustment to future birth wts or no adjustment due to the actual new EPD's of the service sire thus his MCE comes out poor because of the new direct data and can not recover even when the acc is low.

In example two this is what the data revealed. Sire SS's calves' averaged 3.9 lbs. lighter than their contemporaries. There was not a single CG group where his calves were heavier than the average. This drives the CE of the SS up. The SS does have some CE groups where he has more difficulty calving than the average sire used in the group and also some groups where he has less difficulty. However when we look at the data, SS's assist rate when used on C sire's heifers is at 42.3%. On the entire population of heifers mated to SS (which is just under 40) it is 30.75%. The SS assist rate on heifers that are not sire C daughters is 26.7%. This indicates that the extra calving difficulty on sire C x SS matings is coming from the Sire C side of the pedigree and this is what will drive down the MCE on sire C.

Also to note in this example is that the sire of sire C is a US pedigree that does have 40 some herds with 50 some DIP and has been around for a while, so he does have a good spread of data in the Canadian data set. This US sire has been moved from a 2 percentile ranking in the NA evaluation to a 50 percentile ranking in the Canadian data set. Plus another ½ brother to sire C had a similar drop in just MCE. This will all tend to drop the pedigree influence part of the whole MCE equation.