Fertility Evaluations in April 2019

Last year, the April 2018 evaluations showed a larger-than-expected variation in CDCB fertility traits (daughter pregnancy rate {DPR}, heifer conception rate {HCR} and cow conception rate {CCR}). AI bulls in all breeds showed a reduction in their traditional Predicted Transmitting Abilities (PTA), the effect being more accentuated among young bulls. When comparing April 2018 to the previous run (December 2017), the individual bull rankings were stable with high correlations (0.98) between consecutive runs.

CDCB and AGIL staff investigated this result and discovered that the exceptionally large fluctuation was associated to the way year-groups were accounted for in the evaluation model. The yearly grouping strategy was revised and the new model produced fertility PTAs in August 2018 that compared more favorably with PTAs from December 2017. After August 2018, the December results for fertility traits did not show any trend fluctuation.

The revised model was expected to prevent significant variation in fertility traits. However, a larger than expected decrease in the average PTA for fertility traits reoccurred in the April 2019 results. Given that the variation due to the year-groups issue was resolved, we deduct that there are other factors contributing to the changes. Table 1 shows the changes in the DPR mean PTA of younger bulls when compared to the previous triannual evaluation. It is evident that the fluctuation in the mean DPR reoccurred in April 2019, albeit smaller than in April 2018. Changes in the Holstein breed were larger than the changes observed in the colored breeds.

Table 1. Changes for DPR mean over the past 4 years for young Holstein bulls (bulls with no daughter records).

Year	April	August	December
2015	-0.4	+0.4	+0.1
2016	-0.4	+0.2	+0.3
2017	-0.4	+0.3	+0.4
2018	-1.7	+1.1	+0.0
2019	-0.9		

While an absolute PTA value is important for an individual bull and any index that includes that value, comparisons between bulls rely on relative differences. Correlations of April 2019 with December 2018 are above 0.98 for DPR, CCR, HCR as well as PL and NM$ PTA for both young and progeny proven bulls. The impact on the overall rankings of bulls due to the change in mean DPR is therefore minor.

The current fertility model was created in 2014. Given the recent fluctuations, the model may be due for another update to account for rapid changes in dairy herds' reproductive management practices such as synchronization protocols and the targeted use of sorted, conventional and beef semen.

DPR and CCR are included in Net Merit Dollars (NM$) with a weight of 6.7% (DPR) and 1.6% (CCR). Each unit of change in DPR and CCR has an impact on NM$ of $11 and $2.2 respectively.

CDCB and AGIL are committed to find what causes these seasonal trends for fertility traits. Investigation is underway and has yielded probable solutions that will be tested. Progress will be communicated to the industry in a timely manner.