

CDCB changes to evaluation system (August 2020)

[Home](#) / [CDCB changes to evaluation system \(August 2020\)](#)

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Calving trait evaluation and NM\$ updates

By *John Cole, Stefano Biffani, Gary Fok, Ezequiel Nicolazzi and Paul VanRaden*

The phenotypic bases for the calving traits (SCE, DCE, SSB and DSB) will be updated effective with the August 2020 triannual evaluation. A detailed article on expectations and changes to the phenotypic base is [available here](#).

The new phenotypic bases for calving ease and stillbirth are significantly lower than the previous means and standard deviations, which will result in reduced relative weighting in the NM\$ index and in adjustments to correlated trait PTAs for animals with other missing PTAs.

The four calving traits are included in NM\$ via a calving ability index (CA\$). Since economic weights will not be updated at this time, the new CA\$ formula for Holstein and Brown Swiss, respectively, will be:

$$\text{HO_CA\$} = -4. * (\text{SCE} - 2.2) - 3. * (\text{DCE} - 2.7) - 4. * (\text{SSB} - 5.7) - 8. * (\text{DSB} - 6.6)$$

$$\text{BS_CA\$} = -6 * (\text{SCE} - 3.0) - 8 * (\text{DCE} - 2.8)$$

NM\$ updates

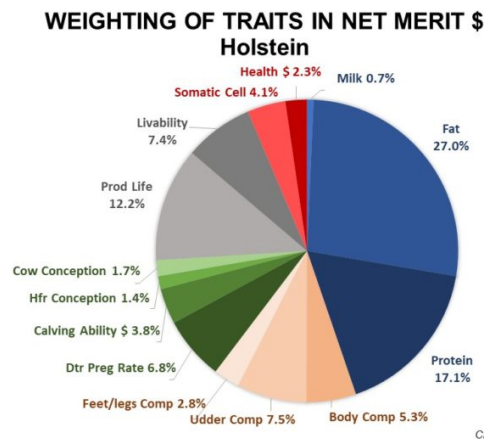
By Paul Vanraden

The lower standard deviation of calving ability index (CA\$) resulting from the new phenotypic base will cause a slight adjustment of the relative weights. CA\$ relative weight in NM\$ formula will change from the previous 4.8% to 3.8% in August 2020.

CA\$ Standard Deviation	Holstein	Brown Swiss
April 2020	18	10
August 2020	14	8

A consequence of reducing the relative weight in CA\$ is the slight adjustment to some of the other traits in NM\$. These adjustments will cause some re-ranking of bulls and cows.

	April 2020	August 2020	Variation
Milk	-0.7	-0.7	0
Fat	26.8	27	+0.2
Protein	16.9	17.1	+0.2
Prod. Life (PL)	12.1	12.2	+0.1
Somatic Cell Score (SCS)	-4	-4.1	-0.1
Body Composite	-5.3	-5.3	0
Udder Composite	7.4	7.5	+0.1
Feet/Legs Composite	2.7	2.8	+0.1
Daughter Pregnancy Rate (DPR)	6.7	6.8	+0.1
Calving Ability \$ (CA\$)	4.8	3.8	-1.0
Heifer Conception Rate (HCR)	1.4	1.4	0
Cow Conception Rate (CCR)	1.6	1.7	+0.1
Livability (LIV)	7.3	7.4	+0.1
Health Trait \$ (HTH\$)	2.3	2.3	0



New inbreeding calculation procedure

By Gerald Jansen and Paul VanRaden

For all animals, the Predicted Transmitting Abilities (PTAs) released by CDCB are precorrected for inbreeding and heterosis. In August 2018, CDCB introduced the monthly update of heterosis calculations; however, the large resource requirements of the inbreeding procedure prevented the possibility to update inbreeding values outside from triannual evaluations.

Effective August 2020, an improved, highly efficient inbreeding calculation procedure will be implemented on monthly to more rapidly reflect additional ancestors or changes in pedigrees. In the future, the new procedures may also be included in unofficial weekly evaluations. This means that all 84+ million animals will undergo both heterosis and inbreeding updates at every official traditional and genomic evaluation, which allows for a more precise correction of PTAs.

UPDATE 08/04/2020: One of the benefits of the new procedure is that it will more closely follow the trajectory of the population by generating a new reference population for inbreeding calculation at every run, whereas the previous practice was to keep it constant. This will mean that the “pool” of animals used for this calculation will be kept more current than before, which is desirable (even though that will mean slightly higher variability from run to run). Additionally, crossbred cows with missing or incomplete pedigrees will now have consistent heterosis (100%) and inbreeding (now set to 0%), whereas the previous version could include positive values for inbreeding in these animals. The combined effect of these changes is that the August vs. April estimated regressions on heterosis and inbreeding for all traits are more variable than in previous triannual runs. Consequently, most traits that are corrected for inbreeding and heterosis when converting the all-breed EBVs to within breed PTA (but most noticeably: Milk, Fat, Protein, SCS, Productive Life and fertility traits) will show a negative trend in August, especially in recent young animals (eg. born after 2015) since their EFI tends to be higher.

The enhanced inbreeding procedure has been successfully implemented in every weekly evaluation since mid July.

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