

The Net Merit \$ index was revised – effective with the August 7, 2018, triannual genetic evaluation – to incorporate the new CDCB disease resistance traits and to update economic values in calculations.

Why was Net Merit \$ (NM\$) revised?

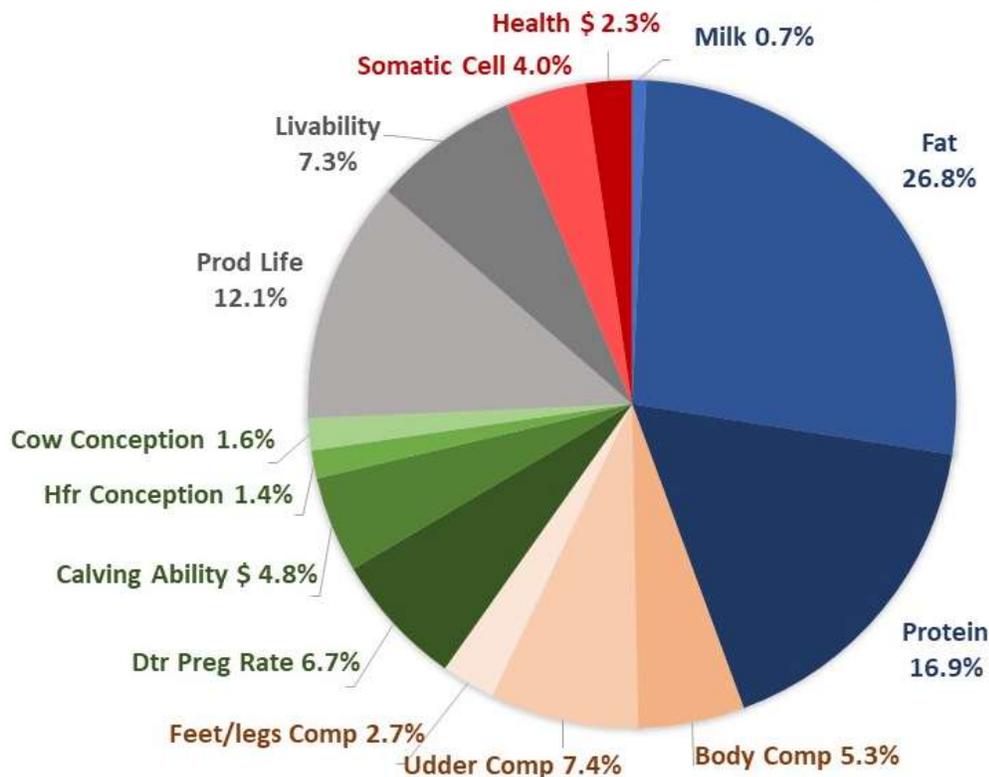
Net Merit \$ and the other lifetime profit indexes are updated periodically to include new traits and to reflect prices expected in the next few years. At its 1994 introduction, Net Merit included five traits, and the 2018 update includes 14 traits or sub-indexes that combine information from 35 individual traits. The evolution of NM\$ demonstrates the increased research and adoption of newer fitness and fertility-related traits.

How are the CDCB health traits incorporated into 2018 NM\$?

Effective August 2018 for Holsteins, NM\$ and three other CDCB lifetime profit indexes include the six disease resistance traits launched in April 2018: clinical mastitis (MAST), ketosis (KETO), retained placenta (RETP), metritis (METR), displaced abomasum (DA) and milk fever (MFEV).

These six individual traits were incorporated in NM\$ through the new sub-index, Health Trait \$ (HTH\$), at a relative value of 2.3% for NM\$, 1.9% for Cheese Merit (CM\$), 2.3% for Fluid Merit (FM\$) and 2.1% for Grazing Merit (GM\$). The new Health Trait \$ sub-index will not be published separately, similar to the calving trait sub-index (CA\$). Relative emphasis on most other traits reduced slightly due to the addition of HTH\$; however, yield trait emphasis increased slightly and somatic cell score (SCS) emphasis decreased greatly because of correlated health costs now assigned directly to HTH\$.

WEIGHTING OF TRAITS IN 2018 NM\$ (HOLSTEINS)



Relative Value of NM\$, CM\$, FM\$ and GM\$ (2018)

TRAIT	UNITS	NM\$	CM\$	FM\$	GM\$
MILK	Pounds	-0.7	-7.9	18.4	-0.7
FAT	Pounds	26.8	22.8	27.1	22.9
PROTEIN	Pounds	16.9	20.9	0.0	14.4
PRODUCTIVE LIFE (PL)	Months	12.1	10.3	12.2	6.6
SOMATIC CELL SCORE (SCS)	Log	-4.0	-4.4	-2.3	-3.5
BODY COMPOSITE	Composite	-5.3	-4.5	-5.3	-5.8
UDDER COMPOSITE	Composite	7.4	6.3	7.5	7.4
FEET / LEGS COMPOSITE	Composite	2.7	2.3	2.8	2.8
DAUGHTER PREGNANCY RATE	Percent	6.7	5.7	6.8	17.8
CALVING ABILITY \$ (CA\$)	Dollars	4.8	4.1	4.8	4.5
HEIFER CONCEPTION RATE (HCR)	Percent	1.4	1.2	1.4	2.4
COW CONCEPTION RATE (CCR)	Percent	1.6	1.4	1.7	4.3
LIVABILITY (LIV)	Percent	7.3	6.2	7.4	4.9
HEALTH TRAIT \$ (HTH\$)	Dollars	2.3	1.9	2.3	2.1

Were there any changes made that are not related to the health traits?

Adjustments were made to the relative economic value for each trait, with economic value defined as the added profit caused when a given trait changes by one unit and all other traits in the index remain constant. Sometimes, the economic value of a trait changes when other correlated traits are added to an index. The values for milk, fat and protein – as well as feed costs – were also updated to reflect current economics. These values were updated based on information from USDA Agricultural Marketing Service and U.S. dairy industry experts.

As CDCB health traits are only available for Holsteins, did NM\$ change for the other breeds?

The NM\$ revision for non-Holstein breeds was very slight and only impacted by economic value changes, because evaluations for stillbirth and health traits are currently computed only for Holsteins. Because the incorporation of health traits is the major change in 2018 NM\$, other breeds should see very minimal change in Net Merit \$. CDCB is committed to increase the data flow for other breeds to allow disease resistance evaluations and subsequent future updates to NM\$.

For Brown Swiss, relative values of the other traits each increase in all the indexes by a factor of approximately 1.02 because the emphasis on HTH\$ is excluded. For the remaining breeds, relative values of the other traits each increase by a factor of approximately 1.07 for NM\$, FM\$ and GM\$ and by a factor of approximately 1.06 for CM\$ – because CA\$ and HTH\$ are excluded.

How does the 2018 NM\$ correlate to the previous Net Merit?

The 2018 NM\$ has a correlation of 0.994 for recent Holstein bulls, compared to 2017 NM\$ ([VanRaden, 2017](#)).

How were the economic values of the health traits calculated?

Economic values of the six disease resistance traits were obtained as averages of two recent research studies. [Liang et al. \(2017\)](#) estimated direct treatment, labor and discarded milk costs for health disorders from veterinary and producer survey responses, and [Donnelly \(2017\)](#) obtained health treatment costs from eight cooperating herds in Minnesota. Also considered were some yield losses associated with health disorders, which are not fully accounted for in published genetic evaluations for yield traits.

Who is responsible for the Net Merit update?

Maintaining an index that is as current and relevant as possible is truly a collaborative effort. USDA's Animal Genomics and Improvement Laboratory (AGIL) provides much of the research to update the NM\$ indices. CDCB applies that research to the routine genetic evaluations after the research phase is concluded and results have been tested, reviewed and accepted by representatives of the U.S. genetics and data recording organizations. Several university researchers have also conducted applied research and been involved with development of previous NM\$ revisions, and dairy industry experts provide helpful insights on income and expense formulas.

Where can I go for more details?

A detailed article was authored by Paul VanRaden and John Cole of AGIL and Kristen Parker Gaddis of CDCB. Read more at "[Net Merit as a measure of lifetime profit: 2018 revision.](#)" Find resources [here](#) for the individual CDCB health traits.