REVISED
February 21, 2020

Revisions made 2.21.2020 affect genetic base numbers for Holstein conformation traits.

April 2020: Genetic Base Change

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The base for U.S. genetic evaluations will be updated, effective with the April 7, 2020, triannual evaluations.

The genetic bases to which (most) dairy traits are expressed in the United States have been updated every five years since 1980. With the base change, users of genetic evaluations may become aware that the standards they set for choosing service bulls or valuing females in the past may no longer meet the genetic quality to remain competitive, due to genetic progress.

Since 1980, some have suggested that the base should be updated more often. A few have lobbied for a fixed base, or one that's never updated. The reasoning for the latter is that if the best bulls are chosen, the magnitude of the numbers are not particularly important and all evaluations are comparable regardless of when published.

For the last base change in 2015, the average predicted transmitting abilities (PTA) of cows born in 2010 were set to zero. Progress continued to be made for most traits, as shown by Table 1 with the PTAs of cows born in 2015. These milking cows born in 2015 define the new base. With the April evaluations, their PTAs will be set back to zero. Stated differently, the averages in Table 1 will be subtracted from the current PTAs of all animals. These are the changes in PTAs expected in April.

Because gains were made across five years for most traits, most of these PTAs will be lowered by the amount shown. However, if the trends were unfavorable, the PTAs will generally increase. The exceptions can be for somatic cell score (SCS) and the four calving traits which may do the opposite because lower values are preferable for these traits. The average PTAs in the table are the differences in transmitting ability for animals over the five-year period. **A note of caution, these will not be the exact changes coming because all will be recalculated before the April 2020 run using more complete and current data.** Any updates in the traits' variation will also cause these approximations to vary from the estimates presented.

Key progress points demonstrated in Table 1 include:

- Favorable gains are shown for 81 of the 102 traits (excluding conformation), while 18 were unfavorable.
- The most important traits (all lifetime merit indexes) showed genetic improvement for all the breeds; the largest gains were for Holsteins, Jerseys and Ayrshires. Thus, the merit indexes for all breeds will be lowered in April.
- Genetic gains were made in all three yield traits (milk, fat, protein) for all breeds. Gains were particularly impressive for Holsteins and Jerseys; so the base change will reduce PTA milk for these breeds by about 492 and 524 pounds, respectively.
- PTAs for fat and protein will be adjusted down by about 18 to 25 pounds.
- Changes in PTAs for somatic cell score (SCS) will be small (-.01 to +.02) for all breeds except Holsteins which will increase by 0.08 due to their progress in lowering SCSs.
- PTAs for productive life will be reduced by about 0.6 to 1.9 months for Guernseys, Holsteins, Jerseys and Milking Shorthorn due to increasing their genetic capacity for longer life.
- Unfortunately, 13 of the 18 fertility estimates showed unfavorable changes over the five years; only Holsteins improved for all three traits.
- PTAs for cow livability, launched in August 2016, improved for three of the six breeds (0.74 for Holsteins).
- Resistance against diseases in Holsteins improved for five of the six traits.
- PTAs increased for 80 of the 90 breed conformation traits, which indicates that selection has been for the higher scores. In most cases this probably was desirable, but in others, perhaps not. The 10 traits with PTAs that did not increase were ones that had an intermediate optimum.

Table 1. Difference in predicted transmitting abilities (PTAs) of cows born in 2015 compared to those born in 2010. PTAs will decrease by these amounts to implement the 2020 genetic base change[1].

Revisions made 2.21.2020 affect the genetic base numbers for Holstein conformation traits, reflecting revised Holstein Association USA requirements to determine which cows born in 2015 met criteria for inclusion.

Caution: These will not be the precise changes applied in April, because all will be recalculated before the April 2020 run using more complete and current data.

		Breed
Trait	**Units**	**BS** Brown Swiss
Milk	Pounds	214
Fat	Pounds	8
Protein	Pounds	8
Somatic cell score (SCS)	Log base 2 units	.00
Productive life	Months	.24
Daughter pregnancy rate	%	
Heifer conception rate	%	
Cow conception rate	%	
Early first calving	Days	0.5
Gestation length[2]	Days	-.03
Cow livability	%	
Displaced abomasum	%	–
Ketosis	%	–
Mastitis	%	–
Metritis	%	–
Milk fever	%	–
Retained Placenta	%	–
Service sire calv. difficulty[2]	%	-0.3
Daughter calv. difficulty[2]	%	-0.6
Service sire stillbirth[2]	%	–
Daughter stillbirth[2]	%	–
Final Score	Points	0.4
Stature	Points	0.6
Strength	Points	0.2
Dairy form	Points	0.3
Foot angle	Points	0.1
Feet and leg score		–
Rear legs-side view	Points	0.1
Rear legs-rear view		–
Body depth		–
Rump angle	Points	0.0
Rump width	Points	0.1
Fore udder attachment	Points	0.3
Rear udder height	Points	0.3
Rear udder width	Points	0.3
Udder depth	Points	0.2
Udder cleft	Points	0.1
Front teat placement	Points	0.3
Rear teat placement		–
Teat length	Points	-0.2
Body weight composite		–
Feet and leg composite		–
Udder composite		–
Lifetime Net Merit	Dollars	60
Lifetime Cheese Merit	Dollars	63
Lifetime Fluid Merit	Dollars	56
Lifetime Grazing Merit	Dollars	38