

The revised NTM – a summary of changes and effects

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The revised NTM implemented in November 2018 is the result of a two year long process with farmers from breed organizations in Denmark, Finland and Sweden playing the major role. It is important to revise the breeding goal regularly since it should reflect prices and production circumstances expected ten years ahead.

This article will focus on what you can expect from the revised NTM; that is, the genetic progress in the sub-indices included in NTM.

Adapted to future conditions

Farmers from Denmark, Finland and Sweden representing Holstein, Nordic red breeds and Jersey have agreed on the revised NTM for each breed. The changes compared to the previous NTM is that it better reflects future expected price relations and productions circumstances.

Two examples of updated economic assumptions are the increased economic value on milk contents as well as an increased expected farmer subscription to health recording schemes. The latter allows farmers to carry out some treatments themselves to lower the veterinary costs.

One key factor regarding future production circumstances is an anticipated lower replacement rate as well as an increased use of sexed-semen and beef semen. Genomic breeding values give farmers the possibilities to more accurately select breeding females to get the required amount of genetically superior replacement heifers. From remaining females, beef*dairy crossbred calves with a higher value for beef production can be produced.

The revised NTM puts increased emphasis on long-lived cows in the breeding goal. This is motivated by a lower replacement rate that will change the age distribution in the herd with a higher proportion of older cows. For traits where breeding values from different lactations are combined, such as for milk yield and udder health, lactation weights have been updated.

Genetic progress in all traits

The most important to note is that there will be genetic progress for all breeding goal traits with the revised NTM. This was also the case earlier, but with the revised NTM the relative genetic progress for the traits will be somewhat different. This is an effect of that weights on sub-indices are changed for all breeds in the revised NTM as a consequence of updated economic values.

Figure 1 shows the relative genetic progress in the different sub-indices in NTM when selecting for the revised NTM. The figures can be interpreted as the proportion of expected genetic progress for each sub-index when selecting for NTM compared to the maximum genetic progress that can be obtained if selection is based on one trait only. For example, for Nordic red breeds, the relative genetic progress in yield index is nearly 70% of the maximum progress that could be obtained if selection was made only on yield index.

For all breeds most relative genetic progress is achieved in yield, followed by longevity. Across breeds, the Nordic red breeds have the strongest association between NTM and yield index. Apart from changing the weights on breeding goal traits in the revised NTM, changes within some of the sub-indices have been implemented for all or some of the breeds. For example, all breeds have implemented changes in the yield index to have more emphasis on milk contents. Another example is that modifications in the sub-index for udder conformation have been implemented for Holstein to obtain the desired progress for the most important traits.

Comparison to previous NTM

The changes in pattern of expected progress in revised NTM compared to previous NTM (before November 2018) differ between the breeds. In common for all breeds, there is however an increase on relative progress in production traits and a small decrease in progress for functional traits.

For Holstein most increase in relative progress is expected for growth, milkability and yield, whereas decreased progress is expected for udder health and udder as well as feet and legs conformation.

For Nordic red breeds, increase in relative progress is expected mainly for growth, fertility, milkability and temperament but also to a lesser extent for yield and general health. For udder conformation, udder health and youngstock survival the relative genetic progress will be somewhat lower than before.

For Jersey, increase in relative progress is expected for fertility, feet and legs conformation, general health and to some extent also yield and longevity, whereas progress is decreased for udder and calving index.

Actual progress that can be achieved in each breeding goal trait depends on several factors and one of these is the progress in NTM-units per year. Compared to 5-10 years ago, the rate of genetic progress in NTM is increased because of genomic selection. Therefore, similar or even increased actual genetic progress for functional traits can be obtained today, which is not reflected in the correlations between NTM and included breeding goal trait.

Expected changes

To be able to assess the expected changes with the updated NTM, correlations between the previous NTM (based on data from October evaluation) and the updated NTM (based on data for November evaluation) have been calculated for bulls. The correlation varies slightly over breeds and category of bulls (daughter proven and young genomically tested bulls, respectively).

The pure effect of the updated NTM can most clearly be seen by looking at the correlations between previous and updated NTM for daughter proven bulls since they are less affected by new data. Here the correlations range from 0.95 for Holstein up to 0.98 for Jersey. That indicates that there will be some re-ranking of bulls based on NTM. About 60% of the proven bulls in the evaluations for Holstein and Nordic red breeds will change more than 2 NTM-units. For Jersey the corresponding figure is about 50%.

The changes in NTM for bulls described above are mainly due to updated NTM weights but also to changes in yield index for all breeds and to changes in sub-index for Udder for Holstein. Further, information from Swedish bull calves have been added in the November evaluation for youngstock survival which also has some effect on the differences in NTM values.

Choose NTM – for better profit

NTM is the breeding goal that gives Nordic dairy cattle farmers the best profit. The revised NTM is better adapted to future circumstances and will give genetic progress for all breeding goal traits.

There is an economic value of improving NTM. Updated economic values on breeding goal traits in the revised NTM has, apart from changing the pattern of relative genetic progress for different traits, also implied that the economic value of one NTM unit has changed slightly. In the revised NTM, it is 8, 9.2 and 9.9 euro for Jersey, Nordic red breeds and Holstein, respectively.

Relative genetic progress with revised NTM

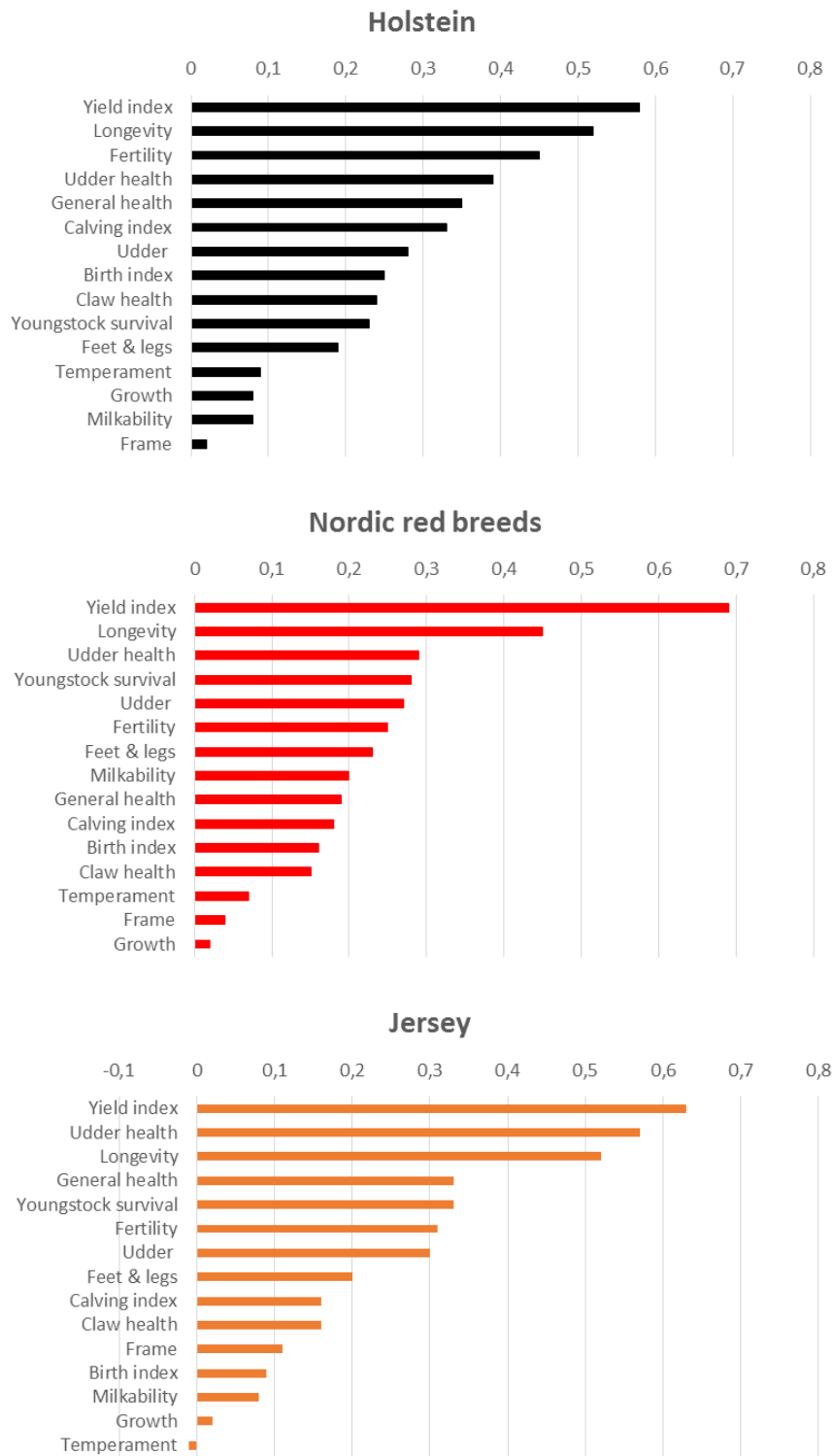


Figure 1. Relative genetic progress with revised NTM for Holstein, Nordic red breeds (RDC) and Jersey. The figures show the correlations between NTM and each sub-index based on genomically tested bulls born in 2015 and 2016 for each breed (n=5218 Holstein, n=4368 RDC, n=867 Jersey). *Note that some sub-indices have no economic weight in NTM (Frame for all breeds and Growth for Jersey)*