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The methane index is for all

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Methane emissions from cows are a major topic in many countries, including the Nordic countries. In cattle breeding, there is a strong ambition to develop a reliable methane index that makes it possible to breed for lower methane production in the rumen of dairy cattle.

In May 2025, NAV released a methane index for Holstein AI bulls, and now the time has come for the next major step. In May 2026, NAV will release the methane index for Holstein females, as well as for both bulls and females in RDC and Jersey. This will make it possible for all three breeds to select animals with a high methane index, which means lower methane production.

Correlation with other traits

In breeding, correlations between traits have a large impact on results and genetic progress. A positive correlation between two traits means that improvement in one trait will also result in improvement in the other trait. Conversely, a negative correlation implies that progress in one trait leads to a decline in the other trait. Correlations range from -1 to 1, where values close to -1 or +1 are strong, while correlations around zero are weak.

Table 1 shows that the index correlation between methane and NTM is very close to zero, meaning that breeding for NTM does not affect the genetic level for methane production. Correlations between -0.1 and 0.1 are so small that they have no real practical effect.

For Holstein, all correlations are close to zero. For RDC, there is a slight tendency towards positive correlations for fertility, claw health, and longevity, and a negative correlation for frame. In Jersey, there is a slight tendency towards positive correlations for birth index, general health, claw health, frame, feet & legs, and saved feed.

Table 1. Index correlations between methane and NTM traits for the three dairy breeds. Calculations are based on genomic tested bull calves born in 2023 and 2024.

	Holstein	Nordic red breeds	Jersey
Yield	-0.02	-0.09	-0.08
Growth	-0.00	0.07	-0.02
Fertility	-0.04	0.12	-0.01
Birth index	0.05	0.03	0.13
Calving index	-0.00	-0.02	-0.03
Udder health	0.04	0.01	0.05
General health	0.04	0.08	0.12
Claw health	-0.02	0.11	0.16
Frame	-0.07	-0.11	0.18
Feet & Legs	0.07	0.00	0.19
Udder	-0.01	0.08	0.00

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Milkability	-0.05	-0.04	-0.02
Temperament	0.04	0.06	-0.03
Longevity	-0.01	0.15	0.06
Youngstock survival	0.01	-0.07	-
Saved feed	-0.04	-0.03	0.13
NTM	-0.03	0.01	0.03

Methane is not included in NTM

Methane is currently an information trait and is not part of NTM. At present, methane has no defined economic value, and therefore it is not relevant to include methane in NTM. For methane to be included, an economically defined value is required, which could be established in the future if clear economic mechanisms related to methane emissions are introduced.

If the goal is to breed for lower methane production, the best approach is still to select the best NTM bulls that fit the breeding goal and then exclude a few bulls if they have a very low methane index.

Methane index for bulls and females

The methane index for bulls can be found on the NAV Bull search. To receive a methane index, a bull must have a genomic test in the Nordic system and have paid the Nordic fee or have a minimum of 10 daughters with methane observations. Methane index is calculated for females both with and without genomic test.

Future development

The methane index is still very new, and the phenotype behind the index currently represents the best available approach for calculating methane production. Development of the index will continue, and as more knowledge about methane becomes available, the model used to calculate the methane index will be further refined to improve reliability and genetic progress for reduced methane production.