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Breeding has led to great improvements for production

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Breeding is a complex matter, and it can be difficult to see the direct economic benefit on the farm. There is no income posted in the accounts called breeding, but instead, it can be found under expenses. So, what does breeding contribute to?

Did you know?

Breeding makes a significant contribution to efficiency improvements in Nordic cattle herds. The efficiency gain comes from both breeding and management. In this article series, the focus will be on what breeding has contributed over the past 10 years.

Production is the most important trait in NTM

Production is the trait with the highest economic value in the Nordic breeding goal NTM, and therefore also has the highest weight in NTM. Production accounts for 31% of the Holstein breeding goal, 34% of the RDC breeding goal, and 32% of the Jersey breeding goal. The production index is weighed together with the indices for kilograms of milk, fat, and protein. There is a negative weight on milk, as milk is a cost, while there is a positive weight on kilograms of fat and protein, as they are paid for by the dairies. Additionally, indices for fat and protein percentages are calculated, as the kilograms of fat and protein depend on the percentages.

Large progress in production indices

All breeds have made significant genetic progress in production over the last 50 years. As shown in Table 1, there has been progress in the production index from 17.8 to 20.9 index units over a ten-year period (2014 - 2024). This means that the cows in the barn now have a higher genetic potential for production compared to previous generations, and the progress has the same trend for all breeds. There has been significant index progress for both kilograms of fat and kilograms of protein, while the progress for kilograms of milk has been smaller. This is as expected in relation to the economic value of fat, protein, and milk in the production index. Both Holstein and RDC have made significant progress in fat and protein percentages, while Jersey has made less progress in protein percentage and almost unchanged fat percentage. The indices show good breeding progress, but what is the effect in the milk tank over the ten-year period?

Breed	HOL	RDC	JER
Milk, kg	9.8	5.4	9.5
Fat, kg	19.5	16.1	16.1
Protein, kg	17.8	14.8	18.5
Fat, %	11.8	16.1	0.9
Protein, %	15.5	15.4	8.0
Yield index	20.9	17.8	20.0

Table 1: Progress in production index units from 2014 to 2024 for cows from Denmark, Finland and Sweden

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Much more milk in the tank

In the period from 2014 to 2024, the genetic potential for production has increased significantly, and for all breeds, there are more kilograms of milk, fat, and protein. The milk has become more concentrated, as both fat and protein percentages have increased. As shown in Table 2, Holstein has put turbo on production and increased by nearly 650 kg of milk and a total of 85 kg drymatter in the period. This corresponds to a performance increase in drymatter being just over one percent per year. For RDC and Jersey, the progress in kilograms has been slightly smaller in the period, with 377 kg of milk and 74 kg drymatter for RDC and 544 kg of milk and 65 kg drymatter for Jersey. For RDC, this corresponds to an annual increase of one percent per year, while Jersey has had a progress of approximately 0.9 percent per year in the period. In the last 10 years, milk has become significantly more concentrated, which is a great advantage, as many dairies pays for kilograms of fat and kilograms of protein, while milk costs money to handle and requires extra feed to produce.

Breed	HOL	RDC	JER
Milk, kg	643	377	544
Fat, kg	49	43	34
Protein, kg	36	31	31
Fat, %	0.35	0.48	0.05
Protein, %	0.16	0.15	0.16

Table 2: Breeding part of the progress in production potential from 2014 to 2024 for cows from Denmark, Finland and Sweden

More concentrated milk

For all three breeds, the protein percentage has increased between 0.15 and 0.16 percentage points. For the fat percentage, RDC has increased by a total of 0.48 percentage points, while Holstein has increased by 0.35 and Jersey by 0.05 percentage points. It should be mentioned that Jersey, in the latest monthly report from the Danish yield control, has an average fat percentage over 6.0.

Breeding contributes to significant production improvements, and this will continue in the future. But there are also many other important traits in NTM. In the article series, we will look into the individual traits and show what breeding has contributed over the past 10 years.