

## Introduction of improved genomic prediction for type traits

*A single step method for type traits is introduced in the Nordic countries in November 2022. Changes in indices due to the new model are minor, but will be largest for unproven AI bulls and genotyped females*

Introduction of the new single step method for calculation of genomic breeding values for type traits gives a series of improvements compared to the previous two-step method. Changes in breeding values for body, feet&legs and udder and the subindices are minor, but there will be some reranking of AI bulls and females. Below are only mentioned changes for udder, but changes of similar magnitude are seen for body and feet&legs.

### Almost no changes for proven AI bulls

Changes for proven bulls will be minor for all breeds. Ranking within year is almost unchanged, but the trend across years will be a bit steeper. Results shows that the trend will be 1-3 index units larger in the last 7 years depending on breed. This means that around 80% of bulls born since 2010 will change less than 3 index units for udder and only 1-2% of the bulls will change more than 5 index units.

### Minor changes for unproven AI bulls

For young unproven AI bulls, there are minor changes. Ranking within year is affected more than for proven bulls and in general, index for udder increases with 1-3 index units compared to two-step evaluation. This means that for RDC and Holstein, 50% of the bulls change less than 3 index units and nearly all other bulls will have indices that are higher (3 or more index units). For all breeds almost no bulls drop more than 2 index units for udder. For Jersey the changes are smaller. Around 60% of the bulls change less than 3 index units for udder and the rest of the bulls will have higher indices (3 or more index units).

### Almost no changes for non-genotyped females

For cows and heifers that are not genotyped there are almost no changes for all breeds. Ranking within year is almost unchanged and trend is not affected. This means that around 90% of the animals change less than 3 index units for udder.

### Minor changes for genotyped females

For cows and heifers that are genotyped, changes are larger than for non-genotyped females. Ranking within year is affected and in general index for udder increases with 1-2 index units compared to two-step evaluation. This means that 60-80% of the cows and 50-70% of the heifers change less than 3 index units. Most cows and heifers with changes larger than 2 index units have increasing indices for udder, but there are also females that have decreasing indices.