

Improved breeding value for milkability

An increasing number of farmers in Denmark, Finland and Sweden, as well as milk recording organizations in Denmark, are getting equipment that automatically measure milk yield and duration of milking at every test day or even at every milking. This gives a large amount of high quality data that can improve the genetic evaluation for milkability.

Automatic records also from Sweden and Finland

The basis of breeding value for milkability has traditionally been farmer's evaluation as a subjective scoring of milking speed of the individual cow compared to her herd mates. This has so far been the only source of data from Finland and Sweden. From Denmark the amount of data was expanded already in 2011, when data from TruTest Milk Meters was included in genetic evaluation for milkability in addition to the farmers scoring. From the 12th of August 2014 the breeding values for milkability will be based on both farmers scoring and automatic measurements of milking speed from AMS and conventional milking parlours from all three countries as well as from Tru test meters from Denmark.

Increase in data from all countries

In Sweden data from several milking robots (AMS) and from other permanently installed milk meters in conventional milking parlours are now included in the evaluation. However the manufactures are not recorded in Sweden. From Finland data from TruTest milk meters and DeLaval is now included in the evaluation. In these two countries the amount of new automatic data is still rather limited compared both to the subjective scoring data from these countries and to the automatic data used from Denmark, but it will probably increase in the future.

In Denmark most of the new data comes from Lely AMS, but also data from permanent installed milk meters are included (Boumatic, DairyMaster, DeLaval and SAC). This gives a considerable increase in data, especially from Lely.

Milk flow and subjective scoring describes the same trait

Milkability from automatic milk meters and AMS is defined as the average flow of solids (fat and protein content measured in kilograms per minute), Data from one up to seven test days in first lactation are included in the genetic evaluation.

In the genetic evaluation for milkability the new data are used together with farmer evaluations. If the cow has both an automatic measure of milking speed and a farmer evaluation only the automatic measurement is used in the genetic evaluation. Otherwise, the available record is used (either an automatic measure or a farmer evaluation). By doing so, data are used in the best possible way in the genetic evaluation. This procedure is possible to use because the genetic correlation between the automatic measures and the farmer evaluation is high (0.9) and the two sources of data therefore reflect the same trait.

Higher heritability and more reliable breeding values

The heritability estimate for milking speed measured by means of automatic milk meters or AMS is about 0.4-0.5 for all breeds when milk flow are based on an average of 4-7 test days. In comparison the heritability estimate for milking speed judged by the farmer is about half that size (around 0.2-0.25). Thus, the heritability estimate for milking speed is much higher if the trait is measured by means of electronic milk meters than

if it is evaluated by milk producers. Due to the higher heritability and increase in data, the reliability of the estimated breeding values based on automatic measures is higher.

Cow EBVs are affected more than bull EBVs

The adding of data from automatic milk meters or AMS may change the estimated breeding values for milking speed for some bulls. An analysis shows that for bulls born from 1989-2009 the largest change is 6-7 index units for Holstein and Jersey and up to 16 index units for RDC. But, for all breeds 98% of all bulls breeding values changed maximum 2 index units.

Cows will change more than bulls because breeding values for cows were previously based only on pedigree information or one record from subjective scoring. Now some cows have a record as before and others change the existing record to one based on one or several automatic measures. The amount of new information that cows can get in the new evaluation is therefore larger than for bulls which already previously had 15 or more daughters with records and rather reliable breeding values.