Finland, the pioneer of health recording and breeding for health traits

Jukka Pösö, Faba Breeding

The importance of including health traits in to the breeding goal for dairy cattle arises from the genetic background among the traits. Several studies have shown that unfavourable genetic correlations between production and fitness traits exist. Moreover, the antagonistic associations are fairly strong. When estimated from Finnish Ayrshire data the correlation between yield and fertility, and between yield and mastitis, the correlations varied from 0.40 to 0.60 in the first three lactations. Therefore, selection for yield will result in declining genetic level in health and fertility traits unless these traits are included, either directly or undirectly, in the breeding program.

Nordic countries were the first ones to build up nation wide health recording systems for dairy cattle. In Finland health recording was established in 1982. Diagnoses and treatments made by veterinarians are recorded. Currently there are 6.3 million recordings in the data base, around 200 000 new observations are added per year. Finland has started also recording of hoof trimming data, i.e. when a cow's hoofs are trimmed by a professional hoof trimmer all information is transferred to national data base.

Health recording data are used both for breeding and for management purposes. Finnish bulls are evaluated by their daughters in clinical mastitis, fertility disorders and other diseases. Farms, that take part in health recording, get reports of their health status compared to farms in the same area. Also local veterinarians get routinely health status reports of the farms in their own region.

Health and fertility traits are associated with low heritability. The genetic variation can be large but measuring of health normally takes place as a binomial trait which conceals differences among the cows. Despite the low heritability the variation in daughter groups can be large. The best Finnish Ayrshire bulls have less than 1% of their daughters treated for mastitis in the first lactation whereas the worst bull has more than 25% of his daughters diagnosed with mastitis. Due to low heritability large daughter groups are needed to get reliable estimates of breeding value.

Finland has used health recoding data for breeding purposes for decades. Health traits have been included in the total merit index for bulls since 1990. Genetic trends for Finnish Ayrshire show large improvement in production and conformation traits. At the same time there is also a positive genetic trend for udder health where as fertility remains virtually unchanged. This is due to simultaneous selection for production, conformation, and health and fertility traits.