Scandinavian co-operation in dairy evaluation

Gert Pedersen Aamand, Nordic Cattle Genetic Evaluation, Udkaersvej 15, DK-8200 Aarhus N, Denmark e-mail: gap@landscentret.dk Homepage: www.nordicebv.info

The company Nordic Cattle Genetic Evaluation (NCGE) has the responsibility for development and routine genetic evaluation for dairy cattle in Denmark, Sweden and Finland. The estimated breeding values (EBVs) are based on thorough registrations done by dairy farmers, technicians, veterinarian and classifiers within the three countries. The final goal is to estimate EBVs for all traits in the breeding goal for dairy cattle.

NCGE was established January 1, 2002. The motivation for establishing the company was to:

- Get a more efficient use of resources for developing new EBVs and methods
- Do more reliable prediction of breeding values
- Improve cooperation in the practical breeding work in the North via common Nordic EBVs.

Recording of traits

The three countries have very similar registration schemes for all important traits within dairy cattle breeding, including more than 20 years of systematic disease recording. All registrations are stored in central national databases and used for both management and breeding purposes. The nearly 100% similarity in recording schemes across the three countries, makes cooperation very effective. Current and future registration work will focus on further harmonisation of traits currently recorded and traits to be registered in the future. Two examples of ongoing harmonisation work are the joint Nordic workshops for classifiers taking place every second year, and the ongoing discussion about a joint Nordic registration scheme for hoof trimming data.

Populations

In total, the numbers of milk recorded cows in the three countries are: 334,000 Red Dairy Cattle (RDC) cows (40,000 Red Danish, 138,000 SRB and 156,000 Finnish Ayrshire), 590,000 Holstein cows (362,000 Danish Holstein, 157,000 Swedish Holstein and 71,000 Finnish Holstein) and 58,000 Jersey cows (in Denmark). Approximately 270 young RDC, 430 Holstein and 60 Jersey bulls are tested every year.

Genetic evaluation

NCGE's goal is to use the best possible statistical models for genetic evaluation in practice. Genetic evaluation takes place within 3 main breed groups: Holstein, RDC and Jerseys. Furthermore a few minor dairy breeds are included in the evaluation.

In 2005, NCGE published the first joint Nordic breeding values for fertility traits, type traits, milk ability and temperament, based on registrations from all three countries. In 2006, joint Nordic EBVs for yield traits and mastitis were published, in 2007 Nordic EBVs for calving traits for Holstein followed, and in 2008 NCGE expects to publish the first joint Nordic EBVs for calving traits for RDC and Other diseases. Furthermore, discussions are going on about a joint Nordic Total Merit Index, which might be ready for publication in 2008 as well. Presently, development projects are under way regarding an improved mastitis evaluation. Each country runs national routine evaluation for traits not included in the NCGE evaluation yet. The national run stops, as soon as a joint Nordic evaluation is developed for that specific trait. Today NCGE has 6 routine runs per year for all traits.

Publication of EBVs

All breeding values for dairy cattle in the three countries are harmonized, concerning definition of genetic base and standard deviation. In practice it means:

- All breeding values are expressed on a rolling "cow base" – mean 100.
- All breeding values are expressed with a standard deviation of 10 for sires with a complete 1st batch of daughters.
- Sub breeding goals for yield, fertility, body, feet and legs, mammary system, calving (Holstein) and mastitis resistance are the same in all countries.

The genetic base comprises cows of all three countries for all traits with a joint evaluation. Therefore, all cows and bulls can directly be compared across borders for yield traits, fertility traits, mastitis, calving (Holstein), type traits, milkability, and temperament.

Benefits from joint Nordic evaluation

The dairy farmers benefit in form of more reliable breeding values. Besides, the development and routine costs are shared between three countries, which is an advantage for three rather small countries like Denmark, Sweden and Finland. Furthermore, joint EBVs give the basis for cooperation on practical breeding work like the merger between the Danish and Swedish AI-centres from 1 January 2008. NGCE is always open to discuss positive cooperation with more countries in the future, which can be especially valuable for the RDC breeds with a limited testing capacity for young bulls.