

### Genetic evaluations for birth weight: comparison of continuous and discrete definitions of birth weight under varying accuracies of recording

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When recorded, birth weights can be used as auxiliary variables in genetic evaluations for calving ease. Subjective scores for birth weights would cost less labour but may lack the precision needed. The aim of the study was to assess this precision using a data set with recorded birth weights from dairy cattle contract herds in North-eastern Germany. Data included 67,715 calving with birth weights, of which 25,462 were from heifer calving. First, the original data were used to form categorical scores for three different schemes: 1) five classes, each 20%; 2) three classes, each 33%; and 3) three classes with 25/50/25%. Since subjective classification is prone to errors, a random error term was added to the original birth weights to simulate classification errors, and the manipulated birth weights used to form classes. Variance components and breeding values were estimated using linear univariate sire-maternal-grandsire models. For the original birth weight data, estimates of direct and maternal heritabilities were 0.30 and 0.08, respectively, for all lactations. Estimates of direct heritabilities increased for heifer calving while calving from later parity cows showed increased maternal heritabilities. Estimates were slightly lower when based on the categorical scores, and were again reduced when based on scores generated from manipulated data. The lowest estimates of direct and maternal heritabilities were 0.20 and 0.05, respectively. Rank correlations between EBVs for sires indicated only slight shifts in ranking between different trait definitions. These results suggest that subjective scoring systems may be a valuable alternative to costly weighing of calves.

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### Session 36

### Theatre 3

#### Genetic parameters for somatic cell score in early lactation

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In German dairy herds, intramammary infections, claw disorders and metabolic diseases are main reasons for early culling. These diseases have a demand on the immune system of the cow that additionally suffers from metabolic stress. Somatic cell score (SCS) is widely accepted as an indicator for the immune response and for its usefulness in the improvement of udder health in dairy cows. Measuring SCS in early lactation (SCSel) is suggested as a new management tool to control the health status of transition cows. The objective of this study was to examine SCSel from records specifically taken in the very early onset of lactation while accounting for between and within-cow variation. Data consisted of 2836 Holstein cows in first to third lactation from seven large herds that calved in the year 2010. Aiming at recording SCSel on day 5 of the lactation, the average for days in milk (DIM) of one single recording per cow was 5.2 and varied between 0 to 20 DIM. The collection of data within a project on neo-partus health is ongoing. In general, the lactation curve for SCS typically shows high values at the beginning of the lactation. In our data, SCSel was 4.1 to 4.6 (DIM 5) and official milk recording results for the same cows were 2.5 to 2.9 at first test day (mean DIM = 23) and 2.2 to 2.3 at second test day (mean DIM = 57). It should be noted that the high value for SCSel not only can be attributed to the colostrums phase of the lactation but also arises from the fact that cows that are culled before they reach their first test day are included. Estimates of the heritability of SCSel and SCS of the first two test days were in the range of 0.10 to 0.12 while genetic correlations between all types of SCS measurements were on a low level.