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Owner-recorded data as source of information for genetic analyses of health traits of dairy cattle

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Dairy performance has been improved very successfully over the last decades. However, higher long-term efficiency of milk production may require genetic improvement of functional traits. In the German project GKuh, dairy farmers are requested to record health events of any kind and independent from veterinary treatment for all female calves, heifers and cows on their farms. Numeral codes that link to a comprehensive key of diagnoses are used for documentation to standardize recording and minimize time and efforts for data collection on farm. Almost 10,000 diagnoses from 49 farms were transmitted to the health database in 2010. In this year, the total number of females on these farms was 11,327 including 6,791 animals > 24 month of age. To investigate the suitability of the owner-recorded data for genetic analyses and to study the effects of trait definition (binary vs. quasi-continuous), modeling and inclusion criteria for controls, four health traits were chosen: early mastitis (MAST), i.e. mastitis recognized 10 days before until 50 days after calving, retained placenta (RET), purulent claw diseases (PCL), and non-purulent claw diseases (NPCL). Depending on trait and stringency of inclusion criteria for controls, the number of animals considered for the genetic analyses ranged between 2,293 and 4,333. Variance components were estimated in univariate linear animal models using REML. With binary coding of presence or absence of disease in a given parity, heritability estimates were 0.03-0.09 on the original scale and 0.06-0.27 using threshold model transformation. Influences of trait definition, modeling and inclusion criteria for controls on the parameter estimates were mostly small. Results indicate that owner-recorded data should provide a suitable basis for genetic evaluation for health traits in dairy cattle.