

Differences in bovine milk fat composition among dairy breeds in the Netherlands

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Knowledge on variation in detailed milk fat composition among cows is of interest for the dairy industry because fat composition is associated with processability, human health and also methane emission. The aim of our study is to quantify breed differences in fat composition among different cattle breeds in the Netherlands. We included milk samples of Holstein Friesian (HF), Meuse-Rhine-Yssel (MRY), Dutch Friesian (DF) Groningen White Headed (G), and Jersey (JER) cows. In total 159,437 records of 99,250 purebred and crossbred cows were included. The detailed fat composition in g/dl milk was predicted using MIR profiles from routine milk recordings based on calibration equations developed in the EU project RobustMilk. Breed effects were estimated by calculating predicted means for fatty acids (FA) using an animal model. For FA which arise in milk through de novo synthesis (short chain FA, C12:0, C14:0, and partly C16:0) differences in breed effects were found for JER and G. Also breed differences were found for FA that arise in milk directly from cows diet (C18:2cis9,12 and C18:3cis9,12,15) and FA in which Δ^9 -desaturases plays a role (C14:1, C16:1, and C18:1). In general differences between HF, MRY and DF in fat composition were not significant. JER tended to produce more saturated FA, while G tended to produce relatively less saturated FA. Adjusting for differences in total fat content in the model showed that differences in detailed fat composition can to a large extent be explained by differences in total fat content.