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Bias in genetic evaluation using random regression test-day
model

Keywords dairy cattle, genetic evaluation, test-day model,
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Abstract

The effect of an upgraded Finnish evaluation model on bias in estimated breeding values for protein yield was investigated. Evaluations based on repeatability animal model and on random regression test-day model without and with heterogeneous variance adjustment were compared. Comparisons were based on the average difference between pedigree indices and the future estimated breeding values, based on own or on daughter performance records. This was defined as empirical bias. The pedigree indices were computed from reduced data sets where four years of the most recent data were excluded. Results showed an upward bias in the protein yield pedigree indices for Ayrshire young sires of 2.2 kg, 2.5 kg and 1.8 kg from the repeatability animal model, random regression test-day model and random regression test-day model with heterogeneous variance adjustment, respectively. Pedigree indices for daughters of young sires were upward biased, whereas pedigree indices for daughters of proven sires were slightly underestimated when heterogeneous variance was not accounted. Inclusion of test-day yields from the fourth lactation onwards increased the bias. Moving from repeatability animal model to random regression test-day model did not reduce the bias, whereas adjustment of heterogeneous variance reduced bias.

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