

FRENCH EXPERIENCE OF USING ICAR APPROVED METHOD FOR PREDICTING 24-HOUR FAT PERCENTAGE AND YIELD FROM ONE SAMPLED MILKINGS IN AUTOMATIC MILKING SYSTEMS

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The use of automatic milking systems is increasing in France, from about 1,550 herds with official records in 2010 to about 3,350 in 2022. The Dairy Cattle Milk Recording Guidelines allows 2 types of robot protocols approved by ICAR, one with at least two milkings per recording day sampled for components and, to meet the simplification and cost-saving needs of farmers, another with only one milking sampled per recording day. Regarding the latter, which is used in France since 2018, 24-hour fat percentage and yield are estimated with the ICAR Peeters and Galeslout method (Peeters and Galeslout, 2002).

The aim of this study was to try to improve the prediction of the 24-hour fat percentage and yield by using more complexed models described by Peeters and Galeslout. Therefore, we compared the accuracy (R^2 , prediction error and standard deviation of prediction error) of the predictions at a recording day level for the multiple regression model currently used and for 6 other models also considering the effect of class variables, such as milking interval and fat to protein ratio.

The estimation of regression coefficients and the validation studies were performed on independent updated data sets (with at least two milkings sampled by cow), using a total of 620,792 milkings for 125,942 cows spread over 1,277 French farms from 2017 to 2019.

The results confirmed the relevance of the model currently used but highlighted a possible improvement. Indeed, adding the effect of class variables to the prediction model slightly improved the correlation between the 24-hour reference and the 24-hour prediction for fat percentage and yield, from 0.776 to 0.786 and from 0.910 to 0.913 for fat percentage and fat yield respectively, for the model giving the best results. There was no effect on the prediction error (-0.003 g/kg for fat percentage and 0 kg for fat yield) while the standard deviation of the prediction error was slightly reduced, from 3.076 to 3.009 g/kg and from 98 to 96 g for fat percentage and fat yield respectively.