

S04(T)-OP-3

Analysis of the accuracy of C method for estimating 24-hour with alternated protocols

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In France, the number of farms using alternated protocols has increased in the last ten years and the percentage has reached 30% in 2018. Milk Recording Organisations want to adapt and simplify protocols to the realities encountered in the field by using ICAR methods to estimate 24-hour yields in alternated one-milking recording (T), one milking sampling with milk weights from more than one milking (Z). Another way consists by using constant one-milking recording (C). The aim of this study is to analyse the accuracy of the C method on test day and on lactation records (milk, fat yields, protein yields, fat% and protein%). Performances adjusted based on method derived from "Liu" method from one milking recording (C) and alternated one-milking recording (T) were compared with the reference on a 24-hour and 305-days lactation basis on a large dataset. A validation study of the model was done on an independent data set:

138 222 Test-day - 12 666 lactations for training data vs 69 982 Test-day - 6 381 lactations for validation study. The model adjustment was estimated through regression coefficient (R^2) and bias. The results show that on test day the R^2 is lower in pm milking compared with am milking. R^2 is higher than 0.932 for milk, protein yields and percent. Fat yields and percent show a higher residual variability, with R^2 between 0.872 and 0.882 for fat yields and 0.779 and 0.834 for fat percentage, in favour of morning milking. On lactation, the loss of accuracy ($1-R^2$) in comparison with the reference 305-days is lower than 1.2% for T method and 6.0% for C method for all traits except for fat percentage for which loss of accuracy reach 3.9 and 14.8% respectively. For all traits, the results of accuracy are lower with C method compared with T method. Estimated bias is on average very low. The results obtained with C method in this study are similar to a study carried out by Berry and al (2005) on alternative milk recording protocols.

Keywords: milk recording, alternated protocols, adjustment, 24-hour yields, 305-days yields