Tuesday, March 12, 2024

Abstract Submission Form

Title (Mr./Mrs/Dr./Prof.) Dr.

Presenting author Christian Ammon

Institute

Institute/company: Melk-FEE GmbH

Adress: Lindenstraße 11a

ZIP/Postal code: 17291 City: Prenzlau

Country: Germany

Insert all authors and institutions

Ammon, C. (1, 2)
(1) Melk-FEE GmbH, Lindenstraße 11a, 17291 Prenzlau, Germany
(2) Leibniz-Institut für Agrartechnik und Bioökonomie e.V. (ATB), Max-Eyth-Allee 100, 14469 Potsdam, Germany

Preferred presentation Oral

Preferred session Session 6: SC Dairy Cattle Milk Recording – Presentation and evaluation of new analytical parameters in herd management for dairy farms

Email of corresponding author cammon@atb-potsdam.de

Title of your paper Possibilities for estimating milk carryover during milk sampling in automatic milking systems (AMS) in field tests, by ICAR test centers

Insert ABSTRACT text

Milk samples are used to get cow-specific information about milk components. This implies that the milk sample from a cow taken in a milking system should be a good representation of that cow's total milk. The amount of carryover describes what % of milk in a given milk sample does not originate from the cow that was currently sampled. When milk samples are analysed in a laboratory later on, it depends on the component of interest whether carryover poses a problem. An assessment of the carryover potential in a given milking system therefore can help to decide whether a milk sample is suitable for specific laboratory methods or should not be used.

There is currently no easy-to-implement method for measuring the milk carryover of a sampling system. However, reference and device milk samples are already routinely taken during a practical test for milk meters as part of the ICAR certification. The milk component data collected from these samples, combined with the knowledge of the identity of the cows involved, could be used to estimate milk carryover between two consecutive milkings using statistical methods. This will be demonstrated with

some anonymized equipment combinations of automatic milking systems and samplers that have already been the subject of an ICAR test.

Based on appropriate mixed linear models with repeated measures, estimates of milk carryover are made using data from existing ICAR AMS tests. It can be assumed that milk carryover is independent of milk yields in these cases. Various dependent characteristics such as fat content or protein content are used and compared with regard to their usefulness to detect carryover. The results of these estimates will be evaluated based on the subjective potential for milk carryover of the respective system.

Simulations based on the recorded data are then presented to assess the statistical power. This serves to classify the repeatability of such measurements; it also shows the magnitude of carryover that can be reliably detected within the established procedures of an ICAR test for milking robots. As a starting point, the statistical power for detecting 20 % carryover within the usual test plans is 80 %.

Adaptation options for these test plans are shown, which can lead to a lower level of carryover being detected with the same reliability. However, this is associated with correspondingly increased time and labour costs.

Finally, the results of the estimates from the ICAR tests are compared with the simulation results and classified in terms of their validity.

We look forward to presenting our conclusions in Bled.

Enter keywords milk sampling, carryover, statistical method, estimation, automatic milking systems