
Report of the ICAR Working Group on Lactation Calculation Methods

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A summary of the last 2-year activities of the Lactation Working group is presented. Main activities include the drafting of new guidelines for 24-hour milk calculation using daily data collected with electronic milk meters. Future focus of the group includes research in order to provide guidelines for milk recording using on-farm milk analyzers.

Summary

Key words: *Electronic milk meters, On-farm milk analysis.*

The activities of the ICAR Lactation Working Group focused on the following areas:

1. Organization of Symposium at the joint annual meeting of ADSA and ASAS in 2007.
2. Interaction with Sub-Committee of Recording Devices.
3. Participation to Working Party for On-farm Milk Analysis.
4. Drafting of guidelines for milk recording with Electronic Milk Meters.
5. Analysis of methods proposed by UK for am/pm milk recording.

Introduction

The symposium was organized together with Dr Marj Faust (ABS Global, USA). It was titled "New Challenges and Opportunities From Automation of Animal Data Recording" and took place during the annual meeting of the American Dairy Science Association in San Antonio, Texas, in July of 2007. Four international speakers were invited to discuss the topic from the perspective of manufacturer, DHI, genetic evaluation unit and farmer/consultant. Dr Katz (Afimilk, Israel) presented "Current

ADSA Symposium

and near term technologies for automated recording of animal data for precision dairy farming”, showcasing the details of the new device AfiLab that analyze various milk components on-line at the farm at each milking for all cows. Mr. Petreny (CanWest DHI, Canada) presented “Thriving in a declining market – the new service paradigm for DHI’s”, illustrating the challenges but also opportunities for milk recording agencies from the installment of new on-farm technologies in dairy farms. Dr Wiggans (USDA, USA) presented “Harnessing automatic data collection to enhance genetic improvement programs”, identifying the potential enhancement of dairy cattle genetic improvement with the use of new and more accurate data collected on farms. Finally, Dr Thomson (TMC, USA) presented “Harnessing automatic data collection to enhance profitability of dairy farms”, pointing out the perspective of the dairy farmer.

Support to other ICAR technical teams

There has been several email exchanges with Uffe Lauritsen, Chair of the Sub-Committee of Recording Devices. Discussion peaked at a live meeting in East Lansing, Michigan, in October 2007. During this meeting, attended by some members of SC-RD, the Chair of Lactation WG and the ICAR President, improvements were discussed to add integrity in regard to:

1. Test day/multi-day volume measurement.
2. Sample/vial ID.
3. Cow ID policy established by member organizations.
4. Write-up of examples of good practices (in integration of recording and ID).

Also, milk meter categories were update and partly re-defined. Furthermore, a standalone approval was agreed for milk meters and respective samplers, and finally it was decided to integrate new technologies in the guidelines, particularly multi-day milk meters.

In the fall of 2007 a new technical body was created: Working Party of On-farm Milk Analysis. The focus of this working party is to provide some background policies with different aspect related to milk analysis in the farm for milk recording purposes, when new on-farm devices are used. Representatives from different technical groups of ICAR are part of this WP, including the Chair of Lactation WG. Olivier Leray is Chair of this ad-hoc WP. A live meeting in Rome, Italy, in November 2007 was attended by members, and, since then, there has been email exchange with drafting of preliminary guidelines. The Lactation WG is not yet fully involved as data are needed to perform proper research.

New guidelines for milk recording with electronic milk meters

New guidelines for 24-hour milk yield collected with electronic milk meters were drafted. The guidelines are based on research by Hand et al. (2006) presented at ICAR meeting in Kuopio, Finland. The guidelines shows how multiple day averages provided by electronic milk meters software can be used to calculate 24-hour milk yield. In fact, better accuracy of the estimation of the true performance using 3 to 7 days averages than a performance estimated on a 24h basis only. However, 24-hour fat and protein yields should be determined from the 24 hr yield on the day of sampling, and not the averaged value.

Furthermore, new guidelines for cumulative milk yield collected with electronic milk meters were drafted. These guidelines are an extension of Test Interval Method for lactation calculation, and are based on research by Wirtz *et al.* (2006) presented at ICAR meeting in Kuopio, Finland. A more accurate calculation of the lactation

performance can be carried out using an average 24 hour milk yield of each test interval calculated from automatically collected single milk weights on the farm. However, a stable and reliable on farm recording system for milk yields and milking intervals is required for using this method. This method is very flexible as it can change between standard and detailed test interval methods

Finally, the Lactation WG reviewed a study provided by NMR, UK, which evaluated various statistical models for estimating daily yield from AM/PM testing schemes. Both herds milked twice daily (2x) and three-times daily (3x) were considered in the analysis. Wiggans factors (derived from US data) resulted in reasonable predictions when applied to UK data. The study provides new weights to enable single test records to be properly included in a test day model or the current records-in-progress procedure. Differences in milking interval among individual cows within herd cannot be taken into account, but advances in electronic identification might make this possible in future. The study concluded that the inability to account for individual cow differences in milking interval is likely to limit the further improvement in accuracy of models to predict daily yield from single measured milkings.

Future focus of the Lactation WG is on performing research with on-farm milk analyzers. However, data from manufactures are needed in order to carry out research in this area. An additional focus is to survey all countries regarding the labeling of various milk recording protocols used worldwide.

K. J. Hand, D. Lazenby, F. Miglior, D.F. Kelton and M.A. Quist-Moyer. 2006. Use of Daily Milk Weight to Predict Lactation and 24-hour Yields. Proceedings of the 35th ICAR Meeting EAAP Publication no. 121: 37-40.

N. Wirtz, A. Bunger, K. Kuwan, F. Reinhardt, and R. Reents. 2006. Calculation of the lactation performance from daily milk recording data Proceedings of the 35th ICAR Meeting EAAP Publication no. 121:49-56.

Future challenges

List of references
