IDF/ICAR Project on Reference System for Somatic Cell Counting in Milk

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Routine somatic cell counting in milk is largely performed with automated instruments. The accuracy of the counting level of these worldwide spread instruments is checked with various available reference materials. It is noted that most reference material providers are involved in intercomparisons with other reference material providers. These intercomparisons are very valuable as a beginning of a globally interlinked networked reference system. The implementation of such a global system for somatic cell counting in milk is the challenging target of the joint IDF/ICAR project group.*

** ICAR = International Committee for Animal Recording*

Outcome of questionnaire for routine laboratories

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Achieving better equivalence in somatic cell counting requires a thorough understanding of the current status with applied systems for ensuring the accuracy of the analyses performed worldwide. The questionnaire dispatched to reference material providers in early 2010 brought a good overview of the available reference materials. A second questionnaire on the use of these reference materials and the calibration of routine instruments was dispatched to routine laboratories in November 2010. The main outcome of the 205 (!) received replies is summarized below.

Analytical context

As a first part, a brief inventory was made on the type of instruments and technologies, the tools for control and the calibration procedures. From the answers received it appeared that there is confusion between the terms calibration and calibration adjustment. Adjustment does not seem to be practiced extensively, only 30 % of the laboratories reported a limit of tolerance for slope and bias deviations. Many laboratories seem simply to recalibrate, even if the deviations are within tolerances.

Use of reference materials

The majority (82 %) of the responding laboratories uses one kind of reference material (RM), 10 % of the laboratories use more than one type of RM and 8 % of the laboratories do not use any RM to control their instruments. These laboratories rely on their performance in national or international proficiency tests to control their counting level.

Interlinkage

The second part of the questionnaire dealt with the interconnections among the different countries and continents. The answers to the questionnaire came from 35 countries spread over the 5 continents but in a somewhat irregular distribution see "Figure 1". Poorly represented areas are to be further investigated. However, from the replies it is clear that the ICAR reference laboratory network appears to have a central role in Europe with the potential to even further expand in the other continents.

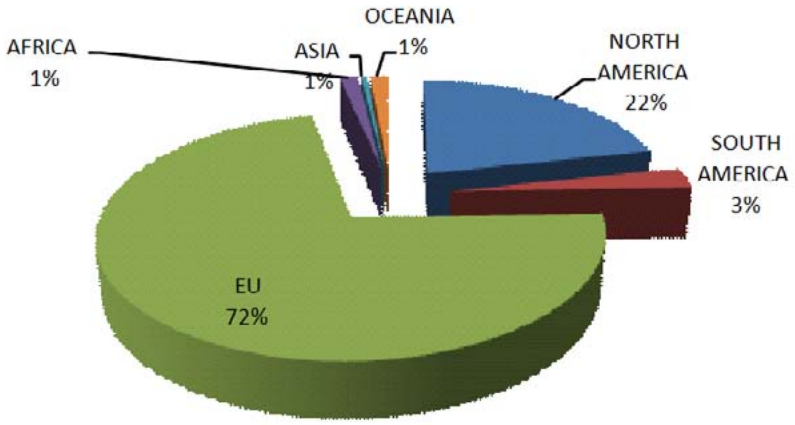

Figure 1: Geographical origin of the replies

Further developments

All the new contacts coming from this survey will be very useful to disseminate the intentions and the progress of this project. The collected information also allows to identify existing interlinkages. These 'small scale' reference systems will be used to test the developed data processing model. They will also play an important role in the planned pilot study in the next phase of this project.

MANY THANKS
TO ALL RESPONDING LABORATORIES!

Assessment of proficiency testing schemes and laboratories

By Thomas Berger

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At the project group meeting in Freising/Munich in October 2010 it was decided to use a probabilistic approach for the assessment of proficiency testing schemes and laboratories. This approach was found to be the most promising way to interlink laboratories and schemes. For the calculation of the specific figures, an Excel spreadsheet was prepared. Next step will be the testing of the spreadsheet and the approach with a limited number of proficiency testing data having a certain degree of interlinkage.

Bottom-up approach

By Harrie van den Bijgaart

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Many small or larger scale anchoring systems for somatic cell counting in milk are already existent worldwide, as became apparent from the recent questionnaires. It is felt that a bottom-up approach provides the most practicable trajectory in reaching for the final goal. In such an approach it is key to realize further interlinkage between existing anchoring systems "see figure 2". In the first phase, the interlinkage can be created by having same materials counted in different circles and achieving traceable alignment at a limited scale. Sharing and spreading of information on optimized procedures for the preparation of reference materials and their use in laboratories will promote harmonization. The interlinked existing systems can also serve for the intended pilot study, in which the functioning of the planned scoring systems and data processing models can be tested and demonstrated before the plan is offered for adoption.

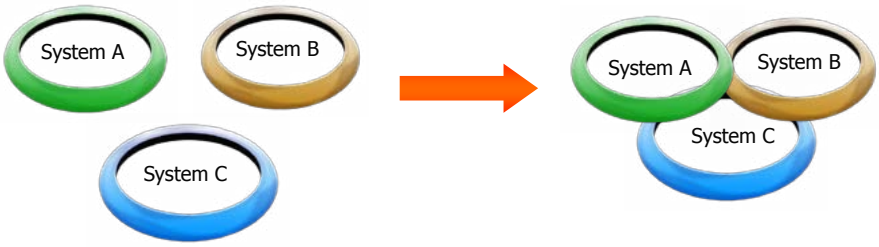

Figure 2: Applying a bottom-up approach through interlinkage of existing anchoring systems

Communication overview

Presentations

Reference systems, a new intitiative of IDF and ICAR. Presentation during IDF World Dairy Summit. Berlin (DE), 23 September 2009 (presented by H van den Bijgaart).

International reference system for somatic cell couting in milk, a world wide challenge. Presentation during ICAR 37th Biennal Session. Riga (LV), 1 June 2010 (presented by C. Baumgartner).

Global networking with ring trial as a tool in reference system on SCC. Presentation during MPR Bayern Jubilee Symposium. Freising (DE), 18 October 2010 (presented by S. Orlandini - O.Leray).

Worldwide equivalence of analytical results with emphasis on reference systems. Presentation during MPR Bayern Jubilee Symposium. Freising (DE), 18 October 2010 (presented by H. van den Bijgaart).

Reference system for somatic cell counting in milk. Presentation during EU JRC/IRMM Symposium on The Future of Reference Materials – Science and Innovation. Geel (BE), 25 November 2010 (presented by S. Orlandini).

Needs by the dairy sector with emphasis on somatic cell counting in milk. Presentation during CCQM/BIPM Workshop on The Role for Reliable Traceable Microbiological Measurements to Ensure Food Quality and Safety. Paris (FR), 6 April 2011 (presented by H. van den Bijgaart).

EU-RL MMP Workshop. Paris (FR), 2-3 May 2011 (presented by T. Berger).

Reference system for somatic cell counting in milk. Presentation during 3rd International AABP/NMC Symposium on Mastitis and Milk Quality. St. Louis (US), 22-24 September 2011 (to be presented by S. Orlandini).

Improving global equivalence in somatic cell counting. Presentation during IDF World Dairy Summit. Parma, 17 October 2011 (to be presented by H. van den Bijgaart).

Publications

Bulletin of the IDF No. 427/2008 - Towards A Reference System For Somatic Cell Counting In Milk, 21 pp.

Newsletter 1, August 2010, http://www.idfdairylaboratories.org/Files/media/imports/newsletter1RefsysSCC-100819.pdf

Newsletter 2, November 2010, http://www.idfdairylaboratories.org/Files/media/AlternativeCSS/newsletter2-IDF-ICAR-Ref-Sys-RCC.pdf

C. Baumgartner & H. van den Bijgaart. International reference system for somatic cell couting in milk, a world wide challenge. In: Farm Animal Breeding, Identification, Production Recording and Management. Proc. ICAR 37th ICAR Biennal Session. Ed: E. Sjukina, E. Galvanoska, O. Leray & C. Mosconi. ICAR Technical Series no. 14. Rome 2010. p. 271-274.

S. Orlandini & H. van den Bijgaart. Reference system for somatic cell counting. Accreditation and Quality Assurance. 2011.DOI: 10.1007/s00769-011-0797-7.

S. Orlandini. Reference system for somatic cell counting in milk. Proc. 3rd International AABP/NMC Symposium on Mastitis and Milk Quality. 22-24 September 2011 (submitted for publication).

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IDF (International Dairy Federation)

The mission of IDF is to represent the dairy sector worldwide by providing the best global source of scientific expertise and knowledge in support of the development and promotion of quality milk and dairy products to deliver consumers with nutrition, health and well-being.

1200 experts appointed by IDF members work on the areas of dairy farming, food standards, analytical methods, nutrition, hygiene and safety, science and technology and economics and marketing. IDF places great emphasis and importance on ensuring that the works it promotes are of the highest scientific integrity and are relevant and applicable to the dairy sector and industry as well as to international organizations, governments and legislators.

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ICAR (International Committee for Animal Recording)

ICAR is an international non-profit body that promotes the development and improvement of the activities of performance recording and the evaluation of farm livestock.

This is achieved through:

- Establishing rules, standards and specific guidelines for the purpose of identifying animals, the registration of their parentage, recording their performance and their evaluation and publication of the findings;
- Providing incentives for concertation and collaboration in animal performance recording and evaluation within and among international organisations, public authorities and industry.

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