



Use of Sensor Data to Monitor and Manage Health and Welfare of Dairy Cattle

ICAR & IDF Workshop

2nd of June 2026 08:30 – 13:00 CET

WELCOME and INTRODUCTION

Christa Egger-Danner and Ilka Klaas,
coordinator of ICAR IDF Sensor Initiative



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ICAR IDF Sensor Initiative - Background

- Collaboration between ICAR Functional Traits Working Group (ICAR FTWG) and IDF Standing Committee of Health and Welfare (IDF SCAHW) - **work on animal-based indicators to promote welfare in dairy cows!**
 - ICAR: develop, provide and promote a system and standards for functional traits (services) (WIKI)
 - harmonize traits
 - recording and validation of data
 - trait definition
 - use of data for herd management, genetics and quality assurance
 - IDF : have dialogue on, and form consensus about new developments in the dairy sector field of animal health and welfare

ICAR Central Health Key

<https://www.icar.org/guidelines/icar-central-health-key/>



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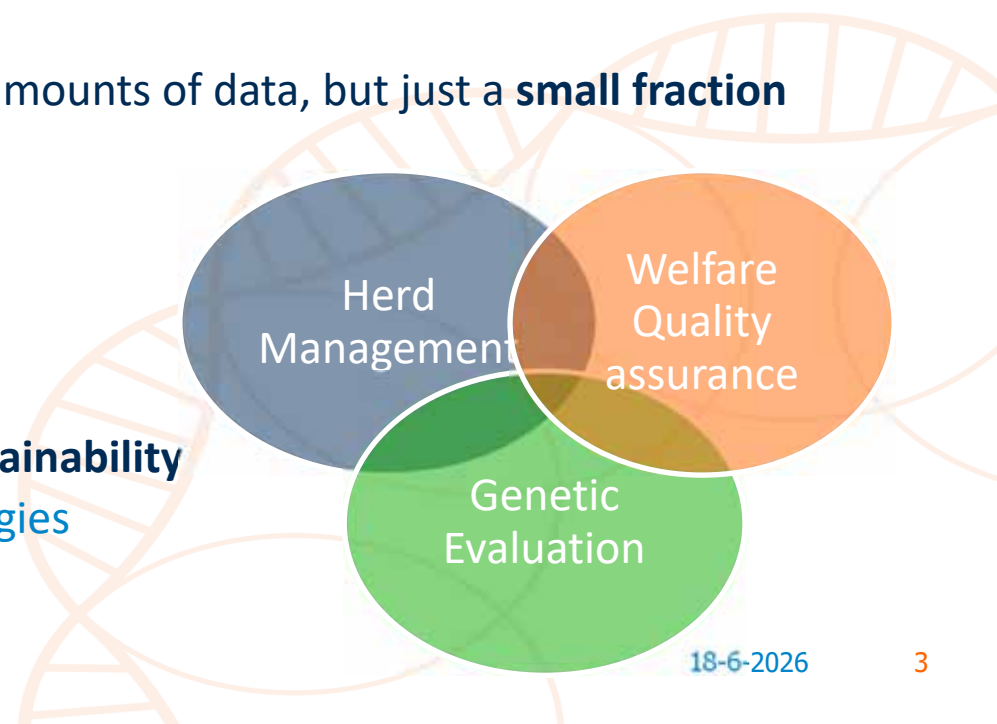
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Background: IDF and ICAR see the need and potential of improved use of sensor data



- **High potential of Precision Dairy Farming / Farmers are increasingly using sensors and other technologies**
- **On-farm sensor systems collect large amounts of data, but just a **small fraction** is currently **used****
 - Veterinary & advisory services
 - Dairy processors
 - Milk recording organizations
 - Breeding organizations
 - ...
- **Huge potential for use / enhance sustainability**
 - Across farms and sensor technologies
 - Along the dairy value chain



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Specific objectives of ICAR FTWG / IDF SCAHW



- Address **sensor-based health and welfare traits** for improvement of **genetics, herd management and welfare quality assurance**
- Bring together **different stakeholders** as technology providers, users of information and scientists: common understanding and knowledge exchange towards our goals
- **Explore opportunities and challenges** for recording, standardization, validation, trait definition and use of this information
- **Develop agreed upon, evidence-based, definitions and standards that support innovation along the dairy value chain**

Promote further and extended use of sensor systems along the value chain to increase sustainability, animal well-being and efficiency in cattle production.

Achievements of collaboration

Network. Guideline



Webinars / Workshops (www.icar.org)

- Multiple workshops, webinars and conference contributions related to animal welfare
- Publication of scientific background paper
 - Sensor data cleaning (Schodl et al. 2024)
 - Sensor and use for genetics (Brito et al. 2025)
- Webinar – Use of sensors for genetics (2026)

Guidelines: (www.icar.org) – approved and published

- WIKI - BCS
- WIKI - Sensor based behaviour information for functional traits with focus on rumination

ICAR IDF Guideline



“Sensor based behaviour information for functional traits with focus on rumination”

- Part 1 – General introduction
- Part 2 – Definitions and terminology
- Part 3 – Sensor data cleaning
- Part 4 – Use of sensor data (focus on time series data) for genetic improvement

Status: approved by ICAR and IDF

Published in WIKI: [Section 07 – Bovine Functional Traits - ICAR Wiki](#)

Continuous further development and updates



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Authors and contributors to this guideline

Collaboration of members of the ICAR Working Group on Functional Traits, the IDF Standing Committee of Animal Health and Welfare, international scientists, manufacturer and representatives of other ICAR bodies and stakeholders.

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The ICAR-IDF Joint Sensor Initiative also acknowledges the contributions of Paolo Bulgarelli (IT), Angela Costa (IT), Paul Edwards (NZ), Line Ferriman (NZ), and Joze Staric (SLO) from the IDF Standing Committee for Animal Health and Welfare in reviewing the guidelines.



Way of working: collaboration of different stakeholders (manufacturer, researcher, and representatives from DHI and breeding organisations,..)

Introduction



AIM of the workshop:

- Share new knowledge and developments regarding the use of sensor data in herd management and welfare assessment
- Discuss needs and opportunities for different stakeholders for use of sensor data in welfare assessment
- ICAR/IDF joint initiative for developing reference standards for sensor data used for animal welfare and health recording
- Discussing and defining next steps

Agenda



- **8:30 – 8:45 Welcome and Introduction** (Christa Egger-Danner and Ilka Klaas, coordinator of ICAR IDF Sensor Initiative)
- **8:45 – 9:10 Animal Welfare risk Assessment: Data and the way forward** (Yves Van der Stede, EFSA)
- **9:10– 9:35 Integral monitoring of dairy cattle welfare on farm using precision livestock farming sensors** (Pol Llonch Obiols, Autonomous University of Barcelona (UAB), online)
- **9:35– 10:00 ICAR IDF Sensor Initiative: Development of a validation protocol** (Miel Hostens, Cornell University)

Agenda



- **10:00 – 10:30 Stakeholder perspective: potential of using sensor data along the dairy value chain**
- Farmer perspectives (Andrea Marconi, farmer)
- Breeding perspective (Melissa Stephen, LIC, New Zealand)
- Veterinarian perspective (use in herd management) (Line Ferriman, CowSmart, online)
- **10:30 – 11:00 Coffee break**
- **11.00 – 12:00 Stakeholder perspective continued**

Agenda



- **11.00 – 12:00 Stakeholder perspective continued**
- **Processors and retailer**
 - Dairy processor's perspective on sensor based welfare assessment (Paolo Bulgarelli, Lactalis Italia)
 - Welfare Assessment User (Holly Gower, RSPCA, online)
- **Manufacturer**
 - Ilka Klaas (Delaval)
 - Shlomi Dagan (MSD)
 - Jan-Mark Hoekstra (Cow manager)
- **Herd data management systems & data integrations on farms, for farmers**
 - Jasper van der Noord (UNIFORM-Agri)
- **Other**
 - Meike Beatrijs van Leerdam (Cornell University)
 - Marie Haskell (SRUC, Scotland's Rural Collage)



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Moderator: Christa Egger-Danner and Ilka Klaas

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Agenda



- **12.00 Multi-stakeholder discussion on practical options: Ways forward? How do we get there? How to make extended use along the dairy value chain?**
 - **Moderator:** Ana Granados Chapatte (ICAR) and Piercristiano Brazzale (IDF)
- **12:50 Summary and next steps** (Christa Egger-Danner and Ilka Klaas, coordinator of ICAR IDF Sensor Initiative)
- **13.00 End**

