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While sensor technology offers many possibilities for genetics or quality assurance systems, it is primarily used for on farm level decision-making. Using data from these technologies across farms and along the dairy value chain offers new opportunities for genetic evaluations, welfare assurance, and improved transparency and sustainability in general. The overall aim of the joint ICAR IDF initiative is to develop guidelines to support the adoption of novel technologies and use of sensor data for improving animal health and welfare. During a workshop at the ICAR Conference 2024, the joint initiative discussed motivation and topics of interest for collaboration of different actors, including different stakeholder groups, scientists and manufacturers. A survey among participating manufacturers identified mutual interests and priority areas:

- Establishing a common agreement on definitions and terminology for health conditions and behaviors measured with sensor systems
- Developing standards to facilitate exchange of data and information across different farms and sensor technologies in accordance and collaboration with other ICAR standards and working groups
- Make Guidelines based on best practices for data collection, handling and analysis for different use, e.g. genetics, health and welfare monitoring
- · Generating Recommendations and protocols for testing the performance of sensor systems

Sensor-based rumination data was selected as the first use case. Preliminary results and recommendations on use of rumination data for genetic evaluation, sensor Key Performance Indicators and preferred reference standards will be presented. Close collaboration between ICAR/IDF with relevant stakeholders and manufacturers of sensor systems enables better understanding of needs and potential of commonly agreed on guidelines, which will improve global adoption of the guidelines to promote use of sensor data in herd management, animal welfare assessment and genetic improvement.

Keywords: Sensor data, animal health and welfare, rumination, genetic evaluation.

Compendíum of Abstracts



Enhancing Farm Resistance to TB

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The aspiration of eradicating TB may seem far-fetched given the lengthy eradication programme and dwindling progress in recent years. However, until recently, the genetic makeup of cattle had never been considered as part of the solution.

Research undertaken in Ireland at Teagasc Moorepark, in conjunction with ICBF, has revealed that certain family lines of cattle are more prone to becoming TB reactors. In the same way that genetics influences milk production and weight gain, animal health is also under genetic control.

Following years of research, ICBF has made breeding values for resistance to TB freely available for AI bulls. Farmers can use the breeding values to identify how likely bulls are to produce offspring that will become TB reactors.

The number of TB reactors in herds undergoing a TB-breakdown is, on average, 26% higher in cattle with the worst breeding values for TB resistance compared to cattle with the best breeding values for TB resistance.

As cattle with more favourable breeding values for TB resistance are less likely to become TB reactors, herds that have many cattle that are genetically more resistant to TB are also likely to incur fewer TB-breakdowns.

Prevention of just one TB infection in a 100-cow herd could avert up to 5 secondary TB infections arising from cattle-to-cattle transmission.

ICBF has made breeding values for resistance to TB available to herd-owners for their individual animals & included breeding for TB resistance a part of national dairy and beef breeding goals.

For farmers looking to avoid TB-outbreaks, breeding cattle more resistant to TB is a free, easy, and complementary tool provided by ICBF.

Keywords: TB, breeding values, disease resistance.