

Session 7: Latest tools using MIR-spectra in the ICAR world.

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## **DEVELOPMENT OF A PORTABLE MIR INSTRUMENT FOR IN-FARM MILK ANALYSIS - WHAT ARE THE NEEDS AND EXPECTATIONS OF THE DAIRY SECTOR**

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Mid Infrared (MIR) analysis of milk is a powerful technology to predict a wide range of phenotypes related to fine milk composition, health, nutrition or environmental footprint of cows. MIR analysis of individual cow milks is used by many DHI organizations around the world for cow management. However, the milk recording is classically organized every 4 to 6 weeks in farms, while to enhance the capacity of MIR analysis to be used for precision livestock farming the frequency of analysis should be increased. A potential solution to achieve this high frequency is to bring the MIR spectrometer to the farm to enable daily measurements. The BROMEDIR project aims to fill this gap by developing a portable miniaturized MIR spectrometer dedicated, among other applications, to milk analysis. As a preliminary step, prior to instrument development, the objective of this work is to identify the needs and expectations of the main stakeholders of the dairy sector. A survey was created and released in March 2023 to dairy farmers, advisers, researchers and industry. The questionnaire aims first to know what are the current information available regarding milk quality and cow status, its sources and its uses to monitor cow management, milk quality or milk processing. In a second step, it aims to collect expectations regarding a potential new technology for in-farm analysis, focusing, among others, on the automation of the sampling and measurement, parameters to display, frequency of analysis, economic aspects or technical considerations. A total of 75 answers were collected from the 4 categories of stakeholders. These feedbacks show differences regarding the interests and needs of the different stakeholders, while common technical considerations were also identified. Results are synthesized in order to highlight the points of attention to consider, to take into account the stakeholders' specificities and develop the new technology adequately to meet the dairy sector's expectations.