

Highlights of the Extra MIR meeting

To kick-off the joint work of ICAR and IDF about the use of MIR-spectra in the dairy world on the IDF-side, a meeting was held during the IDF/ISO Analytical Week in Konstanz, inviting dairy experts of all fields to learn about the actual situation with regards to the use of MIR-spectra and the intentions of this joint activity.

After an introduction by Christian Baumgartner, chairing this meeting, 60 experts in the meeting room and 45 experts online followed the presentations of Steve Holroyd, Amélie Vanlierde and Harrie van den Bijgaart.

According to the agenda of the meeting, the following notes were taken:

1. Welcome (C. Baumgartner)

- The chair welcomed all participants, among them the Presidents of IDF and ICAR, Piercristiano Brazzale and Daniel Lefevre. The high number of participants shows the importance of this initiative. The chair invited all participants to provide their contact details to create an information link for all stakeholders and to provide feedback on the next steps within this initiative ExtraMIR. Furthermore, he invited the colleagues to become an active member of ICAR and IDF, and thus, to contact their own IDF national committee if not yet registered as IDF expert.
- For IDF the proposal is to open a new work item proposal (NWI) and to select Hélène Soyeurt as an action team leader, as she is also chairing the group within the Milk Analyses Sub-Committee of ICAR.
- This project ExtraMIR is not an ordinary project dealing with an analytical method; it is a project that touches different areas of IDF and ICAR as MIR spectra are used for different purposes in almost all parts of the dairy food chain. Standing Committees to be involved are at least those on Farm Management, Environment, Sustainability, Animal Health and Welfare, Data exchange and others.
- For these reasons all communication must be planned and executed well, so that the aims and the potential of this project are understood and promoted in the best way.

2. Introduction to ExtraMIR (C. Baumgartner)

Summary of the actual situation regarding the goals of the initiative, the situation in ICAR and the plans for IDF.

3. Examples of applications using MIR spectra

Presentations of Steve Holroyd (MIR spectra to detect milk adulteration), Amélie Vanlierde (Milk mid-infrared spectra as a proxy to estimate enteric methane) and Harrie van den Bijgaart (FTIR-based fatty acid predictions for herd management purposes, issues in equivalence) displayed existing solutions, potentials as well as problems connected with the use of MIR spectra.

4. Questions and Discussion

After the presentations and some items discussed in more detail, four main areas could be detected in which future activities should be grouped to structure the ExtraMIR work:

References – Quality Assurance – Modelling – Communication

• References

As models derived from MIR spectra are partly referring to complex functional traits, there is a strong need to find a suitable way anchoring the outcome of the models to a sound reference.

- **Quality Assurance**

1. Experience shows that actual QA procedures are not sufficient to obtain the best quality of spectra; thus, there is a need to find options to standardize and stabilize instruments.
2. As well, tools must be developed to verify the equivalence of the information obtained in the different areas of the globe for the same functional trait with different models.

- **Modelling**

1. There is a need to explain what type of information is delivered by statistical models using MIR spectra. Still the nature of information as a prediction (what compound in what concentration, probability of presence or absence of a substance, shaping or markedness of a functional trait) is not understood in many cases.
2. Agreement should be reached on what references to use, how to standardize them, and what data to use for models based on MIR spectra.

- **Communication**

1. It is necessary to standardize the terminology used, as there are some misunderstandings currently.
2. Furthermore, the way to present the information coming from MIR spectra-based models should be simplified, standardized, and explained extensively to combine and connect science with practice.
3. ExtraMIR should set up an expert group to facilitate the creation of information and its appropriate presentation.