

Predicting performance from milk

MIR Profit is investigating the opportunities to use mid infrared (MIR) technology to screen herd recording milk samples for information to predict production, feed efficiency, fertility, health and longevity. The information could be of value at two levels:

- Information about individual animals that farmers could use for management, selection and culling decisions
- Information that could be used to improve genomic breeding values or to develop new genomic breeding values.

The project runs from 2015 to 2018.

Potential value to industry

MIR Profit has the potential to turn the application of herd recording 180 degrees. In addition to using herd recording data as an historical record of what has just occurred, MIR technology could use milk samples to offer predictions of a cow's health performance over her lifetime. It could improve the selection of cows for the major drivers of profitability – production, feed efficiency, fertility, health and longevity.

MIR technology is already being used in a similar way overseas, so our project focusses on applying the technology and developing prediction equations for Australian production systems.

Although it is early days for this project, a quick read of this fact sheet shows the MIR Profit team is already making significant progress.

Australian data collection

Australian data is being collected to assess the validity of the overseas prediction equations for Australian production conditions.

The Victorian Government's Ellinbank research herd is being used for intensive data collection and very frequent herd recording from 2015.

In addition, six commercial herds with different feed bases and diets will be treated as 'calibration herds'.

MIR technology

Traditionally MIR data has been used only to calculate fat and protein content of milk. However recent research in a number of countries has shown that MIR can be used to predict traits such as feed efficiency, energy balance, fertility, health and methane emissions in individual cows. MIR data is potentially useful to farmers and their advisors, and the herd improvement industry.

For farmers and their advisors, MIR has the potential to provide far greater insight into the herd from milk recording; in relation to feed efficiency, negative energy balance, fertility, methane emissions and health. The results could allow farmers to identify individual animals to target management, selection and culling decisions. For the herd improvement industry, MIR has the potential to improve the accuracy of genomic Australian Breeding Values of key traits, particularly feed saved. MIR may also help us develop breeding values for new traits.

Participating calibration herds are:

- Garry and Beverley Carpenter, South Rianna, Tas
- Trevor and Tracy Henry, Tinamba Vic
- Michael and Judy Perkins, La Trobe, Tas
- Michael and Michelle Axford, Korumburra, Vic
- Sam and Fleur Tonge, Dobies Bight, NSW
- Colin and Erina Thompson, Cowra, NSW

A further 12,000 commercial cows will be sampled during 2016 and 2017.



Australian Government
Department of Agriculture
and Water Resources



Once data from the Ellinbank and commercial herds has been analysed, the data set will be used to develop:

1. A method for predicting the risk of an individual cow suffering from potential health or fertility issues arising from negative energy balance in Australia.
2. More accurate genomic breeding values of key traits.

Prediction equations

The final stage of the project will be to develop the software needed for herd test centres to use the data and prediction equations generated by the project. This should be complete by mid 2018.

If the project validates the tests under Australian conditions, our herd recording industry will need to make decisions about investment in the equipment to run these tests on a commercial scale. The project will work with the herd recording industry to discuss the technology, overseas research findings, progress with Australian work, and future business opportunities.

The team

Research team

- Tingting Wang
- Jennie Pryce
- Michelle Axford

MIR Profit Committee

The MIR Profit project is overseen by a committee, representing various industry groups with interest in the outcomes:

- Dairy farmers: Shawn Hollingworth (Chair), Sam Simpson
- Herd test centres: Carol Millar
- ADHIS (breeding values): Daniel Abernethy
- Technical specialists: Steve Little, Eileen Wall, Matthew Deighton
- Investors: Matt Shaffer Jennie Pryce, Carol Millar and Daniel Abernethy

Collaborators

MIR Profit is supported by funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit programme. MIR Profit is led by Dairy Australia and supported by the Department of Economic Development, Jobs, Transport and Resources, Australian Dairy Herd Improvement Scheme and National Herd Improvement Association. There are opportunities for further organisations to be involved. Contact Michelle Axford, Project Liaison for more information.

An overview of MIR Profit activities



More information

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Photo credit: National Herd Development