

A joint initiative of



Australian Government
Department of Agriculture,
Fisheries and Forestry



Reducing Emissions from Livestock Research Program

Open-path FTIR project: University of Wollongong (UOW)

The open-path Fourier Transformer infrared (OP-FTIR) spectrometer is an instrument used to measure methane emissions from animals while they are grazing in a paddock.

The OP-FTIR operates by sending an infrared beam across a paddock, adjacent to and downwind from the grazing animals. The beam is reflected by a mirror back to the instrument. A small gas canister which releases a tracer gas at a known rate is attached to the animals, and the instrument measures the amount of both the tracer gas and the methane from the animals simultaneously in the air between the instrument and the mirror to determine the amount of methane released from the animals.

As part of the reducing emissions from livestock research program, the OP-FTIR will be used at each of the four demonstration sites (Western Australia, Victoria, New South Wales and Queensland). The instrument will be available at each demonstration site during a three month period, during which time the University of Wollongong will provide training on operation of the instrument, data and statistical services and will potentially undertake benchmark emission measurements.

The University of Wollongong with the OP-FTIR will be participating in a field day for the demonstration farms, to give producers an understanding of how measurements are made, the strength and limitations of measurement methods and understand how benchmark data would be used for the development of abatement and mitigation strategies.

The project will provide OP-FTIR expertise to build capacity within the research community to further develop the capability of key research groups in Australia to provide accurate benchmark data of existing livestock systems as well as monitor the changes in emissions profile when abatement policies are enacted.

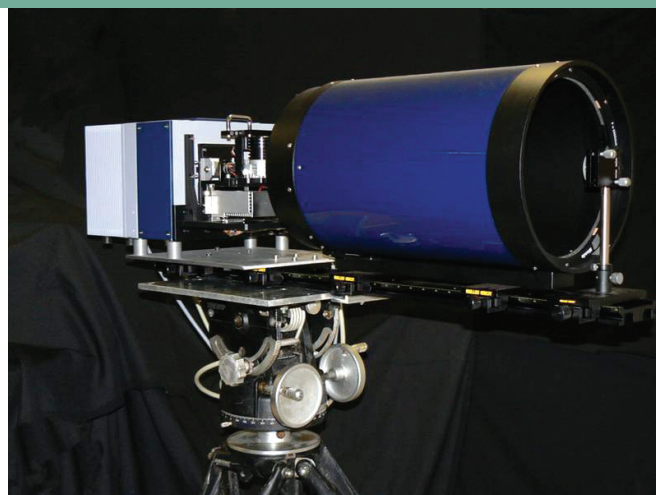


Figure 1: The open-path Fourier Transformer infrared spectrometer.

The program

The Reducing Emissions from Livestock Research Program is a national collaborative program focused on developing practical on-farm options for significantly reducing emissions from livestock while simultaneously increasing productivity. The research will develop more accurate data on emissions from sheep and cattle and the levels of mitigation achieved using a range of strategies.

The Reducing Emissions from Livestock Research Program is supported by funding from the Australian Government under its Climate Change Research Program.

Published by:

Meat & Livestock Australia,
Level 1, 165 Walker Street, North Sydney, NSW 2060
Ph: +61 2 9463 9333 Fax: +61 2 9463 9393
© Meat & Livestock Australia Limited 2011
ABN 39 081 678 364, Published March 2011
www.mla.com.au

Project objective

The aim of the project is to support the transition of outcomes of the applied research and development activities in the Reducing Emissions from Livestock Research Program through to demonstration of practical commercial abatement applications.

Progress

In 2010 the University of Wollongong OP-FTIR team participated in the 'Farming into the Future - Increasing productivity and reducing emissions' Field day organised at the DPI Victoria Hamilton research farm in November. The day was attended by agribusiness and key extension agents as well as producers, with close to 100 attendees.

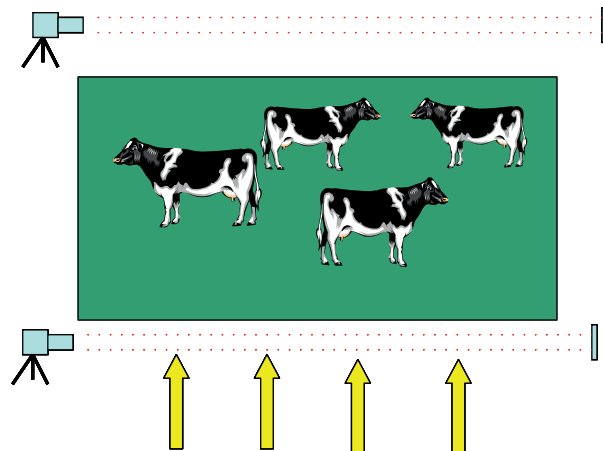
The OP-FTIR demonstration incorporated methane (CH₄) emission measurements from sheep grazing a range of pastures, as part of another project in this program 'Enteric methane abatement strategies for ruminant production systems in south-east Australia'.

Methane emissions from dairy cows were also measured using the OP-FTIR system in conjunction with DPI Victoria. Three OP-FTIR systems were deployed, with high quality data collected when weather conditions were favourable over the three week period.

In 2011 the University of Wollongong will use their OP-FTIR spectrometer to measure greenhouse gas emissions at the Reducing Emissions from Livestock Research Program demonstration farm sites.

The instruments will be operating at the second demonstration site (Trevenna, The University of New England, Armidale NSW) in March, which will incorporate a field day.

Plans are under way for collaboration with the final two sites The University of Western Australia's Ridgefield, Pingelly Western Australia and CSIRO's Lansdown, east of Charters Towers, Queensland, during the year.



A diagram of how the OP FTIR is used on grazing cattle in a paddock, with tracer gas canisters placed near their mouth.



Cattle in a paddock with canisters placed around their head.

For more information contact:
Dr Frances Phillips,
University of Wollongong
Email: francesp@uow.edu.au

Supported by:

University of Wollongong

