

NATIONAL LIVESTOCK METHANE PROGRAM

PROJECT FACT SHEET

Improving the measurement of methane emissions in cattle

Lead organisation	CSIRO
Lead researcher	Dr Chris McSweeney
Funders	Department of Agriculture, Meat & Livestock Australia, Australian Wool Innovation, CSIRO
Communication contact	Adam Harper P: 07 3833 5605 E: adam.harper@csiro.au

About the project

This project is developing and testing a new electronic sensor to measure the level of greenhouse gases (GHG) produced by cattle. The device is placed in the animal's rumen (stomach) and has been designed to rapidly, accurately and safely quantify the concentration of methane, carbon dioxide and hydrogen gases. It uses wireless technology to send measurement data to a nearby computer network, allowing for the instant processing of information about GHG emissions from individual animals. The device can be used without altering the behaviour of animals in any production system and can operate continuously for a few weeks.

This technology will help researchers and farm managers to assess the effectiveness of different strategies aimed at reducing methane emissions, such as genetic selection or the use of special forages and supplements. It will also provide a cost-effective alternative to current measurement methods, which generally only assess a few animals at a time and can be time-consuming and expensive.

What does it mean for producers?

Adoption of this research means producers will have greater confidence in the effectiveness of the methane-reducing practices they may choose to use in their production systems. This will assist producers validate the effectiveness of methane mitigation strategies when entitled to claim carbon credits under the Carbon Farming Initiative (CFI) and the future Emissions Reduction Fund (ERF).

Location(s):

Research is being undertaken in four locations across Australia:

1. F D McMaster Laboratory, Armidale
2. Queensland Centre for Advanced Technology, Pullenvale
3. Queensland Bioscience Precinct, St Lucia
4. RMIT, Melbourne.



The inter-rumen gas measuring device. Source: CSIRO



The battery and sensor equipment. Source: CSIRO

BACKGROUND FACTS ABOUT ...

The National Livestock Methane Program

The National Livestock Methane Program (NLMP) has been developed to provide producers with practical strategies and tools to help them lower methane emissions while increasing productivity and profitability.

The program consists of 16 research projects grouped into five streams including: measurement of methane, genetics, supplements, forages, and rumen microbiology. These projects commenced in mid-2012 and will run until May 2015.

The NLMP is funded by the Department of Agriculture. It is managed by MLA and receives support from 11 collaborating organisations. For more details on the projects and collaborators, please visit www.mla.com.au

The link between ruminant biology, methane and productivity

When cattle and sheep digest feed, between 2-10 per cent of the feed energy they consume is lost in the form of methane gas. This is caused by the activity of micro-organisms that naturally live in the animals' stomach (rumen) and assist with digestion.

The methane gas (CH₄) is belched out by the animal and into the atmosphere. Simply put, they are 'leaking' feed energy, rather than converting it to muscle. Scientists are working to reduce this loss of feed energy by developing treatments to lower methane emissions. Preliminary research results indicate that some treatments can reduce methane-related energy loss by more than 50 per cent.

Methane is also a potent greenhouse gas and in Australia about 10 per cent of all greenhouse gas emissions and two thirds of agricultural emissions come from methane produced by cattle and sheep. Knowledge and practices aimed at reducing methane emissions from livestock therefore serve the dual purpose of improving feed efficiency, productivity and farm income, while also helping lower Australia's greenhouse gas emissions.