GreenFeed methane measuring machine

Measuring methane – one burp at a time

Have you ever wondered how much methane is released in a cow's burp or breath?

The Department of Primary Industries and Regional Development (DPIRD) now has the cutting-edge GreenFeed machine which measures emissions from individual cows and sheep, allowing us to determine Greenhouse Gas (GHG) emissions more accurately in the paddock.

How does it work?

1. The GreenFeed system attracts livestock to the trailer with a pellet.
2. When each animal visits, their electronic ear tag is read. A fan is automatically activated and extracts air from around its head.
3. This air is then analysed by the machine, measuring Methane (CH_4), Carbon Dioxide (CO_2), Oxygen, and Hydrogen (H_2) to determine the animal's emissions profile.

These units have been tested extensively for their accuracy against laboratory methane accumulation chambers.

Real-time monitoring

Researchers can

- conveniently view and control the GreenFeed system in real-time from their computers.
- access data remotely without the need to be physically present in the paddock.

Data collection

- Approximately twenty animals can be measured per GreenFeed machine.
- Data is collected every time the animal visits the feeder.
- Methane emissions can change over the day - from when the animal is ruminating (chewing the cud) or has just completed eating.
- Usually 20 days of measurements are needed to generate an average measurement of emissions for each animal.

The data collected offers invaluable statistics on the average emissions for an entire herd and an indication of the variability of methane emissions within a herd for a particular feed type.

The importance of the data

The data collected will play a pivotal role in delivering precise information on ruminant livestock emissions for differing forage and feed types, and at different stages of an animal's life.

This is particularly crucial as current livestock emissions information is adapted from work in other states and countries and based on estimated Dry Matter Intake and feed quality not specific to Western Australian conditions.
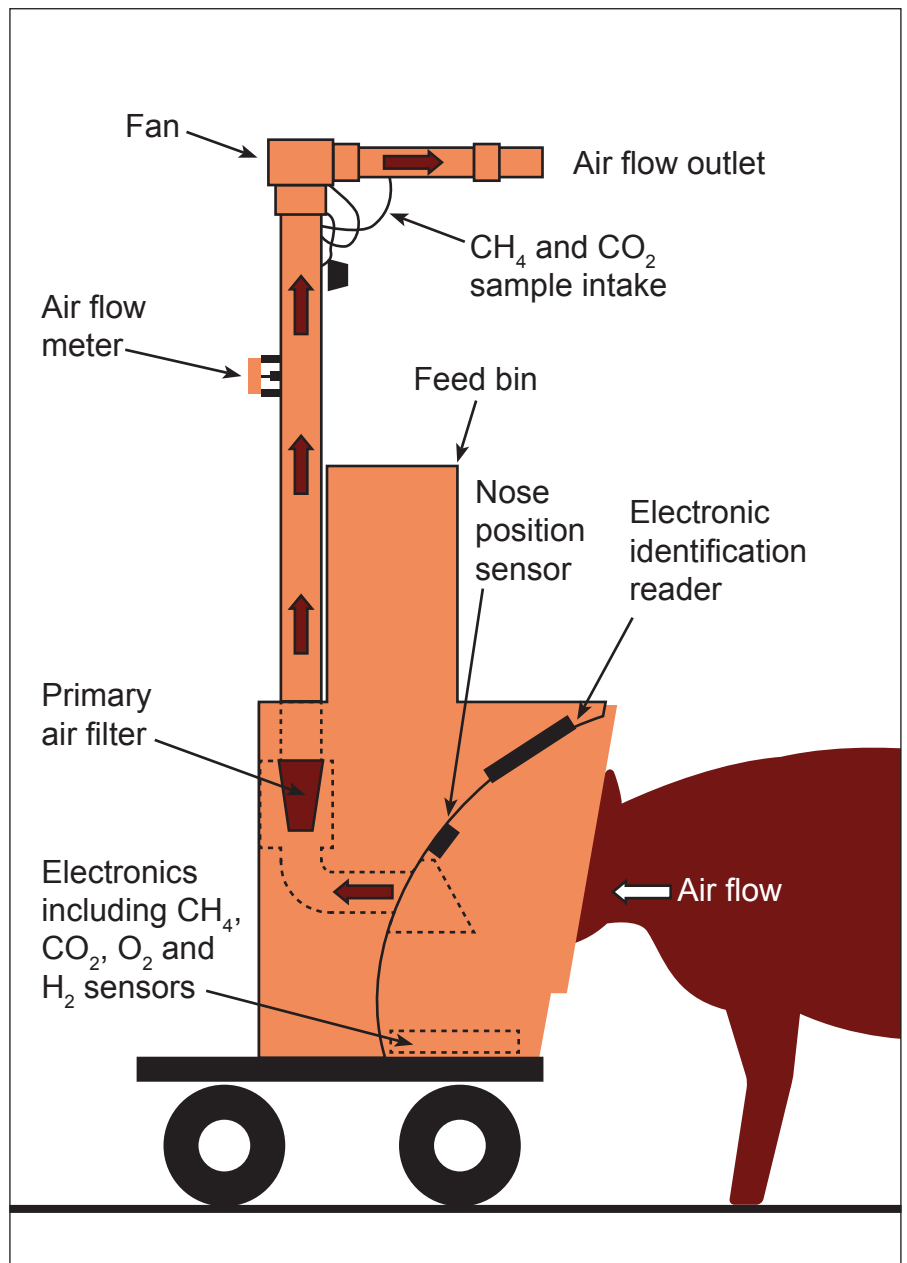
Reducing methane emissions

The machine offers DPIRD researchers and livestock producers the opportunity to understand current emissions of different Western Australian systems and different feed types aimed at reducing methane emissions while maintaining animal and farm productivity.

The results obtained will give producers and researchers greater confidence in identifying practical and effective anti-methanogenic feed solutions to realistically curb emissions.

Fan
Air flow outlet
CH_4 and CO_2 sample intake
Air flow meter
Feed bin
Nose position sensor
Electronic identification reader
Primary air filter
Air flow
Electronics including CH_4, CO_2, O_2 and H_2 sensors

Tackling agriculture's GHG emissions

Livestock contributes a significant 70% of greenhouse gas emissions in agriculture.

DPIRD is committed to supporting industry in reducing GHG emissions, and this groundbreaking research using the GreenFeed machine will provide invaluable insights toward achieving carbon-neutral ruminant livestock farming in the future.

dpird.wa.gov.au