

Dairy Cow Methane Production Measurements

In Natural Resources Institute Finland (Luke) methane and other greenhouse gas production of cows can be measured in respiratory chambers (analyzers: Columbus Instruments) and by breath analysis using GreenFeed emission monitoring unit (C-Lock Inc.) or portable gas analyzer (NG Guardian, Edinburgh Sensors). In a nutshell, the tests are carried out by providing the cows feed containing various ingredients and additives. Then methane and other greenhouse gas emissions related to different feeds and feed additives get measured.

Customer benefits

The universal benefit of reducing methane production is its impact on slowing down climate change. This benefits the whole planet and humankind. In addition, there are two major customer benefits to be outlined:

- It would be expensive and resource-consuming for customers to carry out the emission trials themselves, including the construction of respiratory chambers, acquire breath ana-

lysis instrumentation, employing skilled staff to perform the measurement tests and analyzing the obtained results.

- Luke has the state of art infrastructure for these tasks and is a scientifically qualified partner to perform the tests in a trustworthy yet cost-effective manner.

Services

Luke can perform the needed tests in Jokioinen research farm, Finland where the respiratory chambers and breath analysis instruments are located. Effect of various ingredients and additives on animal performance, greenhouse gas emissions, and energy metabolism can be carefully studied. Measurements can include:

- Feed intake
- Milk production
- Faecal and urine excretion
- Rumen fermentation
- Microbial ecology
- Oxygen consumption
- Carbon dioxide, methane, and hydrogen production

In addition to performing the measurements, Luke's professionals can provide expert consultation and recommendations. They have strong domain knowledge, which enables them to tailor the analyses to always meet the customers' needs.

Application areas

By analyzing the impact of various ingredients, the customer can formulate optimum feed mixtures producing as little enteric methane emissions as possible. Feed production is the first link in a long chain. The composition of feed has a major impact on milk production and greenhouse gas emissions and thus affects the carbon footprint of all food production.

Why Luke?

Luke is a very trustworthy operational partner by virtue of the high-quality and state of the art infrastructure combined with qualified professionals and operate. Partnering with Luke and its research barn is a worthwhile decision. The quality of performance and Luke's attitude has already convinced many feed and feed supplement producers as well as other companies working in cattle industry, both from Finland and abroad, to start the co-operation.

The research carried out in Luke's research dairy barn produces valuable information for sustainable dairy production taking into account economic and environmental aspects as well as animal nutrition and welfare in order to produce high quality animal products. Watch the video for more information.

More information:

Ali Bayat

Senior Scientist
alireza.bayat@luke.fi
+358 29 532 6668

Enyew Negussie

Senior Scientist
enyew.negussie@luke.fi
+358 29 532 6387

Heidi Leskinen

Group Manager, Senior Scientist
heidi.leskinen@luke.fi
+358 29 532 6327



Reducing greenhouse gas emissions is essential to slowing down climate change. We cannot control all emission sources, but we can control some of them. About four percent of anthropogenic greenhouse gas emissions are methane produced by cows. Reducing these emissions is important to curb climate change.

