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METHAGENE

Large scale methane measurements
on individual ruminants for genetic evaluations

ABOUT METHAGENE

METHAGENE is a unique network:

- ▶ **Bringing together European experts** working on strategies to quantify and mitigate methane emissions from ruminants and growing unique synergies.
- ▶ **Integrating a range of disciplines** to cover all methane-determining factors; animal nutritionists, animal breeders, environmental engineers, animal physiologists, rumen microbiologists, bio-informaticians, system biologists, statisticians, gas analysis experts.
- ▶ **Stimulating research, education and exchange** of knowledge and experience
- ▶ **Training of Early Stage Researchers** at training schools across Europe and on Short-Term Scientific Missions (STSMs)

METHAGENE started on December 10th, 2013 and will run until December 9th, 2017.

INTRODUCTION

Reducing methane emissions of ruminants is a **hot topic**.

In the EU, the livestock sector accounts for about 13% of total greenhouse gas emissions.

Of the various greenhouse gases produced by ruminants, enteric methane (CH₄) is the most important contributor, with a global warming potential 25 times that of carbon dioxide (CO₂). Despite extensive research on solutions to reduce enteric methane emissions, there is little or no concerted EU-wide effort to **develop usable tools for genetic reduction of methane**.

METHAGENE offers a platform for this effort.

JOIN METHAGENE!

- ▶ Are you planning to buy equipment and start measuring methane?
- ▶ Are you working on in vitro studies on methane?
- ▶ Are you approaching the study of enteric methane from a completely different perspective?

If you are new in this field, if you actively want to share your knowledge, and if you want to learn from others, **we would like to help you and also learn from you. Come on, and join our network soon!**



www.methagene.eu



What?

- Compiling all possible factors associated with variation in methane production
 - Animal factors
 - Nutritional factors
 - Rumen microbial factors
- Establishing standardised definitions for methane measurements

Why?

- Input for the best experimental design
- Develop guidelines when collecting methane emission data

Working Group 1

Methane determining factors

Working Group 2

Measuring techniques and strategies

What?

- Establishment of protocols for:
 - calibration
 - comparison
 - harmonisation
 - merging

of large-scale individual methane measurements
- Use of different techniques and measuring strategies

Why?

- Being able to compare measurements of different studies
- Being able to combine data from different studies and enlarge the power of analyses

What?

- Compiling, testing and developing low-cost indicators of methane output
 - Milk
 - *Yield + Composition*
 - *MIR spectra data*
 - Feed intake
 - Animal anatomy
 - *Rumen size*
 - *Body size*
 - And other indicators

Why?

- Reducing costs of measurements
- Enlarging dataset with individual data

Working Group 3

Proxies for methane

Working Group 4

Benefits for producers

What?

- Recommendations and suggestions for approaches to include methane into breeding goals
- Indications of the societal, environmental and economic value of methane output

Why?

- Animal breeding is a mitigation strategy that is cost-effective, permanent, and cumulative
- Methane emissions are related to energy loss of feed intake (2-12%)
- Reducing methane whilst maintaining production has direct economic benefits