Large-scale methane measurements on individual ruminants for genetic evaluations

Yvette de Haas and Jan Lassen
This is what we want a cow to do ...

(4 to 9 hours/day - Hafez & Bouissou, 1975)
... but what is also causing problems

Ruminants account for up to 18% of the world CH₄ production.

In EU: 13%

Animal nutrition, microbes, genetics.

90% of CH₄ produced in rumen.

Reduction of GHG of 20% by the year 2020 relative to 1990 levels.
Genetics as mitigation strategy

- Making use of natural variation between animals
  - Permanent and cumulative changes in performance

Information on many phenotypes is needed!

- Enteric CH$_4$ is expensive and difficult to measure
  - Different equipments
  - Different protocols
Measuring equipments (1/2)

Respiration chamber
Gold standard!

SF6

Animal Breeding & Genomics Centre
Measuring equipments (2/2)

1. Laser
2. Data Logger/Link
3. Sniffers (FTIR) GreenFeed
4. Automatic Feeder

Laser

Exhaust

CH4, CO2 Measurement Instrument

Automatic Feeder

Livestock Research Wageningen UR

Methagene
COST is a unique means for European researchers, engineers and scholars to jointly develop their own ideas and new initiatives across all fields of science and technology through trans-European networking of nationally funded research activities.

www.coste.eu
Objectives of METHAGENE

- Define best trait for methane emission;
- Harmonise protocols for large-scale methane measurements using different techniques;
- Identify proxies for methane emissions to be used for genetic evaluations; and
- Quantify benefits for producers when incorporating methane emissions into national breeding strategies.
Members

21 countries
- AT; BE; CH; DE; DK; ES; FI; FR; IE; IT; LT; MAC; NL; NO; PL; PT; SE; SLO; SK; TU; UK
Activities and meetings

- Kick-off meeting – Dec 2013 (Brussels)
- Start up meeting – May 2014 (Amsterdam)

- Annual Workshops
  - Granada, Nov 2014
  - Wageningen, Oct 2015
Activities and meetings

- Training schools
  - Dummerstorf – Oct 2014
    - Methane physiology
  - Poznan – Sept 2015
    - Methane data analyses

- Expert meeting – Catania, April 2015
Activities and meetings

Short term scientific missions

- Develop linkages and scientific collaborations between participating institutions involved in the Action
- 1 week up to 3 months
- Priority given to ESRs
STSM routes

12 STSMs

- BE-ES
- CH-DE
- FR-UK
- UK-FR
- IT-DE
- ES-FR
- SK-DE
- DE-CH
- PL-UK
- AT-DE
- TR-IE
- SK-CH

EUROPE

- EU Member States
- EU New Members 2004
- EU New Members 2007
- EU Candidates
- EFTA Member States

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Dissemination

- www.methagene.eu
- Twitter account
Thank you!

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