EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

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COST Action no. FA1302

Large-scale methane measurements on individual ruminants for genetic evaluations

2013 | 2017

Objectives

- Methane is a greenhouse gas (GHG) that contributes to climate change. The livestock sector, particularly ruminants, is estimated to contribute up to 18% of total global anthropogenic GHG emissions
- Preliminary data suggest that genetic selection to reduce methane emissions is possible. However, successful breeding programs require large datasets of individual animal measurements which cannot be generated by any EU country working alone
- The goal of METHAGENE is to discuss and agree on 1) protocols to harmonise large-scale methane measurements using different techniques; 2) easy to record and inexpensive proxies for methane emissions to be used for genetic evaluations; and 3) approaches for incorporating methane emissions into national breeding strategies

Main Achievements

- 66 individual members from 19 countries in Europe; 25 and 11 % are women and Early Stage Researchers (i.e., students or those that received a Ph.D. <10 years ago), respectively
- Establishment of Greenhouse Gases Working Group under ICAR (i.e., International Committee for Animal Recording) together with the Animal Selection Genetics Genomics Network (www.asggn.org) of the Livestock Research Group of the Global Research Alliance on agricultural greenhouse gases
- Start up meeting planned on May 8th 2014 at Schiphol Airport
- Course on “Methane physiology for geneticists” planned on Sept 30 – Oct 2, 2014 in Dummerstorf, Germany

Food and Agriculture (FA)

Participating countries

AT, BE, CH, DE, DK, ES, FI, FR, IE, IT, LT, MK, NL, NO, PL, PT, SI, SE, UK

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Working Group activities

Working Group 1:
Methane determining factors

- To compile a) an inventory and discuss possible factors associated with variation in methane production, b) standardized definitions for methane measurements, and (c) combined and integrated data into novel genetic models.

Working Group 2:
Comparison and calibration of measurements

- To generate, discuss and develop protocols for collection, harmonisation, comparison, calibration and storage of methane emission measurements on individual animals made using different techniques and measurement strategies.

Working Group 3:
Proxies for methane emission

- To brainstorm and (in)validate easy to measure, inexpensive indicators of methane that are closely related to enteric, and examine their relationships with methane emissions.

Working Group 4:
Benefit for producers

- To quantify the importance of methane emissions (or indicators) relative to other performance traits in breeding goals (e.g., milk or meat yield, fertility), and indicate the benefit for producers when methane emissions is included in breeding goals within EU dairy cow populations.

Working Group 5:
Knowledge and management exchange (KME)

- To support KME of innovations to methane sensor, breeding, dairy, and meat industries. In order to increase the potential application of the results, international stakeholders are involved in METHAGENE.

Industry participation

Interbull
Uppsala, Sweden
www.interbull.org

EFFAB
Brussels, Belgium
www.effab.org

ICAR
Rome, Italy
www.icar.org

Image caption: Measuring methane from breath analyses (picture: CRV)

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