Enteric Fermentation Flagship

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

Project dates: 22/01/2019 to 22/01/2021

Project: Improved quantification of the effects of feed and nutrition on enteric methane emissions from cattle managed under a wide range of production conditions and environments (FEED/METHANE RELATIONSHIPS)

Leader: LRG Feed & Nutrition Network coordinator (A. Hristov, USA); ERAGAS CEDERS project leader (A. Bannink, Netherlands)

Countries involved: All GRA countries

PennState
College of Agricultural Sciences

Department of
Animal Science

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Feed and Nutrition Network - Ruminants

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Specific objectives:

- (1) Expand animal and feed databases for mitigation of enteric methane developed by the GLOBAL NETWORK project to include new data representing production systems and environments from specific regions (focusing on **South America and Southeast Asia**), including systems and systems relying on by-products for feed;

- (2) Using these expanded databases, identify and recommend methane mitigation technologies that are practical and feasible for the livestock production systems in the target geographic regions and production systems;

- (3) Develop specific methane yield (Y_m) values suitable for local feeds in the target regions and production systems, which will enable the use of these new Y_m values to improve national greenhouse gas inventories;

- (4) Identify how nutritional measures can be captured in national greenhouse gas inventory methodologies to demonstrate mitigation in the target regions. The scope of work could be expanded (including additional geographic regions), if additional funding becomes available.

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- **A network of collaborators from the target regions representing diverse ruminant production systems will be developed**.

Outputs:

- (1) At least two publications in international peer-reviewed scientific journals, one describing new information on feed/methane relationships in the target regions and Y_m factors, as well as one detailing opportunities for feed-based mitigation options in the target regions based on revised Y_m factors and other relevant considerations (economics, climate, feed availability, farming system);

- (2) At least two presentations at relevant international/regional conferences;

- (3) Final project report summarizing the achievements of this project.

Outcomes:

- Improved methane prediction algorithms and information to support improved national methane and greenhouse gas inventories in the target regions. Quantified feed mitigation options will be developed for the target regions, suitable for a range of systems based on comprehensive data.

Current Activities

Latin America:

- A post-doctoral fellow was hired (Apr 1, 2019) to work on the project

- 120 potential collaborators from 20 countries and 60 Research Institutions from Latin America were identified

- Project database template suitable for Latin American conditions was developed

- Currently, data from 17 experiments from 3 collaborators from Brazil and Colombia were entered into the database

Southeast Asia:

- A research contract is being finalized