



**HAL**  
open science

## **Solutions for greenhouse gases mitigation in ruminant farming: how to favor their adoption?**

Michel Doreau, Philippe Faverdin, Herve Guyomard, Jean-Louis Peyraud

### ► **To cite this version:**

Michel Doreau, Philippe Faverdin, Herve Guyomard, Jean-Louis Peyraud. Solutions for greenhouse gases mitigation in ruminant farming: how to favor their adoption?. 3. Climate Smart Agriculture, Mar 2015, Montpellier, France. 2015, Abstracts of the climate smart agriculture 2015. hal-01211042

**HAL Id: hal-01211042**

**<https://hal.science/hal-01211042>**

Submitted on 3 Jun 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

### 93. Solutions for greenhouse gases mitigation in ruminant farming: how to favor their adoption?

Doreau Michel<sup>1</sup>, Faverdin Philippe<sup>2</sup>, Guyomard Hervé<sup>3</sup>, Peyraud Jean-Louis<sup>3</sup>

<sup>1</sup>INRA, UMR 1213 Herbivores, 63122 Saint-Genès Champanelle, France

<sup>2</sup>INRA, UMR 1348 Pegase, 35590 Saint-Gilles, France

<sup>3</sup>INRA, Scientific direction of agriculture, 147 rue de l'Université, 75338 Paris Cedex 07, France

This paper overviews mitigation perspectives in ruminant farming systems and discusses main obstacles and levers for their adoption. Using dietary lipids or nitrates as feed additives are the two most efficient ways for reducing enteric methane emission without affecting animal performances. However fat use in diets is often expensive and the use of nitrates may be not acceptable by farmers and/or consumers. In the future, genetic selection for low-emitter animals and progress in manipulating rumen microbial ecosystems are two promising ways of progress. Decreasing dietary protein of dairy cows will reduce N excretion and thus nitrous oxide emissions. Improving animal reproduction performances and health through more robust animals and decreasing age at first calving will reduce emissions, possibly resulting in a lower level of production. Increasing carbon sequestration through improvements in pasture management and using legumes in grassland in replacement of mineral fertilizers are considered as win-win strategies; they are not applied currently at large scale because many farmers are not convinced they are sound. Optimizing manure management is an interesting mitigation option, but requires investments. At least, using sexed semen or dual-purpose breeds rather than specialized breeds to better valorize male calves for meat may be solutions for the future, but these strategies will significantly affect dairy and meat chain organization. Larger emission reductions will be achieved by using several options simultaneously. In that context, the last section uses the key reading of the public economics theory to define the principles of a public policy aiming at efficiently reducing GHG emissions from ruminants: this policy should combine transitory direct aids for facilitating adaptation and the internalization of carbon price in production costs of farmers; it should also target research, agricultural advice as well as farmers' education and organization.