BeefMetaReduction: Nutritional strategies for the reduction of methane emissions in beef production

Summary

The need to provide the population with quality protein sources and at the same time reduce atmospheric concentrations of greenhouse gases (GHG) leads to the search for innovative tools to control and reduce methane production in cattle production.

Despite the fact that the beef cattle production system in Catalonia is not a major emitter of methane because it is very efficient in its processing, there is still room for improvement. Currently available technology will allow methane emissions to be estimated on commercial farms.

Ruminal activity is the source of methane generation by the animal, so inhibition of the rumen fermentation process may be a key aspect. Growth efficiency is also important since we would be reducing the ratio between kg of methane emitted and kg of meat produced. To this end, two strategies will be pursued in parallel, consisting of increasing rumen fat availability and the use of additives. Research will also be carried out into substitutes for palm oil such as rapeseed oil, sunflower oil, local by-products or local alternative products (camelina, insect oil or algae).

Once these alternative food sources have been identified and characterised, an in vitro screening methodology will be applied, from the results of which at least four strategies will be chosen. The critical points of the strategies under consideration and their technical and economic viability for large-scale use will be assessed for the development of feed.

In a third phase, the in vivo emissions of each of the chosen strategies will be quantified on the basis of actual field data, and guidelines for feed formulation and manufacture will be developed to reduce environmental impact.

Objectives

To reduce methane emissions from fattening calves by using fats rich in polyunsaturated acids, while seeking alternative sources to palm oil, and also by improving production efficiency with the incorporation of enzymes in the diet.

Description of the actions planned in the project

- Characterisation of new ingredients.
- In vitro screening to assess the potential to reduce methane emissions.
- Evaluate existing technological limitations in the use of new feed ingredients in feed factories.
- Quantification of the impact of the applied strategy on methane reduction, animal feed intake and calf growth under commercial conditions.

Expected results and practical recommendations

At the end of the project, feed formulation and manufacturing guidelines to reduce methane emissions will be drawn up. Actual field data on emission quantification will also be generated as a basis for impact reduction calculations.

Leader of the Operational Group

ORGANISATION: NANTA, SA

Coordinator of the Operational Group

ORGANISATION: CATALAN ASSOCIATION OF BEEF PRODUCERS AND CATTLE BREEDERS (ASOPROVAC CATALONIA)

Other members of the Operational Group (grant recipients)

ORGANISATION: CORPORACIÓ ALIMENTÀRIA DE GUISSONA, SA

ORGANISATION: SOLUCIONES INTEGRALES PARA LA NUTRICIÓN ANIMAL, SL

Other members of the Operational Group (not recipients of the grant)

ORGANISATION: IRTA - Institute of Agrifood Research and Technology

Subject area(s) of application

☐	Agricultural production system
☐	Agricultural practice
☐	Agricultural equipment and machinery
☒	Livestock farming and animal welfare
☐	Vegetable production and horticulture
☐	Landscape / Territorial management
☐	Pest and disease control
☐	Fertilisation and nutrient management
☐	Soil management
☐	Genetic resources
☐	Forestry
☐	Water management
☒	Climate and Climate Change
☐	Energy management
☐	Waste and by-product management
☐	Biodiversity and environmental management
☐	Food quality/processing and nutrition
☐	Supply chain, marketing and consumption
☐	Competitiveness and agricultural and forestry diversification
☐	General

Geographical area(s) of application

PROVINCE(S)	**REGION(S)**
CATALONIA	CATALONIA

Dissemination of the project (publications, conferences, multimedia, etc.)

Use of social media and hiring of an influencer to provide a popular science angle on the role of the beef sector in climate change mitigation for the general public and young people in particular.

Project website

More information on the project

PROJECT DATES	TOTAL BUDGET
Starting date: July 2021	**Total budget:** €223,637.95
	DACC funding: €103,422.00
Current status: Under way	**EU funding:** €78,020.11
	Own funding: €42,195.84

With funding from:

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Order ARP/113/2021 of 20 May, approving the regulatory bases for grants for cooperation for innovation by promoting the creation of European Association for Innovation operational groups in the areas of agricultural productivity and sustainability and the execution of innovative pilot projects by those groups, and Resolution ACC/1660/2021, of 27 May, announcing the call for the grant.

Generalitat de Catalunya
Departament d'Acció Climàtica, Alimentació i Agenda Rural

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