

The Regional Universities Forum for Capacity Building in Agriculture with support from the Global Research Alliance on Agricultural Greenhouse Gases have funded eight Graduate Research Grants (GRG) aimed at building the capability of graduate and post-graduate level students in Africa to conduct applied research on agricultural greenhouse gases. Each GRA-GRG supports a Principal Investigator (an individual senior lecturer of a RUFORUM member university) and two Masters Students to undertake research and training on topics related to the measurement and management of greenhouse gas emissions and removals in ruminant farming systems in Sub-Saharan Africa over a two-year period.

Project Coordinator
University of Abomey
Calavi, Benin

Project ID: RU/2020/
GRG/04

Project duration:
24 months

Start date
16th November 2020

Funding
RUFORUM

Total budget:
US\$70,040.00

Project partners:
CaSSECS

CIRAD-CIRDES, Burkina
Faso

INERA/DRREA-OUEST,
Burkina Faso

Université de Dédougou,
Burkina Faso

Université Nazi Boni,
Burkina Faso

Project title

Relationship between cattle voluntary feed intake on pasture and enteric methane emission in the Sudanian zone of West Africa

Summary

Comprehensive and accurate estimates of enteric methane emissions in the West African livestock sector are still lacking, because of the extensive nature of the prevailing pastoral and agro-pastoral production systems, but are necessary to provide guidance for mitigation strategies. This project seeks to build the capability of African graduate and post-graduate students to conduct applied research on agricultural greenhouse gases. The goal of the project is to reduce enteric methane emissions in West African pastoral and agro-pastoral systems for improving food security and livelihoods. The purpose is to develop enteric methane emission factors and reference values of methane production per animal per day for cattle reared in the Sudanian zone of West Africa.

Objectives

Overall: To develop enteric methane emission factors and reference values of methane production per animal per day for cattle reared in the Sudanian zone of West Africa.

Specific objectives are to:

1. quantify feed intake and selection of grazing cattle on pastures across seasons
2. contribute to the validation of the measurement of the intake of cattle herds on pastures using the NIRS method
3. evaluate the productive performance of animals (gain/loss of live weight) according to seasons
4. estimate, through direct and indirect methods, the daily enteric methane emissions of cattle raised in diverse production conditions.

General planned activities

Activity 1: Review of literature on the diversity and seasonal availability of feed resources in the Sudanian Zones of West Africa

Activity 2: Assessing smallholder livestock farmers feeding practices and strategies across seasons in the Sudanian zone of West Africa

Activity 3: Measuring voluntary intake of cattle on pastures

Activity 4: In vivo measurements of enteric methane emissions

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Activity 5: Capacity building and dissemination

Students activities

Two Master studies will focus respectively on Measuring voluntary intake of cattle on pastures (Activity 3) and on in vivo measurements of enteric methane emissions (Activity 4).

Expected outcomes

1. Tools and protocol for assessing ruminant intake levels in the Sudanian zone of West Africa validated
2. Methods and tools for characterizing ruminant feeding and evaluating pastoral and agro-pastoral herd performances in the Sudanian zone of West Africa validated
3. Direct and indirect methane emission measurement methods for pastoral and agro-pastoral systems in the Sudanian zone of West Africa validated
4. Baseline data on enteric methane emissions for pastoral and agro-pastoral systems in the Sudanian zone of West Africa generated
5. National and regional capacities for reducing enteric methane emissions in West African pastoral and agro-pastoral systems strengthened.

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