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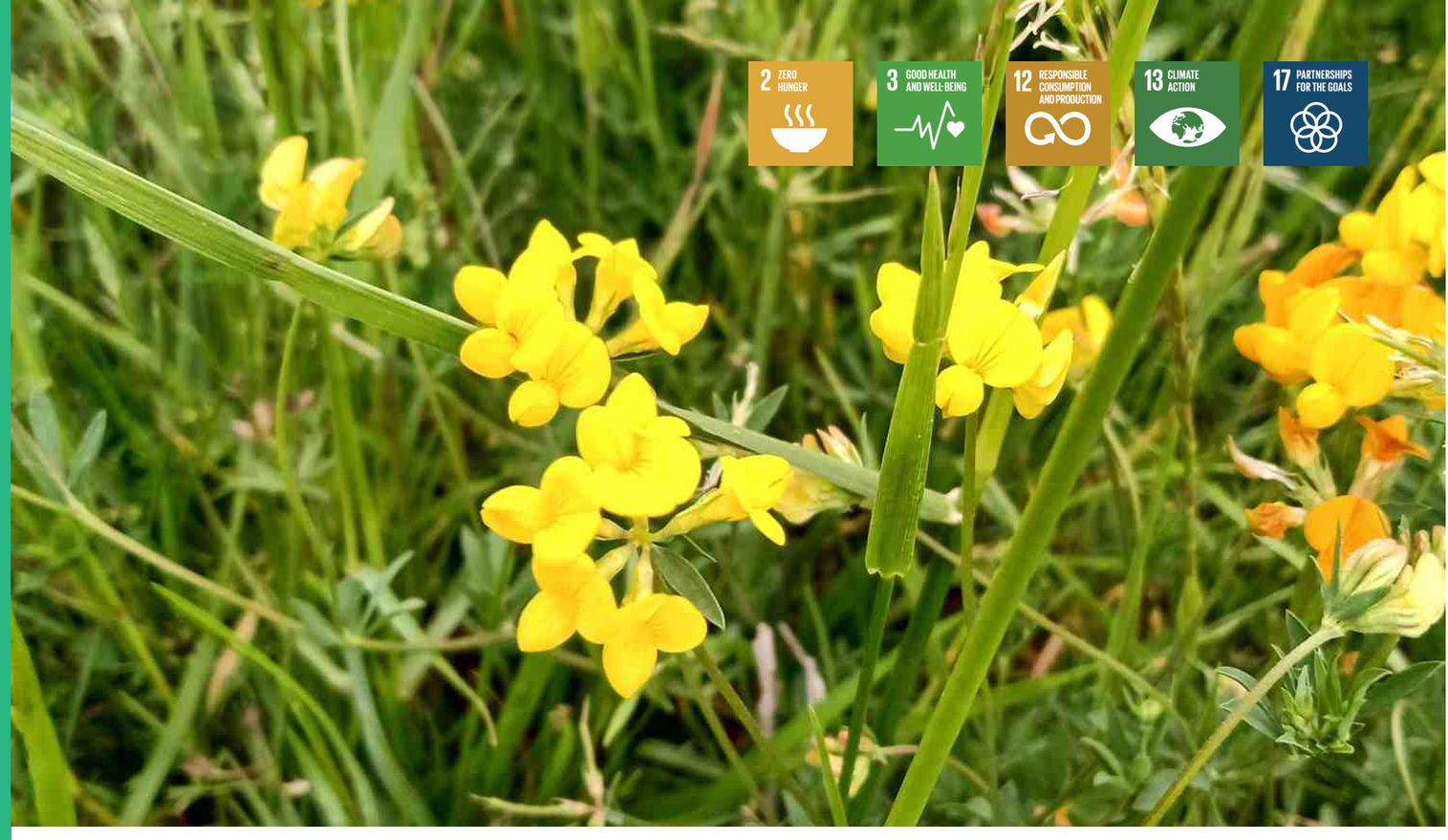
# Sustainable intensification of livestock systems with legumes: Latin America and the Caribbean cooperation platform




The use of legumes in livestock increases animal productivity, biological N fixation and carbon sequestration in soils, and can reduce Greenhouse Gases emissions (GHG) from the system.

**109kg**
Cumulative emission difference of N-N-1 in soil with cattle grazing

**14%**
Fixed N

**+50000**
Gas chromatography analysis

**10**
Publication. Technical report

Can the use of legumes help us produce more meat while emitting less greenhouse gases?

## The implemented initiative

The aim of this project is to enhance livestock systems in Latin America and the Caribbean (LAC) by promoting the use of forage legumes. The project has a particular focus on improving production efficiency and protecting the environment. To achieve this, a cooperation platform has been established to examine the impact of legumes on various factors such as biological nitrogen fixation (BNF), nitrous oxide ($N_2O$), and methane ($CH_4$) emissions, as well as changes in soil carbon sinks due to increased nitrogen input. The study also examines the impact of dietary changes on animal productivity.

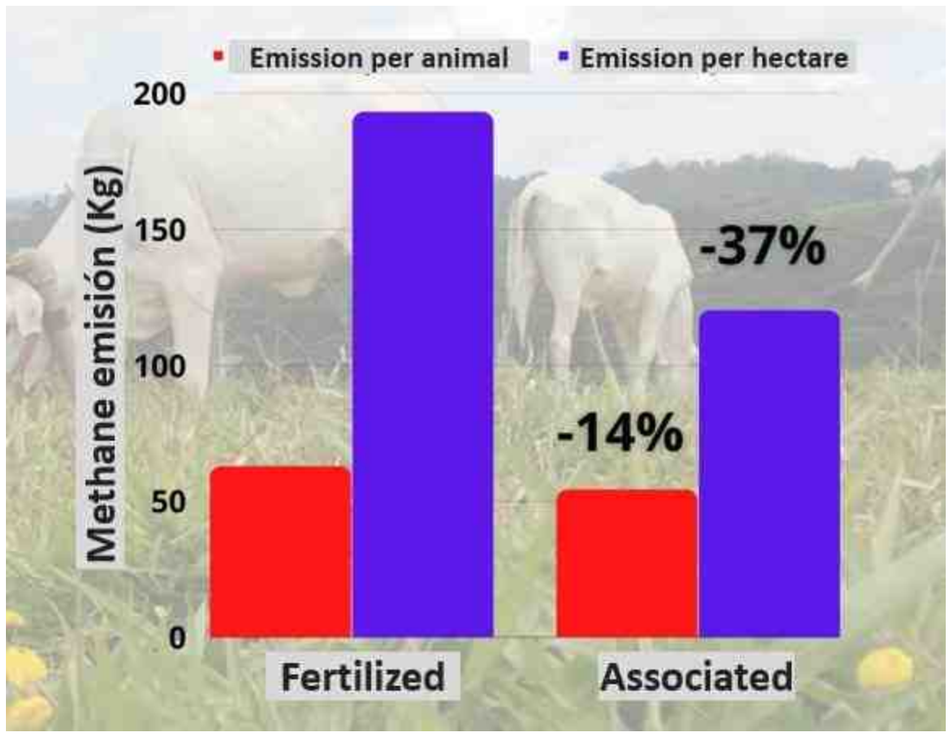
To disseminate this knowledge, the project uses multiple channels such as mass media, scientific publications, conferences, and training programs aimed at a diverse audience.

Partnering, cooperating and sharing knowledge: the key to making livestock production more efficient in the region

## The technological solution

The member countries of this platform share a common characteristic: beef production is vital to their economies. Additionally, they have the opportunity to use legumes as a forage resource. Despite their differences, legumes can fix atmospheric nitrogen, reducing fertilizer costs and energy consumption. Furthermore, legumes make a significant contribution to plant nutrition and the storage of carbon in the soil. By balancing emissions and carbon retention, it is possible to reduce greenhouse gas emissions from livestock production systems, improving greenhouse gas inventories.
The solution lies in exploring the resources that countries possess but which due to usage, customs, or situational factors are sometimes not adequately exploited. This program aims to train human resources within a framework of collaboration and complementary capacities.

$CH_4$ Emissions in fertilized pastures and associated with Arachis pintoi in Minas Gerais, Brazil.




MÁS INFO

## Results

The publication of results on enteric and soil $CH_4$ emissions, soil $N_2O$, and BNF has continued. New data on BNF confirm the large proportion of N in plants coming from the air. In the last year, a phase comparing $N_2O$ emission data from excreta of grazing animals vs. free-range has concluded, pending sequencing to characterize microbial populations that explain the variations.
Regarding enteric $CH_4$, emissions decrease when pastures have legumes with optimal condensed tannin contents. Partial results show that there is an increase in the C stock of the first centimeters of soil in pastures with legumes.
The data for the calculation of FE from N present in feces and urine in what is today the main cattle-raising region of Argentina are in final review before being published.

Main donors

Participating Organizations