

## Goal .....

The laboratory specializes in bromatological and instrumental analyses for the characterization of tropical forages (grasses and legumes) with the aim of evaluating their nutritional value, supporting the selection of improved hybrids for animal feed, and identifying materials with greenhouse gas mitigation potential, primarily methane, as part of the Tropical Forages Program research.



## Where we work .....

### Americas:

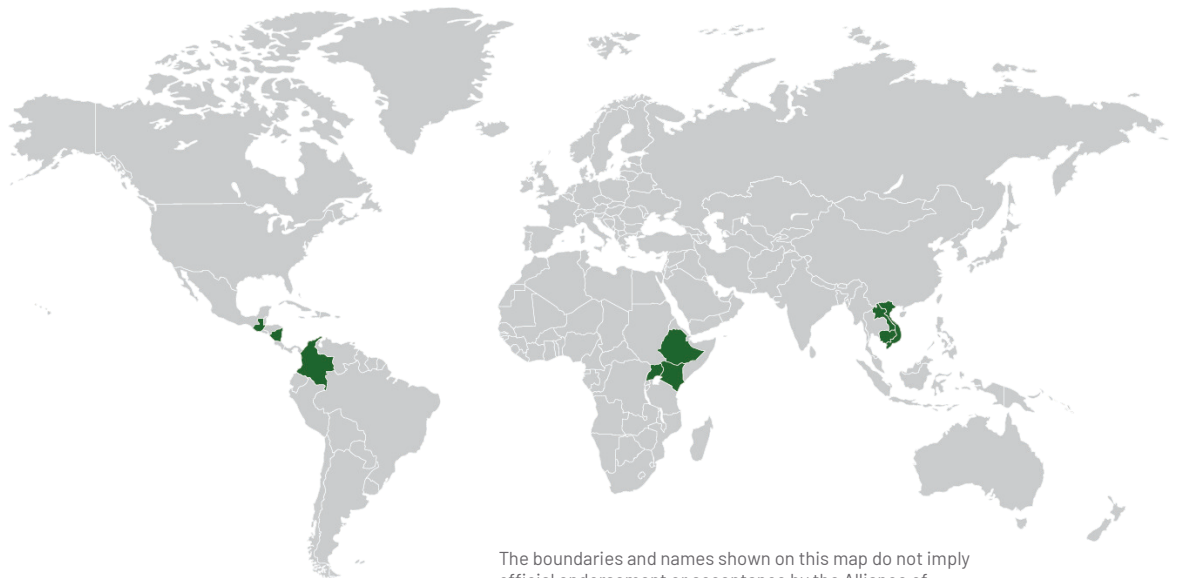
- Colombia
- Guatemala
- Nicaragua

### Africa:

- Ethiopia
- Kenya
- Uganda

### Asia:

- Vietnam
- Laos
- Cambodia



The boundaries and names shown on this map do not imply official endorsement or acceptance by the Alliance of Bioversity International and CIAT.

## How we do it .....

- **Advanced Bromatological Analysis:** Uses wet chemistry techniques to determine key nutritional components (protein, fiber, ash, dry matter and WSC, ensuring precise forage quality assessment for balanced livestock diets.
- **In Vitro Rumen Fermentation Systems:** Simulates rumen digestion to evaluate forage digestibility and fermentation efficiency, aiding in the selection of high-digestibility, low-methane forages.
- **Advanced technologies for evaluation Forage Breeding lines:** Applies Near-Infrared Spectroscopy (NIRS) for rapid, non-destructive nutritional analysis, accelerating the selection of superior forage lines in breeding programs.

# The impact

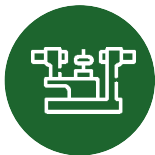


Each year, the nutritional content—fiber, protein, digestibility, and more—of **over 3,000 forage species** from various regions is analyzed, creating a key database for formulating more efficient diets.



Identifying forage composition enables the development of strategic diets that enhance digestion and rumen fermentation, leading to better feed conversion and reduced enteric methane emissions.

# Technologies



## Near-Infrared Spectroscopy (NIRS)

A rapid, non-destructive analytical technique that uses infrared light to determine the chemical composition of forages, including protein, fiber, and digestibility.

## Impact

Provides fast and accurate nutritional profiling, reducing the need for chemical reagents and laboratory time, allowing for large-scale forage analysis to support better livestock feeding strategies.



## Liquid Chromatography (HPLC) for Volatile Fatty Acids (VFAs) analysis

Separates and quantifies VFAs produced during rumen fermentation, essential for understanding energy availability in animal diets.

## Impact

Helps optimize forage selection and supplementation strategies to improve rumen fermentation efficiency and overall animal performance.



## In vitro gas production system

Simulates rumen fermentation to measure gas production from forage samples, assessing digestibility and fermentation kinetics.

## Impact

Provides insights into how different forages affect digestion, methane emissions, and livestock nutrition, contributing to sustainable feeding practices and reduced environmental impact.

# Partnerships



To know more about the program, visit us:



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