

# Global Methane Genetics initiative

Led by  **WAGENINGEN**  
UNIVERSITY & RESEARCH

In Partnership with  **BEZOS EARTH FUND**  **Global Methane Hub**

## GMG Latin America Working Group meeting

12-05-2026



# Agenda

- Welcome
- Open discussion with all
- GMG LATAM projects
  - **Uruguay:** Gabriel Ciappesoni
  - **Argentina:** Patricia Ricci & Mauricio Alvarez
  - **Brazil:** Fernando Cardozo
  - **Mexico:** René Calderón Chagoya
- Update GMG-initiative
- AOB



# Open Discussion with all

What is going on in your group/institute, related to:

- Methane projects beyond GMG?
- Investigating Genotype × Environment interactions?
- Adoption and incentives for breeding as a mitigation strategy?
- Genetic correlations between methane and other key traits?
- ....



Updates of GMG-LATAM projects

# Update GMG

## NEW projects & proposals

- **ICARDA:** measure methane in small holder farms in Africa & India
- **Buffalo proposal** (Lead University of Adelaide, Australia, Asian countries & South America)
- **Asia cattle proposal** (Bangladesh, India, Indonesia, and Pakistan)





**Share data,**  
*and* accelerate genetic progress  
to reduce methane emission

## Global Methane Genetics Initiative

### LOGIN

Please log in to continue to your account.

Email

Password



Remember me

[Forgot password?](#)

Log in



For registration, please contact us at [methane-register@datagene.com.au](mailto:methane-register@datagene.com.au)

# GMG project:

## Framework adoption & incentivization system for genetic selection as methane mitigation tool

**Methane  
breeding value  
validation  
protocol**

Webinar  
May 11, 2026

**SWOT analysis  
trait definition  
Selection index  
Breeding objective**

Webinar  
April 13, 2026

**Review of  
policy levers  
and market  
mechanisms**

Webinar  
May 7, 2026

Session at ICAR meeting in Verona: Adoption & Incentives to Breed for Methane Mitigation  
<https://icar2026.it/meeting-programme/> & panel discussion

# Webinars & WG meetings

**Towards guidelines to validate genetic evaluations for enteric methane emissions**

Date and time  
Monday, 11 May 2026  
12:00-13:00h CET

**Latin America working group meeting**

Date and time  
Tuesday, 12 May 2026  
16:00-17:30h CET

**Beef working group meeting**

Date and time  
Monday, 18 May 2026  
13:00-14:30h CET

**Microbiome working group meeting**

Date and time  
Tuesday, 9 June 2026  
12:00-13:30h CET

**Webinar planning GMG initiative 2026**

**Measuring methane emissions using Laser Methane Detection (LMD) in rural livestock systems: key considerations**

Date and time  
Wednesday 25 March 2026  
9:00-10:30h CET

**SWOT analysis of methane trait definitions and consequences for breeding programs**

Date and time  
Monday, 13 April 2026  
12:00-13:00h CET

**Dairy working group meeting**

Date and time  
Thursday, 23 April 2026  
12:00-13:30h CET

**Sniffer data aligning and editing pipelines**

Date and time  
Wednesday, 29 April 2026  
14:00-15:30h CET

**Sheep working group meeting**

Date and time  
Thursday, 30 April 2026  
12:00-13:00h CET

**Enabling adoption of methane-reducing breeding programs through GHG accounting and MRV frameworks**

Date and time  
Thursday, 7 May 2026  
12:00-13:00h CET

**Africa working group meeting**

Date and time  
Friday, 8 May 2026  
13:00-14:30h CET

News  
flash\*

GMG newsletter:



# In person meetings



World Congress on  
Genetics Applied  
to Livestock Production  
Madison, Wisconsin  
12-17 July 2026



**27th AAABG Conference**  
23-25 March 2027  
Geelong | Victoria | Australia

Genetic Advances through Innovative Next-generation Technology

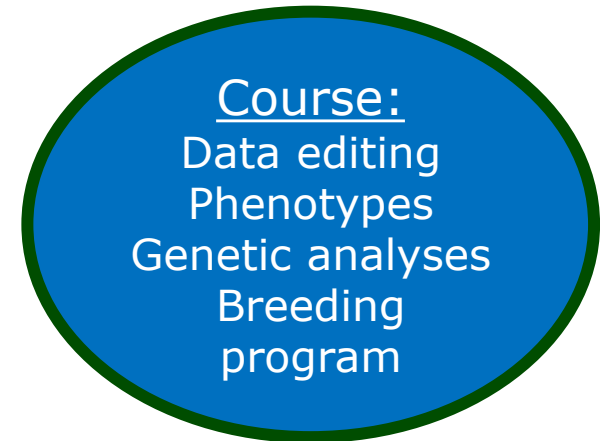


EOI Call for Papers Extended!



**Verona, Italy**  
29 May - 5 June 2026

Shaping the Future of Sustainable Livestock  
Let's meet in Verona



Course:  
Data editing  
Phenotypes  
Genetic analyses  
Breeding  
program



**The 77<sup>th</sup> EAAP Annual Meeting**  
07/11 September 2026 - Hamburg, Germany



# Any other business & closure

**Global  
Methane  
Genetics  
initiative**

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Global  
Methane  
Hub

Contact:  
[gmg@wur.nl](mailto:gmg@wur.nl)



# Developing livestock breeding strategies for enteric methane mitigation in developing countries: the case of Latin America

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# Turning the map: a LATAM viewpoint for Low Methane Beef

Global  
Methane  
Genetics  
initiative



*Joaquín Torres García*  
1874-1949

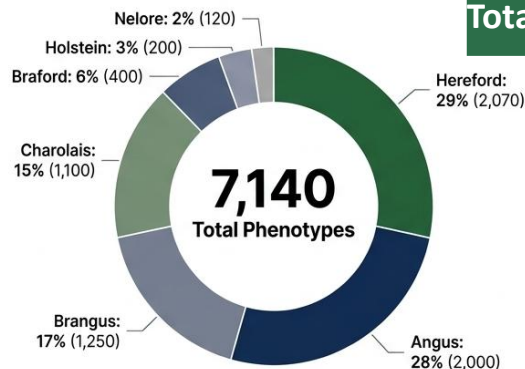


# I. Methane phenotypes per breed



Country	Angus	Braford	Brangus	Charolais	Hereford	Holstein	Nelore	Total
Argentina	1,220	300	220	0	320	200	0	2,260
Brazil	250	100	1,030	100	100	0	120	1,700
Mexico	0	0	0	1,000	0	0	0	1,000
Uruguay	530	0	0	0	1,650	0	0	2,180
<b>Total</b>	<b>2,000</b>	<b>400</b>	<b>1,250</b>	<b>1,100</b>	<b>2,070</b>	<b>200</b>	<b>120</b>	<b>7,140</b>

The Breeds

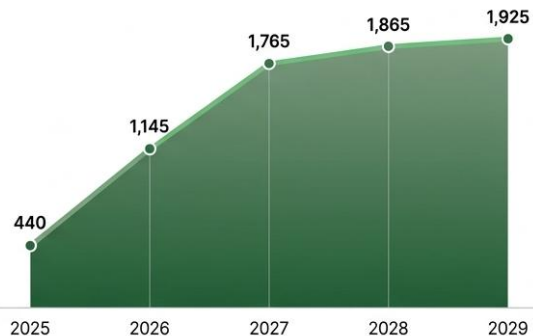


## II. Methane phenotypes per year

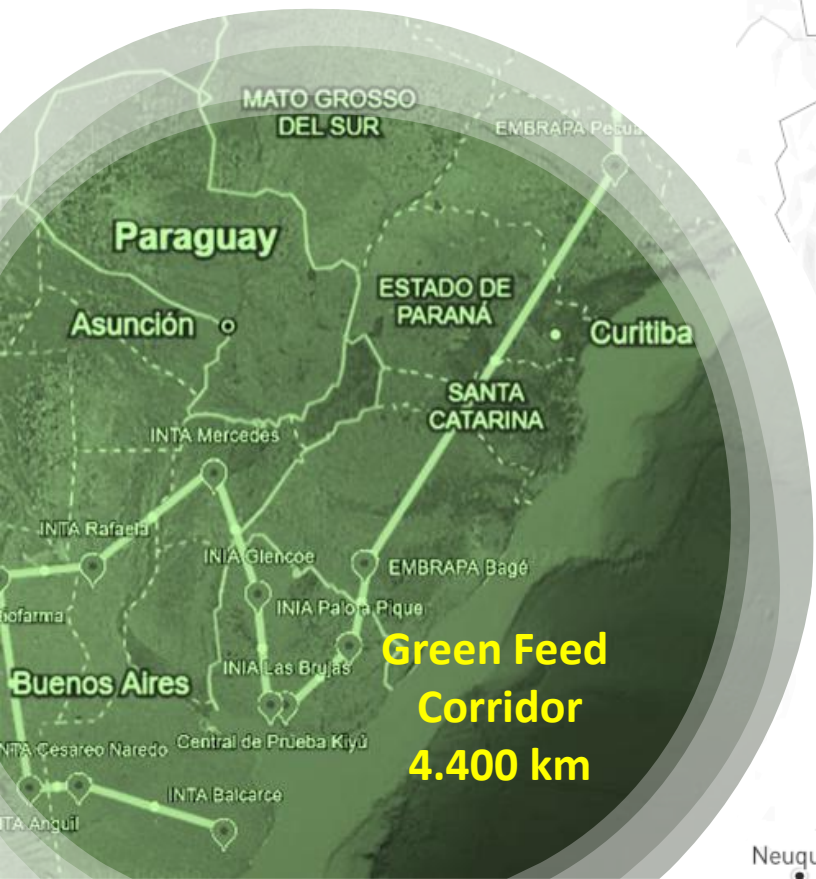
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Methane  
Genetics  
initiative



Country	2025	2026	2027	2028	2029	Total
Argentina	0	470	570	600	620	2,260
Brazil	190	190	375	445	500	1,700
Mexico	0	125	290	290	295	1,000
Uruguay	250	360	530	530	510	2,180
<b>Total</b>	<b>440</b>	<b>1,145</b>	<b>1,765</b>	<b>1,865</b>	<b>1,925</b>	<b>7,140</b>



# Green Feed in LATAM project



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# The Mysterious Affair of Bird Protection

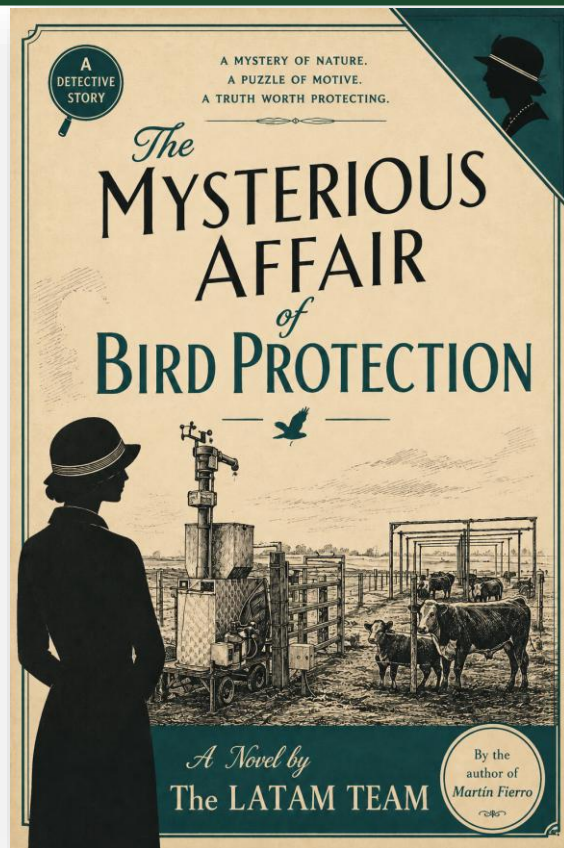


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**Embrapa**

**INIA**  
URUGUAY

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# Uruguayan Update

## LATAM: Low Methane Beef - Project

Developing livestock breeding strategies for enteric methane mitigation in developing countries:  
the case of Latin America



# 1. What are you working on now?

## Green Feed: Methane records

Global  
Methane  
Genetics  
initiative



### INIA Las Brujas (New)

- 2 Green Feed units fully operational
- Hereford Informative nucleus flocks (~45 cows)
- First 20 steers in 2026 (4 students UCU)



### Feed Efficiency Trial (Kiyú progeny test)

- Starts in July (Hereford,95 commercial young bulls, 300 days)
- Same units as Las Brujas



### INIA Glencoe (New)

- 1 new (pasture) Green Feed unit.
- 1 new GreenFeed units will be added.
- Hereford Informative nucleus (250 cows)



### INIA Palo a Pique

- 2 Green Feed units pasture (since 2020)
- Trailer-based PAC for on-farm phenotyping



# 1. What are you working on now?

## Green Feed: Methane records

Global  
Methane  
Genetics  
initiative



### Visit to EMBRAPA Bagé

Objectives:

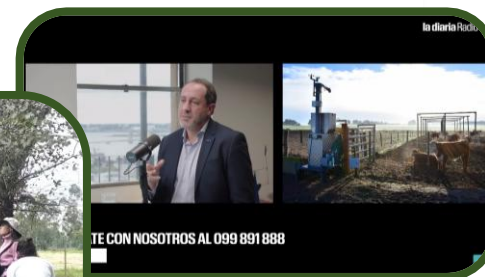
Technical + social.

- Green Feed installation
- Meet the counterpart.



### Extension & Outreach

- National radio coverage
- INIA's Board of Directors presentation



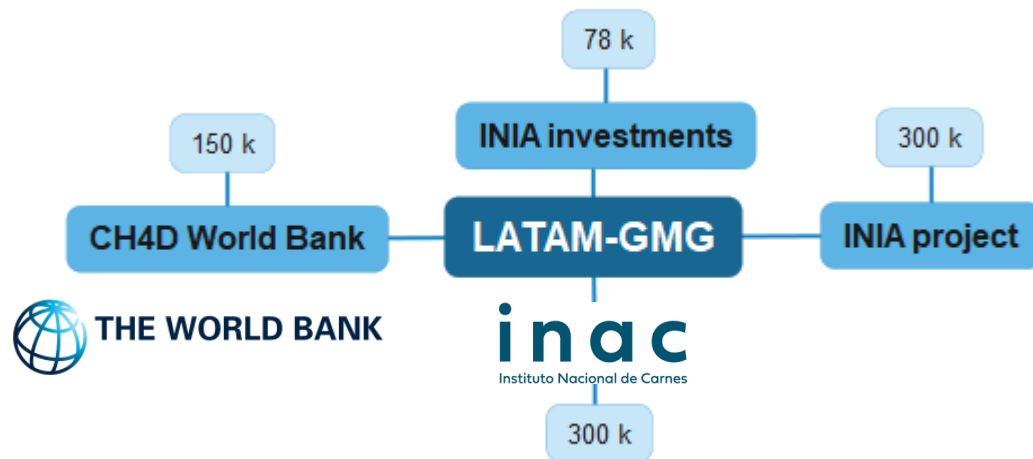
# 1. What are you working on now?

## Related project

Global  
Methane  
Genetics  
initiative



## Clean breeding



Sustain Sheep  
Green Breeding

# 2. What is your plan?



## Research & Field Activities

**Feed efficiency + methane trials (Kiyú):** Hereford

**Import 4 new Green Feeds:** for pasture (2 are renew)

**Genotyping:** All trial animals (DNA already collected)

**Rumen fluid sampling:** All animals in feed efficiency trials

**On-farm methane measurements:** in 2027

## Compliance, Engagement & Outputs

**Industry engagement:** Angus data from the industry will be incorporated, meeting with the Breeders Association



**Hereford - INIA technical field day** at INIA Glencoe with the Hereford breeder association



**Nagoya Protocol:** Procedures initiated with Ministry of Environment; bilateral agreement with Australia required

# 3. Roadblocks & Lessons Learned



## ● Administrative delays

**Slow agreement signatures;** internal + external delays (signed this week INIA-GMH). **One year+1.**

## ● Importation constraints

Rumen fluid preservation materials need importation (2–3 month typical delays)

## ● Nagoya Protocol compliance

Coordination with Ministry of Environment; bilateral agreement with Australia required

## ● Human resources

Recruitment of dedicated project staff took longer than expected (now advancing)

## ● Equipment availability

**Significant delays in equipment purchases. Over 7 months** of waiting just to place the order, then **another 3 months** to receive it.



## Key Lesson Learned

*Early anticipation of administrative processes, international permits, imports, and staff recruitment is critical — these factors directly condition the biological and experimental timeline.*

# 4. Data Collection Overview (2026)



**~450**  
 total animals  
 with methane data



Breed	Station	Cat.	n
Hereford	Kiyú ✓ <sup>®</sup>	Bulls	85
		Steers	20
	Las Brujas* <sup>®</sup>	Heifer/Cows	35
		Glencoe	Heifers
Angus	Palo a Pique ✓ <sup>®</sup>	Cows	22
		Heifers	102
		Calves (F)	112
<b>Total</b>			<b>451</b>

\* Feed intake: Titanium dioxide (TiO<sub>2</sub>)

✓ RFI (intake trials)

<sup>®</sup> Rumen fluid sampled



# 5. Topics for Discussion



## Protocol Harmonization

Strong need to coordinate and standardize measurement protocols, particularly for pasture-based animals and on-farm scenarios. Alignment across GMG partner countries is essential for data comparability.

**Agscen/Optiweigh: Can also be used to measure methane?**

## World Congress / GMG Meeting + BlueGrass

Clarify objectives, expected outputs, and coordination mechanisms for the upcoming project meeting and associated international events.

**Confirm who will participate in the WCGALP** from among the participants of this project  
Interactions with BlueGrass (Angus + Hereford)

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*Developing livestock breeding  
strategies for enteric methane  
mitigation in developing countries:  
the case of Latin America*



LATAM Project– GMG Initiative

**inia**  
URUGUAY

# Developing livestock breeding strategies for enteric methane mitigation in Latin America

Argentina is building a regional platform that integrates methane phenotyping, genetics, microbiota and real-world production systems to deliver methane-efficient livestock for a sustainable future.



Methane phenotyping

Advanced measurement technologies



RFI integration & feed efficiency

Measuring efficiency together with methane



Genetics & genomics

High-density genotyping for selection



Rumen microbiota

16S, metagenomics and multi-omics



Multi-environment platform

Across diverse production systems and regions



Public-private collaboration

Connecting science, breeders and industry



Global Methane Hub



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# What we are working on now in Argentina

From real production systems to genetic improvement and system-level carbon impact: a **connected pathway** for climate-smart livestock.



## MEASURING METHANE IN REAL SYSTEMS

Field trials across conditions, diets and mitigation strategies



## NUTRITION, ADDITIVES, BY-PRODUCTS, PASTURES TRIALS

Different techniques to evaluate performance and emissions



Additives and by-products



Nutrition trials



Pasture trials



Laboratory analysis



Gas measurements



Animal measurements



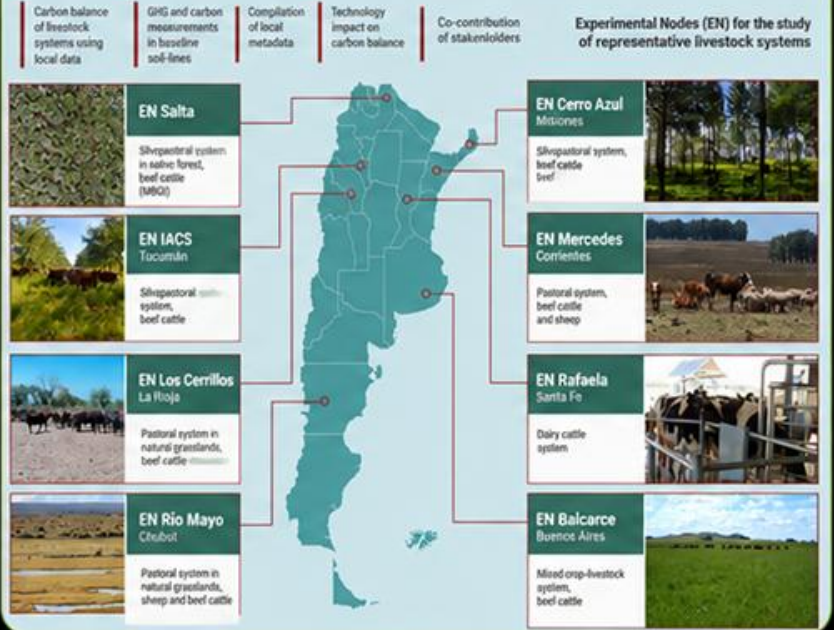
## SYSTEM-LEVEL IMPACT & CARBON BALANCE

Scaling genetic progress to reduce emissions at system level

**Project 097**  
Greenhouse gas (GHG) emissions and carbon capture in agricultural, livestock and forest systems

**Long-term studies**

Update: April 2024



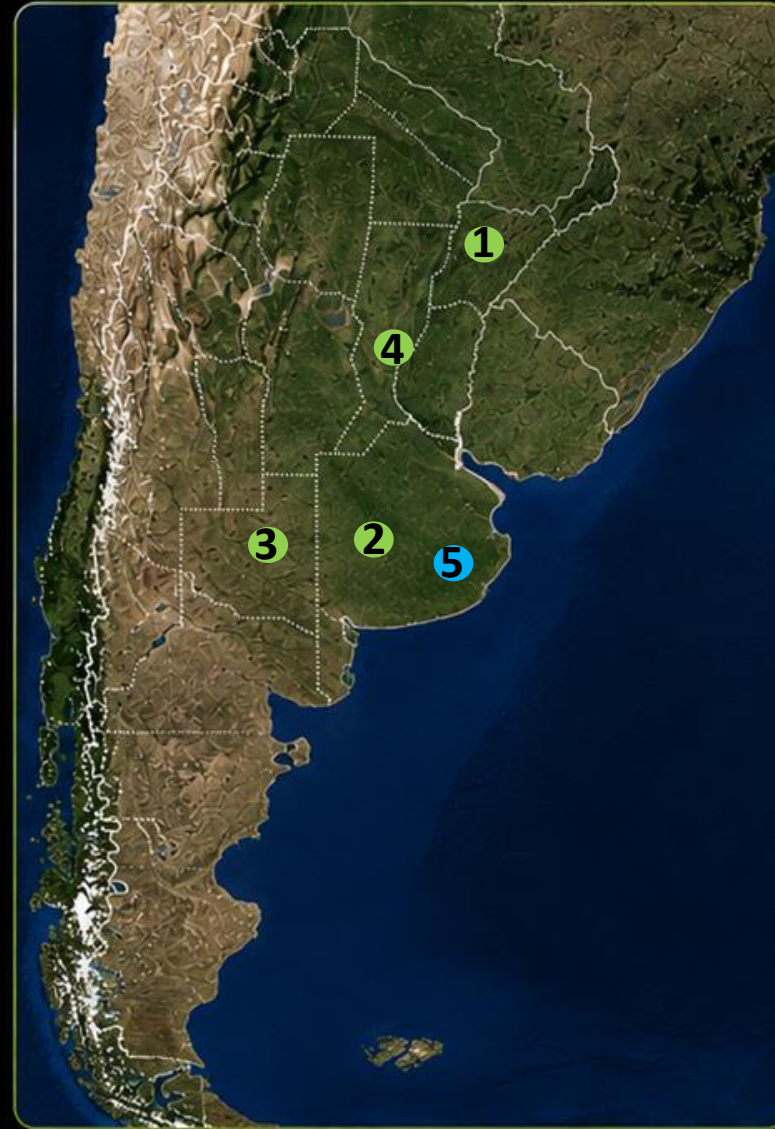
# What we are working on now in **Argentina**

Building a national platform that integrates methane phenotyping, efficiency (RFI), genetics, and microbiota and data science to deliver methane-efficient livestock for a sustainable future.

## NATIONAL PHENOTYPING NETWORK

● RFI + CH<sub>4</sub>   ● CH<sub>4</sub> only

 <p><b>1</b></p> <p>Mercedes (Corrientes) RFI + CH<sub>4</sub></p> 	 <p><b>2</b></p> <p>Cesáreo Naredo (Buenos Aires) RFI + CH<sub>4</sub></p> 	 <p><b>3</b></p> <p>Anguil (La Pampa) RFI + CH<sub>4</sub></p> 	 <p><b>4</b></p> <p>Rafaela (Santa Fe) RFI + CH<sub>4</sub></p> 	 <p><b>5</b></p> <p>Balcarce (Buenos Aires) CH<sub>4</sub> only</p> 
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# How our data collection looks like

## GRAZING MEASUREMENTS – GREENFED



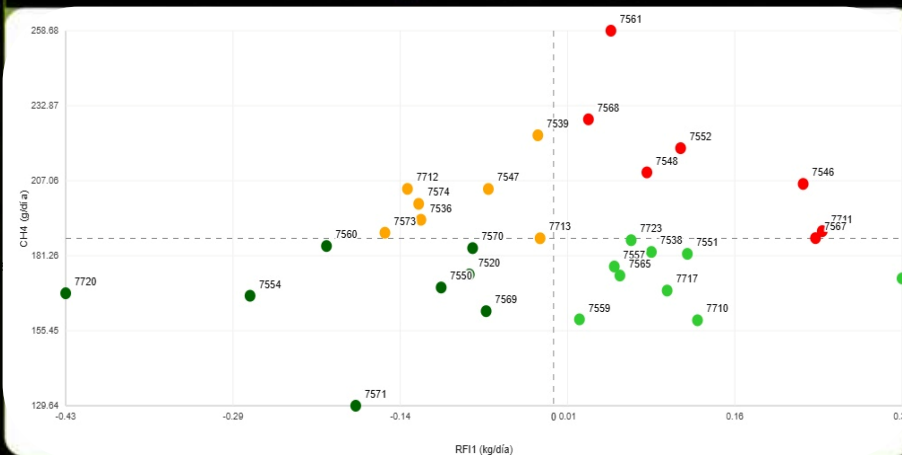
Grazing on alfalfa and natural pastures

## RFI – GREENFED



RFI measurements in real production systems

## RFI vs CH<sub>4</sub> MEASUREMENTS



## NUMBER OF METHANE PHENOTYPES COLLECTED (CH<sub>4</sub> MEASUREMENTS)

Reporting year	Braford	Brangus	Angus	Hereford	Holstein	TOTAL
2026 (projected)	20	20	300	80	50	470
2027 (projected)	80	60	300	80	50	570
2028 (projected)	100	60	310	80	50	600
2029 (projected)	100	80	310	80	50	620
TOTAL projected	300	220	1220	320	200	2260

## WE RECOVER AND GENERATE GENETIC INFORMATION



Retrieving genetic information from measured animals



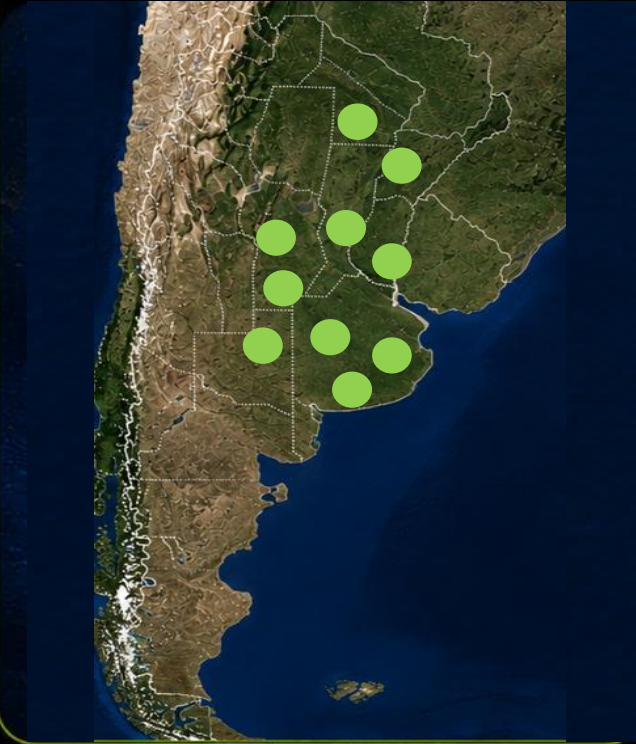
# How our data collection looks like

ID	Sire	Dam	Breed	Stud	Cat	Date Mean LW	Mean LW(kg)	Mean MW (kg/dia)	ADG (kg/d)	Date FatEco	FatEco (mm)	DMI_Obs (kg/d)	CH4 (g/d)	DMI_E (kg/d)	RFI (g/kgDMI)	CH4 (g/kgADG)
32010004107520	HI648	22010004103417	Hereford	7	Bull	27/7/2025	351,1	81,1	1,76	28/8/2025	3,3	8,76	174,8	8,84	-0,08	99,1
32010004107530	78144297	22010004103421	Hereford	2	Bull	27/7/2025	325,7	76,7	1,11	28/8/2025	4,8	7,09	187,0	7,16	-0,07	167,9
32010004107533	FL018D	22010004103424	Hereford	6	Bull	27/7/2025	408,3	90,8	1,39	28/8/2025	4,0	8,96	193,1	8,94	0,02	138,5
32010004107536	HI648	22010004103481	Hereford	7	Bull	27/7/2025	424,5	93,5	1,51	28/8/2025	4,9	9,28	193,6	9,40	-0,12	128,5
32010004107538	BI192	22010004103420	Hereford	5	Bull	27/7/2025	365,8	83,6	0,99	28/8/2025	3,4	7,60	182,5	7,51	0,09	185,2
32010004107539	4335755	22010004103425	Hereford	1	Bull	27/7/2025	326,9	76,9	1,26	28/8/2025	6,1	7,45	222,7	7,46	-0,01	177,3
32010004107546	BI192	22010004103422	Hereford	5	Bull	27/7/2025	416,5	92,2	1,12	28/8/2025	6,0	8,74	206,0	8,52	0,22	184,0
32010004107547	4335755	22010004103423	Hereford	1	Bull	27/7/2025	380,0	86,1	1,47	28/8/2025	4,9	8,62	204,2	8,68	-0,06	139,1
32010004107548	4335755	22010004103428	Hereford	1	Bull	27/7/2025	405,1	90,3	1,45	28/8/2025	7,1	9,10	209,9	9,02	0,08	144,3
32010004107549	ML009	22010004103430	Hereford	9	Bull	27/7/2025	331,8	77,7	1,58	28/8/2025	2,8	8,48	173,4	8,17	0,31	110,1
32010004107550	ML009	22010004103436	Hereford	9	Bull	27/7/2025	278,7	68,2	1,32	28/8/2025	2,6	6,75	170,3	6,85	-0,10	128,6
32010004107551	ML009	22010004103434	Hereford	9	Bull	27/7/2025	339,1	79,0	1,67	28/8/2025	3,0	8,58	181,9	8,46	0,12	109,2

# Further planned activities



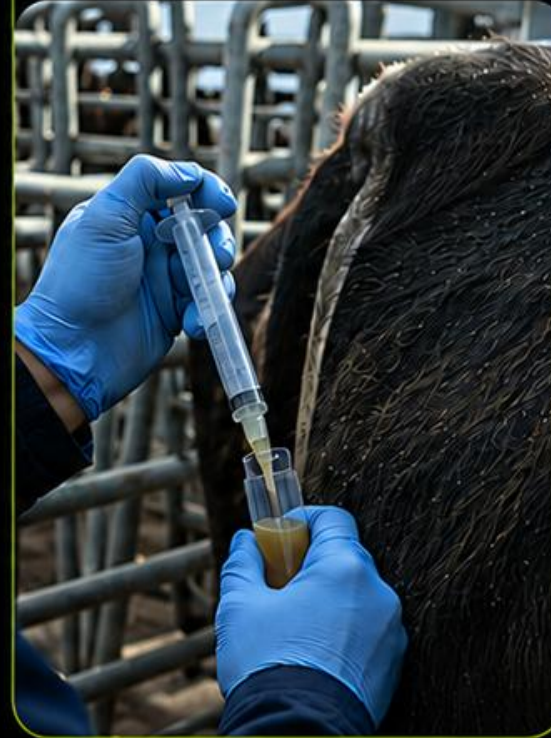
Increase phenotyping capacity with new equipment



Incorporate private phenotyping centers



Rumen microbiota sample collection



Include more private herds



# Roadblocks and **key lessons**



## STANDARDIZATION IS CRITICAL

Common protocols, calibrations and QA/QC across techniques ensure data comparability and reliability.



## EQUIPMENT TRAINING AND CALIBRATION TAKE TIME

High-quality phenotyping demands skilled teams. Training programs, exchanges and practical capacity-building take time.



## EXPERIMENTAL HERDS CONNECTED TO BREEDING POPULATIONS ARE ESSENTIAL

Experimental herds linked to breeding populations ensure a steady supply of animals and a predictable flow of high-quality data.



## PARTNERSHIPS WITH PRIVATE SECTOR ACCELERATE INNOVATION

Strategic partnerships with private centers and companies speed up innovation, infrastructure development and technology adoption.



## NEXT KEY DECISION

What equipment to purchase to increase phenotyping capacity?



# GMG Latin America's Project – Brazilian progress update

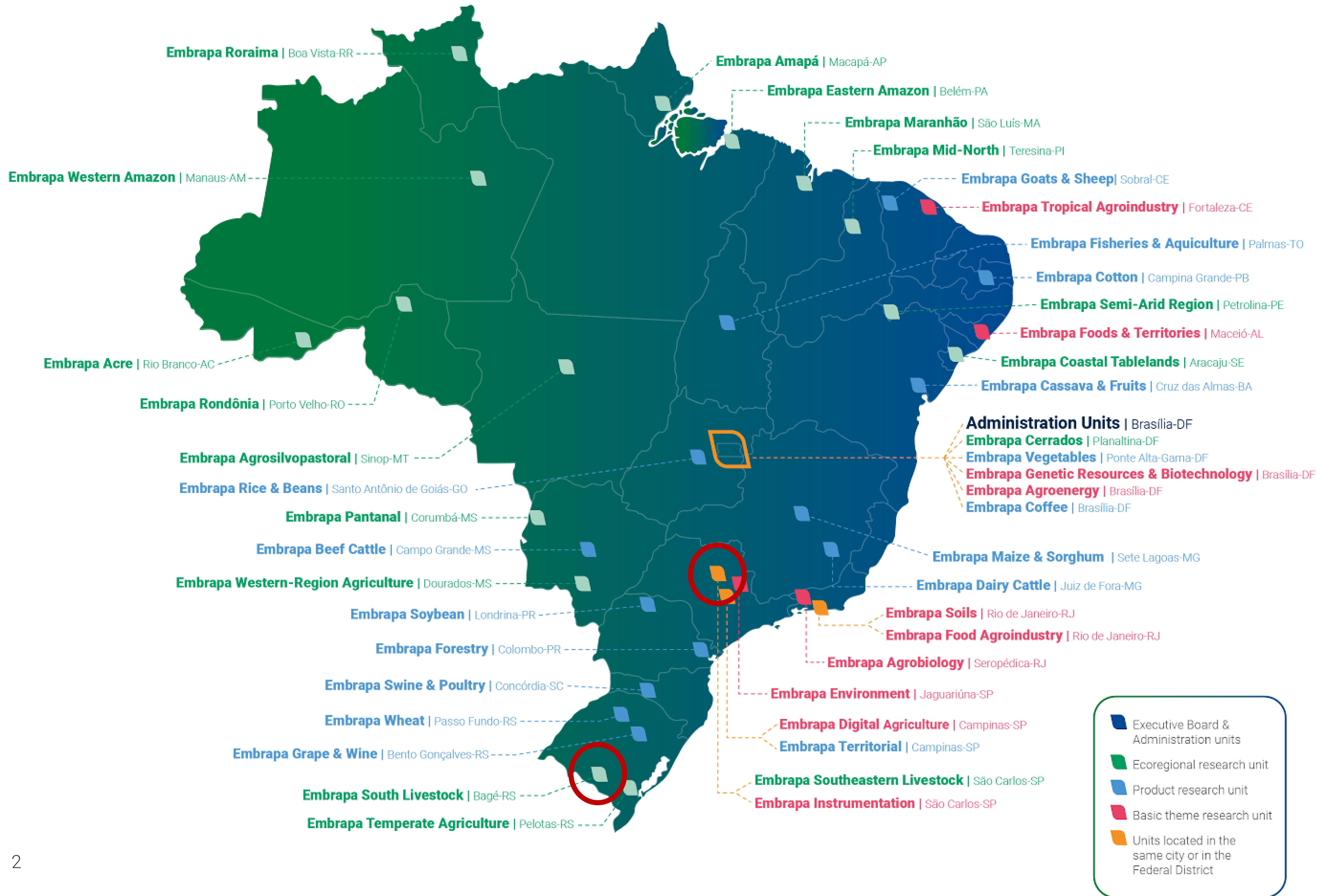
Fernando F. Cardoso, PhD  
Head of Embrapa Southern Livestock

GMG Latin America Working Group meeting  
Uberaba, May 12, 2026.



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AGRICULTURA E  
PECUÁRIA



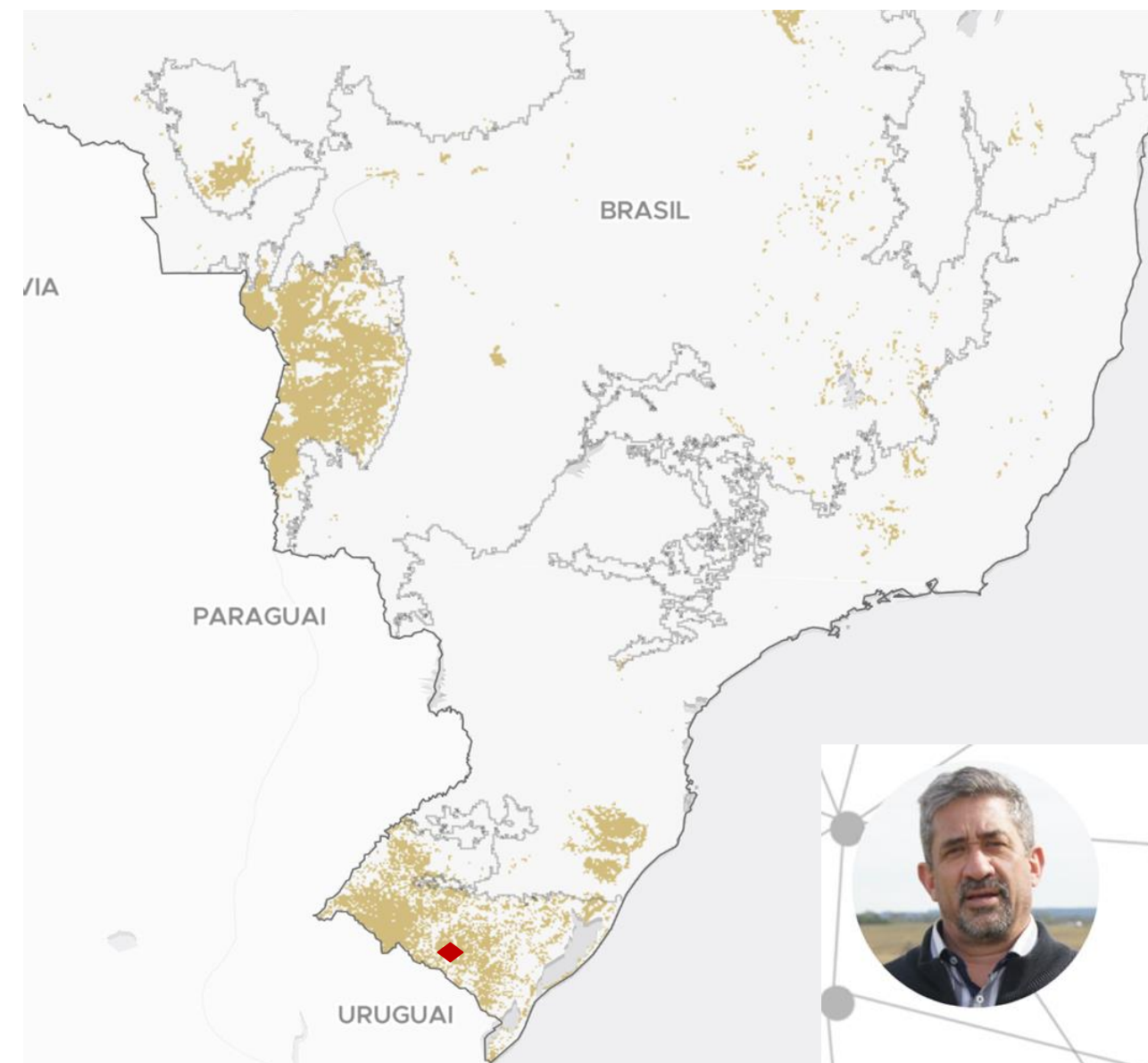


# EMBRAPA in Brazil

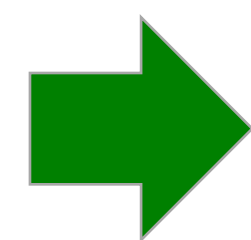
**43** Decentralised Units (Research Centres) in all Brazilian regions

# Embrapa Southern Livestock

- Established in 1975 in Bagé/RS
- Experimental area of 2,783.6 hectares

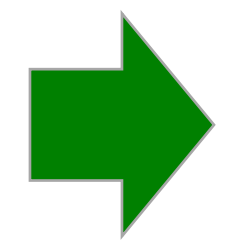


**Focus of R&D**



generating multifunctional livestock systems for sustainable healthy food production in the subtropical region of Brazil

**Team**



32 researchers (96 employees)



# Genetic improvement roles

- Genetic evaluation programs (since 2008)
  - Partnership with breed associations
  - On-farm data collection
  - Bioinformatics and genomics lab (Labegen)
- Performance tests of seedstock cattle (since 2003)
  - Center of excellence in genetics, nutrition and sustainability



# Center of excellence in genetics, nutrition and sustainability



- Feed efficiency and methane emission tests
- Nutrition experiments with supplements and additives (by-products from local industry)
- Facilities
  - 4 pens ~30 bulls each
  - 19 feeders - 4 with access gate
  - 4 water troughs with scales
  - 4 GreenFeed Systems (**new**)



# GMG Latam Project – Current work

- Finishing the infrastructure and settings for Green Feed system measurements
- Two recent trainings on setup and use of Green Feed systems
- Feedlot measurements of feed efficiency in Angus, Brangus, Hereford and Braford 18 month old bulls
- Negotiating arrangements with ABCZ for Nelore data collection



# GMG Latam Project – Planned further activities



- Scale methane emissions measurements for other animal categories (cows, calves and heifers) on pasture at experimental station (Brangus herd) and commercial farms (All target breeds)
- Sample rumen fluid from most evaluated animals
- Set up the local database on the GMG/WUR format



# GMG Latam Project – Roadblocks/lessons learned



- Sending samples to Australia (Legal authorizations and Sample Preservation)
- Consent for ruminal fluid collections from farmers



# GMG Latam Project – Data collection

- Expected phenotypes per breed

Country	Angus	Braford	Brangus	Charolais	Hereford	Nelore	Total
Brazil	250	100	1.030	100	100	120	1,700

- Expected phenotypes per year

Country	2025	2026	2027	2028	2029	Total
Brazil	190	190	375	445	500	1,700

- SF6 data

Angus	Braford	Brangus	Hereford	Total
68	15	120	19	222

- Starting now with the GreenFeeds



# Thank you!

fernando.cardoso@embrapa.br



MINISTÉRIO DA  
AGRICULTURA E  
PECUÁRIA





# inifap

Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias



Universidad Veracruzana  
Universidad Veracruzana Intercultural

## MEXICAN UPDATE

*LIVESTOCK BREEDING STRATEGIES FOR ENTERIC METHANE MITIGATION IN DEVELOPING COUNTRIES – THE CASE OF LATIN AMERICA*

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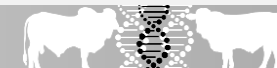
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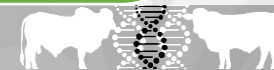
# 1. What are you working on now in your region



**Genetic Evaluation:** Analysis of registered beef cattle breeds such as Charolais, Simmental, and Brangus Rojo, among others, focusing on growth and reproductive traits.

**Dairy cattle:** Methane emission measurements in dairy cattle using sniffer systems integrated into robotic milking facilities (~80 animals, Querétaro, Mexico).

**Beef cattle:** Measurements in crossbred beef cattle for dietary trials conducted by the National Institute for Forestry, Agriculture and Livestock Research (>40 animals simultaneously, Durango, Mexico).

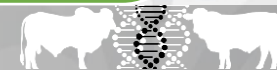


## 2. What are your planned further activities



**Technology Development:**  
*Development of an automated system for continuous methane sample collection using GrowSafe equipment, combining information extracted from sniffer systems, in collaboration with the Monterrey Institute of Technology.*

**Upcoming Research Activities:**  
*Planned initiation of methane measurements in beef cattle at the facilities of the Autonomous University of Nuevo León by late July or early August, subject to funding availability.*



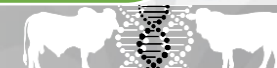
### 3. Any roadblocks you are facing or lessons learned



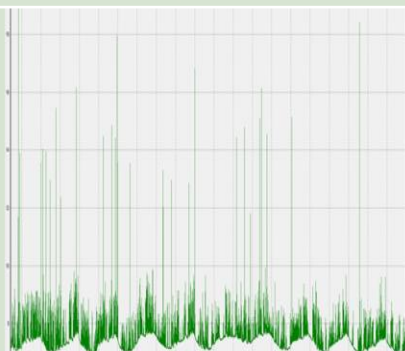
**Installation Protocols:**  
*Development of standardized installation and feeding system protocols to ensure accurate and consistent methane measurements across facilities with different structural designs.*



**Upcoming Research Activities:**  
*Methane measurements at the facilities of the Autonomous University of Nuevo León have not yet started due to pending access to project funding.*



## 4. What does the data collection look like



*Equipment & Methodology:  
Methane measurements are  
conducted using  
GuardianNG sniffer-type  
equipment*

*Methane Database:  
Approximately 125 Charolais  
cattle projected to have  
methane emission data  
collected by 2026.*



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**THANK YOU VERY  
MUCH FOR YOUR  
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