

# **Sheep Genetics for increasing feed efficiency and reducing methane emissions**

Visit to Uruguay Falkland's delegation

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# Content

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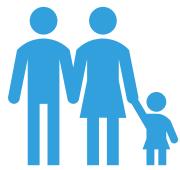


Agroecological focus

# Agroecological focus: Role of Genetics



Animal Welfare



URUGUAY  
BEEF & LAMB

Social aspects



Conservation priority species

Biodiversity

Quantity & Quality



Evaluaciones Genéticas

INIA  
URUGUAY

SECTARIADO  
URUGUAYO  
SILVÍCOLA



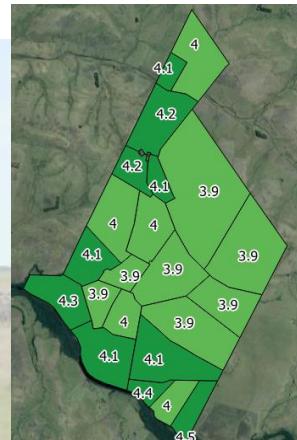
Smarter



Life Cycle Assessment & Carbon Stock



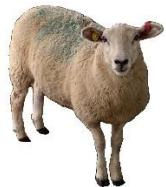
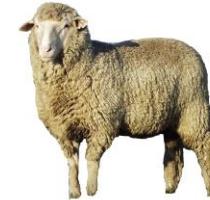
Environmental impact



Ecosystem Integrity Index

Blumetto et al. 2019

INIA



Temperament

**Behaviour & Welfare**

Health

FEC

FAMACHA

Foot rot

Wool traits: FD, yield,  
SL, colour



Quality of products



Resilience

BCS

Lamb survival

Twinning rate

Fertility

Genetic originality

Reproduction

Maternal ability

Scrotal circ

Environmental impact

Efficiency & Production

BW

REA - BF

RFI

Feed intake

Methane



# Number of animals recorded per trait and breed

Traits	Merino	Dohne	Corriedale	Texel	Total (end 2022)
<b>Individual intake (kg/a/d)</b>					
<b>Wool data (5 traits)</b>					
<b>Rib eye area + Backfat</b>	<b>981</b>	<b>357</b>	<b>368</b>	<b>129</b>	<b>2.345</b>
<b>Condition score</b>					
<b>FEC</b> 	+390*	+120*			
<b>DNA</b>					
<b>Methane (g/a/d)</b>	<b>981</b>	<b>230</b>	<b>298</b>	<b>129</b>	<b>2.275</b>
<b>Genotype (50 K)</b> 	x		x	x	<b>1.868</b>

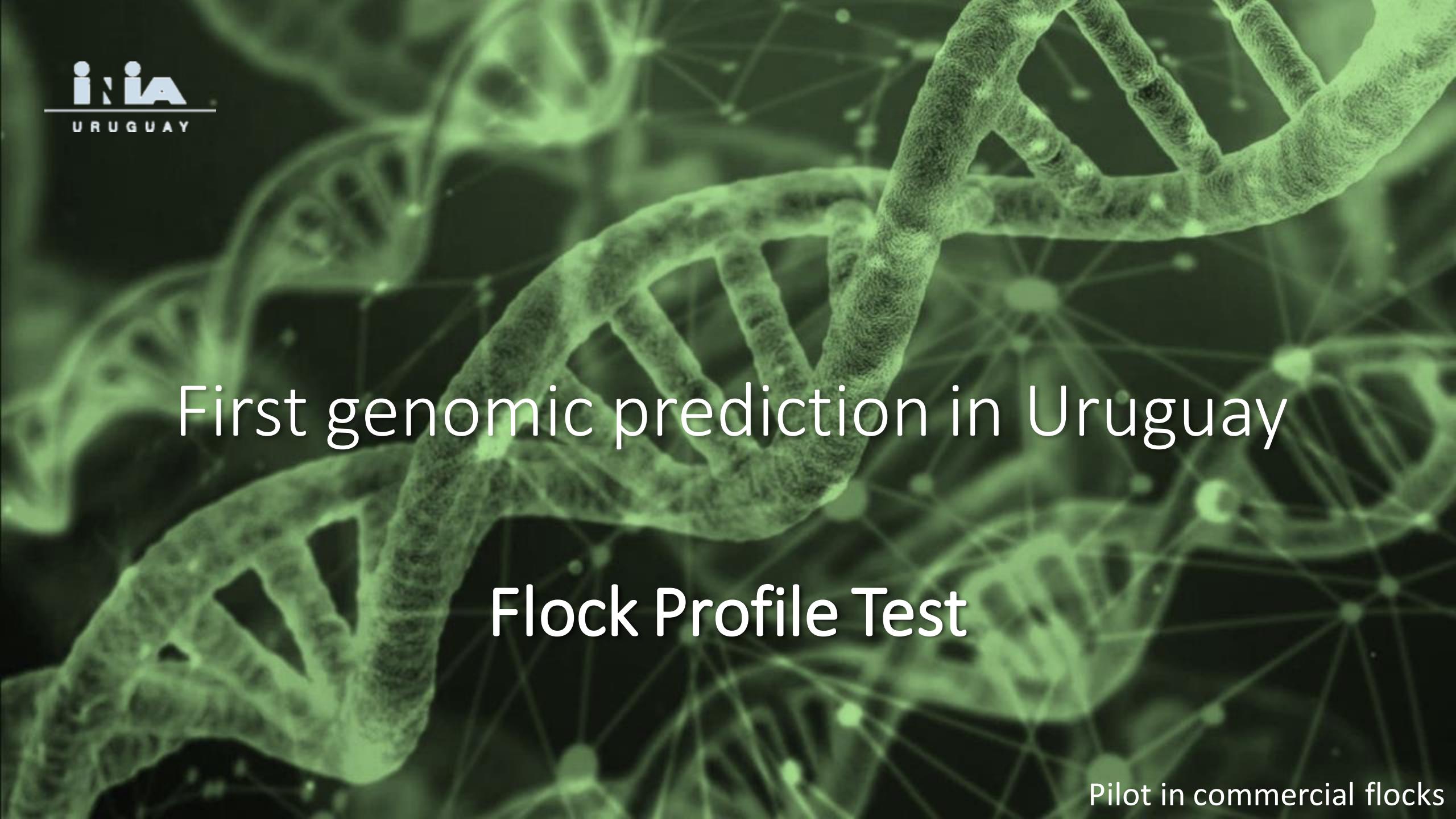
\* In 2022

# Genetic parameters for new traits



	RFI	Feed intake	O <sub>2</sub>	CH <sub>4</sub>	CO <sub>2</sub>	GFW
RFI	<b>0.27</b>					
Feed intake		<b>0.38</b>				
O <sub>2</sub>			<b>0.26</b>			
CH <sub>4</sub>				<b>0.23</b>		
CO <sub>2</sub>					<b>0.27</b>	
GFW						<b>0.41</b>

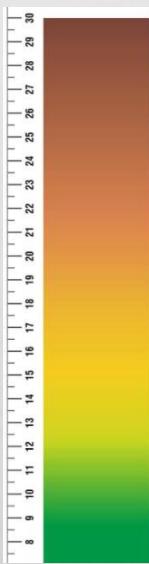


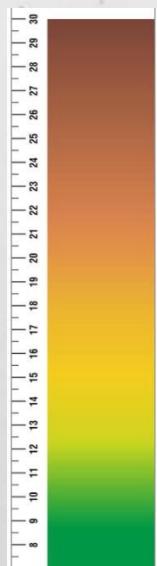


First genomic prediction in Uruguay

Flock Profile Test

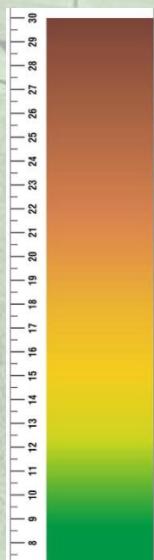
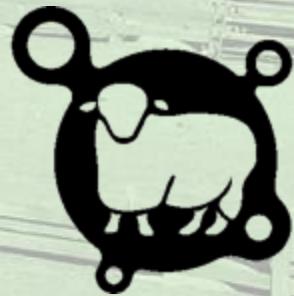
Pilot in commercial flocks







2000



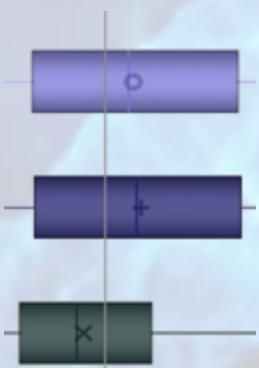
# Predictomics

**36.854 sheep with and without phenotype**

**1.652 genotyped with 10.691 SNP(10K).**

Ram team from La Soledad y Manatiales **20 & 20**

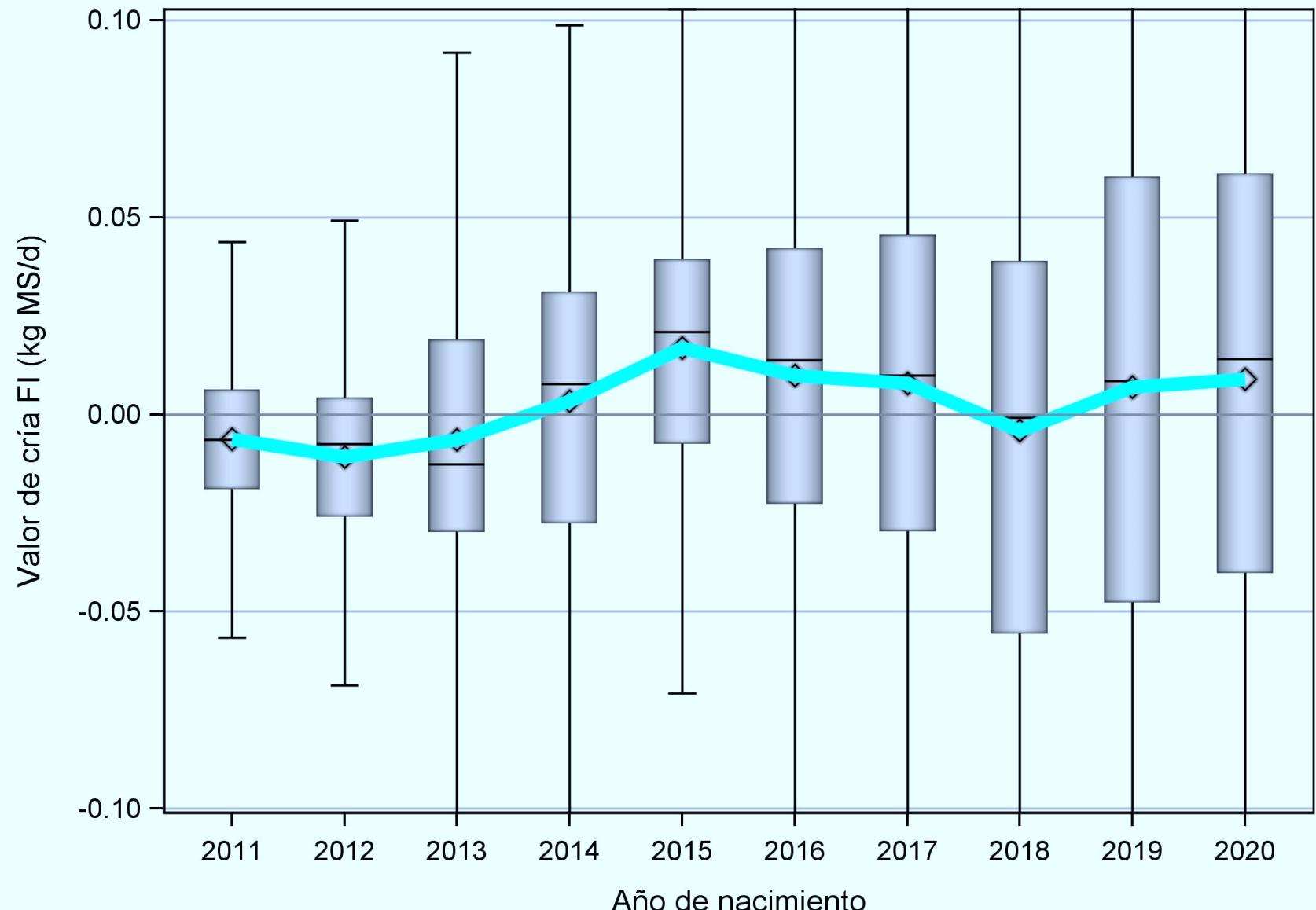
**Comparison with:**



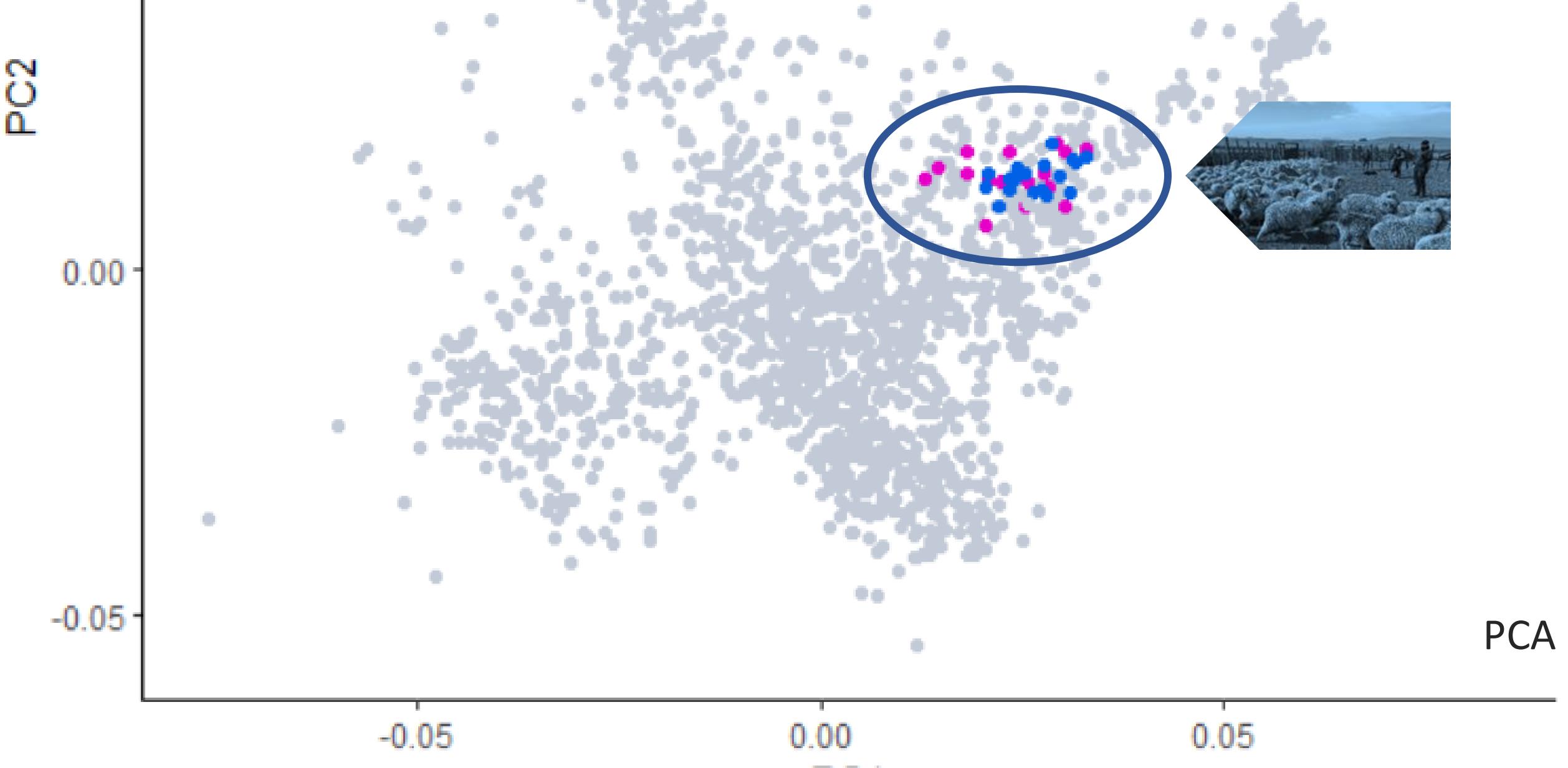
- ✓ All stud-flocks (no INIA, n>10.400)
- ✓ All INIA Glencoe nucleus (without 2020 drop, n>5.200)
- ✓ INIA 2020 drop (n=359)

# Genetic trends Merino: Glencoe Nuclues

Consumo MS - 10 años - INIA Glencoe

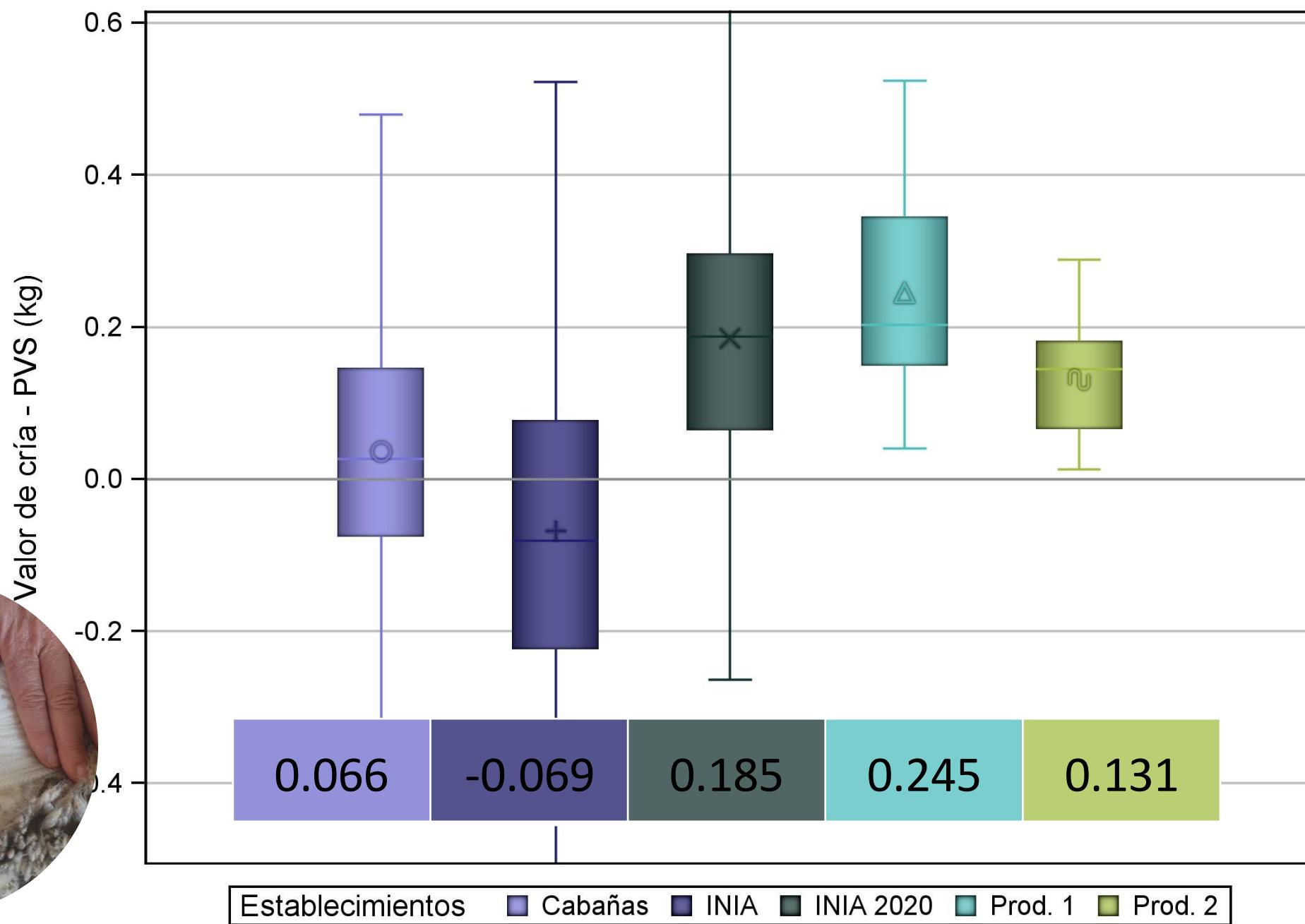


# ¿How close are the commercial flocks to the studs?

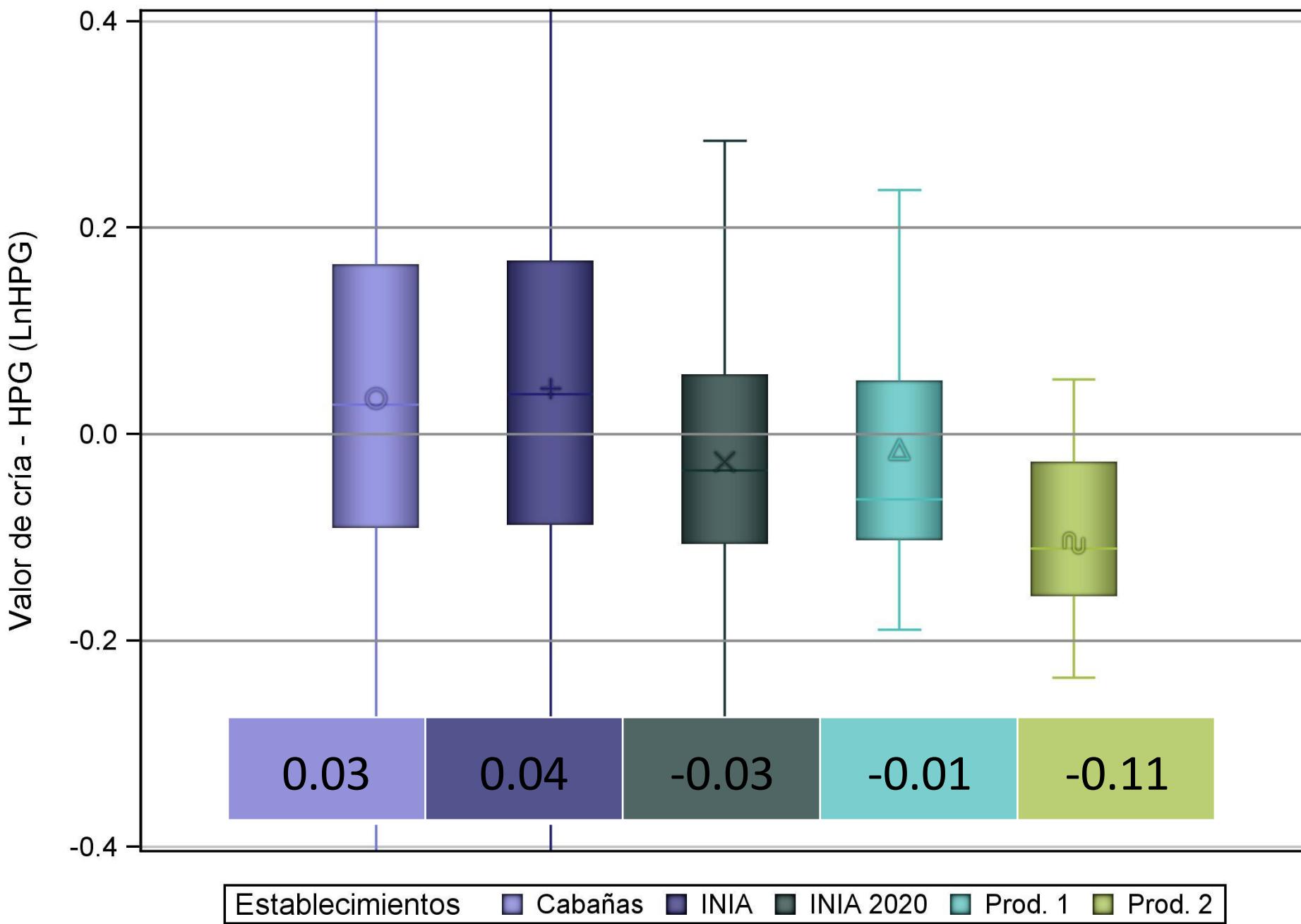


# Peso de Vellón Sucio - Valores de Cría

acc.  
0.47



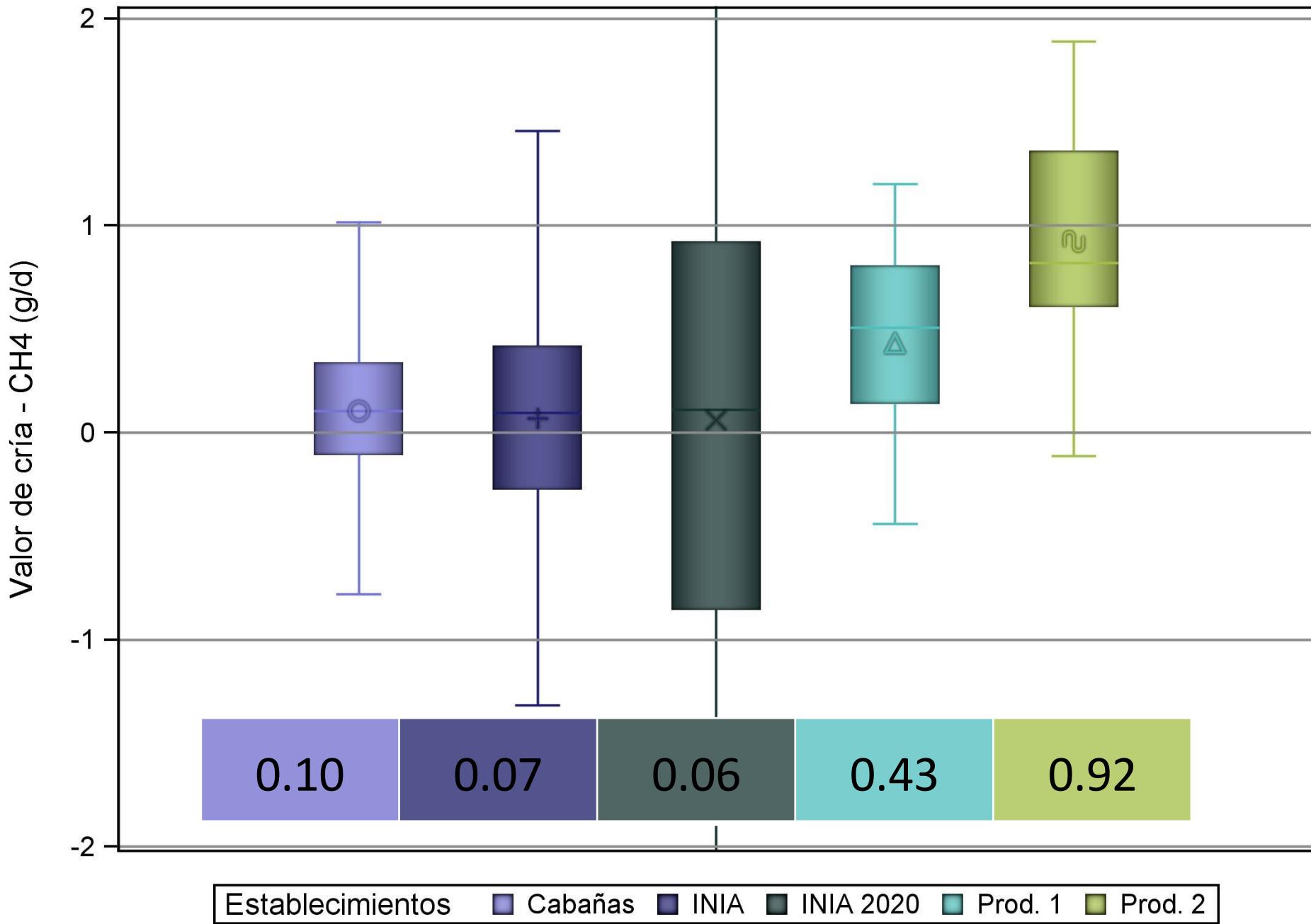
# HPG - Valores de Cría



acc.  
0.41

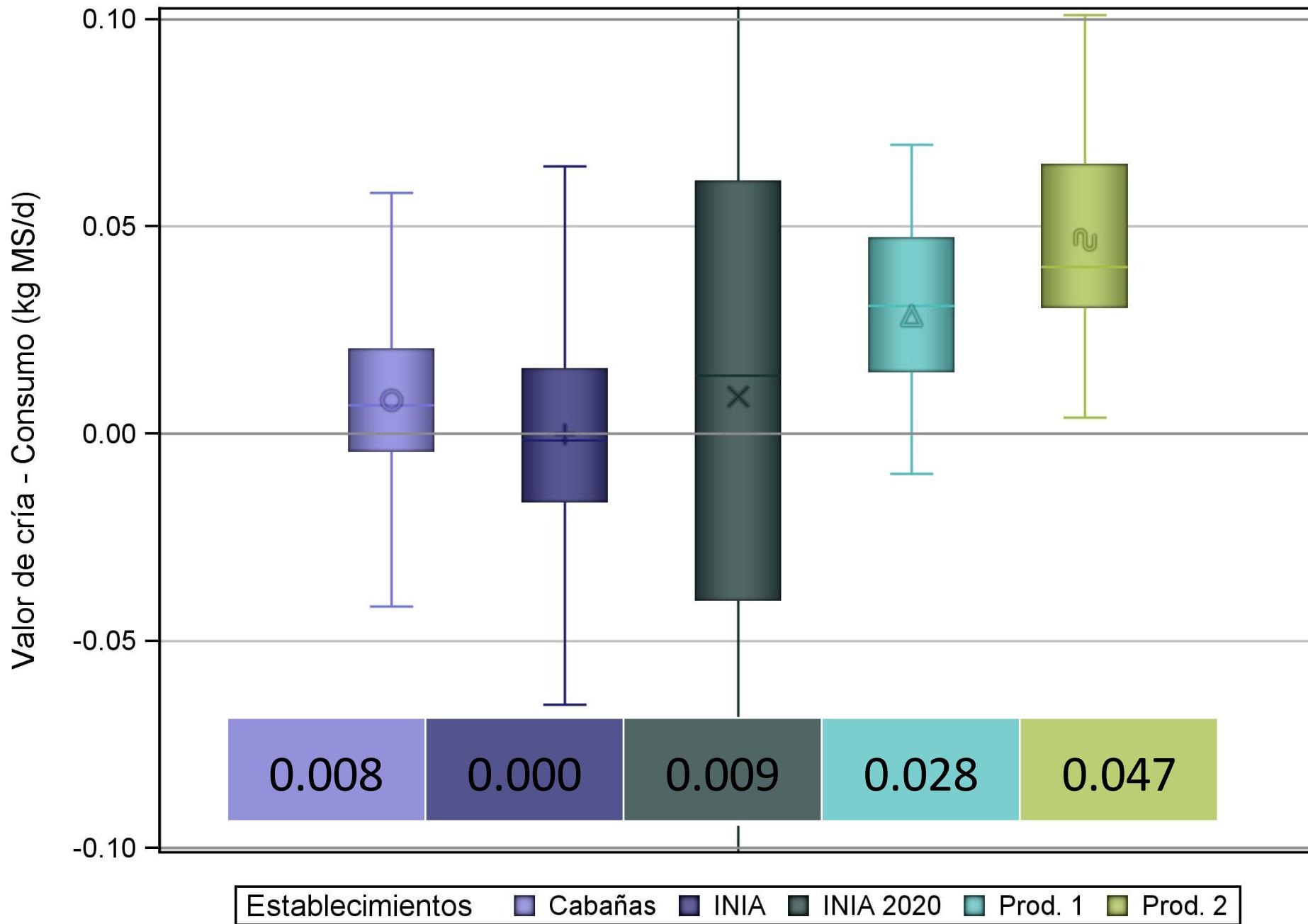


## Metano - Valores de Cría



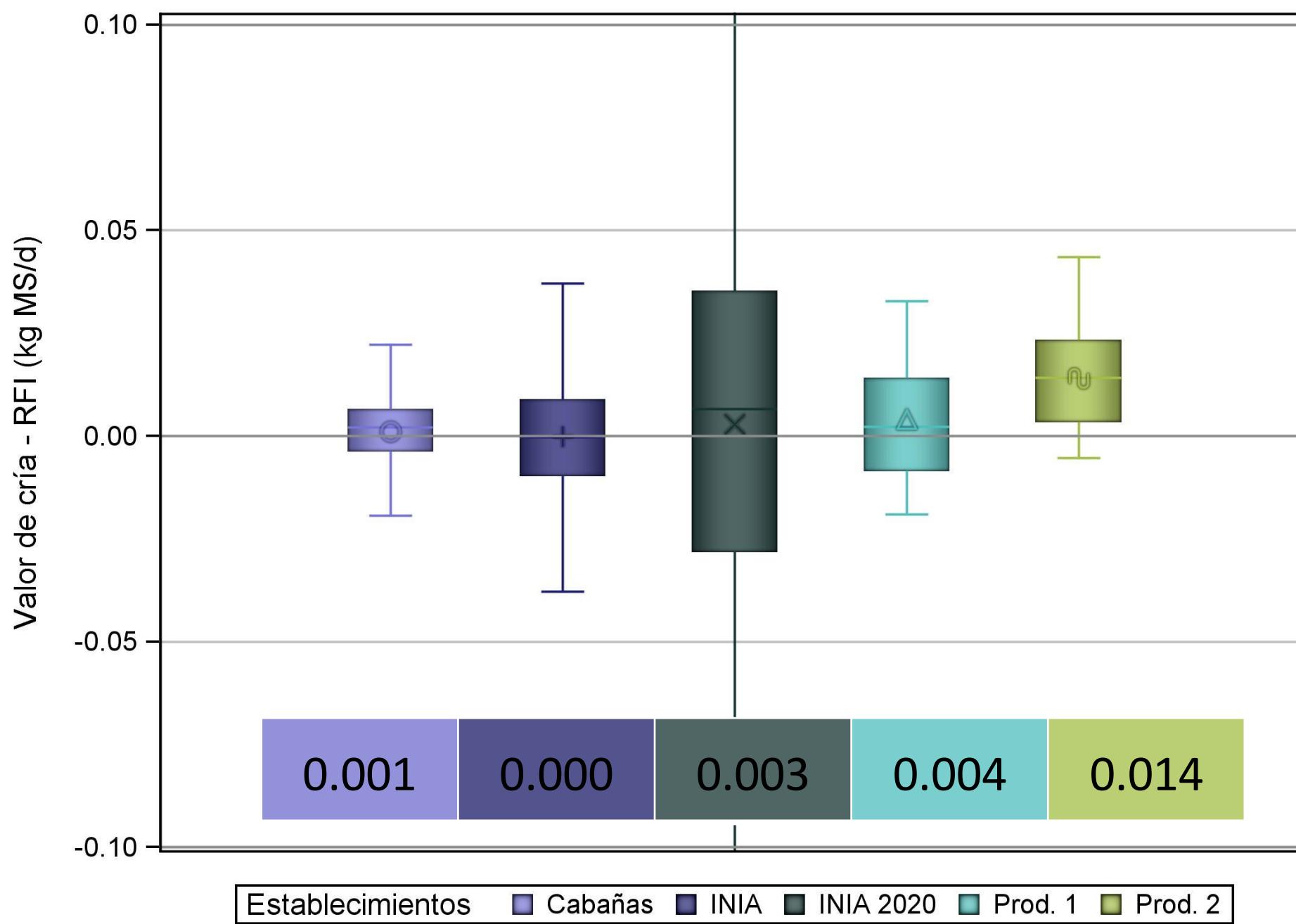


## Consumo MS - Valores de Cría



acc.  
0.22

## RFI - Valores de Cría





# Agroecology: Implementation in sheep systems



# Agroecology: Implementation in sheep systems

*The new breeding pyramid*

## Informative Nucleus



**Research platform:** generation of knowledge, training courses for technicians and field days for farmers

## Stud Flocks



**Applied Research platform:** stud flocks with specific traits (e.g. FEC, Methane), reference farmers, pilot plan for design of agroecological transitions, field days

## Commercial farmers



**Validation & Development Platform:** Initial picture (environment & genetics), define agroecological transition (co-innovation) linked to the value of the system (e.g. wool from a generative agriculture)

Top Industry



Brands



Customers





*Thank you for your attention*

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