Correlations between methane emissions and production traits In Australian Merino Sheep

Camila Balconi Marques*, Ignacio De Barbieri, José I. Velazco, Elly A. Navajas and Gabriel Ciappesoni | Instituto Nacional de Investigación Agropecuaria, Uruguay | *cbalconi @inia.org.uy

Introduction

Breeding sheep for low methane (CH_4) emissions is an attractive mitigation strategy which implementation requires exploring the impact on other traits.

Aim

Estimate the correlations between **CH_4 and different production traits**

Material and Methods

Using portable accumulation chambers, data of CH_4 emissions of 863 animals born between 2018 and 2020, sired by 19 rams was collected

Feed Efficiency	Growth	Carcass Quality	Feeding Behavior	Fecal egg count	Wool
• Feed Intake • Residual Feed Intake (RFI)	• Average Daily Gain (ADG) • Metabolic Weight (MWT) • Yearling Body Weight (BW)	• Rib-eye area (REA) • Fat thickness (FT)	• Number of Meals	• Log_e FEC	• Staple Length (SL) • Greasy Fleece Weight (GFW) • Fiber diameter (FD)

Traits elected for estimating correlations

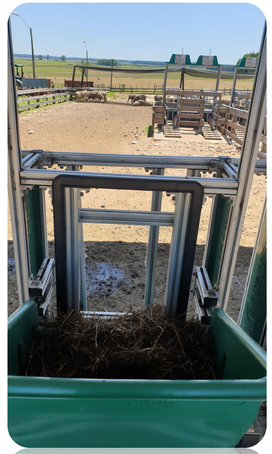
CH_4 (g/d) = sex-pen-trial + animal + date-hour

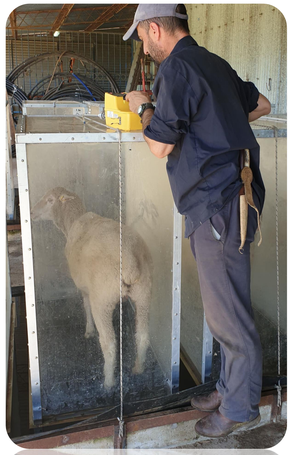
Model

Residuals of the mentioned traits were estimated using a **model including age, type of birth and sex-pen-trial** as fixed effects, with the exception of **RFI.**

Results and Conclusions

- The coefficients of correlation indicated that **CH_4** was **not associated** with **GFW** and **FD** residuals ($p>0.05$).
- **Significant** ($p<0.05$) but **low** correlations were estimated for **SL**, **Log_e FEC**, **RFI**, **FT** and **number of meals**, with values ranged from **0.09** to **0.15**.
- **Higher correlations** were found between **CH_4** and **REA** and **BW** (**0.23** and **0.29**, respectively).
- The **strongest associations** were with **ADG** (**0.36**), **feed intake** (**0.45**) and **MWT** (**0.46**).
- A **positive correlation** (**0.14**) between **CH_4** and **RFI**, indicates that high emitters may present **lower feed efficiency**.





This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement n°772787