

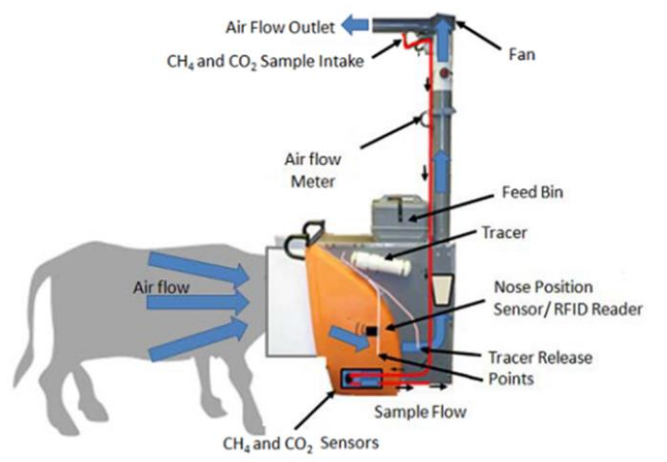
First estimations of methane emissions using Sheep GreenFeed in the Romane breed

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Same operation as for cattle :



CO₂ and CH₄ records

278 animals (with 1 to 7 weeks of records)
 Nb visits : **190 ± 101** / animal [3;535]
 Nb days : **31.7 ± 10.0** / animal [1;42]

Protocol

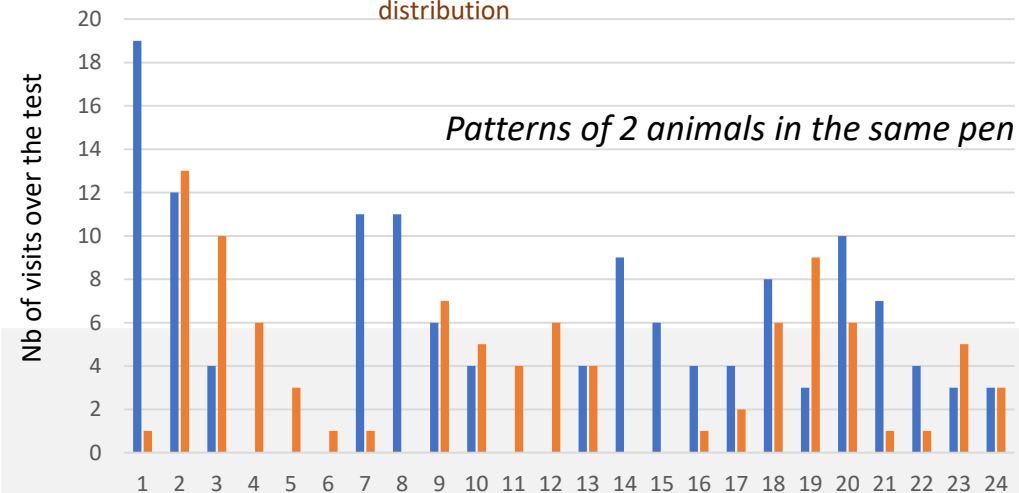
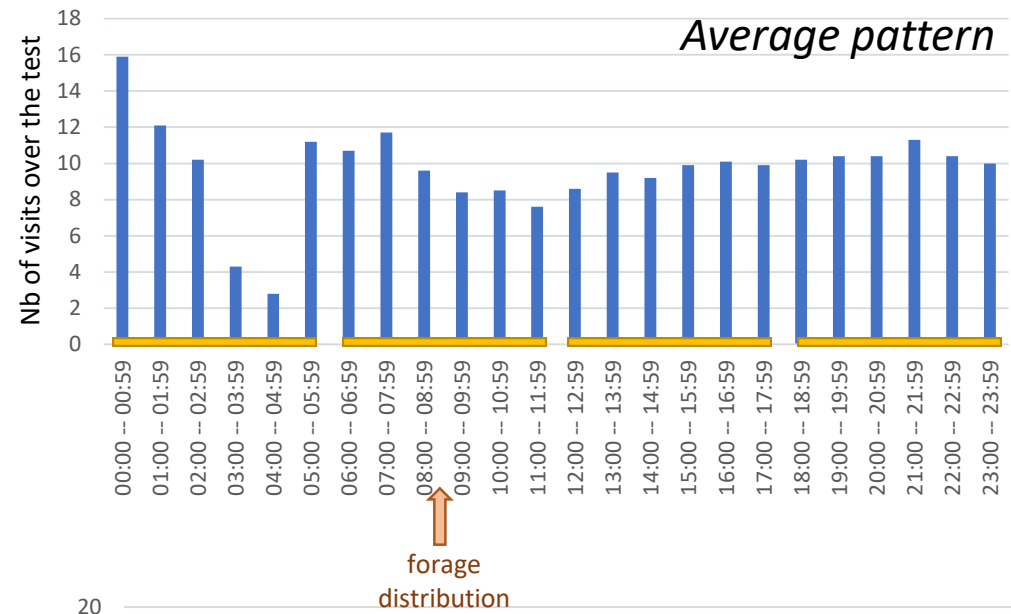
2 weeks of adaptation + 6 weeks of control
GreenFeed Parameters:
 6 drops of 10g every 30 s,
 repeated 4 times (= every 6 hours)



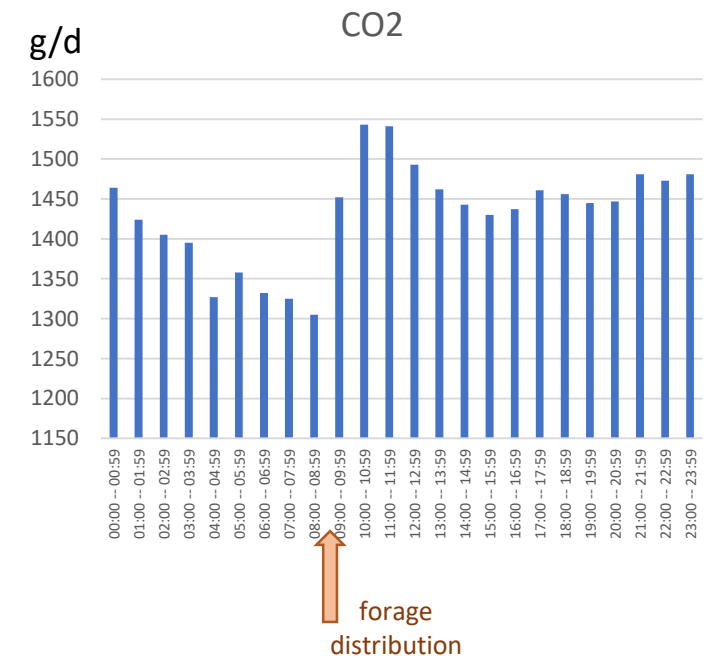
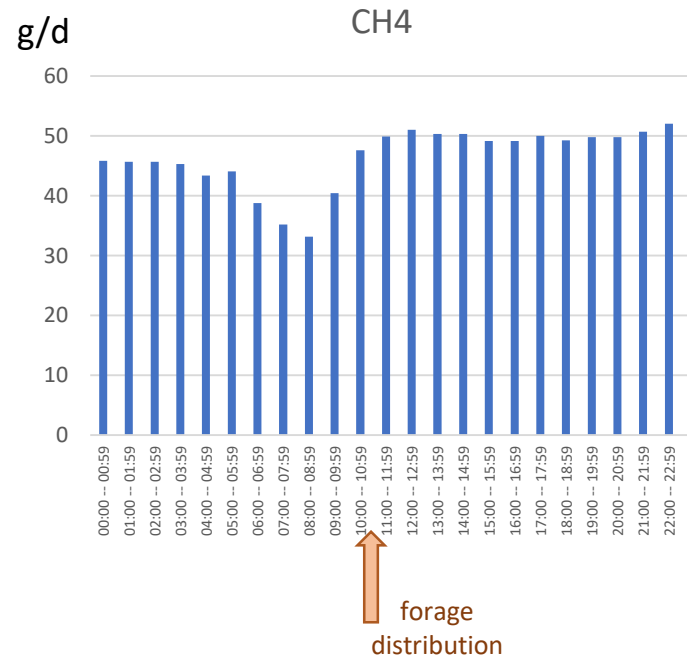
➤ Dealing with diurnal patterns of emissions

On 107 males tested during 37 days on average, we obtained **3.9 visits per animal per day** with gas recording.

Different patterns of visits along the day ...



... combined with the variability of emissions as a function of the time elapsed since the meal



GHG emissions have to be corrected by the period of the day

$$(\text{CO}_2 \text{ or}) \text{CH}_{4,ijkl} = \mu + \text{pen}_i + \text{day}_j + \text{hour}_k + \text{animal}_i + \varepsilon_{ijkl}$$

Individual emission to consider



➤ First Estimates – males Romane meat sheep breed

On 34 animals, with 6 weeks of records (after 2 weeks of adaptation), under a forage-based diet (2/3 forage + 1/3 concentrate)

	N	Mean	Std
CH ₄ (g/day)	34	41.24	4.61
CO ₂ (g/day)	34	1247	102
BW (kg)	34	56.8	4.6
CH ₄ (g/day/kg BW)	34	0.73	0.09
CO ₂ (g/day/kg BW)	34	22.03	1.78
Feed Intake (kg/day)	32	1.92	0.16
CH ₄ (g/kg FI)	32	21.47	2.72
CO ₂ (g/kg FI)	32	651.6	64.8

values higher than in the literature : effect of fasting vs. no fasting? Age of animals?
 (CH₄ emissions from 7.5±2.1 g/d to 24.0±2.9 g/d in lambs in Jonker et al., 2018
 CH₄ emissions = 24.6±3.2 in Pinares-Patiño et al., 2013
 CH₄ emissions = 24.0±8.3 in Rowe et al., 2019)

Pearson correlation (<i>p-value</i>)	CO ₂ (g/day)	BW (kg)	Feed Intake (kg/day)
CH ₄ (g/day)	0.80 (<i><0.0001</i>)	0.40 (<i>0.02</i>)	0.245 (<i>NS</i>)
CO ₂ (g/day)		0.57 (<i>0.0007</i>)	0.34 (<i>0.06</i>)
BW (kg)			0.66 (<i><0.0001</i>)

Positive correlations in line with the literature (Pinares-Patiño et al., 2013 ; Jonker et al., 2018)

Additional data are being collected for further analyses including relationships with feed efficiency related traits.

