

Additional data to the methane inventory for sheep

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Introduction

Current CH₄ emission factor for sheep

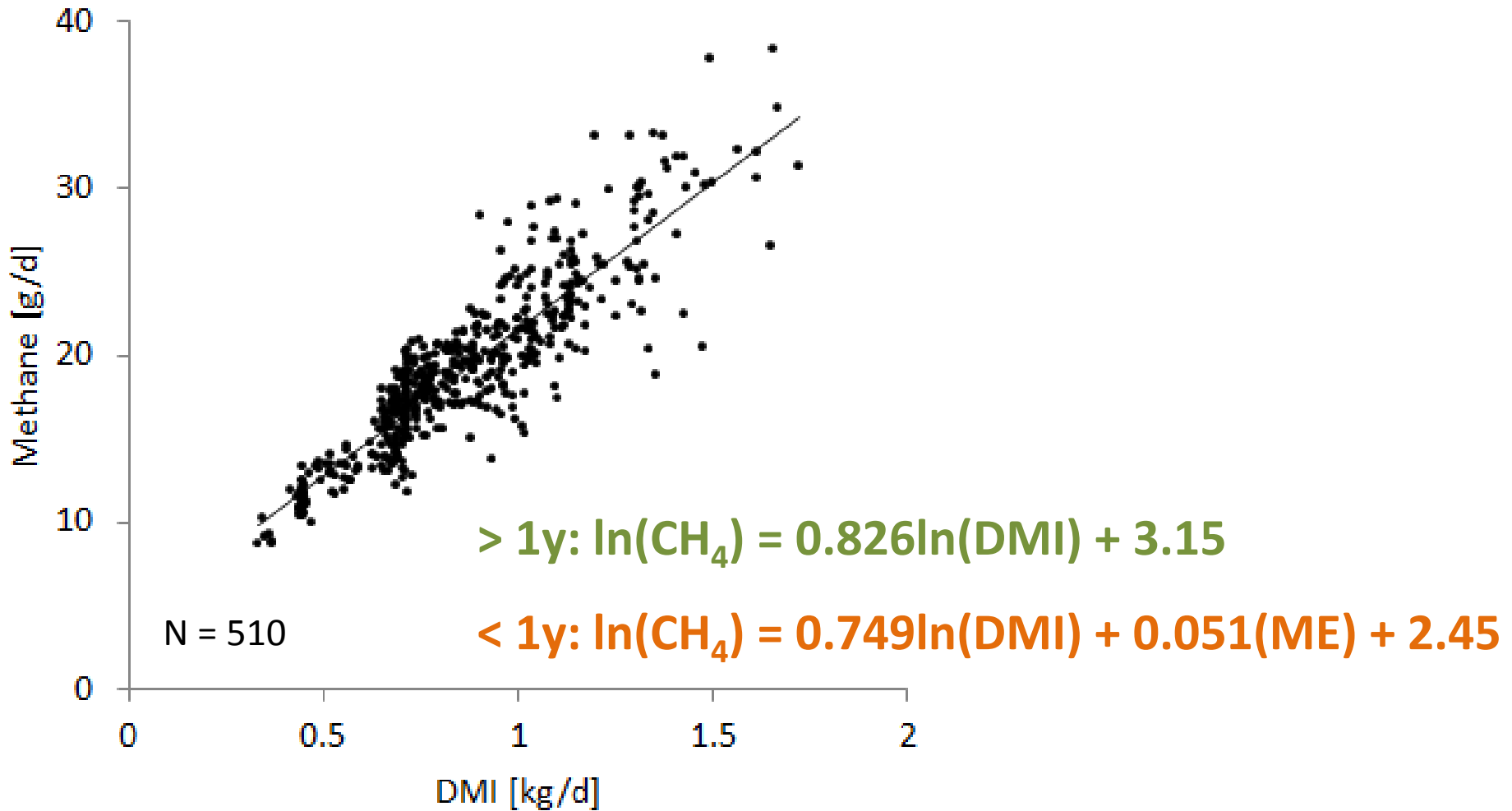
> 1 year 20.9 g CH₄/kg DMI

< 1 year 16.8 g CH₄/kg DMI

Introduction

- All experiments with fresh cut pasture
- All measurements in respiration chambers
 - Feeding level
 - Diet quality
 - Animal age

Introduction



Muetzel & Clark 2015, NZJAR 48: 472

Objective

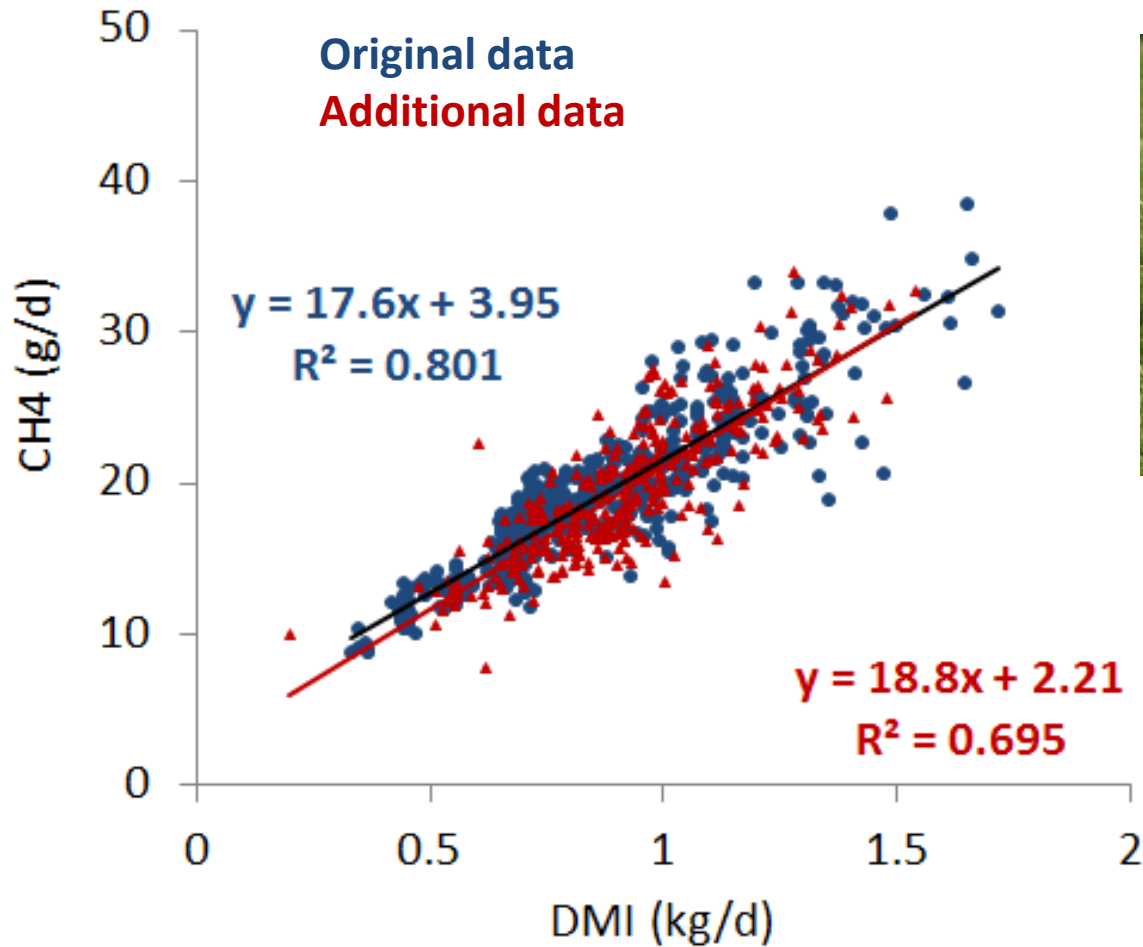
Criteria

- Only animals fed fresh cut pasture
- All measurements in respiration chambers

Data set (14 experiments from 2009-2014)

- 307 measurements from 289 sheep
- 174 measurements from 174 sheep with ME data

Results

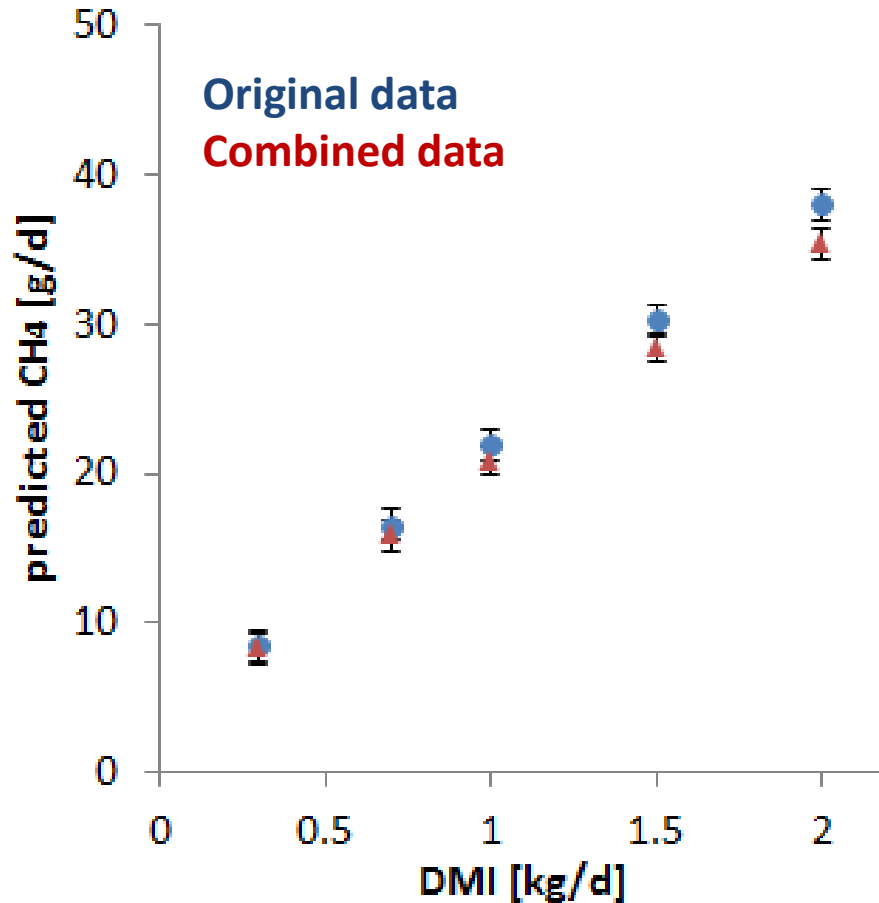


	P-value
Intercept	0.016
Slope	0.129

All animals

$$\ln(\text{CH}_4) = 0.79\ln(\text{DMI}) + 3.1, n=510$$

$$\ln(\text{CH}_4) = 0.76\ln(\text{DMI}) + 3.0, n=817$$



Sheep > 1y

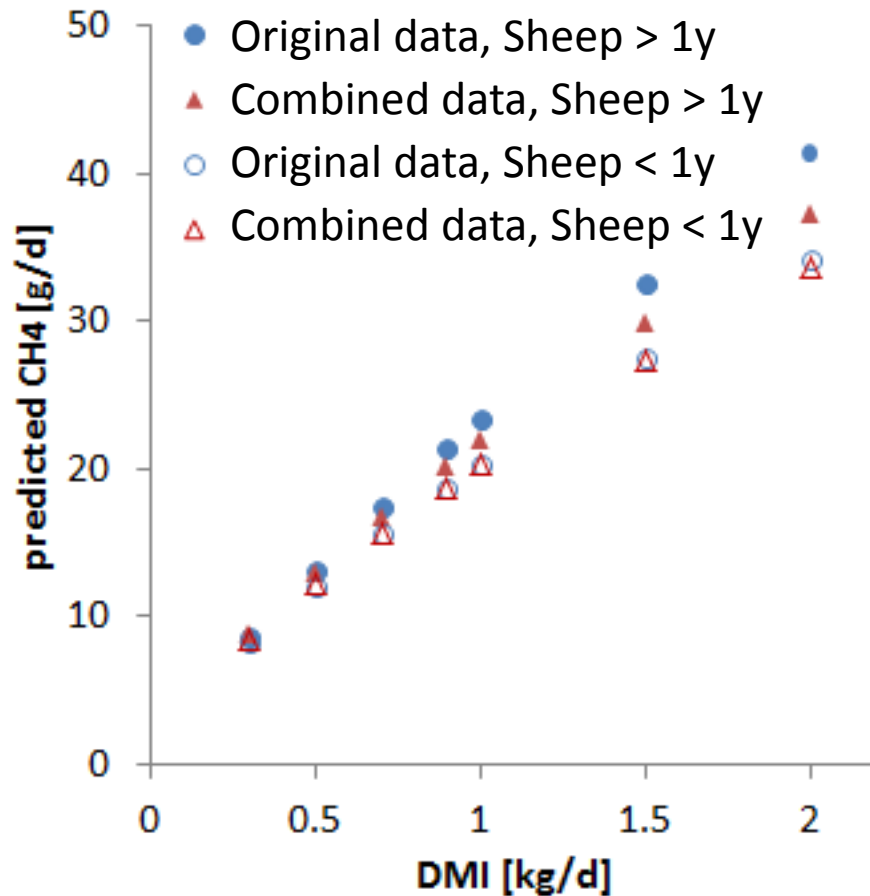
Sheep < 1y

$$\ln(\text{CH}_4) = 0.826\ln(\text{DMI}) + 3.15, n=198$$

$$\ln(\text{CH}_4) = 0.749\ln(\text{DMI}) + 0.05\text{ME} + 2.45, n=312$$

$$\ln(\text{CH}_4) = 0.765\ln(\text{DMI}) + 3.09, n=293$$

$$\ln(\text{CH}_4) = 0.734\ln(\text{DMI}) + 0.05\text{ME} + 2.46, n=407$$



Predictions

	0.5			1			2			SED
DMI (kg/d)										
ME (MJ/kg)	9.5	11	12.5	9.5	11	12.5	9.5	11	12.5	
Yield factor										
Sheep > 1y		10.5			20.9			41.8		
Sheep < 1y		8.4			16.8			33.6		
Simple Regression										
Sheep > 1y		12.3			20,9			35,4		1.03
Age based Regression										
Sheep > 1y		12.9			21.9			37.2		1.03
Sheep < 1y	11.3	12.2	13.2	18.8	20.3	21.9	31.3	33.7	36.4	1.03

Summary

- **Additional data increased variability of the combined dataset**
- **Confirmed effect of diet composition in young but not in older sheep**
- **Effect on inventory based on DMI, diet quality age structure and animal numbers**

Acknowledgements

We thank the Ministry for Primary Industries for the funding for this analysis

