

# Measuring methane in sheep systems



# Methods of measurement

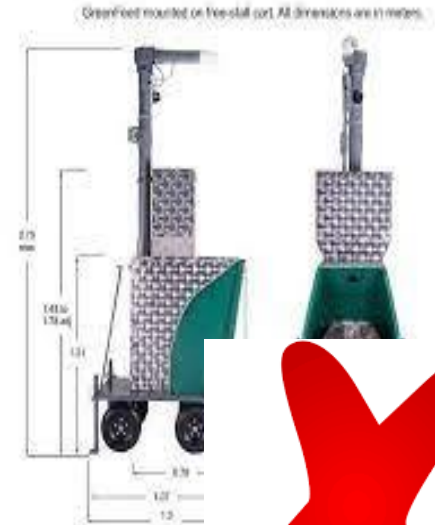
PACs



SF<sub>6</sub>



GreenFeed



Respiration Chamber

# Methods of measurement

## Respiration Chamber



- 1 animal per chamber
- Animals enclosed for 48hrs
- **Pros**
  - Deemed the 'gold standard'
  - Allows for DMI and water intake
  - Values accepted to national inventory
- **Cons**
  - Low animal throughput
  - Expensive technique
  - Labour intensive
  - Unnatural environment for the animal

# Methods of measurement

SF<sub>6</sub>



- Individual equipment required per animal
- Measurement run takes 6 days
- **Pros**
  - Correlates well to RC (0.69, Munoz et al., 2012)
  - Allows animals to be measured at pasture
  - Values accepted to national inventory
- **Cons**
  - Low animal throughput
  - Expensive technique
  - Labour intensive

# Methods of measurement

## PACs



- 12 animals per run (72 per day)
- Measurement run takes 50min

### ➤ Pros

- Correlates well to RC (0.55, O'Connor et al., 2021)
- Allows animals to be measured at pasture
- Higher animal throughput
- Labour efficient

### ➤ Cons

- Used as a ranking tool only
- Equipment is moisture sensitive

# Data Collection



Methane measurements collected using PAC



Removed from feed 1hr prior



Live-weight recorded



PAC  
50mins



CH<sub>4</sub>, CO<sub>2</sub> and O<sub>2</sub>  
at 0, 25 & 50min



# Data Collection

## Methane recs



### Final dataset

7,123 methane records



1,803  
lambs



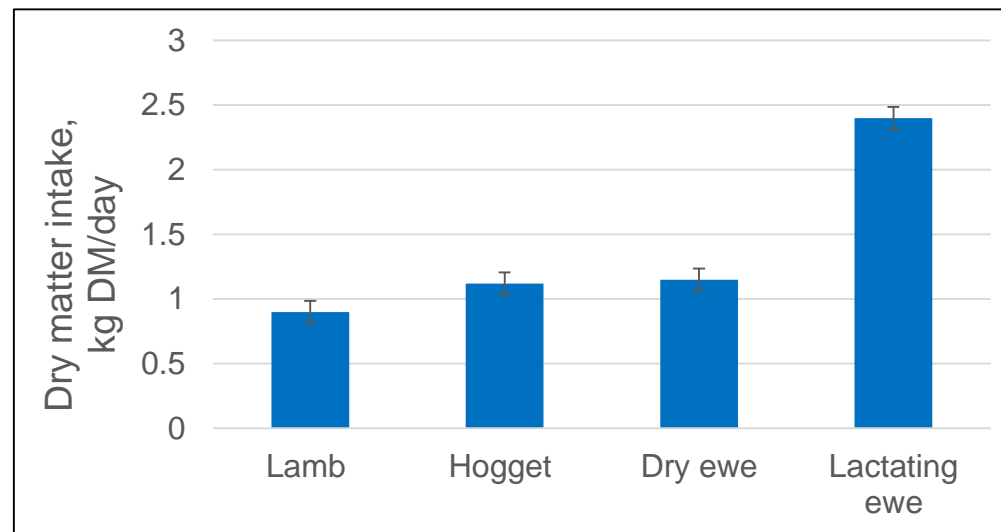
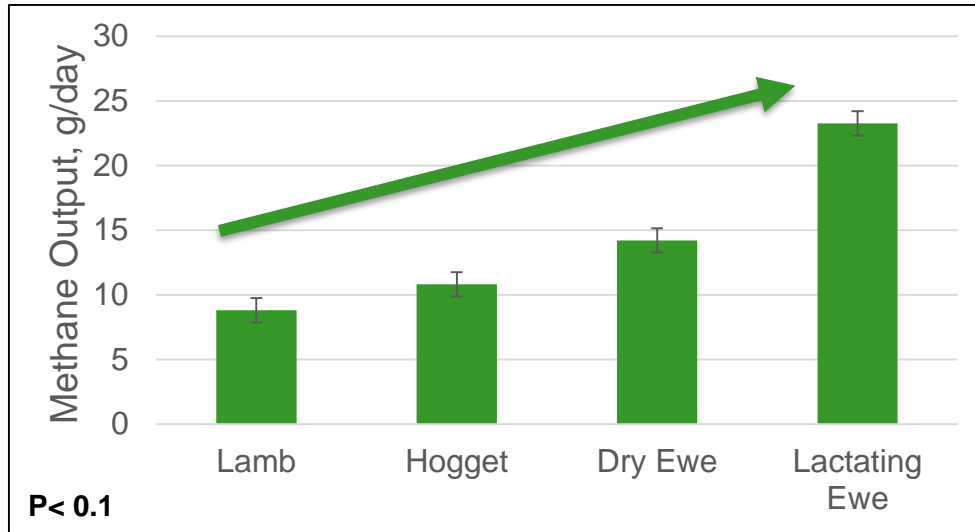
862  
hoggets



4,458  
ewes

2,692 animals  
4 sheep flocks

# The effect of life-stage on the ranking of methane output and DMI in sheep





# Comparing methane output from ruminants



Respiration  
Chamber, g/day

469

205

29.5

SF6, g/day

422

189

37.3

0.4-0.6 g CH<sub>4</sub> per kg live-weight

# Factors affecting methane output

