

# WELSH SHEEP GENETICS PROGRAMME

## Innovative Projects

→ Breeding for Reduced Methane Emissions



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## INTRODUCTION

There is natural variation in the amount of methane that different sheep produce from digesting the grass they eat. The aim of this project is to measure methane emissions from lambs included within the WSGP, with the objective of developing a breeding value for methane yield that could be used to select sires producing offspring with lower methane emissions. Over three years (2023-2026), the project aims to measure 1800 lambs to give sufficiently robust data for preliminary estimates of the heritability of methane traits, reticulo-rumen volume and the genetic correlation between these traits.

## DATA COLLECTION

Measuring of methane yields are being carried out via Portable Accumulation Chamber (PAC), as well as CT Scanning.

### PAC

- Measure individual methane output
- PAC trailer visits each farm
- 72 lambs per day (on good grass with no major 'events' such as moving/shearing/worming for 3 weeks before)
- Home Office regulated procedure

### CT Scanning

- Measure reticulo-rumen volume and assess the relationship with methane emissions.
- Mobile scanner at Peithyll, Aberystwyth January 2024 and 2025.
- Lambs CT scanned are sired by the same rams as those with a PAC measurement.
- Home Office regulated procedure

### 2023 - 2024

Lambs measured represented **84 sires**  
51 sires- lambs with both PAC and CT measurements  
11 sires- lambs with a PAC measurement only  
22 sires- lambs with a CT measurement only

**CT Scanning**  
504 lambs, from 14 flocks

**PAC**  
649 lambs (2023 born Welsh Mountain), from 10 flocks

### 2024 - 2025

Lambs measured represented **53 sires** (to date)

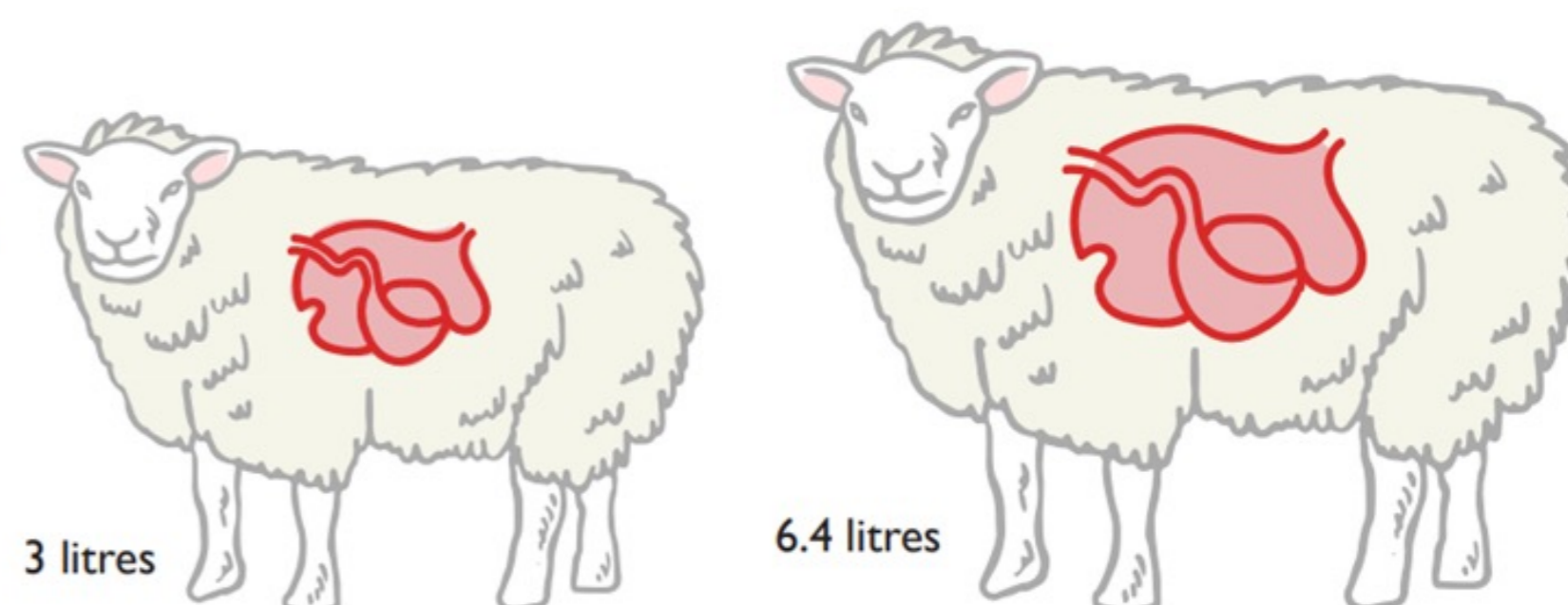
**CT Scanning**  
493 lambs, from 13 flocks

**PAC**  
575 lambs (2024 born lambs) from 8 flocks (Tier 1 and Tier 2 March 2025)  
A further 360 from 5 flocks to be measured this year

## RESULTS

### CT Scanning

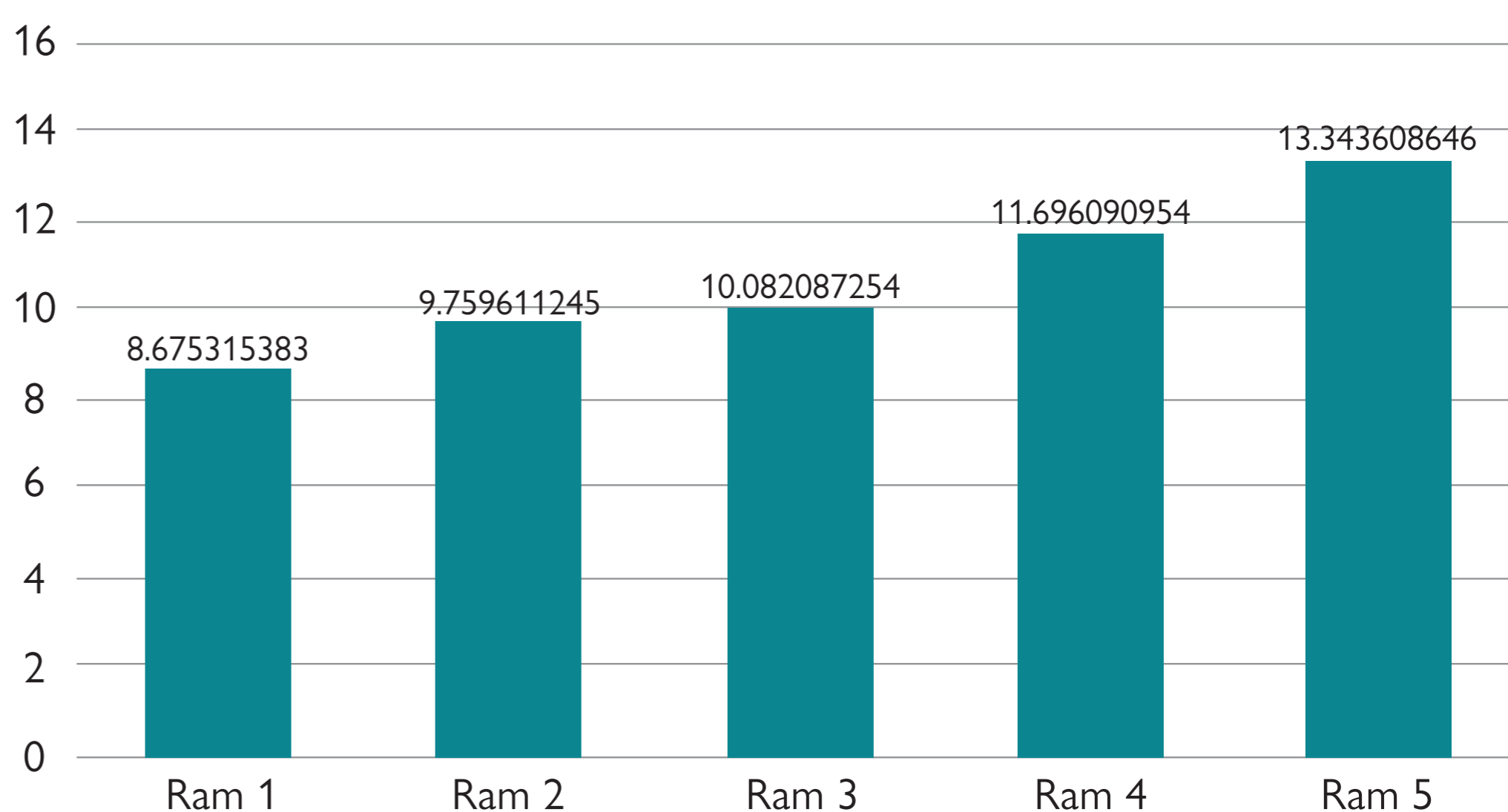
- Heavier lamb – larger rumen
- Average 4.5 litres (adj. for LWT)
- Within flocks - variation of 1-2 litres either side of the average



### PAC

- Lots of variation within flocks
- Typically the highest 20% of lambs are emitting 30-50% more total methane than the lowest 20% of lambs.

### Mean methane (g/day, adj. for liveweight) of progeny of 5 rams in one flock



Portable Accumulation Chamber (PAC) is used to measure methane emissions in sheep



Ariennir gan  
**Lywodraeth Cymru**  
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