

Dairy Farming Systems and the environment

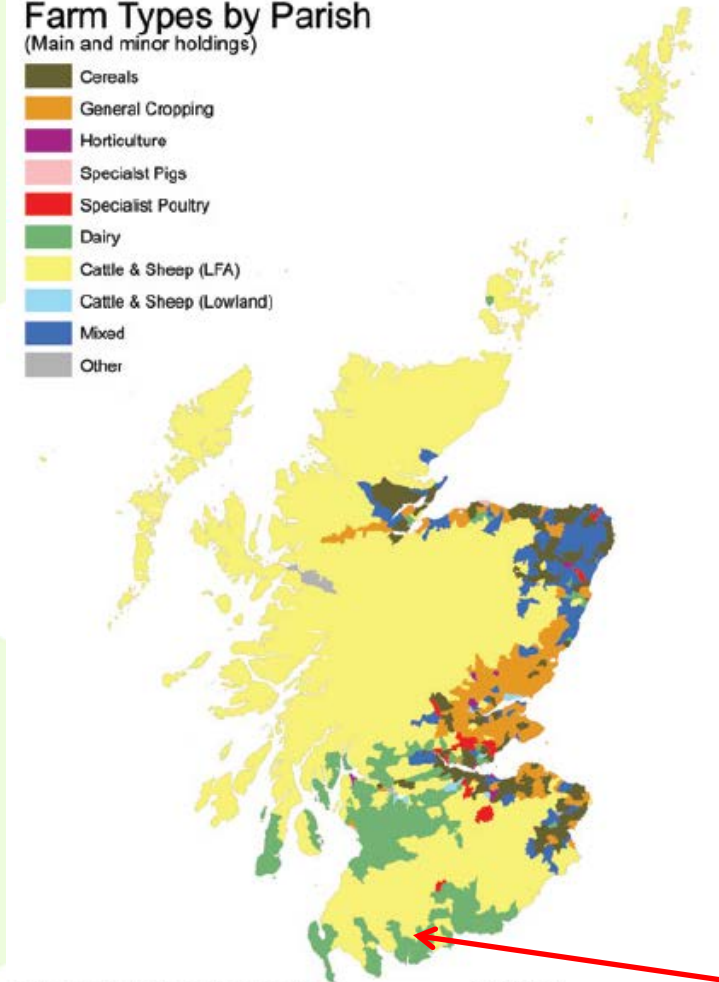
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SRUC systems research centres



Map 2:
Farm Types by Parish
(Main and minor holdings)

- Cereals
- General Cropping
- Horticulture
- Specialist Pigs
- Specialist Poultry
- Dairy
- Cattle & Sheep (LFA)
- Cattle & Sheep (Lowland)
- Mixed
- Other



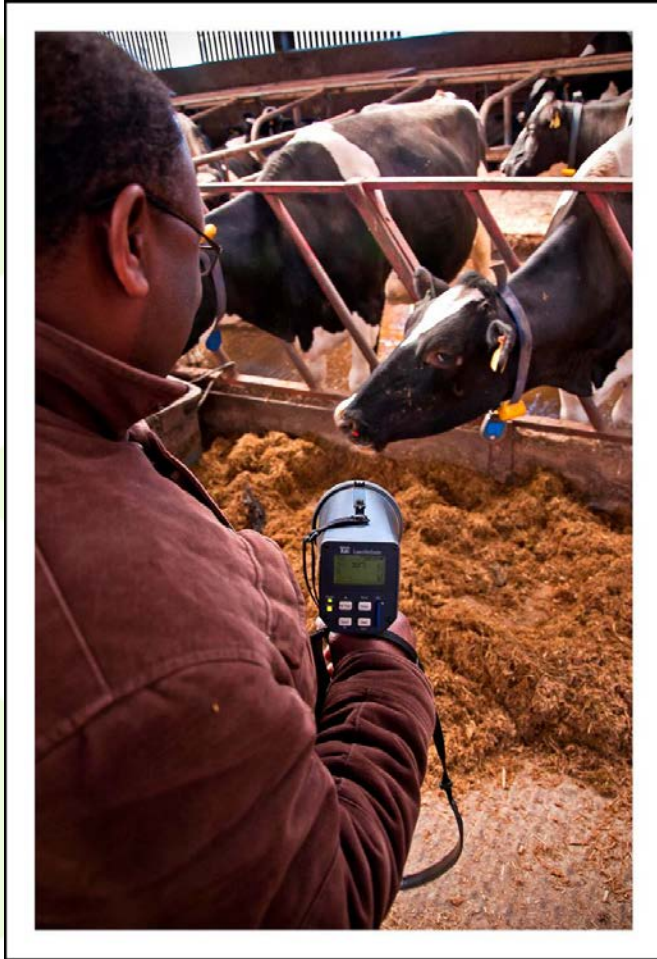
Parishes have been assigned a farm type, where the total European Size Units (ESUs) for that type exceeds the total ESUs for each of the other types

Source: RERAD 2007
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Government Geographic Information Service

SRUC Dairy Research Centre
Crichton



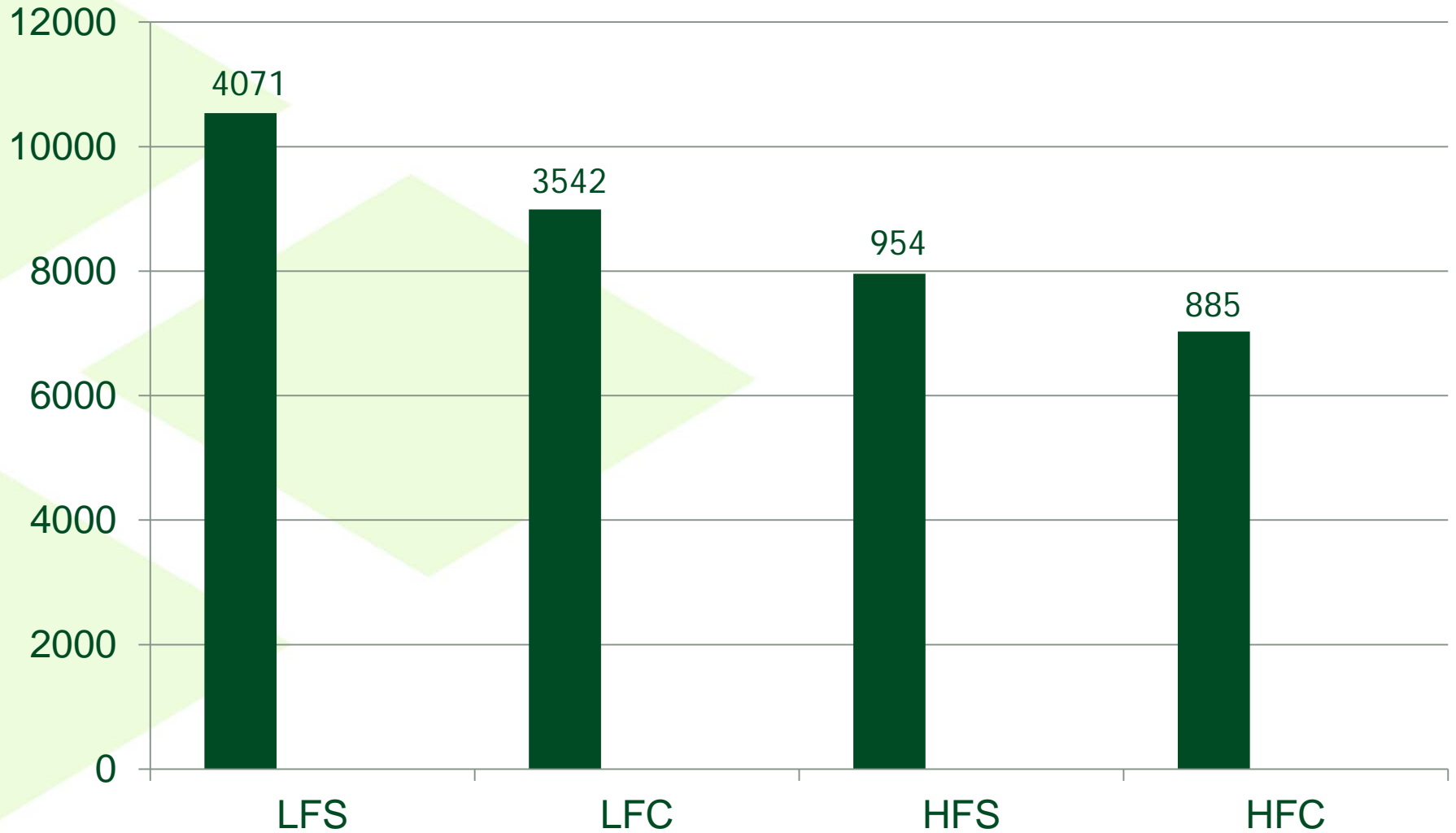
Estimation of methane



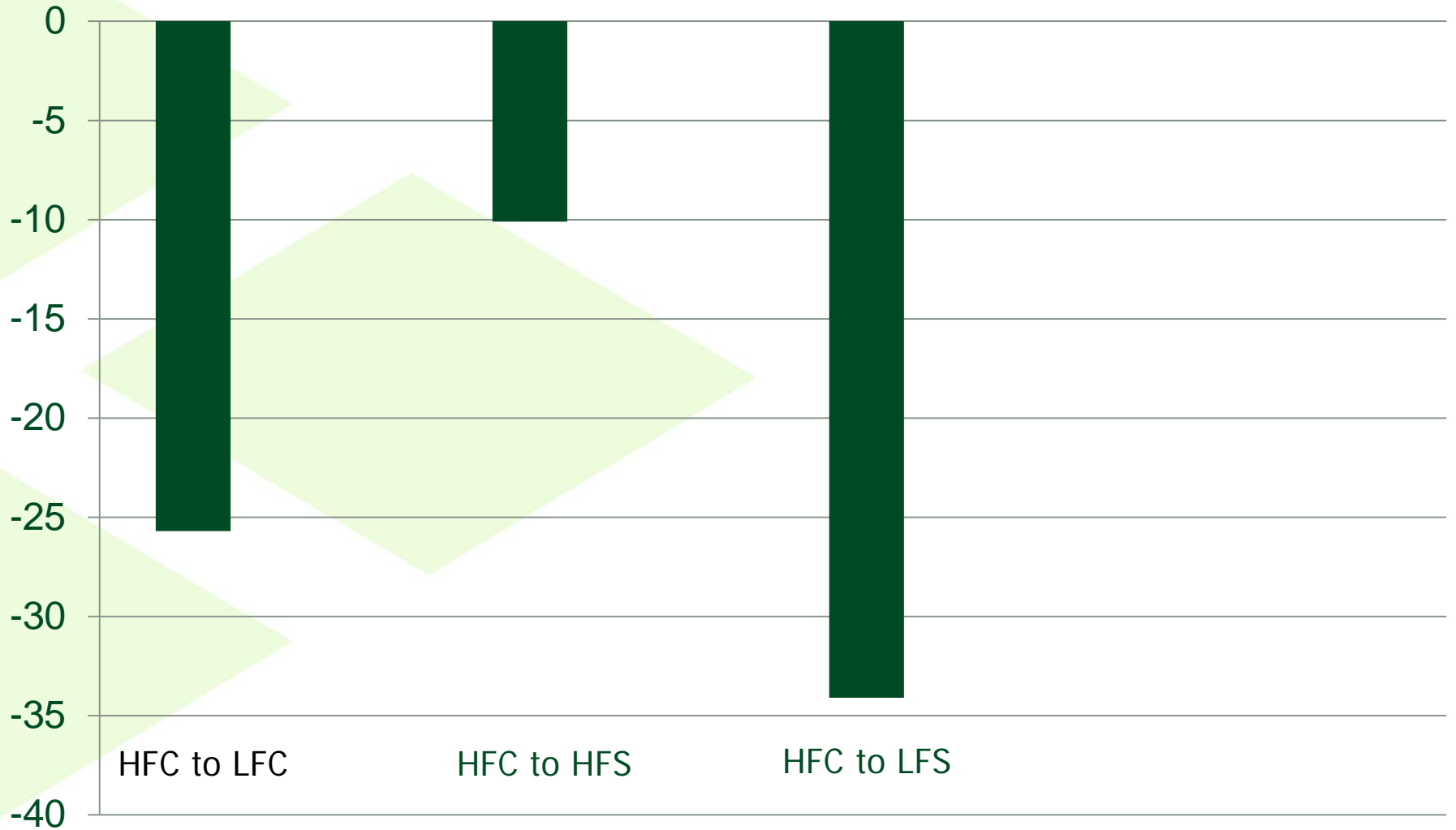
- Equations:
$$\text{CH}_4 \text{ (MJ/d)} = 8.25 + 0.07 \times \text{ME intake (MJ/d)}$$

(Mills *et al.* 2003)

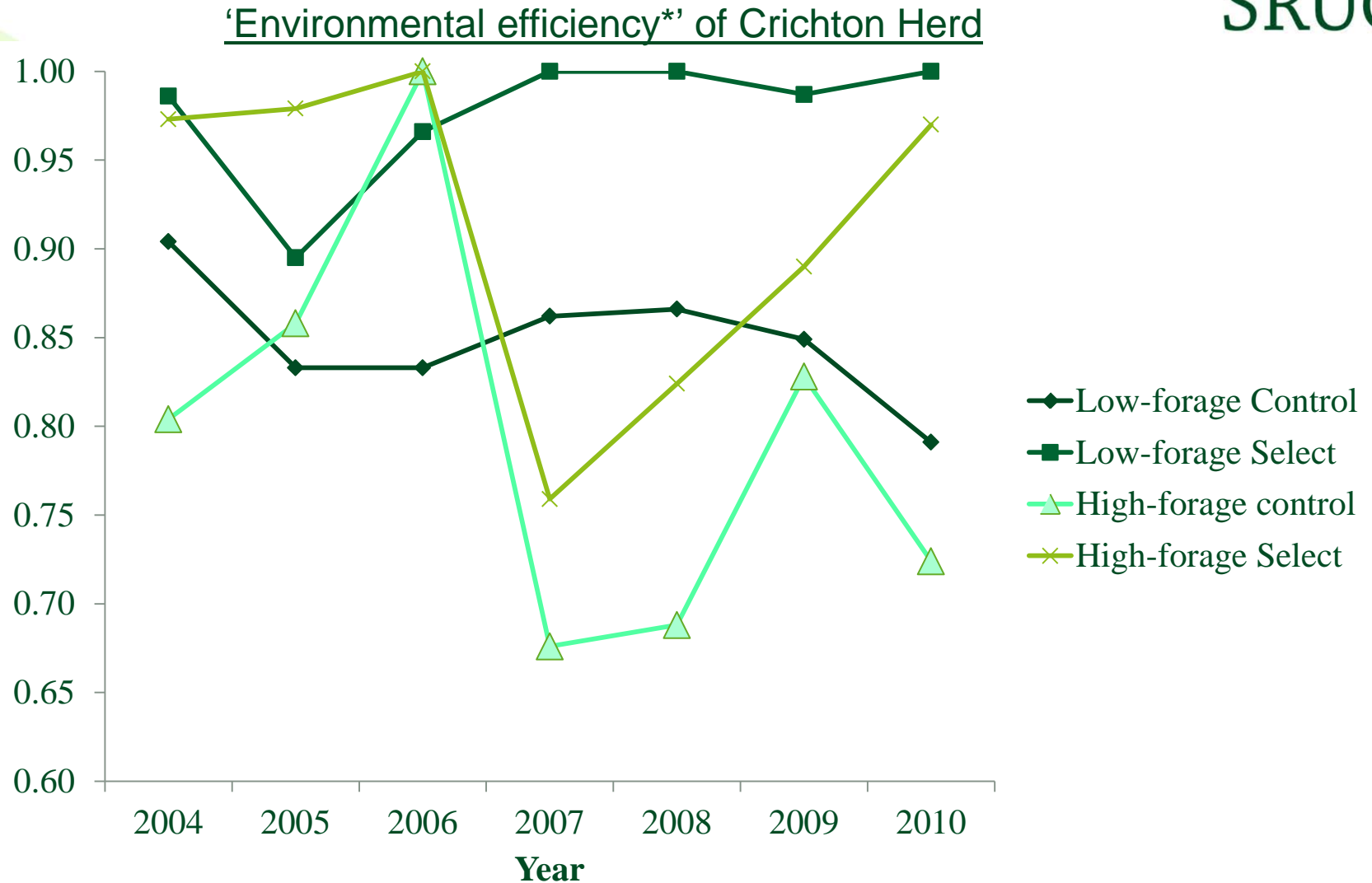
Milk sales (l/cow/year) and concentrate fed (kg/cow/year)



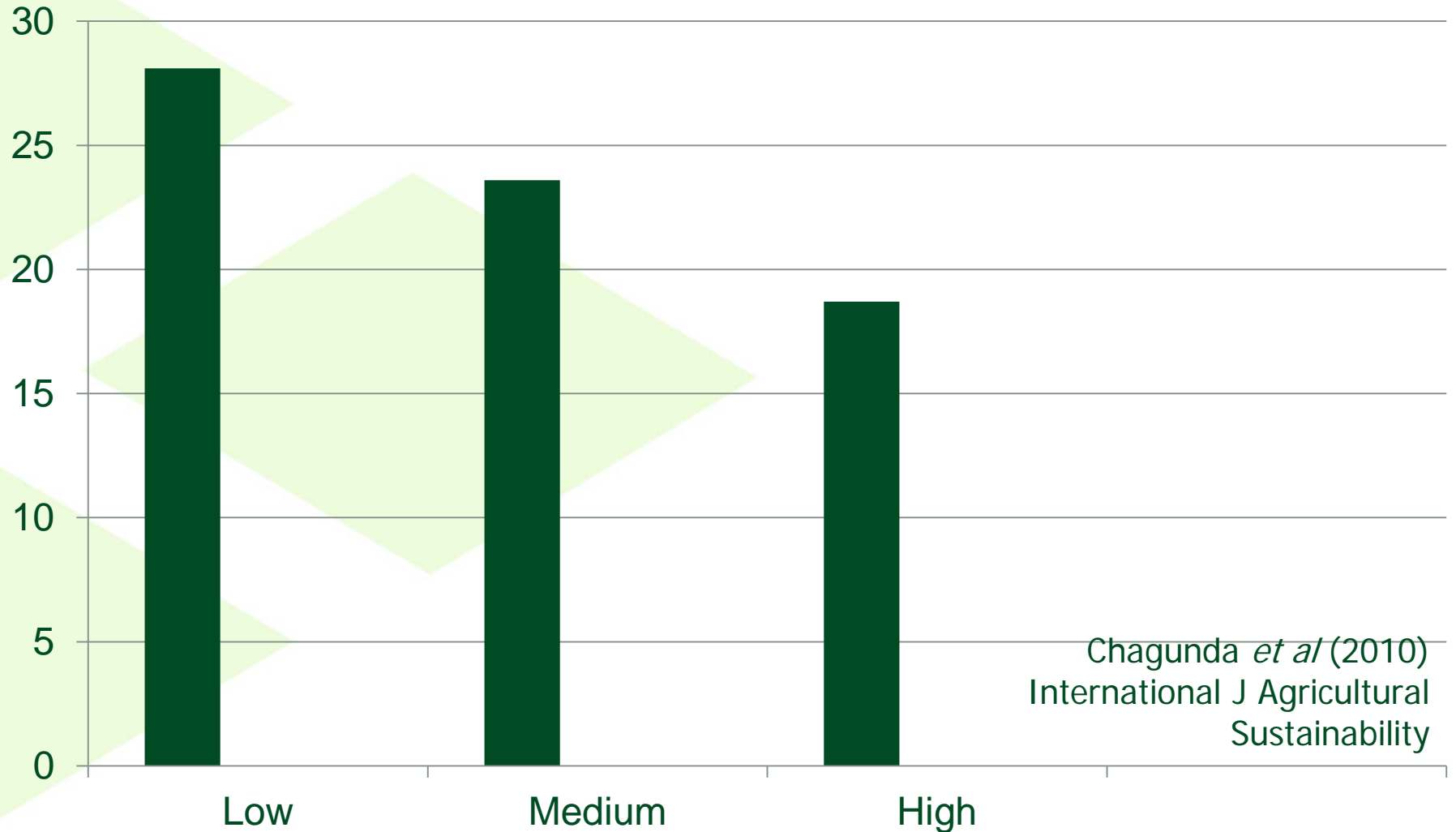
% reduction in enteric methane output by changing systems



Understand change



Estimates enteric methane (g/kg milk) from different silage qualities



Chagunda *et al* (2010)
International J Agricultural
Sustainability

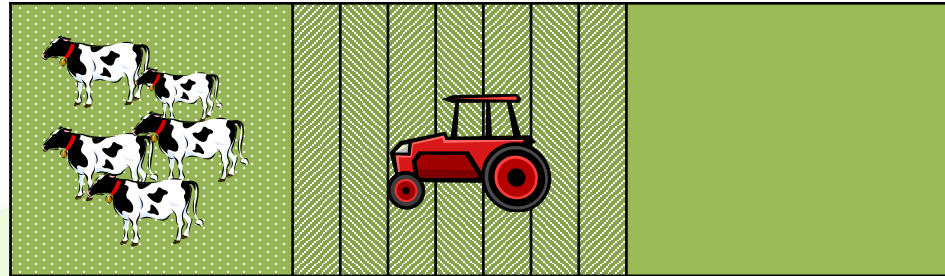
Compaction



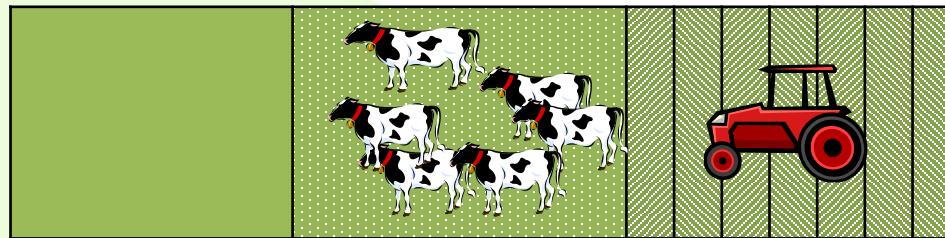
Main Treatments of the Compaction Experiment



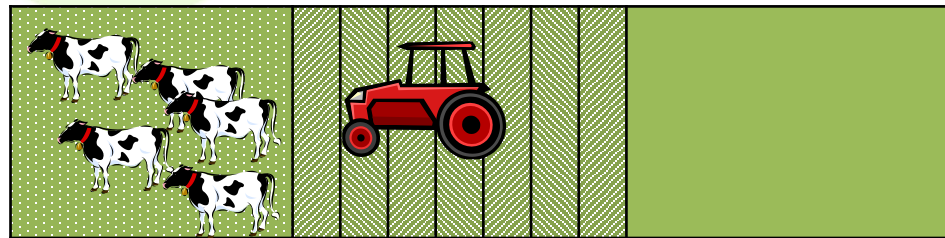
Rep 1



Rep 2



Rep 3



Trampling



Tractor



Control

Each treatment area is 20m x 24m

Tramplng Treatment



Heifers (12) introduced into each tramplng area for 1 hour on two separate occasions – one week apart.

Tractor Treatment



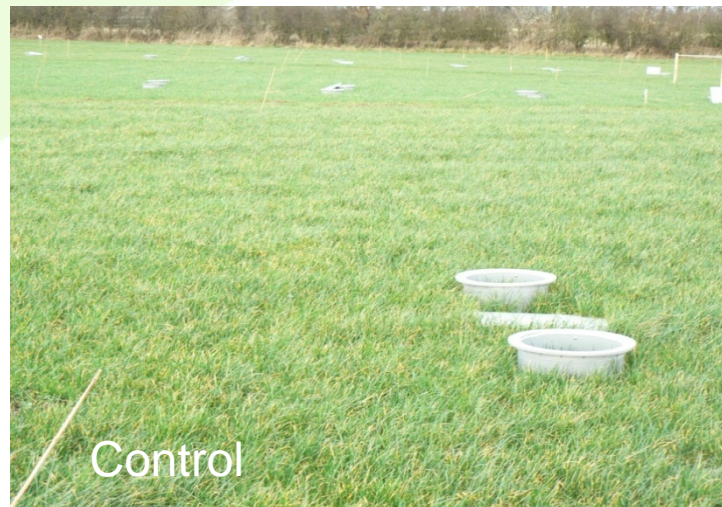
**Used a tractor with weight on the rear
(Total weight 10,200kg).**

**Driven over the compaction area
once on two separate occasions -
one week apart.**

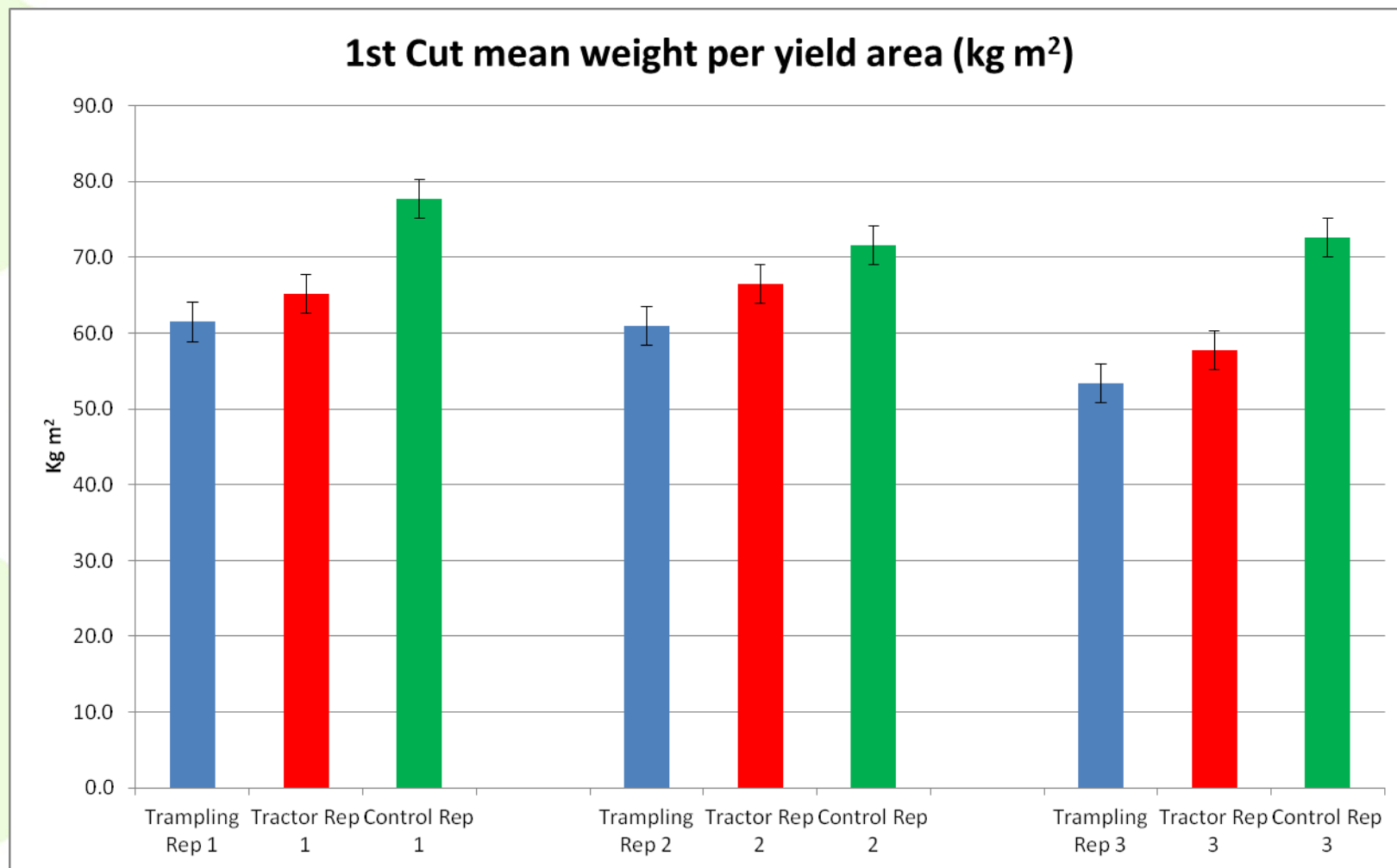


**Tractor should affect both
the surface of the soil
and at depth**

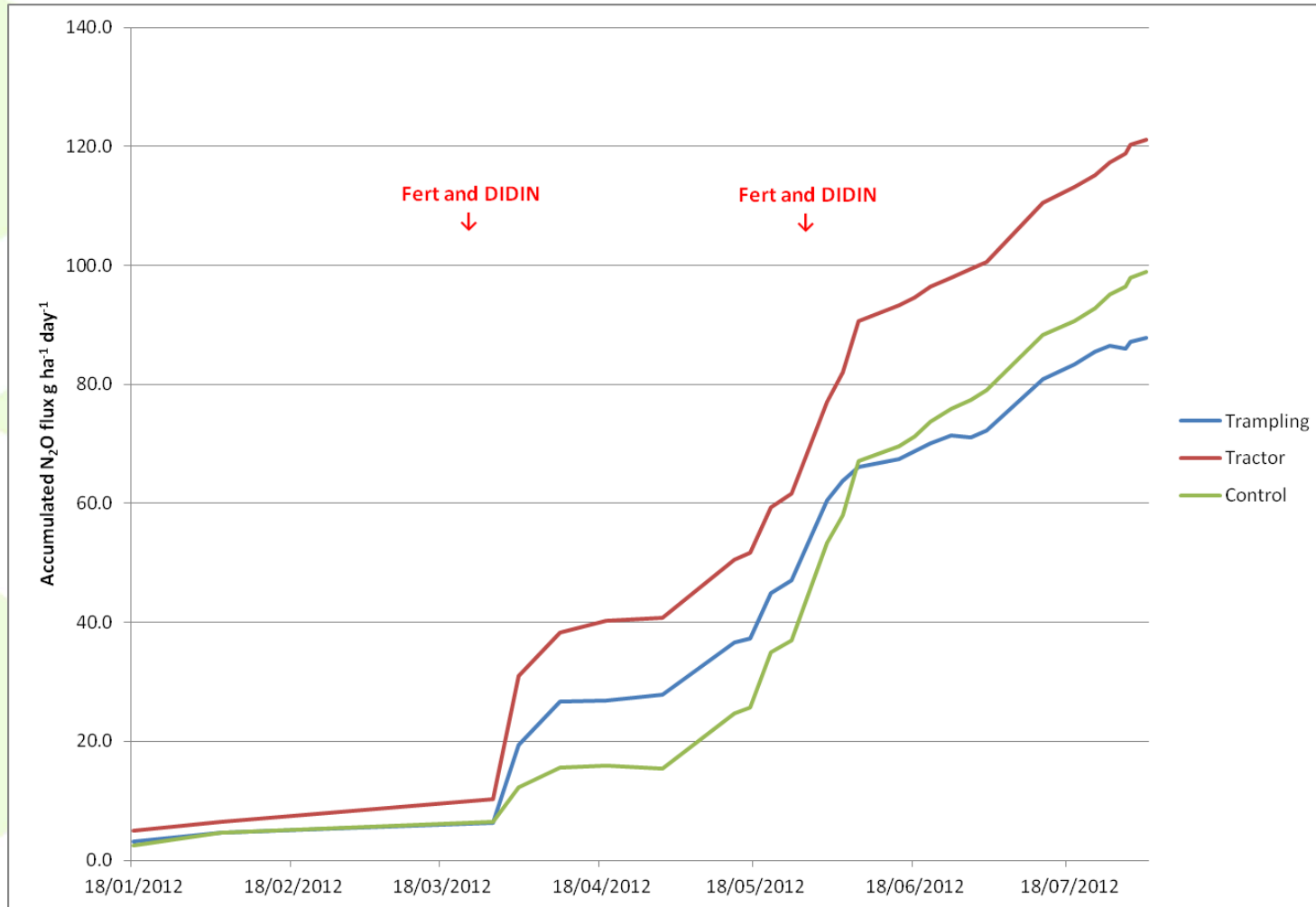
Treatment Effects



Compaction Results – 1st Cut



Accumulated N₂O Emissions



Acknowledgements



- Defra and *InveN₂Ory* project team
- DairyCo Research Partnership
- Scottish Government

