

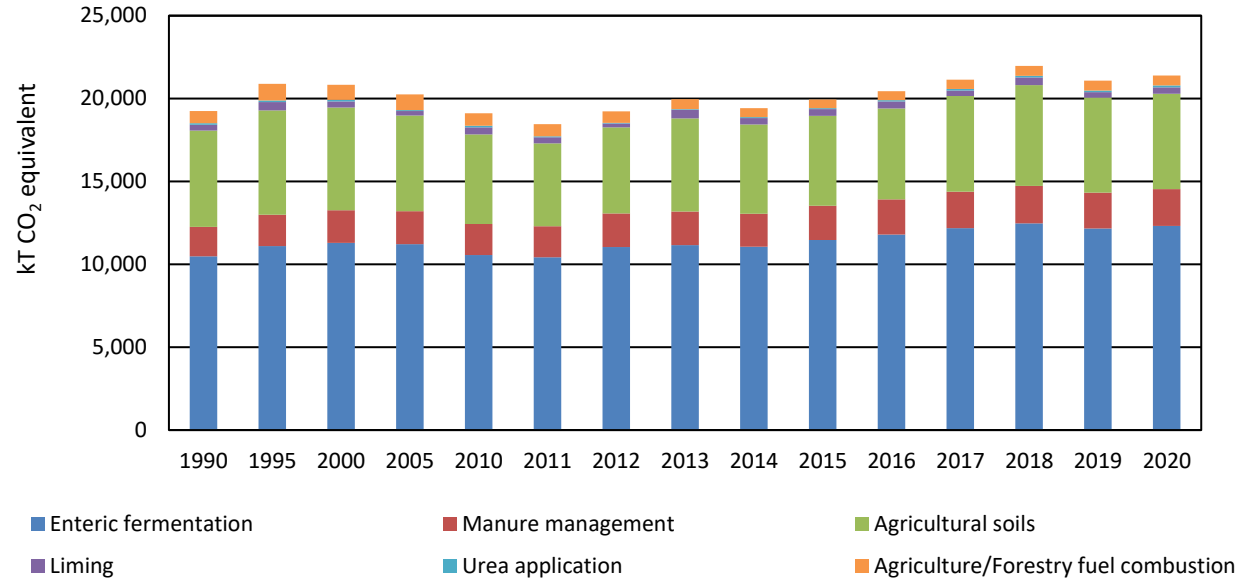
Reducing GHG and Increasing Efficiency, a win-win for the Sheep industry

**Nóirín McHugh, Edel O' Connor, Eoin Dunne,
Jonathan Herron & Fiona McGovern**

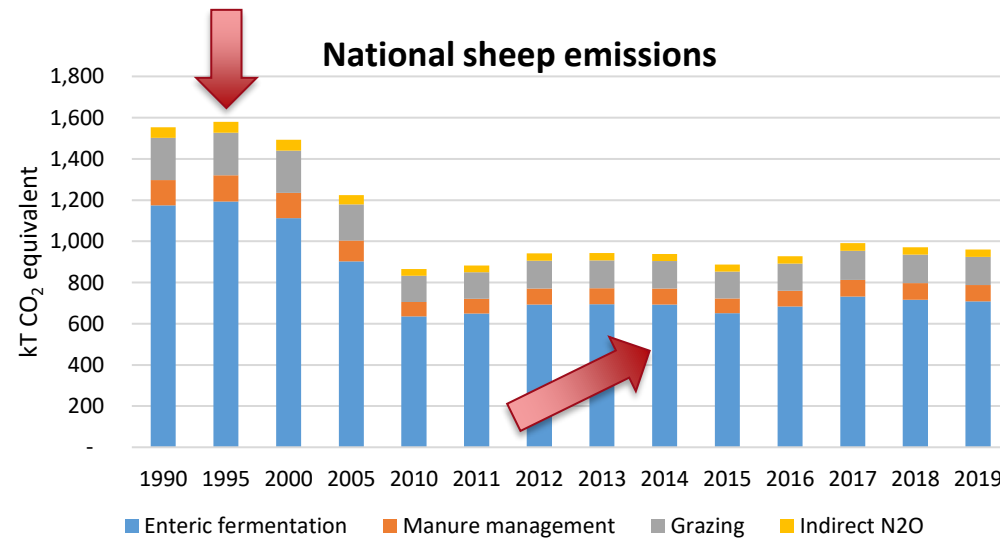
Sheep Ireland Meeting, 16th June 2022

National GHG emissions

National agricultural emissions



- 37% national GHG emissions
- Dominated by cattle related emissions



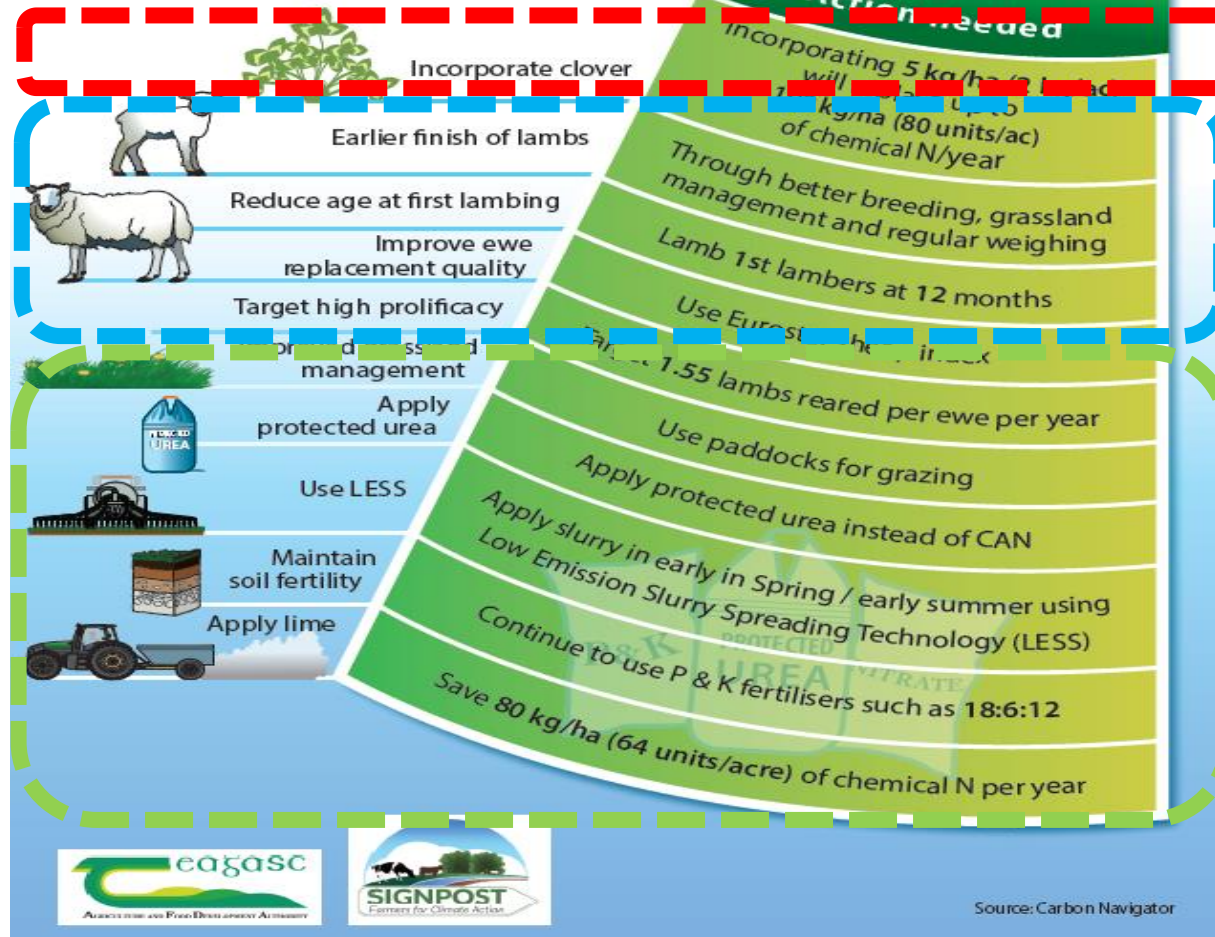
Where are you on the 10 Steps to Reduce Emissions of YOUR FARM?



Diet

Breeding

Management



Source: Carbon Navigator



Breeding

4

Selecting on Euro-star indexes

1 Star Flock



Weaning 1.54 lambs/ewe

5 Star Flock



Weaning 1.70 lambs/ewe

Contents lists available at ScienceDirect
Agricultural Systems
 ELSEVIER journal homepage: www.elsevier.com/locate/agsy

Description and validation of the Teagasc Lamb Production Model
 A. Bohan ^{a,b,*}, L. Shalloo ^a, B. Malcom ^{d,e}, C.K.M. Ho ^d, P. Creighton ^c, T.M. Boland ^b, N. McHugh ^a

^a Animal & Grassland Research and Innovation Centre, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland
^b School of Agriculture & Food Science, University College Dublin, Ireland
^c Animal & Grassland Research and Innovation Centre, Teagasc, Athlery, Co. Galway, Ireland
^d Department of Economic Development, Jobs, Transport and Resources, Carlton, Vic. 3053, Australia
^e University of Melbourne, Vic. 3010, Australia

ARTICLE INFO ABSTRACT
 Article history:
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 Received in revised form 1 July 2016

A stochastic budgetary simulation model of a sheep farm was developed to investigate the effects of changes in lamb production systems on farm profitability. Model inputs included: land, labour, capital, animal numbers, as well as several other variables. Model outputs included: lamb production, lamb mortality, lamb weight, lamb

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A life cycle assessment of the effect of intensification on the environmental impacts and resource use of grass-based sheep farming
 D. O'Brien ^{a,*}, A. Bohan ^b, N. McHugh ^b, L. Shalloo ^a

^a Livestock Systems Research Department, AGRI, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland
^b Animal & Bioscience Research Department, AGRI, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland

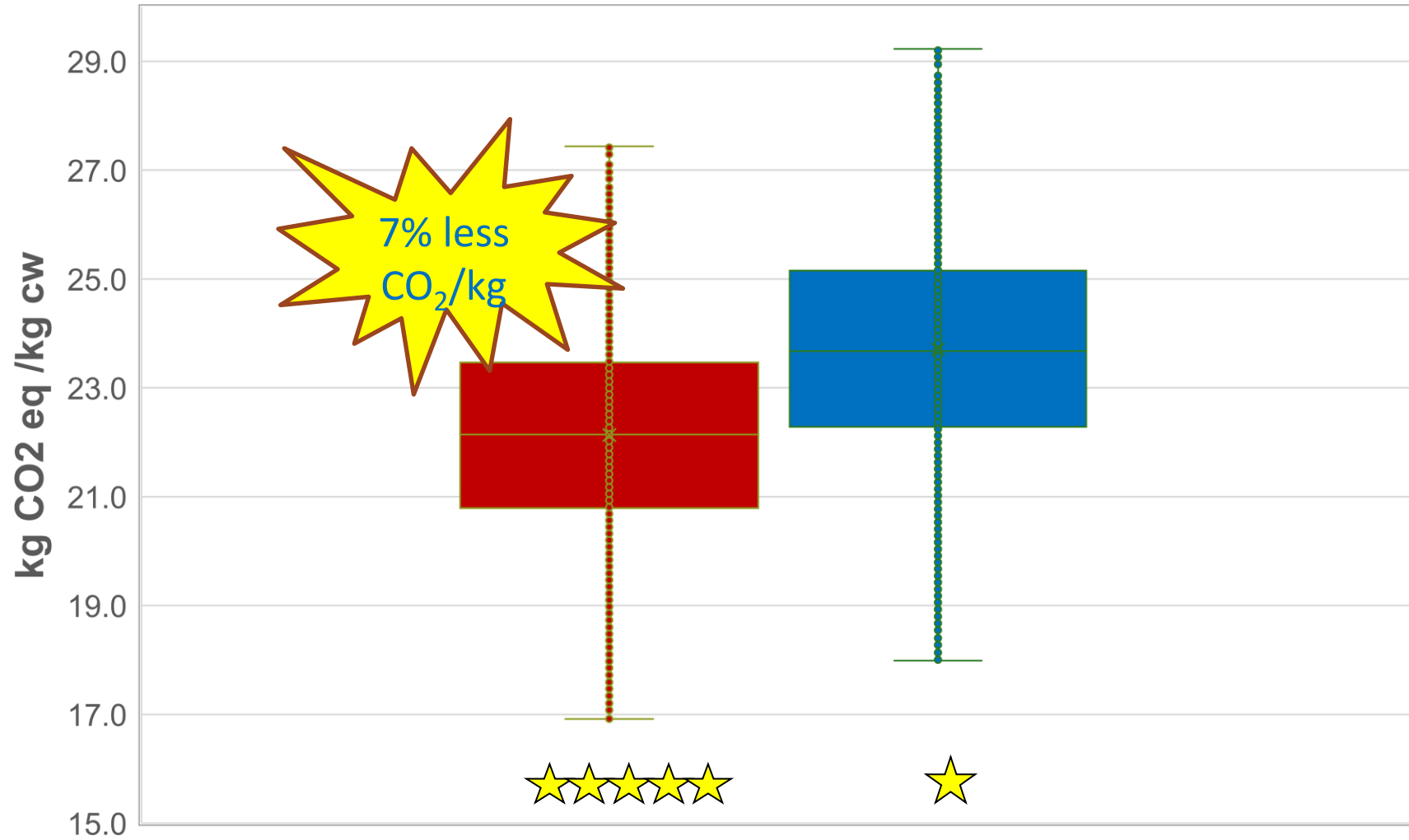
ARTICLE INFO ABSTRACT
 Article history:
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Intensification is a strategy that is reported to increase the productivity and environmental performance of livestock farms, but most life cycle assessments (LCA) of livestock (particularly sheep) only consider greenhouse gas (GHG) or carbon footprint (CF). The goal of our LCA study was to assess the effect of intensification on several

Using CPT commercial data

+€18 per ewe

Greenhouse gas intensity



Direct Selection

7

Why measure methane in sheep?

- Identify high and low emitters in the flock
- Develop breeding values for methane

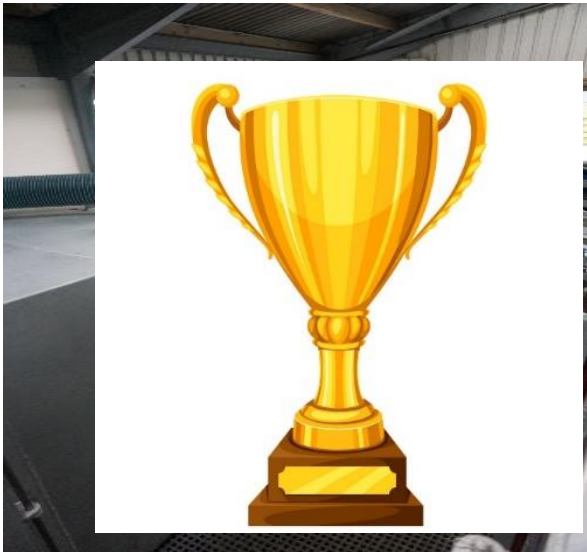


The screenshot shows a news article on the Beef + Lamb New Zealand website. The header includes the logo 'beef+lamb NEW ZEALAND' and the slogan 'BY FARMERS. FOR FARMERS.' Navigation links include 'Log in / Register to vote', 'About B+LNZ', and 'Contact Us'. A secondary navigation bar lists 'Knowledge hub', 'Data & tools', 'Compliance', 'Events', 'News & views', and 'Your levies at work'. The article title is 'Sheep farmers now able to breed “low methane” sheep', categorized as a 'Media Release'. It features social media sharing icons for Facebook, Twitter, Email, and WhatsApp. The date is 'Wednesday, 27 November 2019'. The main image shows a sheep in a pen with a 'B+L research' sign. The text below the image states: 'Beef + Lamb New Zealand (B+LNZ) Genetics has launched a “methane research breeding value”. Breeding value (BV) is a term used to help select important traits that ram breeders want to bolster within their flock (e.g. low methane-producing animals).'



Methods of measurement

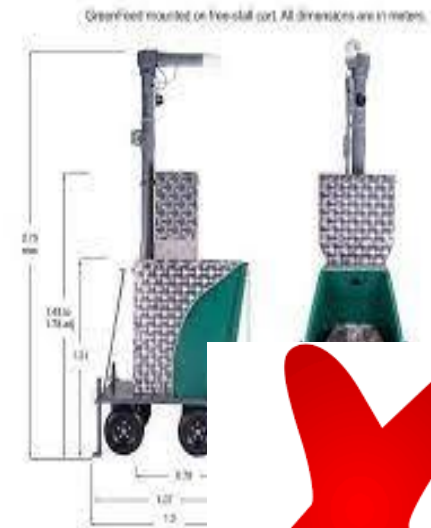
PACs



Respiration Chamber



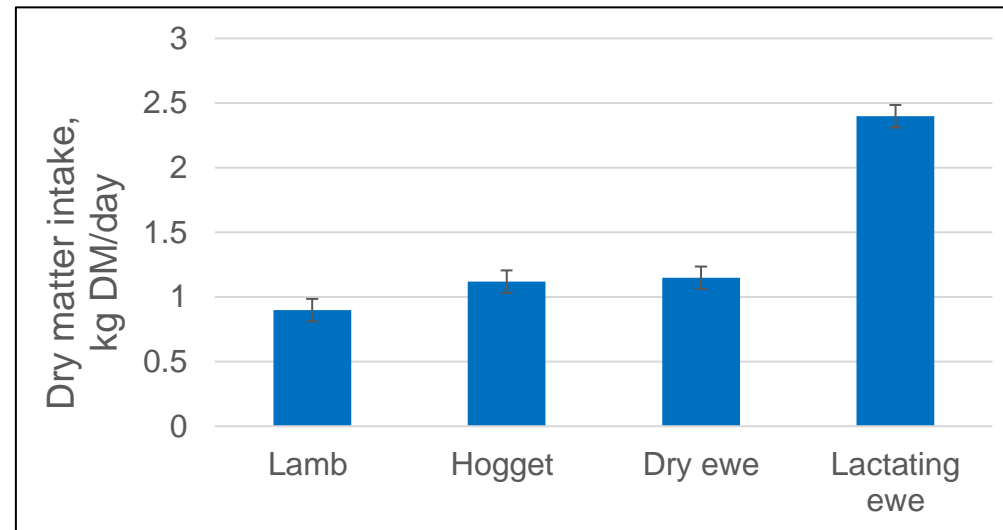
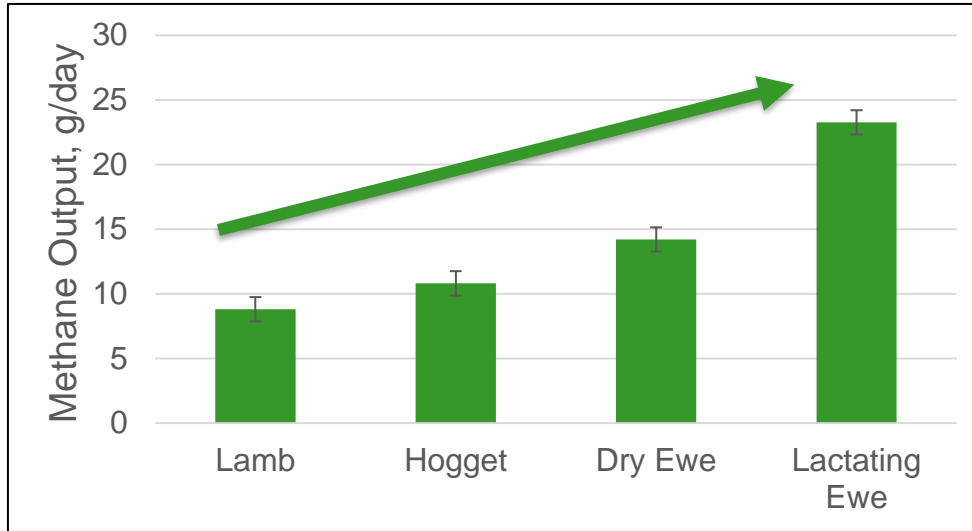
GreenFeed



PAC



Methane output and DMI in sheep



Comparing methane output from ruminants



Irish data
(g/day)

330

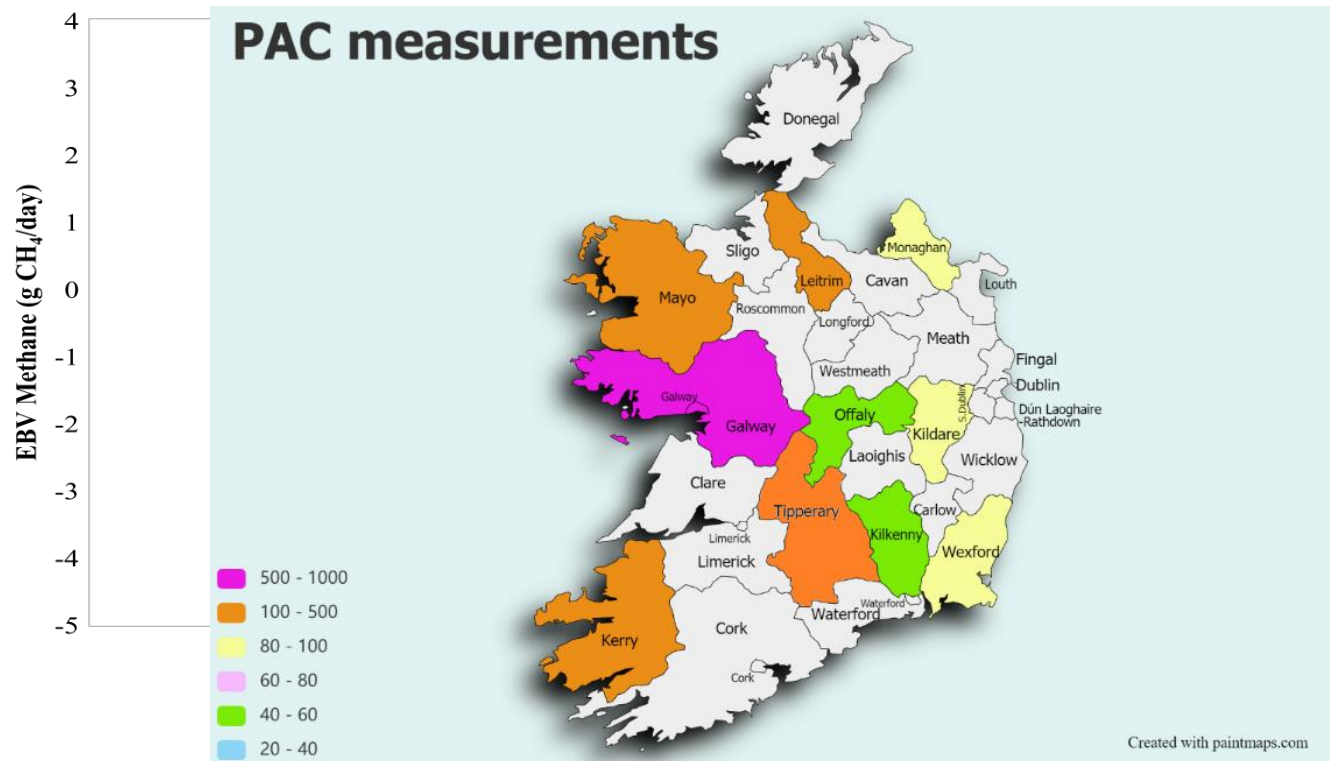
230

29.5

0.4-0.6 g CH₄ per kg live-weight

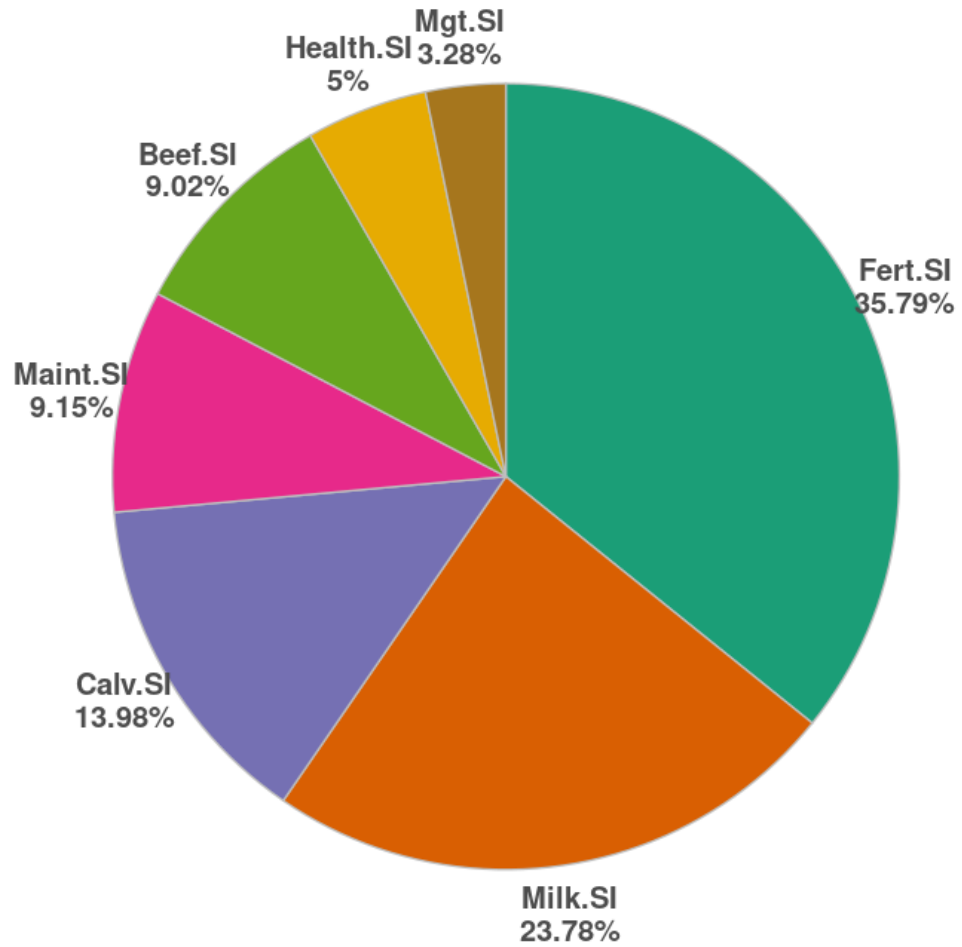
Genetics of methane

- Variation between animals for methane?
- **Results to date:**
 - Heritable → 25%
 - Repeatable → 39%

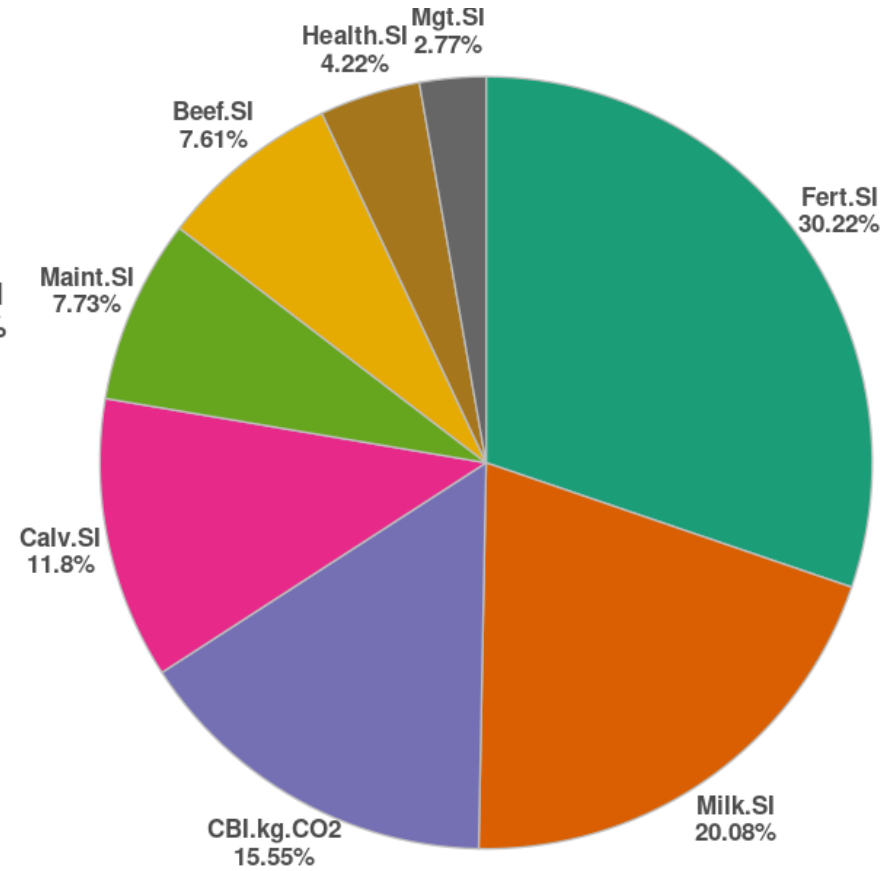


Carbon sub-index

Current EBI



EBI + CBI C @ €160/t



Take home messages

- Methane measurements underway in sheep
 - Measuring commercial & pedigree flocks
- Results to date methane is under genetic control
 - Link to production traits
 - breed low emitters with high levels of performance
- Carbon sub-index to be developed
- Incorporate into the Terminal & Replacement Indexes

Acknowledgements



GreenBreed (17/S/2135)



Panel Discussion

How can genetic selection help to increase resilience and efficiency in sheep??

