



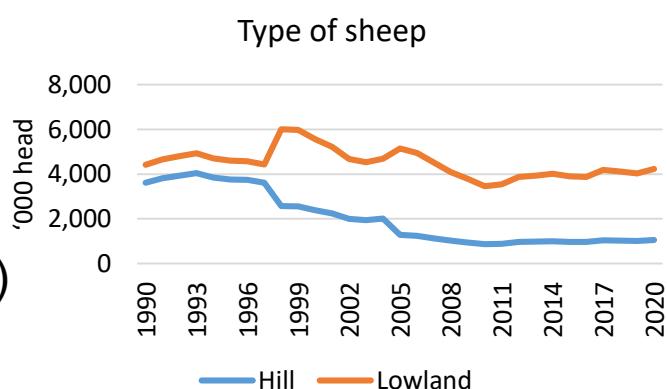
Breeding for reduced GHG

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

AHDB Seminar, 26th October 2022

Irish sheep sector

- Spring lamb production
- 2.7 million breeding ewes
 - 80% lowland
 - 20% hill
- 35,505 farms
 - Average farm size – 83 ewes
 - 17,435 specialist sheep farms
- 335% self-sufficient in sheep meat
- Irish sheep meat exports- €420 million (Bord Bia, 2022)
 - +12% vs. 2020
 - France largest market (30.5%)



National GHG emissions

National agricultural emissions



27% of national GHG emissions
generated by cattle emissions

THE IRISH TIMES

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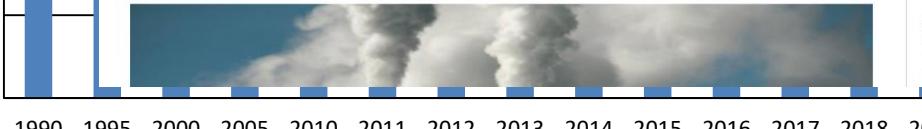
Bord Gáis Energy

Environment

Q&A: Why is Ireland failing to meet its environmental targets?

Greenhouse gas emissions in Ireland are rising and there is little evidence future targets will be hit

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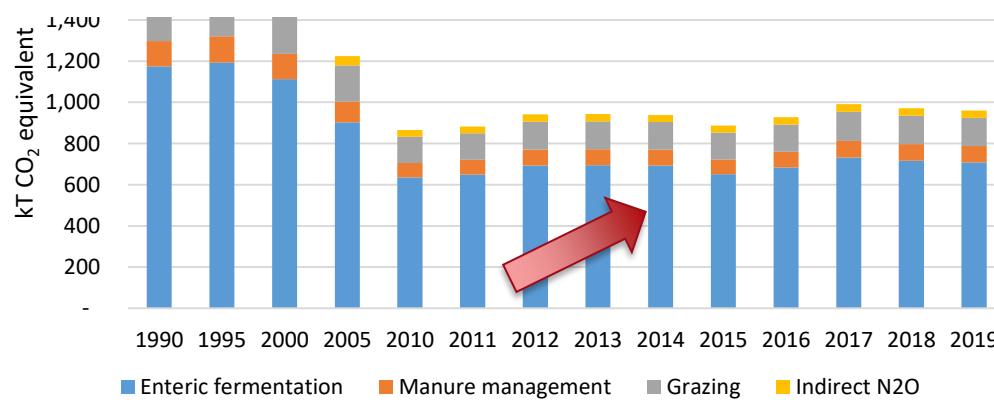
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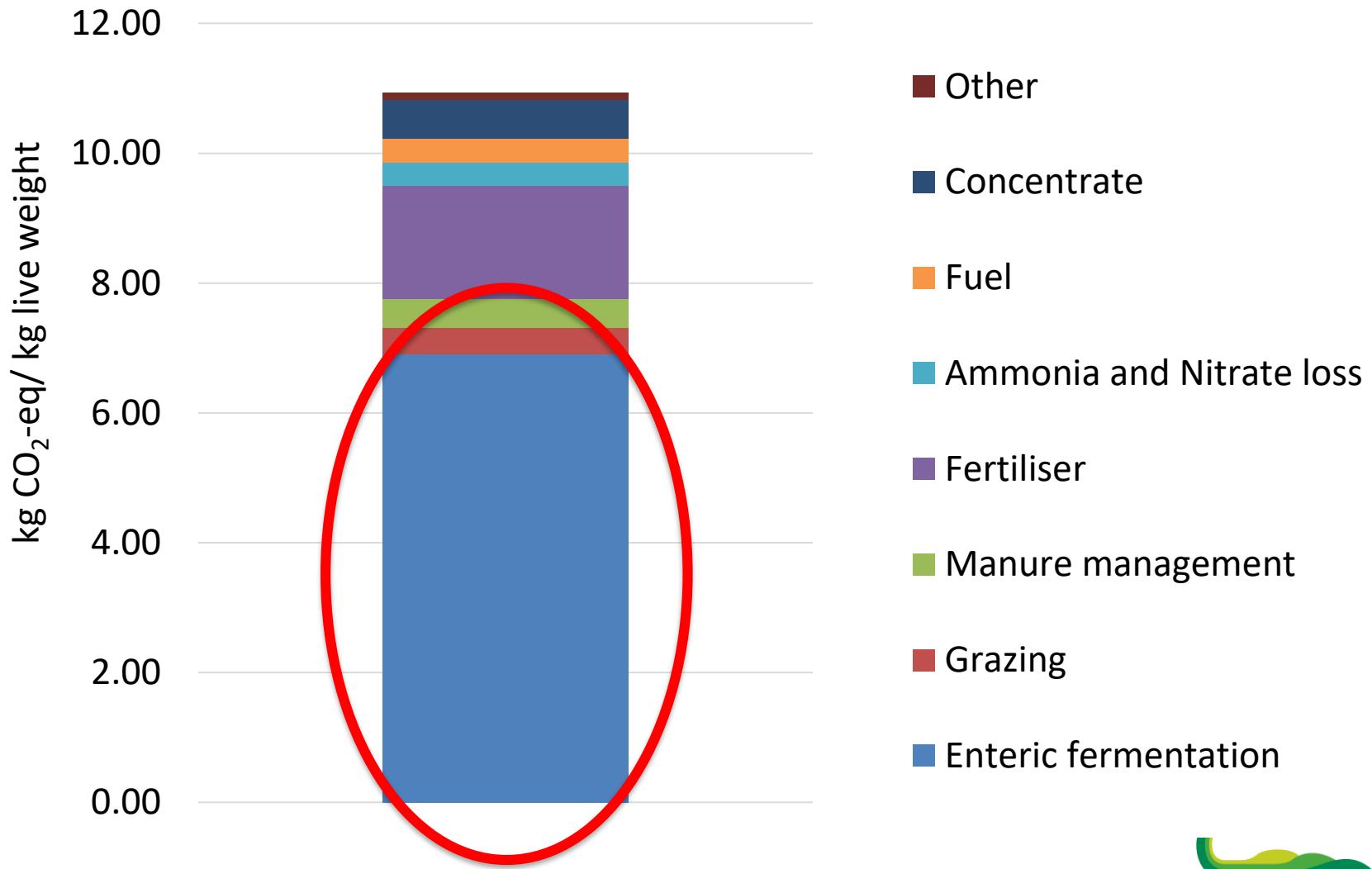
Climate & Environment

Comment: Farming cannot be left off the hook when it comes to climate action

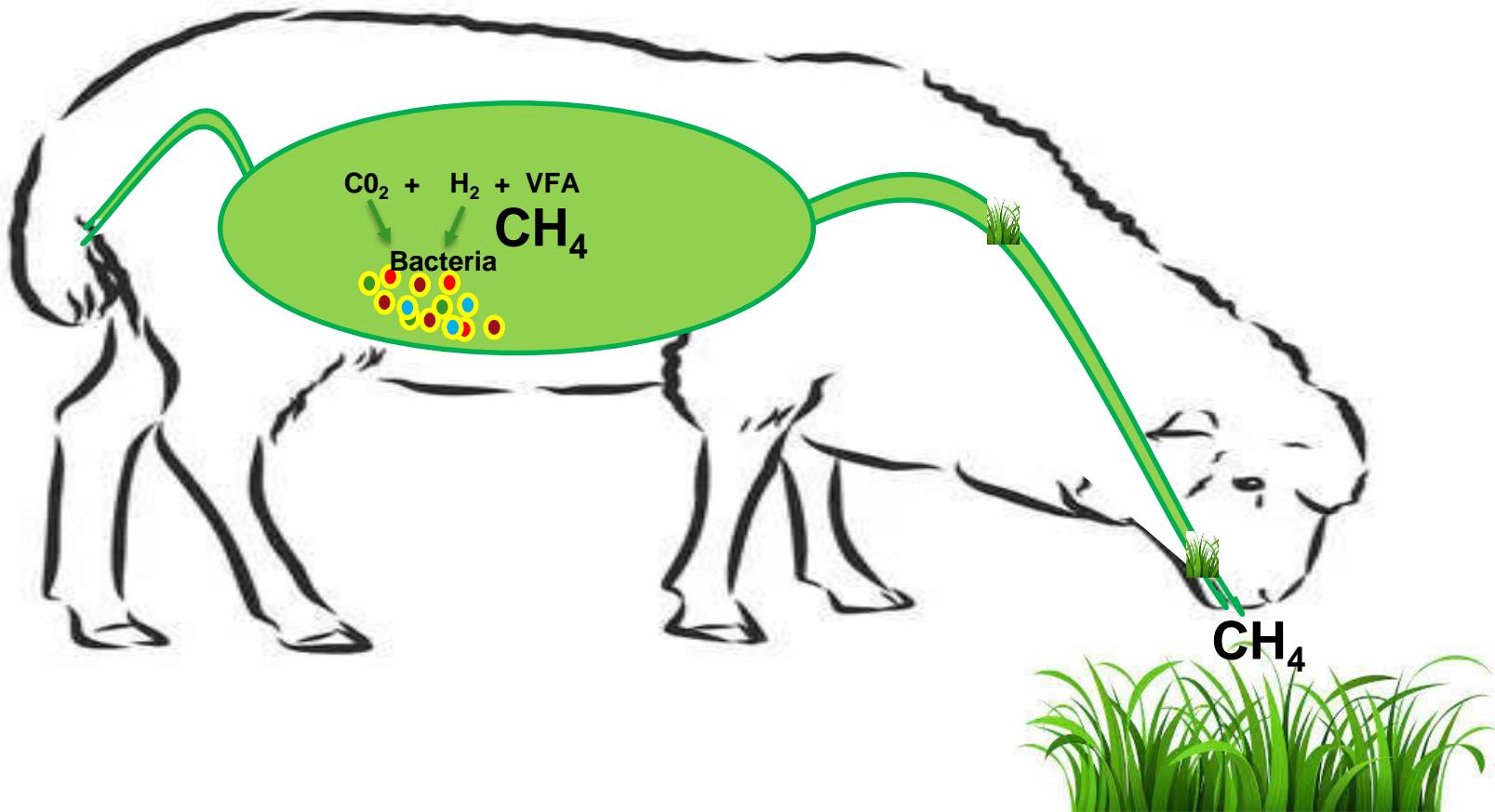
The 2030 Agri-Food Strategy does not go far enough in relation to emissions reduction from agriculture and places an unfair burden on other sectors



Irish sheep GHG emissions



Enteric Fermentation

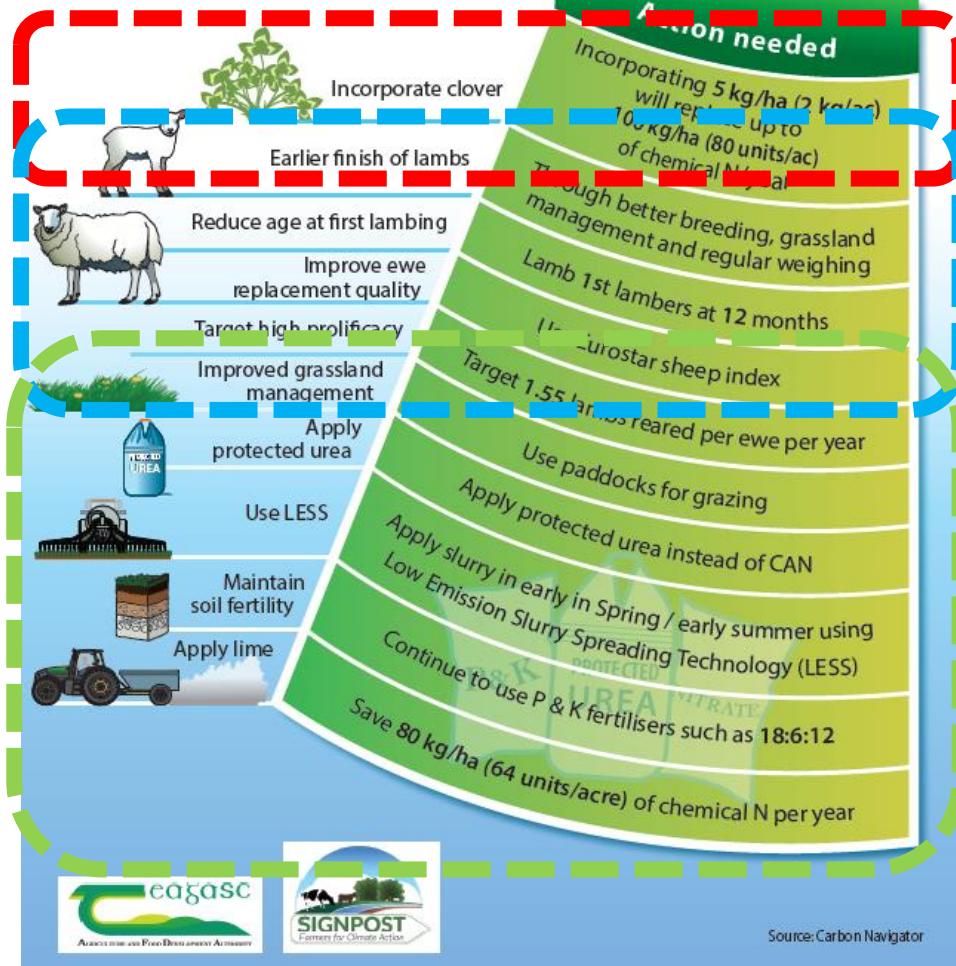
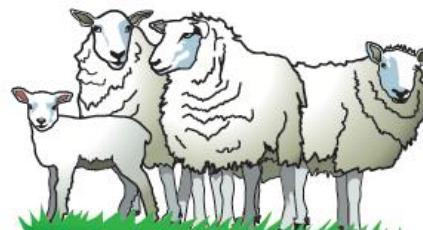


Diet

Breeding

Management

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



Breeding

7

Selecting on €uro-star indexes

1 Star Flock



1 Star Flock

257 ewes

DTS : 203

Using CPT +€18 per ewe

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ABSTRACT
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

5 Star Flock

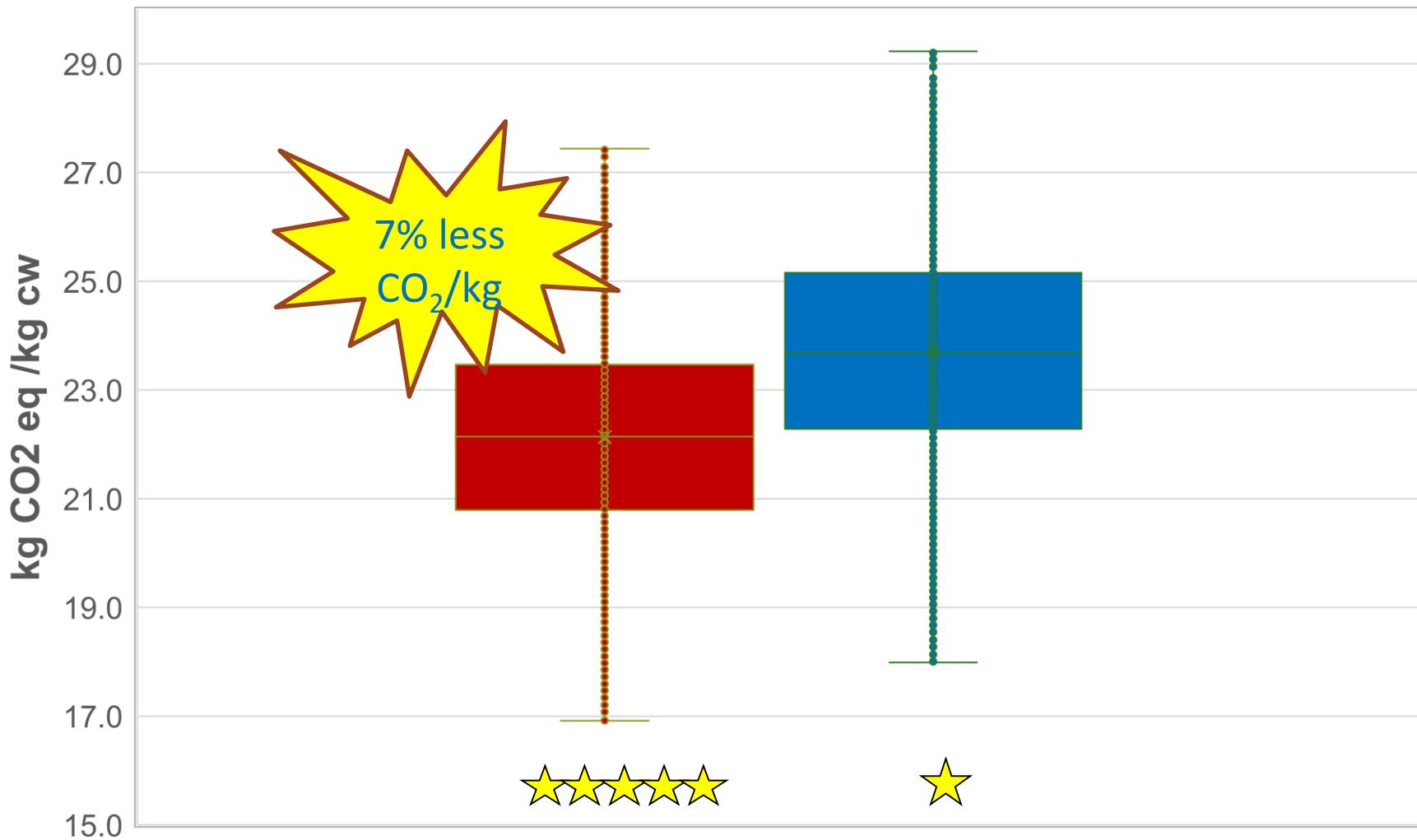


5 Star Flock

257 ewes

DTS : 190

Greenhouse gas intensity



Direct Selection

10

Why measure methane in sheep?

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

beef+lamb
new zealand | BY FARMERS.
FOR FARMERS.

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Home > News & views > Sheep farmers now able to breed "low methane" sheep

Topics: Media Release

Sheep farmers now able to breed "low methane" sheep

In a world first, New Zealand sheep farmers now have the ability to breed animals that emit less methane.

Wednesday, 27 November 2019



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).

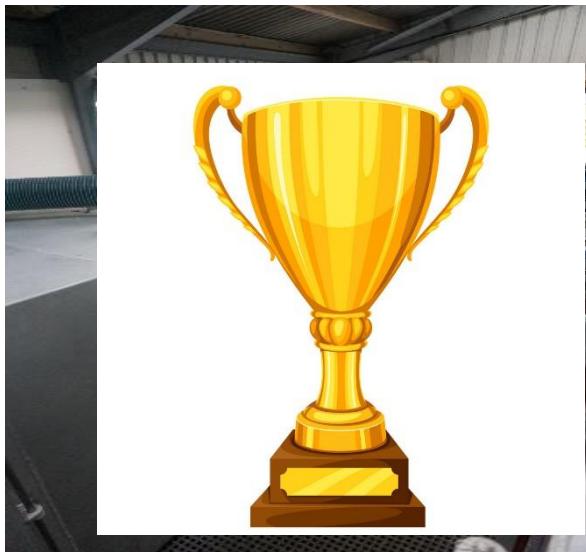


Methods of measurement

PACs

Respiration Chamber

GreenFeed



PAC



Results



Methane
(g/day)

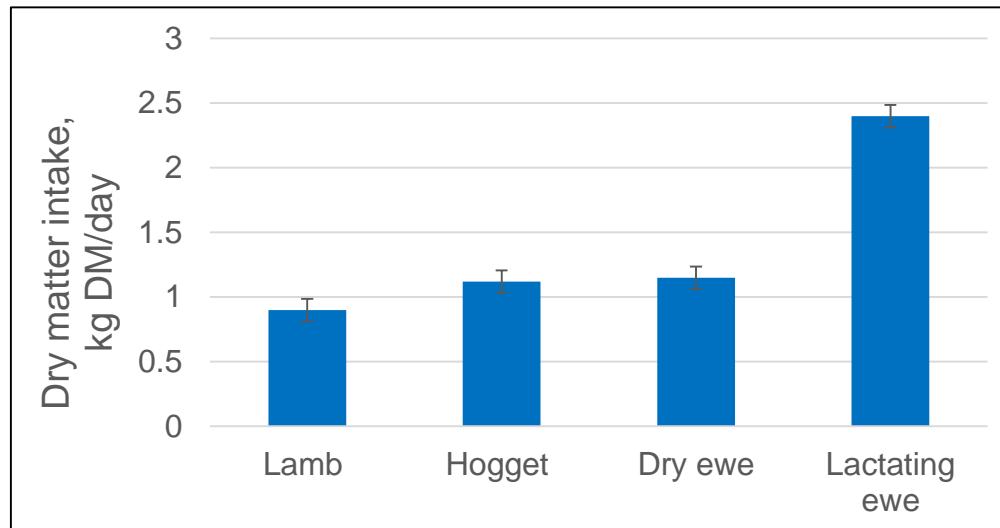
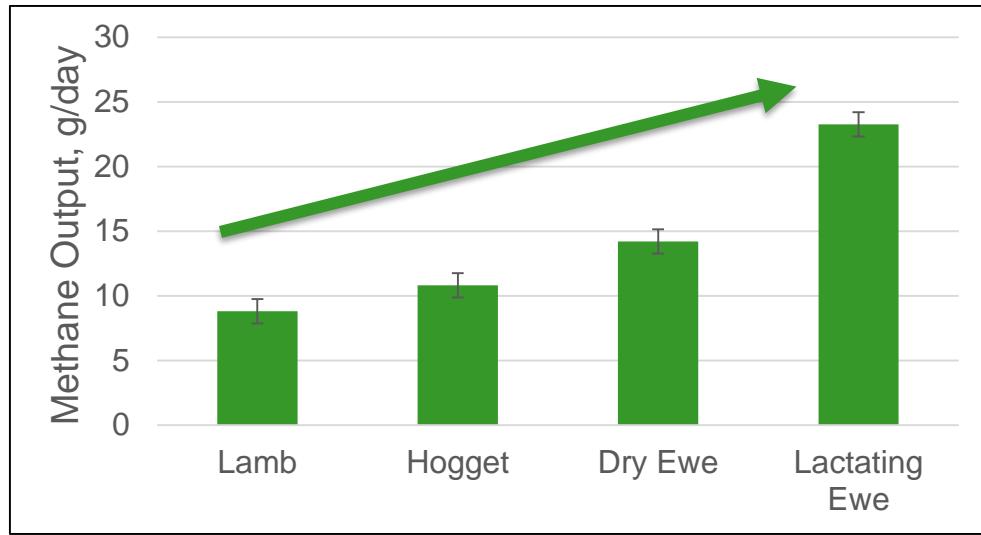
19.29

240

230

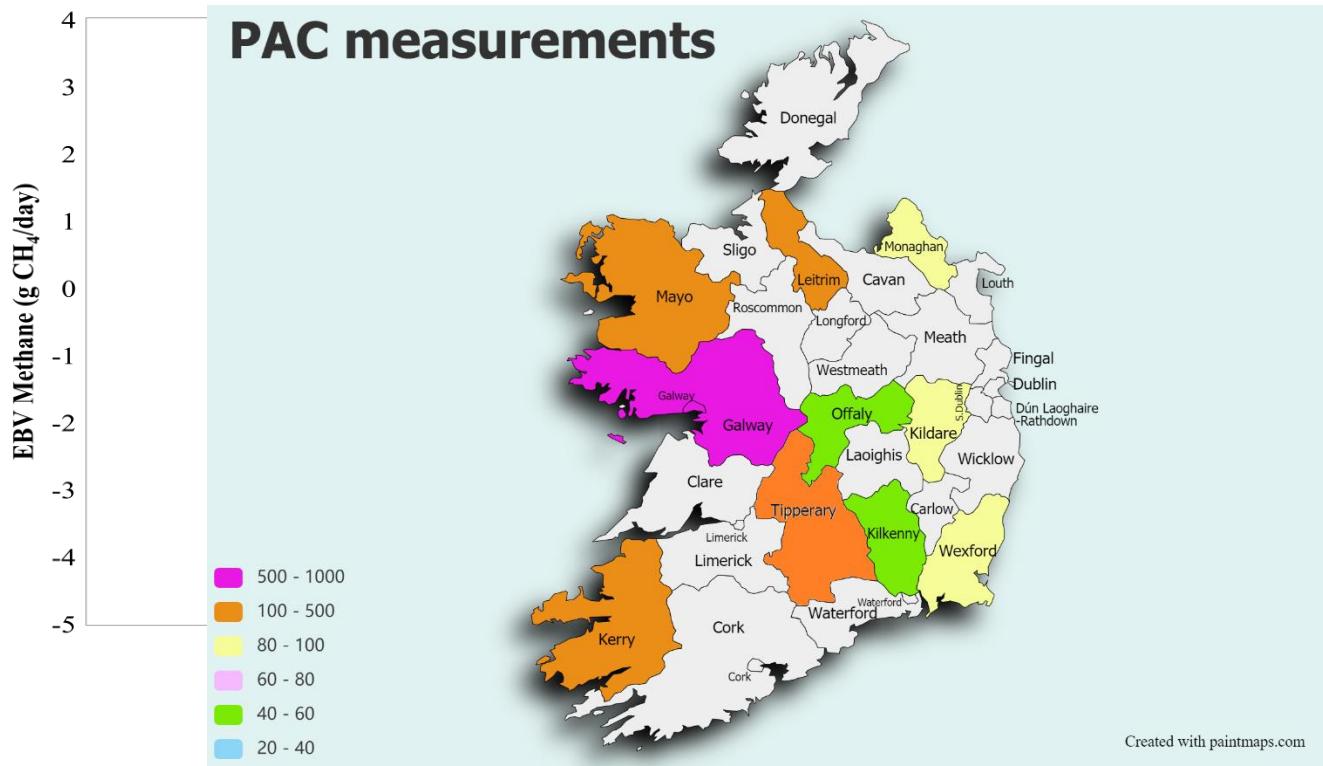
0.4-0.6 g CH₄ per kg live-weight

Methane output and DMI in sheep



Genetics of methane

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



Next steps

TUBBER GIBSON WD2101814, IE043817801814D

DOB: 16-JAN-2021 • Belclare • Male • Twin • Parentage DNA Verified • Scrapie: Type 1



Breeder: **LIAM** ♂ [REDACTED] Offaly • DQI: 90%

Owner: **MICHAEL** [REDACTED] Cork • DQI: 93%

VIOLET HILL DERREK

JR1810861, IE042821310861E

TUBBER

WD1601409, IE043817801409E

Sire: **TUBBER FINLOUGH**

WD2001752, IE043817801752B

Dam: **CAHERGAL**

MJ1903856, IE042200703856C

RATHKENTY BEETHOVEN

RL1602916, IE044280302916F

MJ1402792

IE042200702792E

EuroStars

29-JUN-2022

Replacement: **€6.79**

Top 31%

Acc 75%

Terminal: **€2.00**

Top 5%

Acc 76%



Lamb Survivability: **0.62%**



Bottom 41%

Days to Slaughter: **-15.2 days**



Top 3%

No. Lambs Born: **0.30**



Bottom 6%

Daughter Milk: **0.3 kg**



Top 3%

Methane: **- 2 g/d**



Top 1%

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

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GreenBreed (17/S/2135)



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Thank you for your attention

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