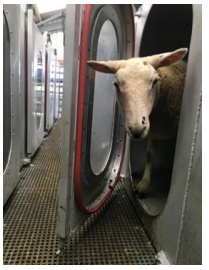
The effect of sward type on *in-vivo* dry matter intake digestibility and methane output in sheep






S. Woodmartin [1, 2], P. Creighton [1], T.M. Boland [2], L. Farrell [1], E. Dunne [1] and F. McGovern [1]

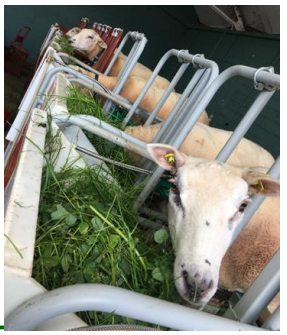
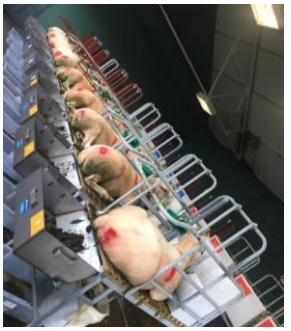
[1] *Teagasc Animal and Grassland Research and Innovation Centre, Mellows Campus, Athenry, Co. Galway, Ireland*

[2] *School of Agriculture and Food Science, University College Dublin, Belfield, Dublin 4, Ireland*

Objective

To evaluate the effect of **sward type** on:

- Dry matter intake (DMI)
- Digestibility (DMD)
- Methane (CH_4)

Methods

- 5x5 Latin Square
- 5 feeding periods, 5 dietary treatments
- Housed in metabolism crates
- Diets offered as zero grazed herbage

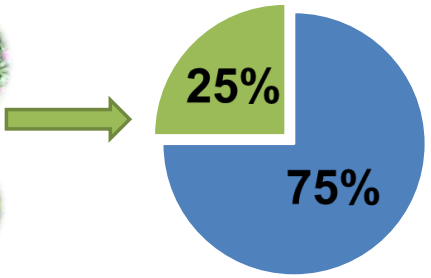
Perennial Ryegrass (PRG)

PRG+White Clover (PRG+WC)

PRG+Red Clover (PRG+RC)

PRG+ Chicory (PRG+Chic)

PRG+ Plantain (PRG+Plan)



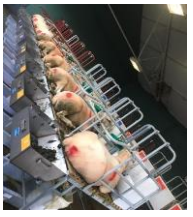
Day 1-2
Open individual pens

Day 3-5
Metabolism crates (adaption)

Day 6-12
Metabolism crates (measurements)

Day 12
Left Crates

Returned to group grazing (72hrs)



20 animals (n=4)

Belclare

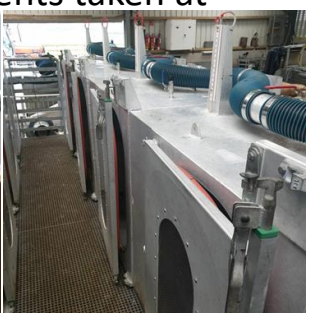
Male sheep

♂

Av. LW 65kg

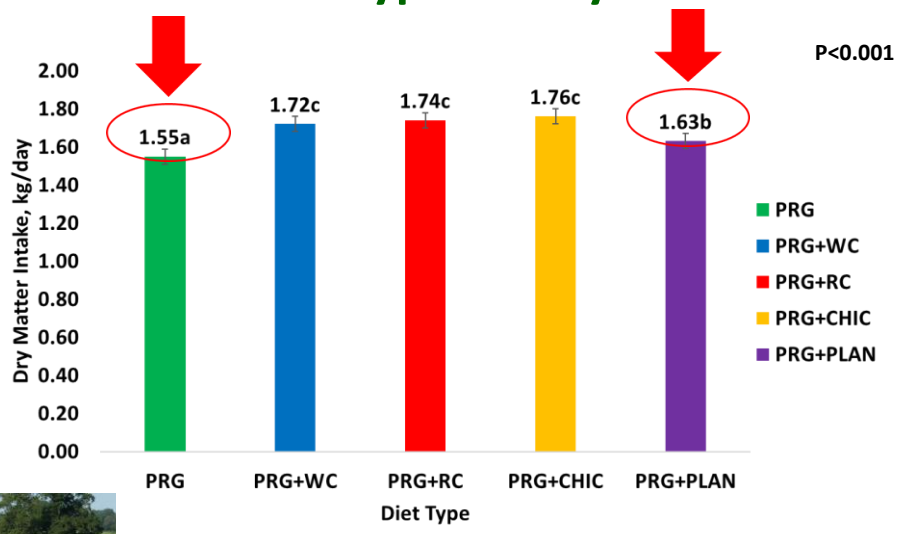
Methane Measurements

- Portable Accumulation Chambers (PAC)
- Off feed for 1 hour prior to measurements
- 50 minutes in the PAC
- Methane, oxygen and carbon dioxide measurements taken at 3 time points
  - 0, 25 and 50 minutes
- 12 chambers

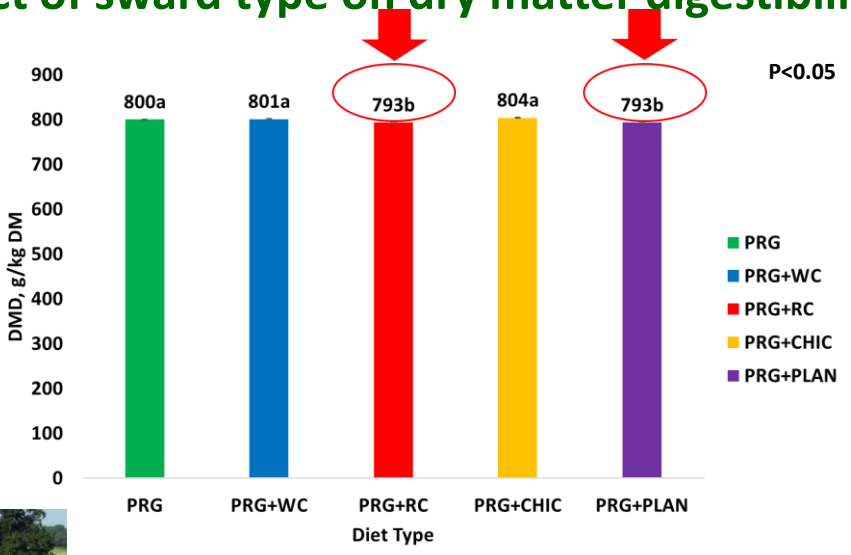


Results

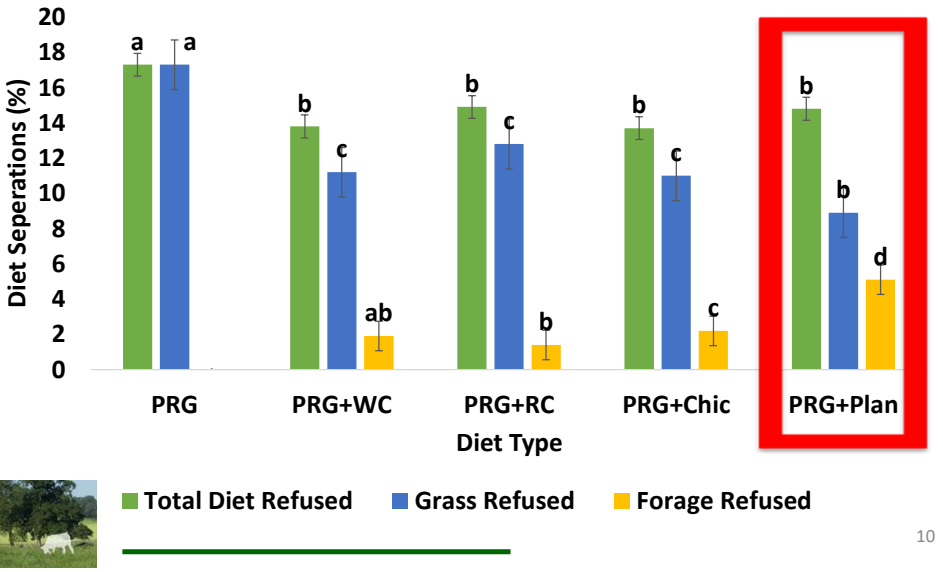
The effect of sward type on dry matter intake



The effect of sward type on dry matter digestibility



The effect of diet offered on refusal proportions



Total Diet Refused Grass Refused Forage Refused

Leaf, stem dead proportions of the offered diet

	PRG	PRG+WC	PRG+RC	PRG+CHIC	PRG+PLAN
Grass Leaf, %	61.4^{a}	46.0^{b}	46.2^{b}	45.8^{b}	46.0^{b}
Grass Stem, %	32.0^{a}	24.0^{b}	24.0^{b}	23.8^{b}	24.0^{b}
Grass Dead,%	5.8^{a}	4.2^{b}	4.2^{b}	4.2^{b}	4.2^{b}
Forage Leaf,%	-	11.6^{a}	13.4^{b}	15.0^{c}	12.6^{d}
Forage Stem,%	-	8.4^{a}	7.6^{b}	5.8^{c}	10.8^{d}
Forage Dead,%	-	1.0	1.0	1.0	0

The effect of sward type on methane output

-14%

-27%

Herbage Treatment

	PRG[2]	PRG + WC	PRG + RC	PRG + Chic	PRG + Plan	SEM	P value
Methane production (g CH_4/day)	21.90^{ab}	18.81^{c}	20.09^{bc}	22.29^{a}	21.15^{ab}	0.831	0.0001
Methane yield (g CH_4 / kg DMI[1])	16.16^{a}	11.76^{b}	13.00^{bc}	13.82^{cd}	14.31^{d}	0.623	0.0001

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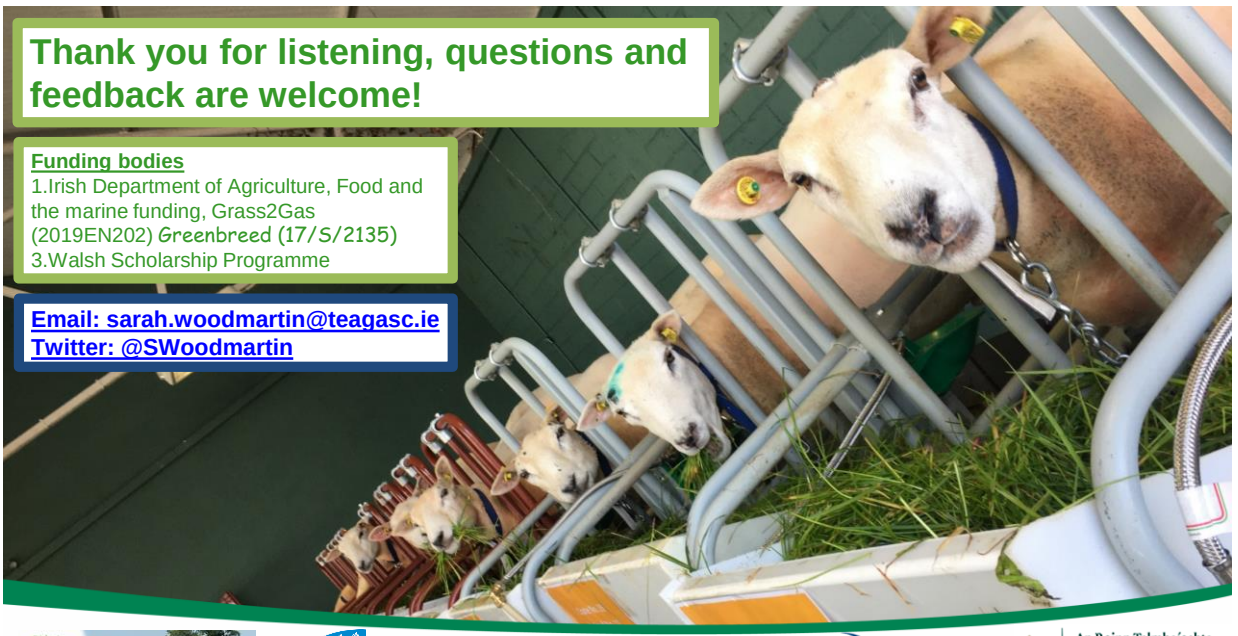
Conclusion

- **The inclusion of a companion forage:**
  - Increased DMI
  - Resulted in similar digestibility's across all sward types
  - Ranked methane yield lower
  - Ranked methane production lower by up to 14%



Thank you for listening, questions and feedback are welcome!

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Email: sarah.woodmartin@teagasc.ie
Twitter: @SWoodmartin

UCD DUBLIN

teagasc
Agriculture and Food Development Authority

GrassToGas

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine