



Future sustainable grazing systems at the UCD Lyons Farm Long Term Grazing Platform

T. Boland, H. Sheridan, F. Monahan, P. Murphy, Z. C. McKay, O. Schmidt, F. Godwin, A. Evans, A. Kelly.

UCD School of Agriculture and Food Science,
University College Dublin, Belfield, Dublin 4, Ireland.

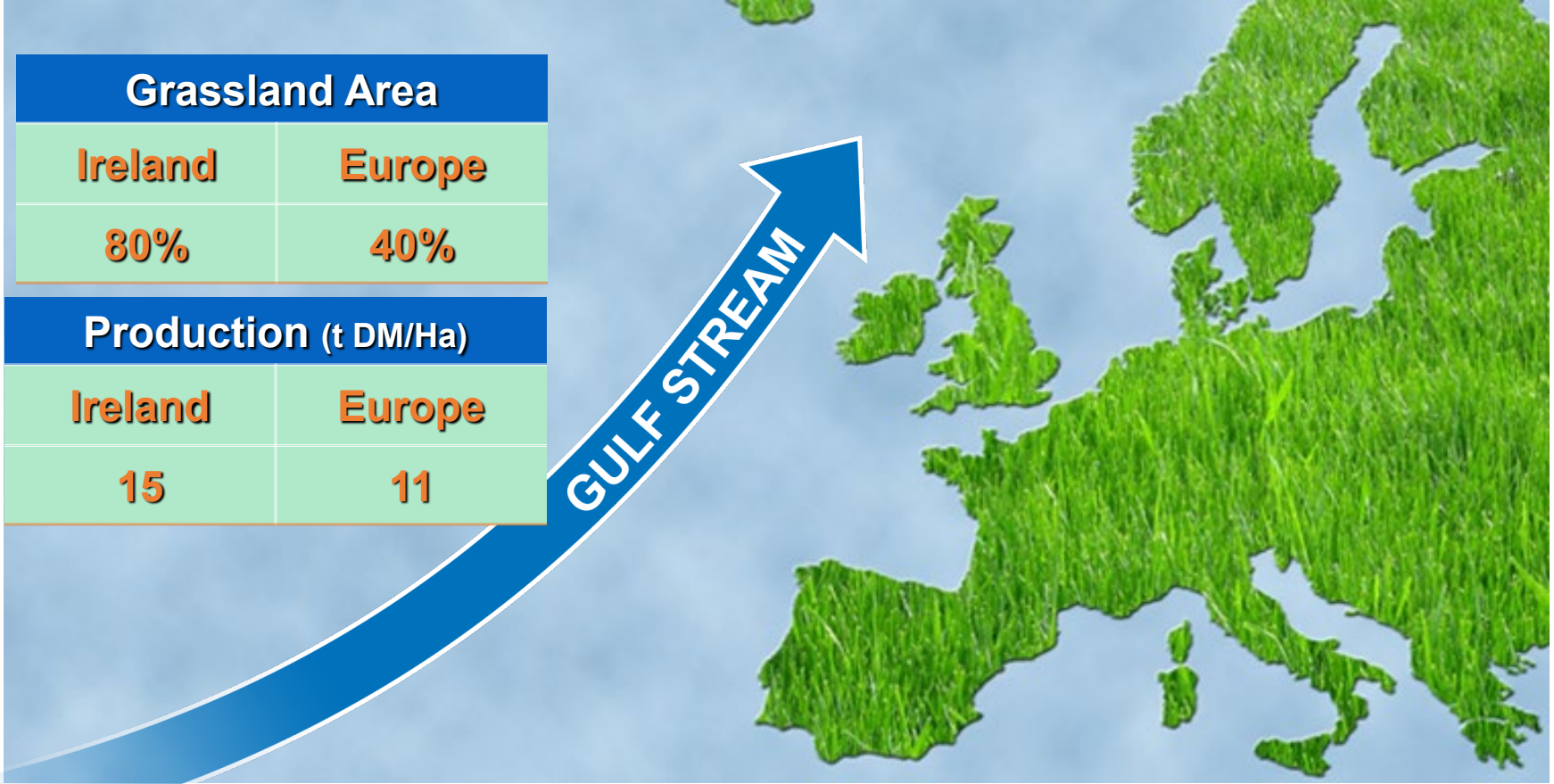
Tommy.boland@ucd.ie



Ireland's Grass Advantage

Grassland Area	
Ireland	Europe
80%	40%

Production (t DM/Ha)	
Ireland	Europe
15	11



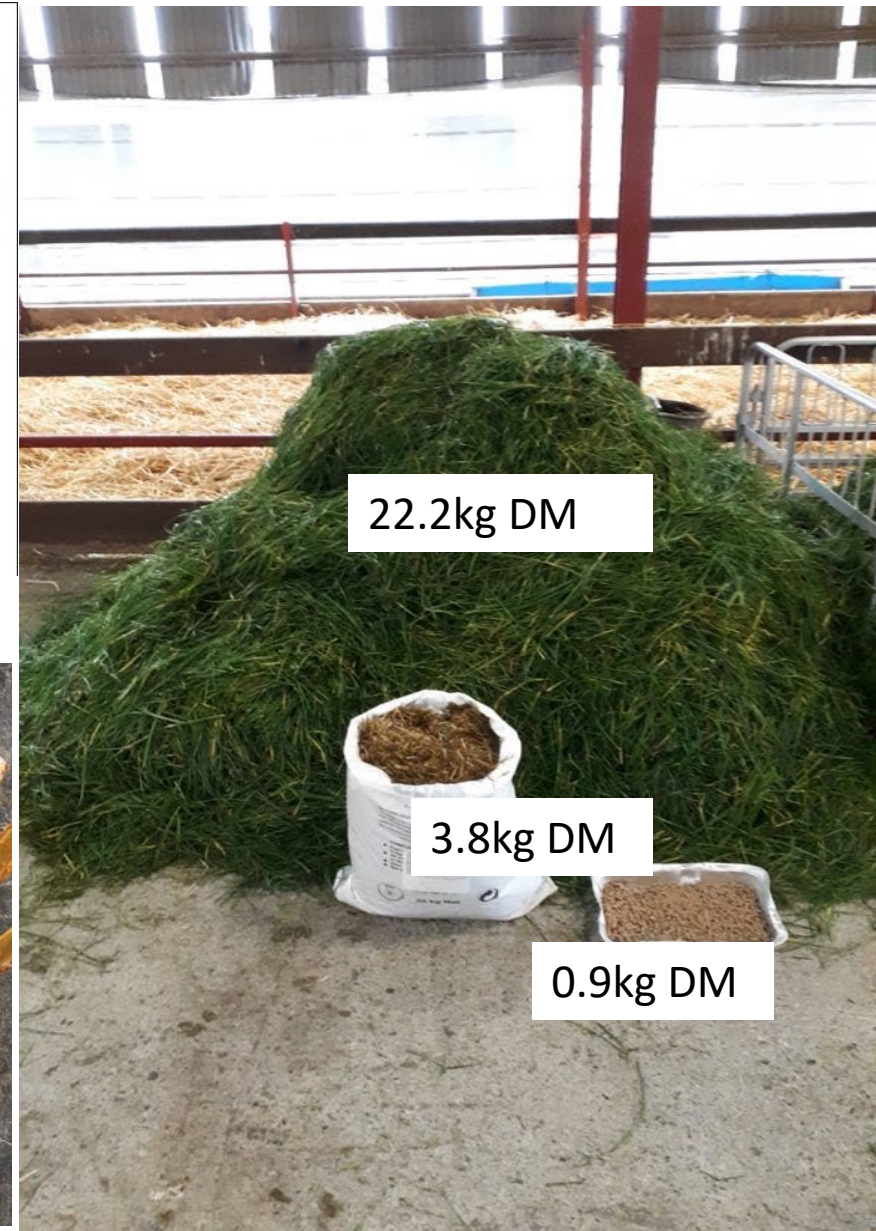
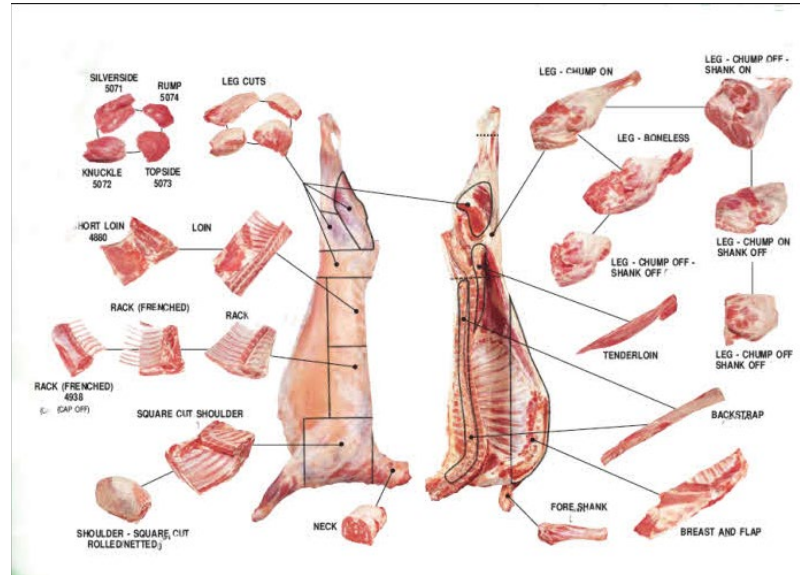
GULF STREAM

The Gulf Stream provides frequent rainfall and mild temperature range.

-Ireland has Europe's longest growing grass season

Kelly (2023)

What's in a kg of lamb?



Earle et al. (2017)

Perennial Ryegrass only pasture

300+ grazing days
3.5-4.5 LU/ha
250 + kg N/ha

Issues?

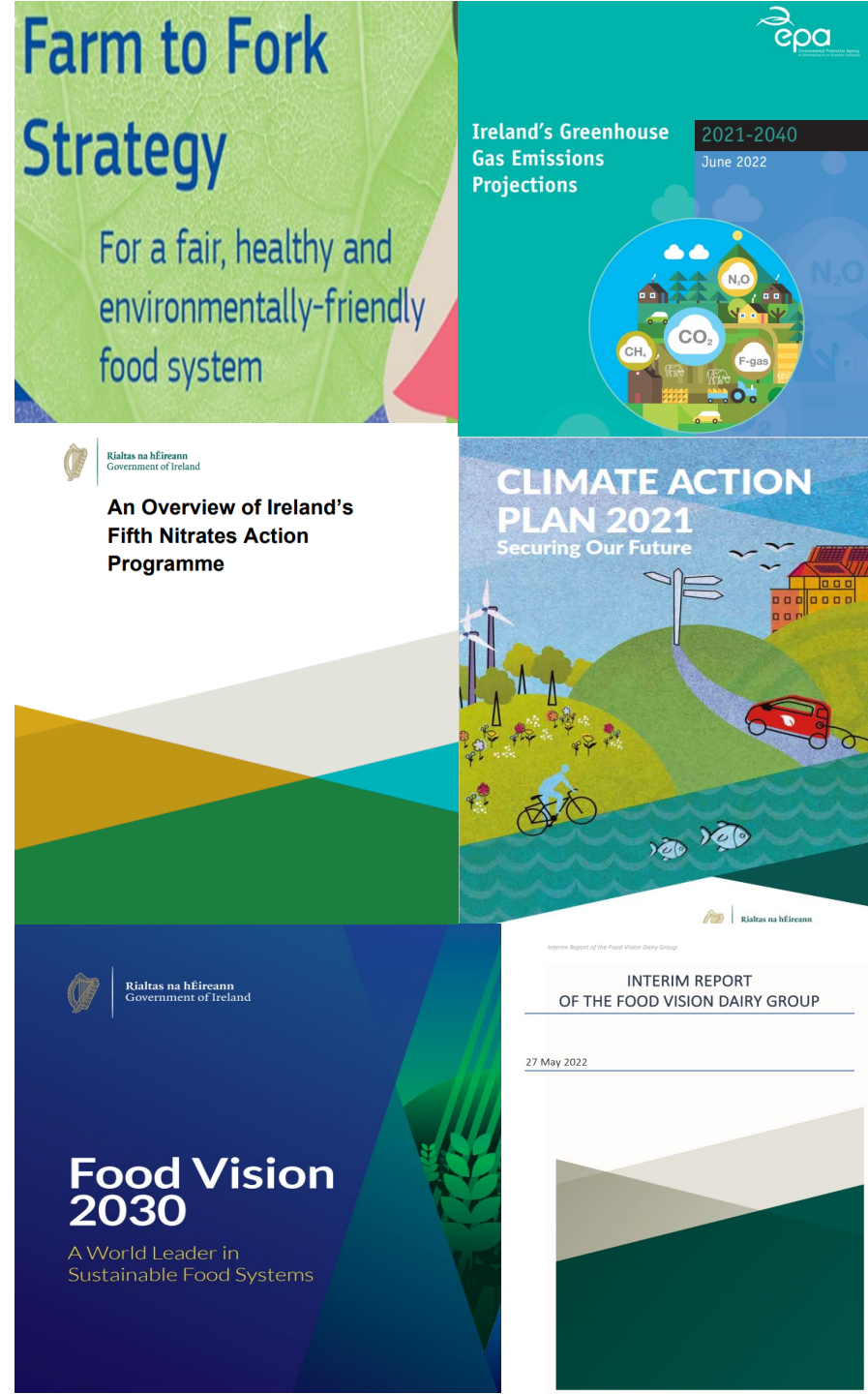
High N requirement
Trace elements
Parasite burden/Control





Environmental sustainability challenges

- ❖ Carbon neutral by 2050
- ❖ Reduce greenhouse gas emissions
 - 25% by 2030
- ❖ Improve water quality via
 - 50% reduction in nutrient losses
 - 20% reduction in the use of fertilisers
- ❖ Increase biodiversity



Should we be looking for another way?



Water quality
Biodiversity
GHG emissions
Carbon sequestration

.....

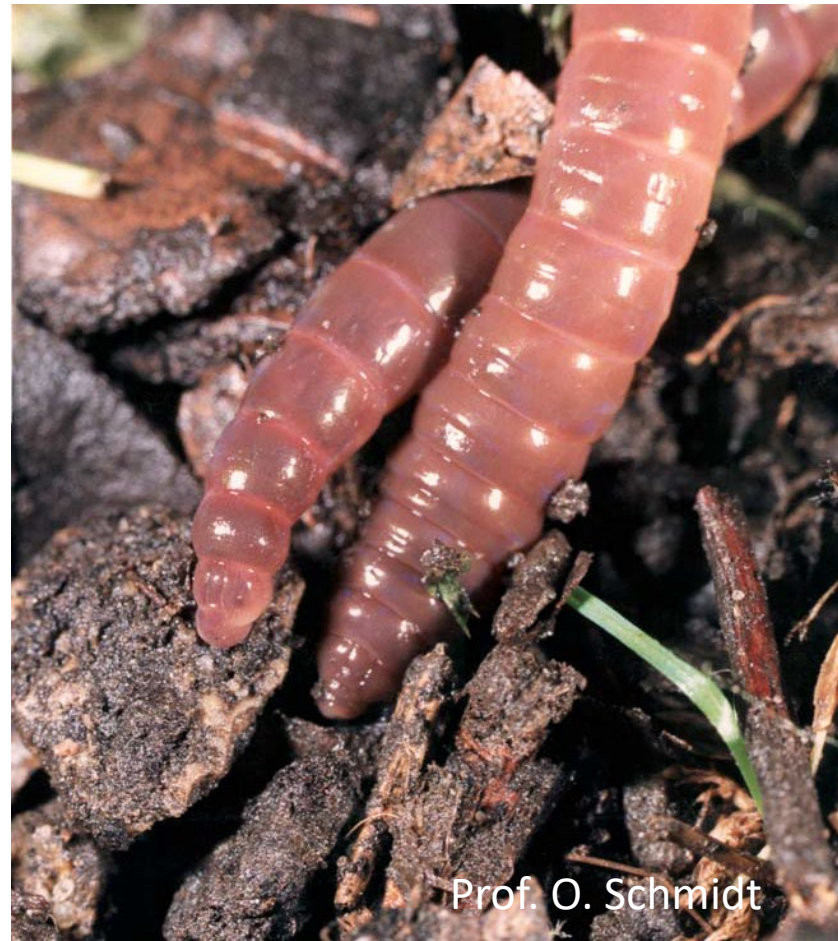


Does sward diversity present an opportunity?

The background of the slide is a photograph of a lush, green sward. It is densely packed with various plants, including tall grasses, clover, and several small, white, daisy-like flowers. Some pinkish-purple flowers are also visible. The overall appearance is one of high biodiversity.

Seasonality
Persistency
Nutritive value
Weed Control

Benefits of multispecies swards in sheep systems



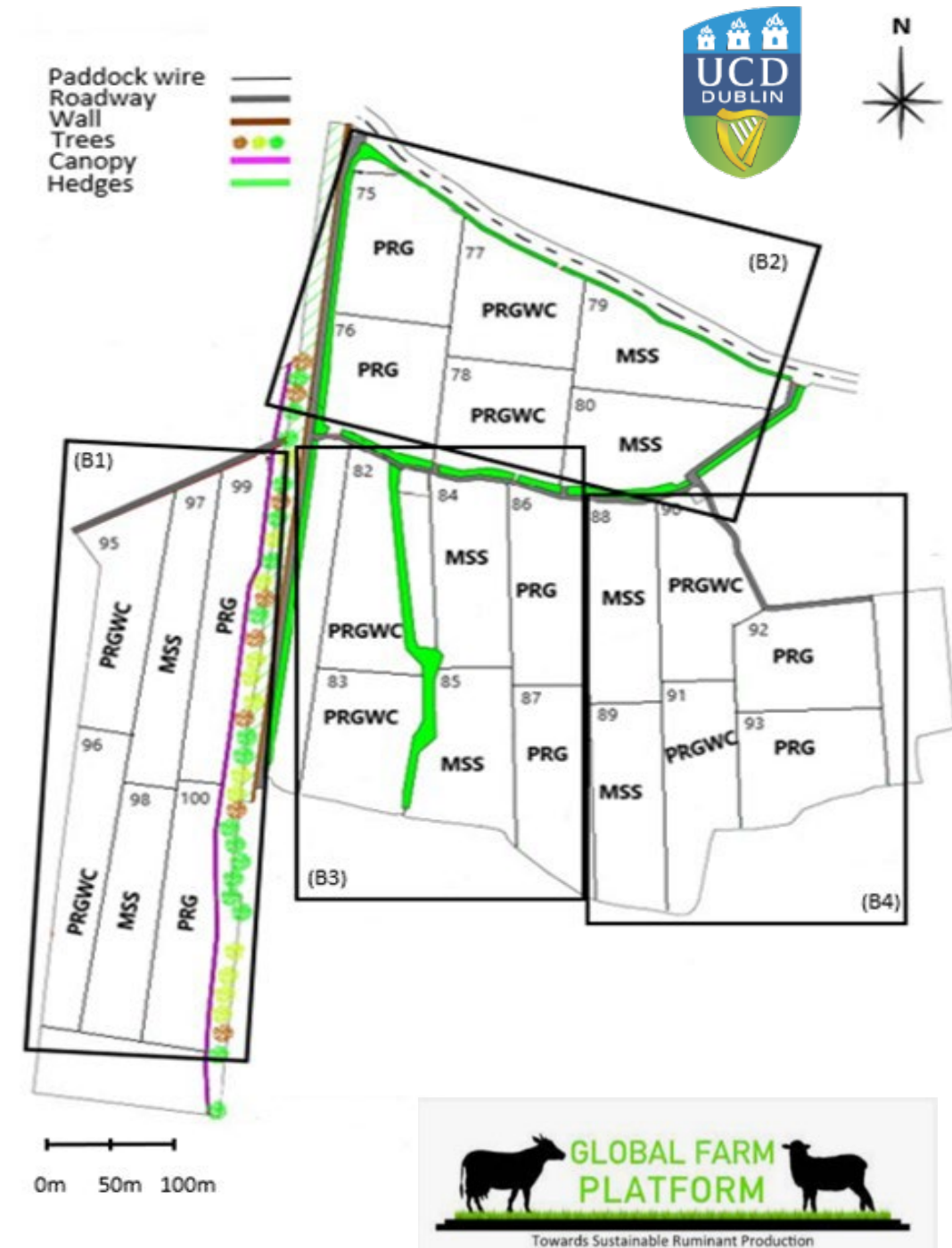
- Reduce fertilizer N inputs by 40%
- Maintain grass/herbage production
- Increase animal performance
- Accelerate slaughter date by two weeks
- Reduce anthelmintic inputs by 50%
- Increased biodiversity
- Increased earthworm populations
- Increased water infiltration
- Reduced nitrous oxide emissions



An urgent need to rejuvenate agri-food systems at farm level and beyond



UCD Lyons Farm Long Term Grazing Platform



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







A 2 ha hydrologically isolated paddock of
multispecies grassland shortly after establishment,
Autumn 2019

Image: Shona Baker 2019

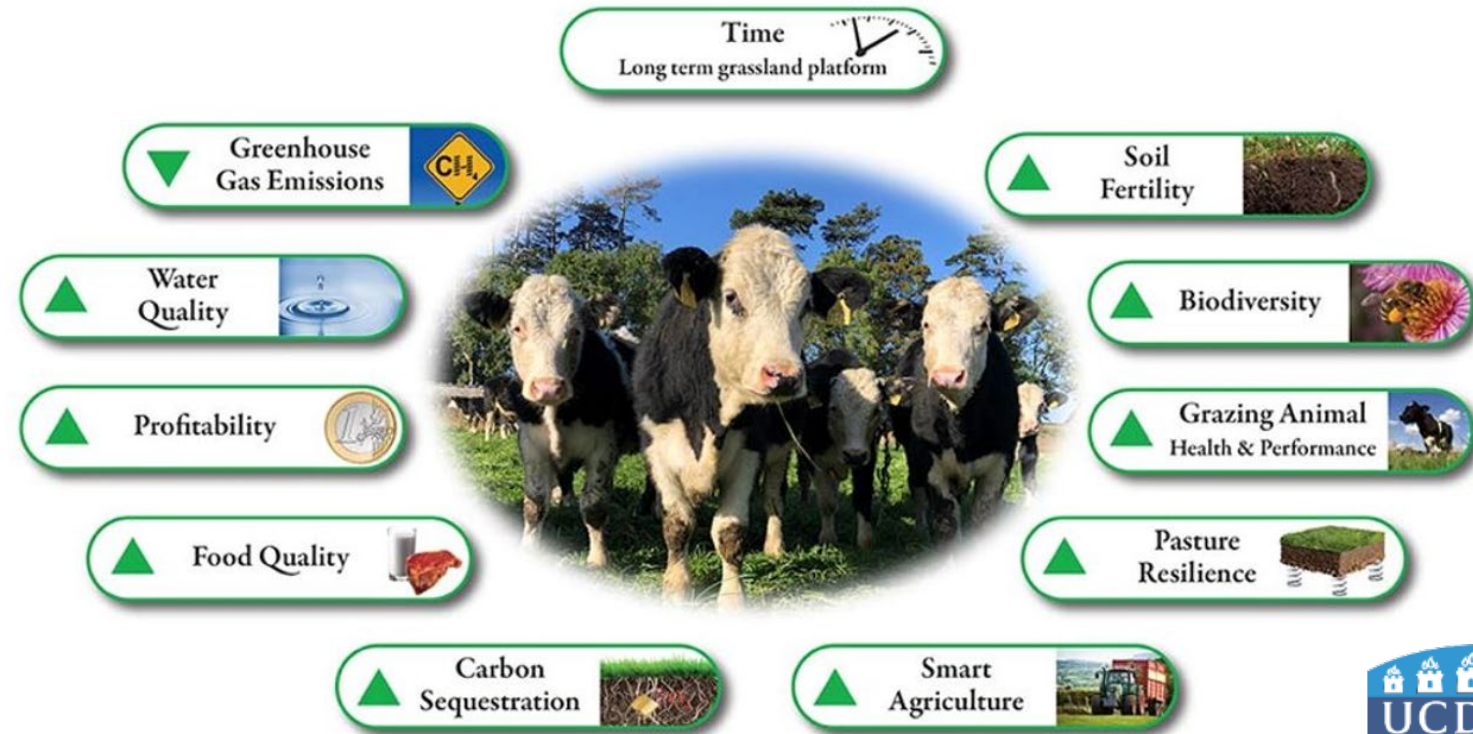
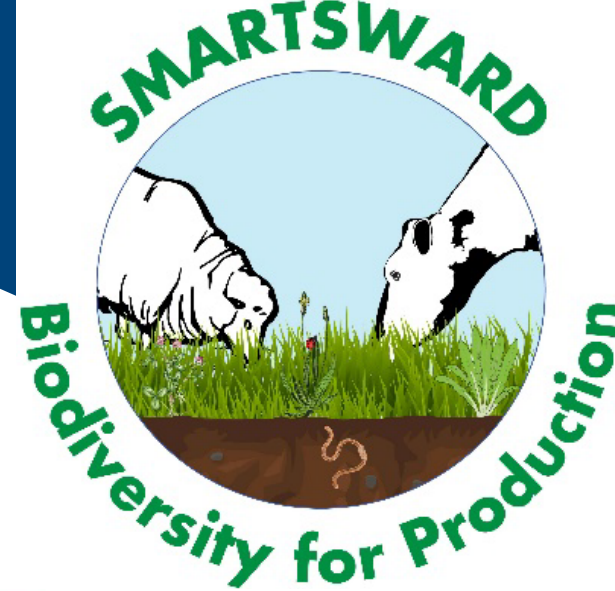


A multispecies sward on the UCD Lyons Farm Long-
term Grazing Platform, Autumn 2019

Image: Shona Baker 2019

Long Term Grassland Platform

- Long term grassland project
- Sustainability options for grass based agriculture- lower environmental footprint
- Aim to increase environmental and production efficiency of a traditional dairy calf-to-beef farm system.

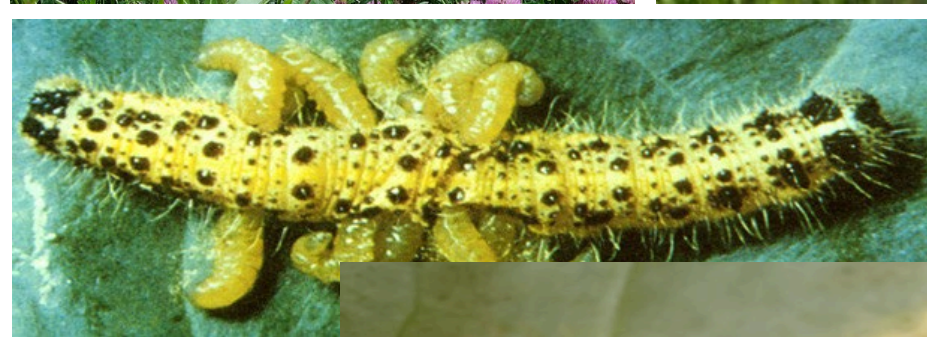
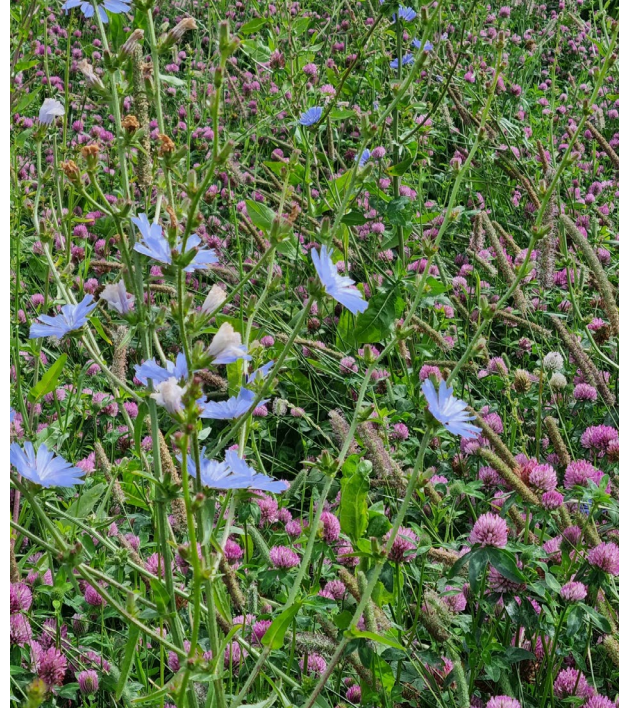


- UCD Lyons farm
- Three (8 ha) farmlets
- Three sward types
 - Perennial ryegrass (**PRG; 210 kg N**)
 - Perennial ryegrass white clover (**PRGWC; 90 kg N**)
 - Multispecies (**MSS; perennial ryegrass, Timothy, white and red clover, plantain and chicory; 90 kg N**)
- Animal liveweight is recorded monthly
- Herbage production is measured weekly
- GDBSM - bioeconomic



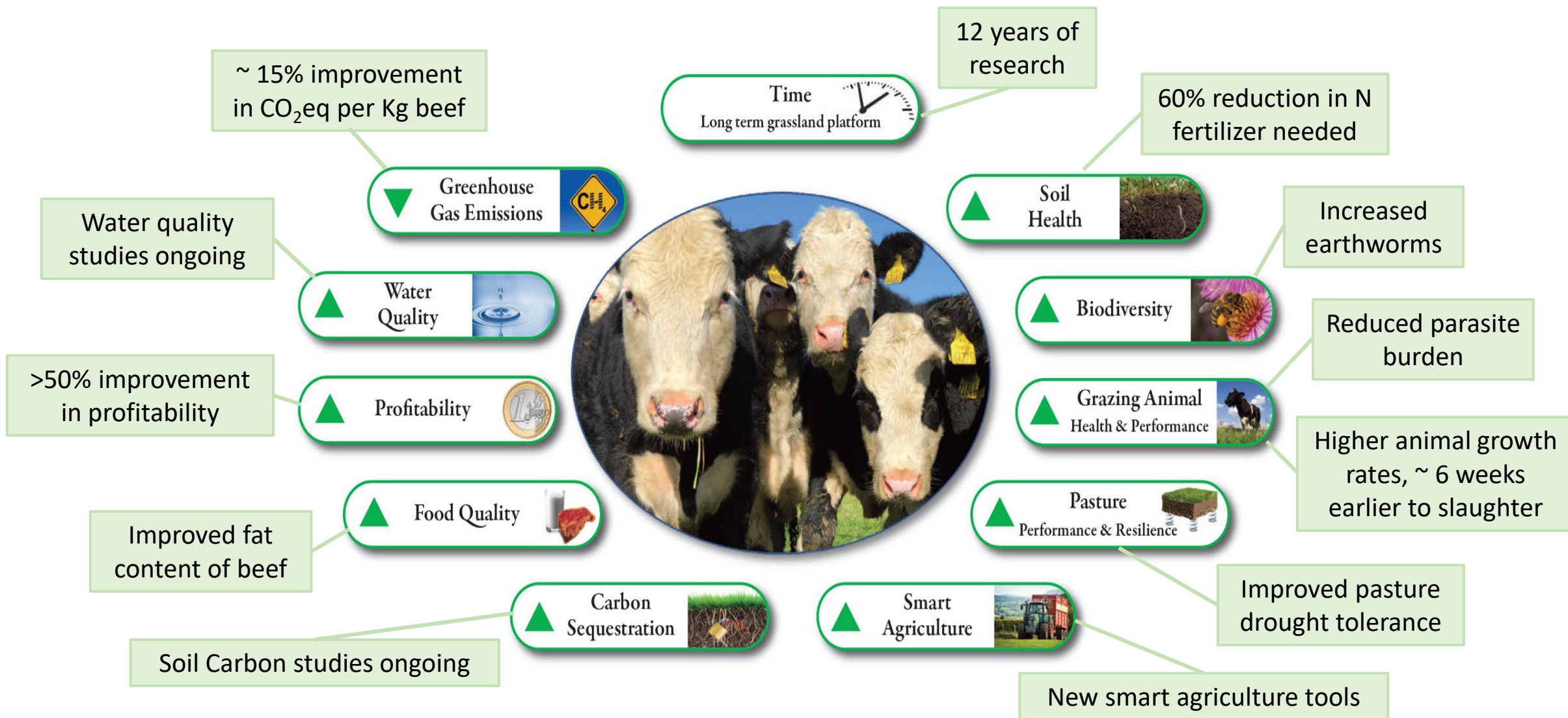


Olaf Schmidt



Benefits of Multispecies Swards vs Conventional

What we have shown so far:



"If you build it, they will come."
-Field of Dreams (1989)



Policy Makers





Sowing Multi-Species Swards

Background

This Measure is being
sustainable methods of
Research work carried
nitrogen fertiliser input
sequestration while si
anticipated to have a
Biodiversity Strategy.

The Measure will run
from date of applicatio
September 2023. The
Regulation.



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

DEVENISH™
Beyond Nutrition

Teagasc
AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY



Site selection



Choose grazing paddocks over silage paddocks.

Industry groups



Farmers



Multispecies pastures produce more fodder, research shows

Updated / Wednesday, 23 Aug 2023 16:59



International Scientists



Continuing Infrastructure investment



Follow on Research Projects

ABP partners with UCD and BiOrbic for Regenerative Farm Project



Breifne O'Brien

December 8, 2023 6:00 am



L-R: ABP Food Group's Irish agri-sustainability manager, Stephen Connolly, BiOrbic business development manager, Sean Douglas, ABP Slaney's general manager Rory Fanning and lead researcher on the project, BiOrbic's Professor Tommy Boland



European Union



IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn



So what now?

- Refine CH₄ emissions factors for individual sward types
- Refine N₂O emissions factors for individual sward types
- Use of native concentrate feedstuffs
- Identification and incorporation of low CH₄ emitting phenotypes
- Longer term carbon sequestration under individual sward types
- Water quality
- Water usage
- Soil health/soil fertility
- Zero N
- Animal behavior
- Animal health
- Farmer behavior
- Sward renewal/rejuvenation
- Integrated systems: beef/sheep/dairy/arable
- Lets do it together!!



Thank you

