Ballyhaise Dairy Research Farm

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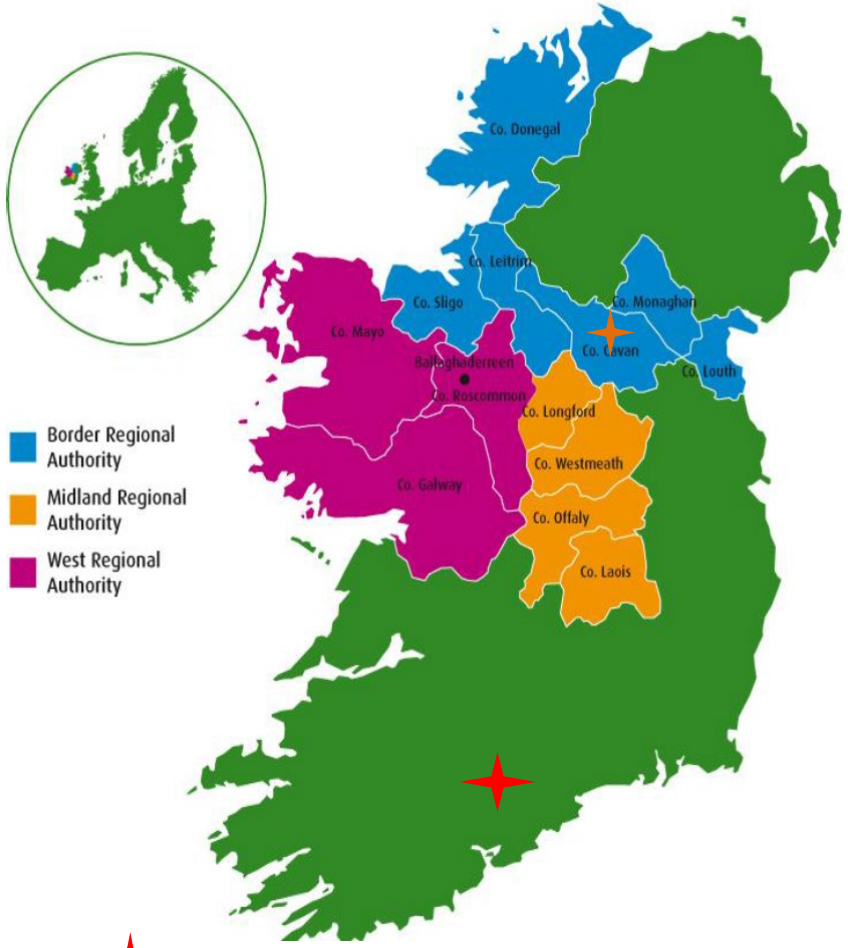
Introduction

- Background of research programme
- Quick introduction to the farm
- Description of Current Research
- Future Direction

Purpose of Research Programme

- BMW region accounts for 47% of land and 25% of milk produced (CSO, 2015)
- NFS data suggests that farms in this region are less economically viable than other regions (O'Donoghue and Hennessy, 2014)
- Previous studies have questioned the viability of milk production on wetland soils due to reduced grass production & utilisation, a short grazing season, increased supplementation and higher production costs (Shalloo, 2004; Lapple et al, 2012; Ramsbottom et al., 2015)



Regional Differences in Farm Systems (Ramsbottom et al., 2015)

Region	Cork	Midlands	North West	South East	South West	SE	P
Stocking rate (LU/ha)	2.20 a	2.12 b	1.93 c	2.11 b	1.99 c	0.020	0.001
Grazing days (No./hectare)	577 a	578 a	540 b	558 a,b	525 b	12.4	0.01
Pasture harvested (t DM/ha)	8.4 a	7.9 b	7.0 c	8.0 b	7.4 d	0.083	0.001
Milk production							
Lactation length (days)	282 a	279 a,d	271 b	274 b,c	277 c,d	1.5	0.001
Milk (l/cow)	5,236 a	5,075 b	4,925 c	5,169 d	5,121 b,d	31.1	0.001
(l/ha)	11,451 a	10,715 b	9,466 c	10,914 b	10,217 d	118.5	0.001
Herd EBI (€)	73 a	76 b	70 c	76 b	74 a,b	0.9	0.001
Net profit (c/L)	12.3 a	10.9 b	10.4 b	10.9 b	11.5 c	0.19	0.001
(€/cow)	650 a	556 b	515 c	574 b,d	591 d	13.8	0.001
(€/ha)	1,435 a	1,187 b	985 c	1,223 b	1,192 b	28.7	0.001

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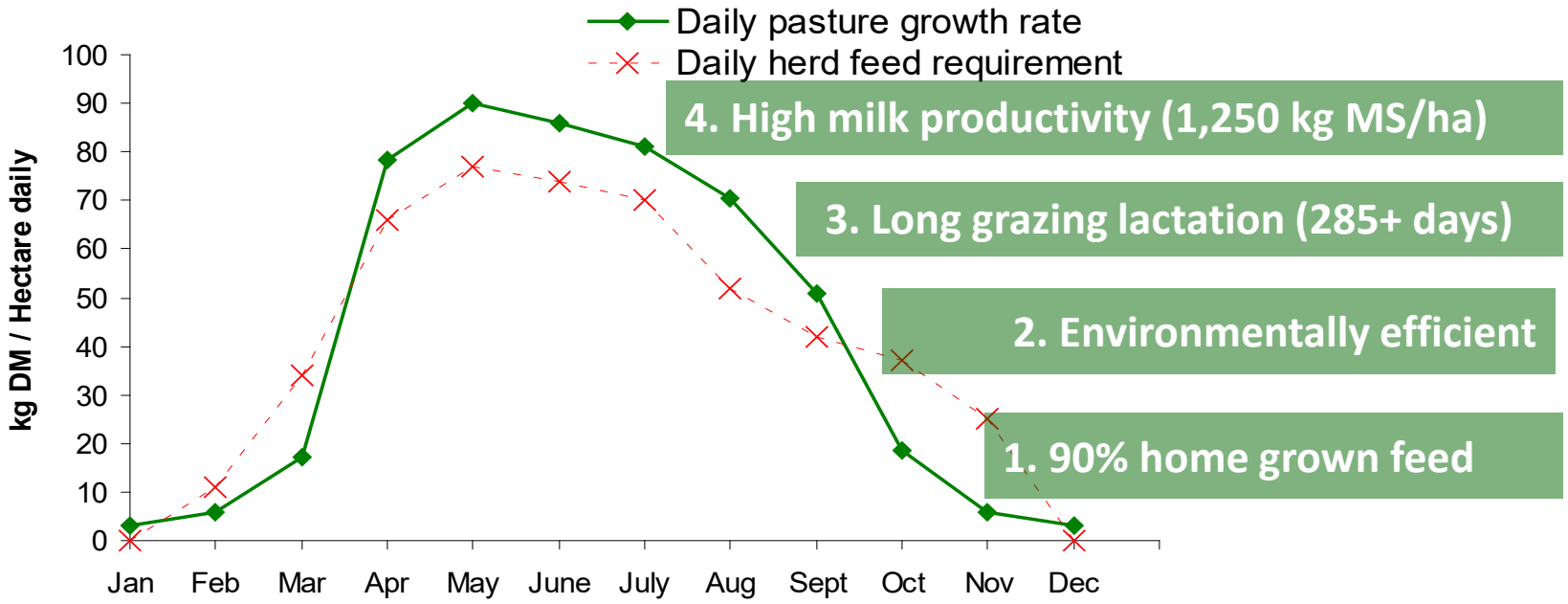
Research Focus

- Grass Growth and utilisation
- Grazing management on wet soils
- Calving Pattern
- Stocking Rate
- Profitability
- Establishing clover on drumlin soils

First Principles of Pasture-Based Milk Production



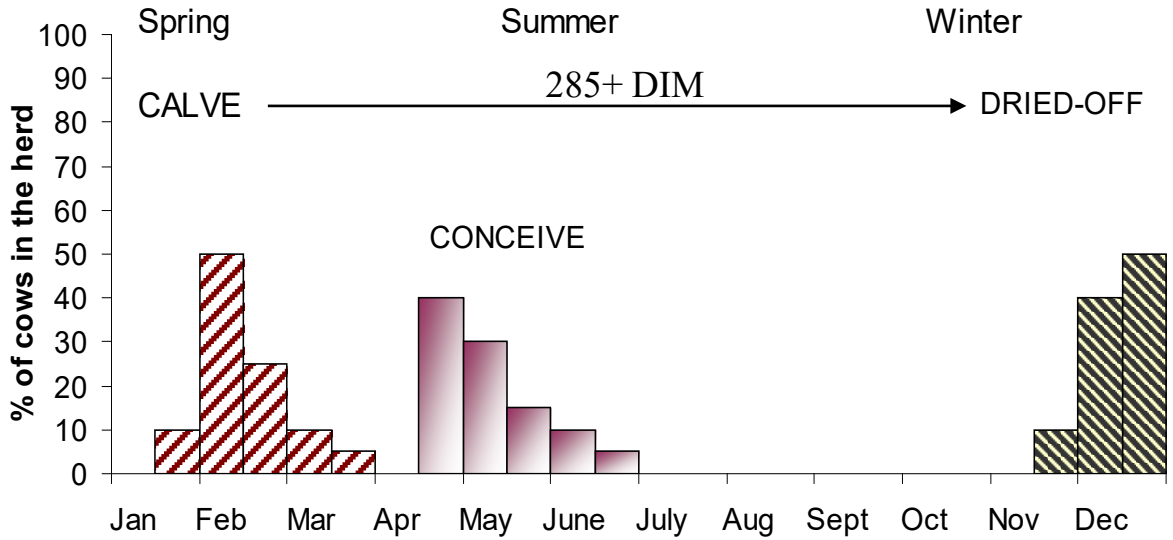
4. High milk productivity (1,250 kg MS/ha)

3. Long grazing lactation (285+ days)

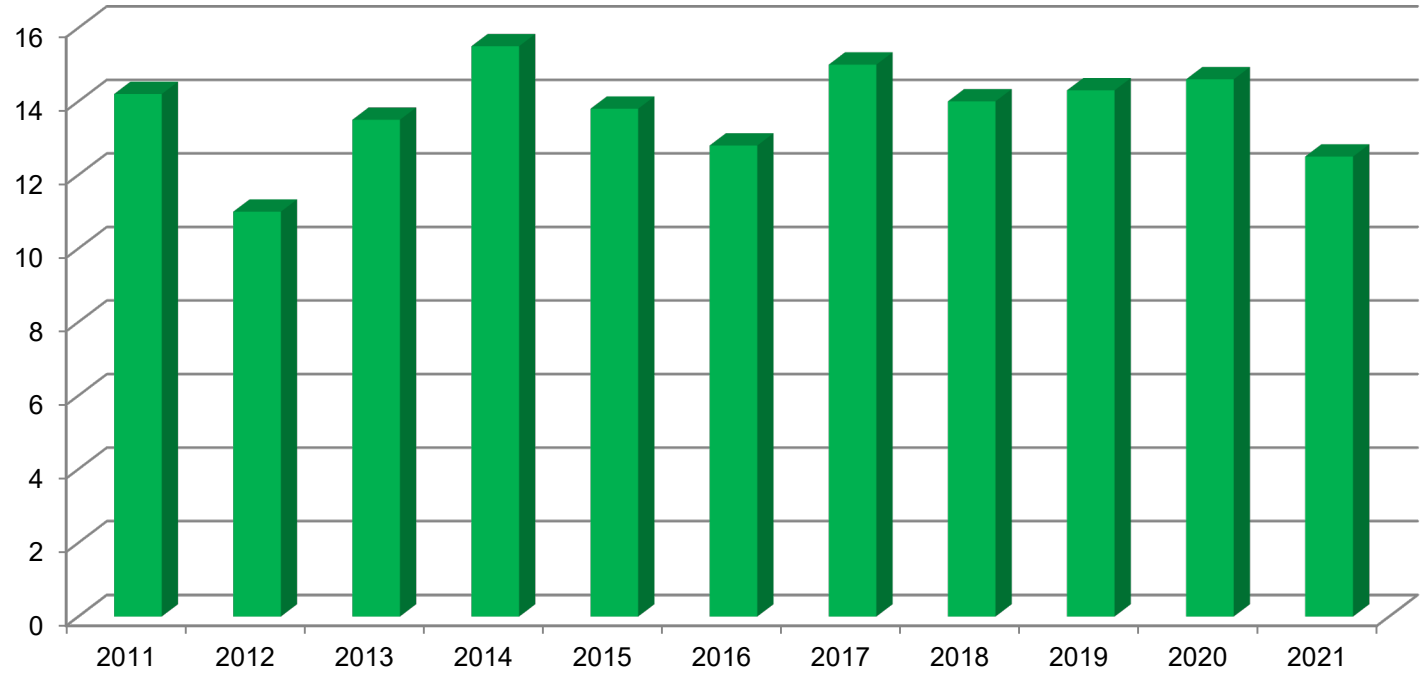
2. Environmentally efficient

1. 90% home grown feed

Compact calving high fertility status dairy herd



Ballyhaise Grass Production



- Average production 14 tonnes DM / ha

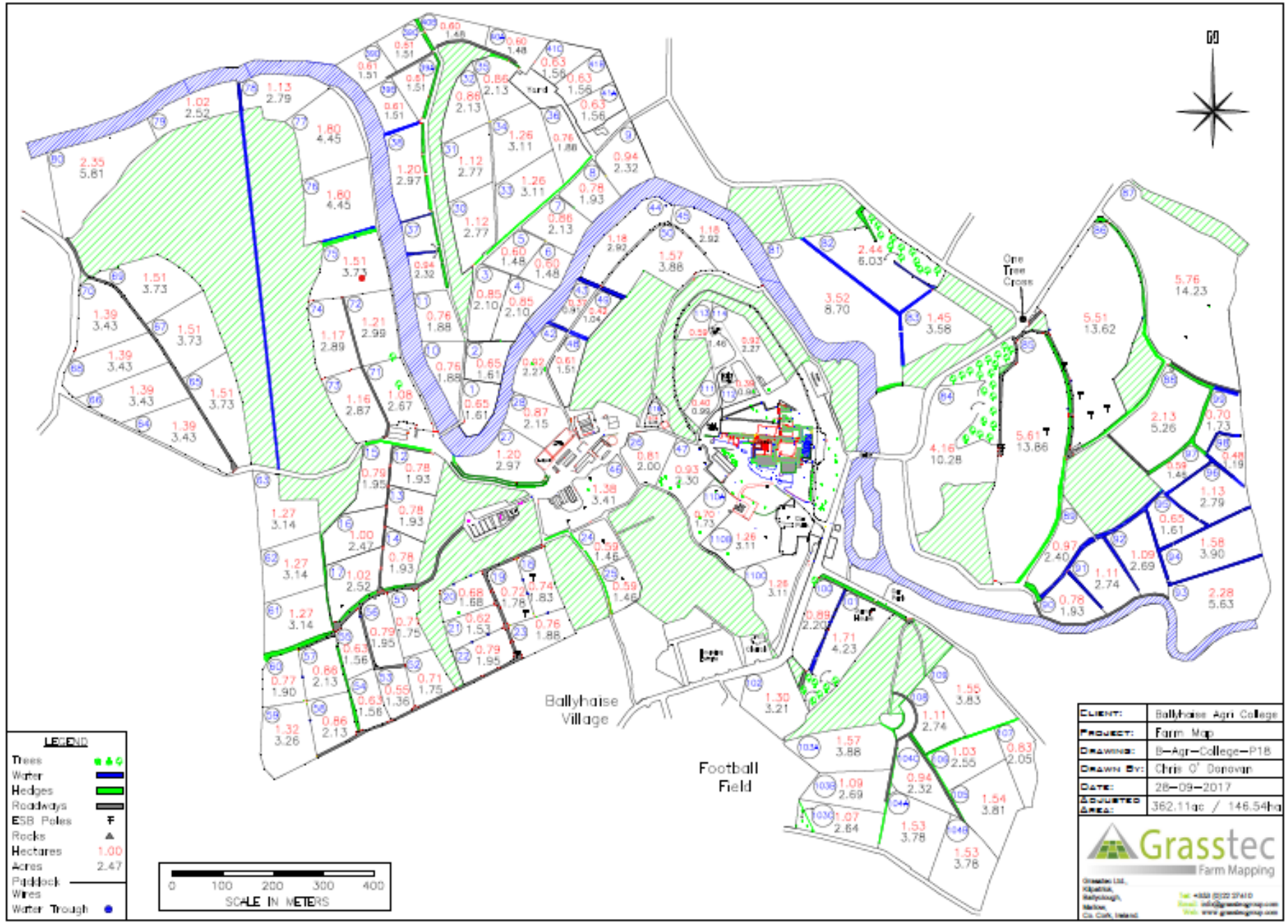

LEGEND
Trees
Water
Hedges
Roadways
ESB Poles
Rocks
Hectares 1.00
Acres 2.47
Paddock Wires
Water Trough
0 100 200 300 400
SCALE IN METERS
Ballyhaise Village
Football Field
One Tree Cross
CLIENT: Ballyhaise Agri College
PROJECT: Farm Map
DRAWING: B—Agr—College—P18
DRAWN BY: Chris O' Donovan
DATE: 28—09—2017
ADJUSTED AREA: 362.11ac / 146.54ha
Grasstec
Farm Mapping

Table 3: Lakeland/ICBF Performance Score Card

	Your Herd	Lakeland Average	Lakeland Top 10%	Your Rank out of 100	Your Star Rating [1]
Milk performance for 2021 (Jan - Dec) based on Lakeland data					
Fat + Protein (Kg/cow) Average Fat and Protein yield per cow for your herd	471	431	537	66%	* * * *
Litres per Cow per Day Avg litres of Milk per cow from Jan - Dec 2021	15.14	15.29	19.2	45%	* * *
Fat % to end December 2021 Weighted average Fat % from Jan - Dec 2021	4.62	4.14	4.43	97%	* * * * *
Protein % to end December 2021 Weighted average Protein % from Jan - Dec 2021	3.65	3.43	3.61	93%	* * * * *
Average Milk Price (cpl) Incl. VAT Average milk price received from Jan - Dec 2021, (Includes Bonuses/Penalties, Excludes Levies)	43.4	39.9	42.4	95%	* * * * *
SCC (,000 cells/ml) The weighted average Somatic Cell Count for Jan - Dec 2021	166	198	104	61%	* * * *
Fertility & Calving data based on HerdPlus 2021 Calving Report					
Calving Interval (days) Average number of days between successive calvings for cows calved during the period	361	402	**367**	97%	* * * * *
Spring 6 Week Calving Rate Number of cows/heifers calved within the first 6 wks **(86)** as a proportion of all cows calved during the Spring **(110)**	78%	58%	85%	80%	* * * *
% with known Sire and Calving Survey recorded Calves where sire **(118)** and calving survey **(118)** are recorded as a proportion of all births during the period **(118)**	100%	63%	100%	99%	* * * * *
%AI bred replacements Calves born in the period from dairy AI **(44)** as a proportion of dairy females born **(44)**	100%	56%	100%	100%	* * * * *
% of Heifers Calved at 22-26 months No. of heifers calved **(14)** that were between 22 & 26 months of age **(20)**	70%	59%	100%	48%	* * *
EBI Statistics based on the latest HerdPlus EBI report 2022					
Herd EBI (2022) Average EBI for Cows **(103)** with EBI data	€188	€111	€161	99%	* * * * *
EBI of 2022 Inseminations Weighted Average EBI of dairy AI bulls recorded in Spring 2022	€288	€250	€293	86%	* * * * *

Ballyhaise Systems Trial 2021 - 2026

- 5 year systems trial – 2021 to 2026
- Reduction in Purchased N surplus – feed and fertiliser
- Front loaded whole farm system clover establishment over 3 years
- Target to cut N surplus by 50% over 3 years
- Measure clover establishment and persistence, animal and pasture performance and feed self-sufficiency

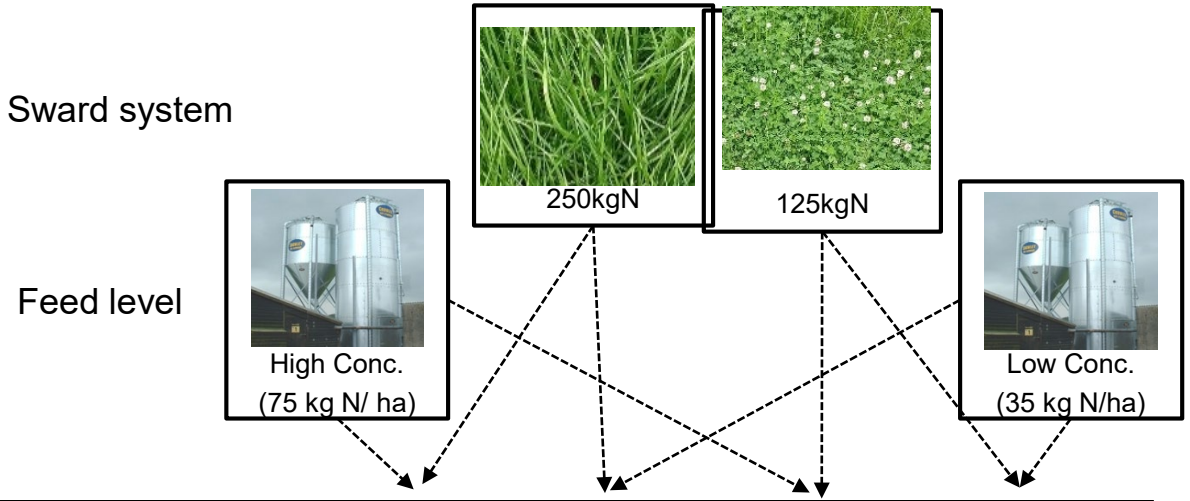
Sward	Grass (GR)		Grass Clover (CL)	
Concentrate level	High (HC)	Low (LC)	High (HC)	Low (LC)
SR (cows/ha)	2.5	2.5	2.5	2.5
Chemical N (kg/ha)	250		125	
Concentrate (kg/cow)	1,200	600	1,200	600
Target clover content (%)	0	0	25	25

Our Research Question

Can we maintain high animal performance from grazing with reduced chemical N inputs while increasing profitability?

Treatments

Transitioning to low N systems: impacts of sward & supplementation level on grazing systems in the BMW

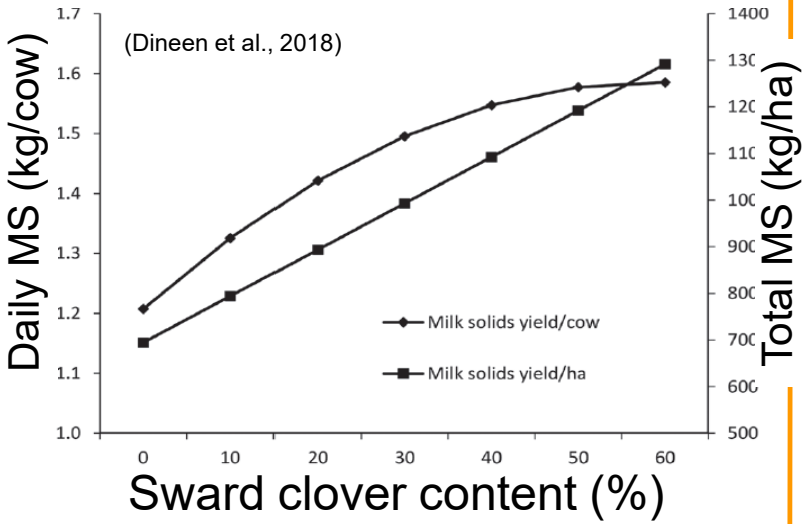


	PRG + HC	PRG + LC	WC + HC	WC + LC
N inputs (kg/ha)	325	285	200	160
N reduction (%)	-	12	38	51

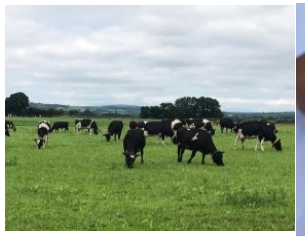
Weekly research updates are available online: https://www.teagasc.ie

Benefits of Clover Inclusion

- Increase animal intake & performance
- Reduce chemical N
- Reduce GHG emissions
- Increase farm profit



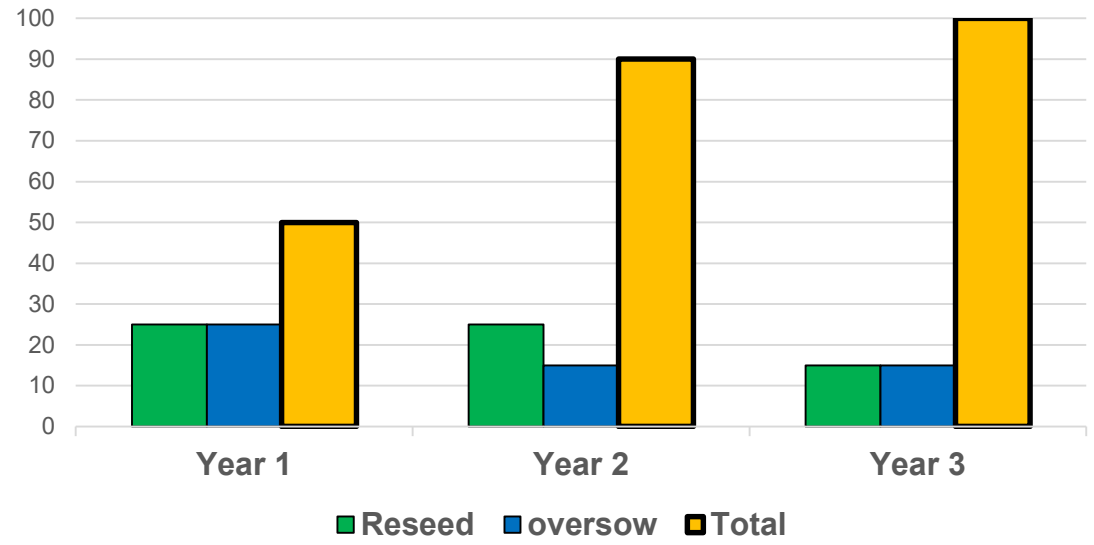
In 2018: +€100- 300/ha

We wish to acknowledge Irish dairy farmer funding of this research via Dairy Levy

Dairy Research Ireland
funded by Irish Dairy Farmers

3 Year Transition to Clover Swards



- Front loaded reseeding and over sowing in years 1 – 3
- Reducing chemical N on a paddock by paddock basis
- Over sowing repeated where unsuccessful
- Very high levels of reseeding in year 1 and 2 – effects on overall feed budget

Full reseed Establishment

Sowing date: First block in late May, second block in late June

Method: Disc+power harrow + sow

Seeding rate (kg/ha): 30 kg high PPI grass + 5 kg white clover

Clover varieties used: Chieftain and Crusader

Post emergence - N/P/K management: 3 bags 10-10-20 at sowing, 1 bag 0-10-20 in August

- Spray: Clovermax @ 5 weeks post establishment
- Grazing management: Grazed at 1200 kg or less

Example – Paddock 23

- Sowed 28th May
- 0 N since sowing
- Healthy sward and easy grazed
- 61kg N
- 8.5 ton DM /ha
- Clover content Autumn 2021: 35%

Example – Paddock 25

- Sowed 28th May
- 0 N since sowing
- 61kg N
- 8.5 ton DM /ha
- Clover content Autumn 2021: 29%

Over sown swards 2021

Sowing date: All completed in May
Method: Rakeman – after grazing mostly
Seeding rate (kg/ha): 6.25 kg
Clover varieties used: Chieftain and Crusader
Post emergence - N management: 0 kg N after sowing where clover sufficient
- Grazing management: Grazing at 800 covers

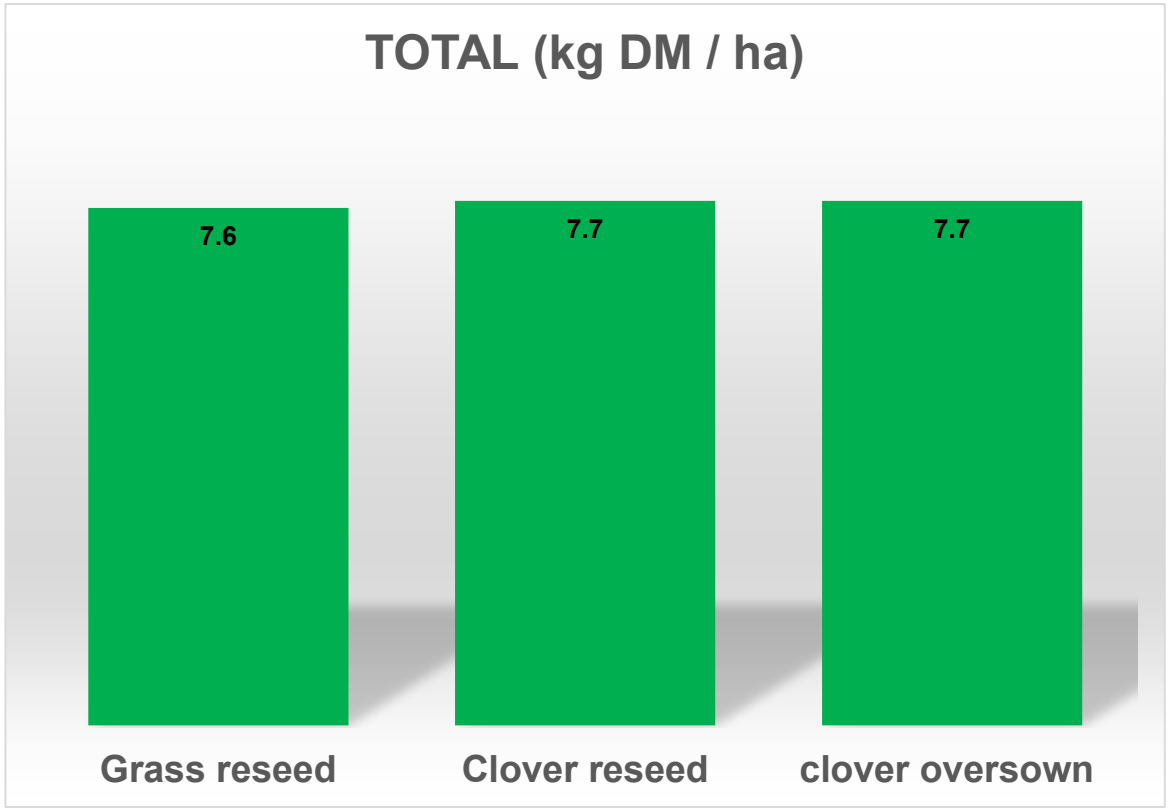
Example – Paddock 32

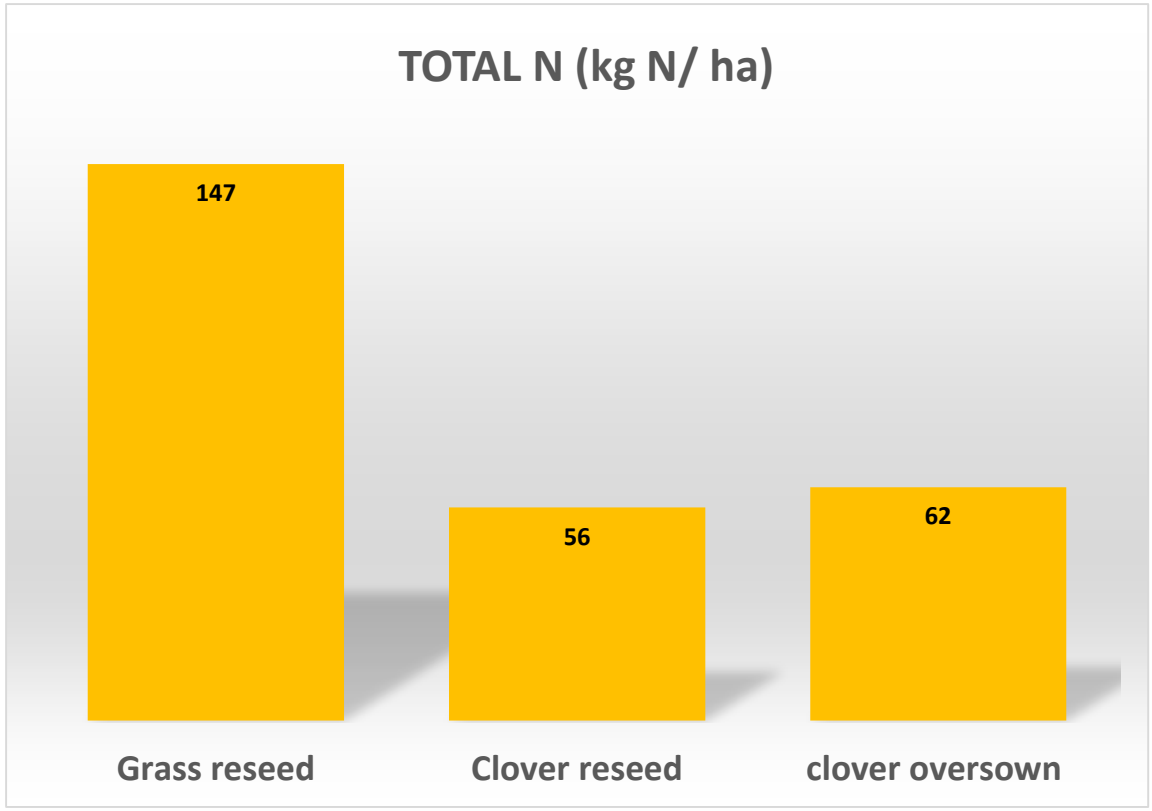
- Sowed 5th May
- Got 0 N from sowing – high clover content
- 102kg N / ha
- 8.5 T DM / ha
- Clover content Autumn 2021: 65%

Example – Paddock 40 B

- Sowed 5th May
- Nx2 during summer - clover slow to appear
- 106kg N / ha
- 10.6 T DM / ha
- Clover content Autumn 2021: 25%

Performance of clover swards 2022





Clover content July 22

over sown

reseed

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System Performance 2021

- High levels of animal performance achieved during 2021 with reduced chemical N application
- Reduced feed self sufficiency due to the high rate of pasture renewal

Sward type	Grass only		Grass clover	
Concentrate level (kg/cow)	High	Low	High	Low
Milk yield (kg/cow)	5,549	5,165	5,600	5,327
Fat (g/kg)	52.6	51.3	49.4	51.0
Protein (g/kg)	38.3	37.6	37.8	37.8
Milk solids (kg/cow)	514	468	495	482
Pasture grown (T DM/ha)	13.4	12.4	12.0	12.4
Chemical N applied (kg/ha)	244	264	175	210
Concentrate (kg/ cow)	1,077	612	1,097	627
Silage conserved (%)	51	37	41	30

Summary

- Establishing clover is a long term project
- Establishment was very good in 2021 (year effect?)
- 3 year programme not realistic on commercial farm unless stocking rate low – 2 cows per ha or lower
- 10% reseeds and 10% 0versowing realistic
- To date clover swards have preformed well growing similar levels of pasture with less N
- Maintaining clover in swards will be a challenge on our soil type
- Huge potential to reduce N inputs if we can keep clover in swards.

Acknowledgements:

- Ballyhaise College Staff for their care of experimental animals

- Local dairy farmers and processors for their financial support through expanded National Dairy Levy