Francis McDonnell ZeroNsile 12/6/2025

- Converted from suckler in 2018
- Works full time in IT
- Farming 110 acres, 20 grazed
- 41 cows currently milking and 9 dry cows
- 4 replacements
- Cows purchase privately off one farm
- Plan to use sexed semen going forward
- Why robotic milking and grazing?

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Current performance

- 28.8KG of milk per day
  - BF 4.41
  - Protein 3.39
  - SCC 144
- Average days in milk 169
- Feed rate: 0.353
- 2.8 milking per day
- Predicted annual yield 7800L

Grazing

- 12hrs grazing 2am to 2pm
- Automated shedding gate
- 12hr paddock allocations
- Received 2 bags of 17 4 4 per acre and slurry in the spring
- Into 3rd rotation
- Plans to improve infostructure

Red Clover for Silage

- **pros**
  - fixes Nitrogen from air (>200kgN/ha)
  - high yielding crop (>15tDM/ha)
  - high animal intake and performance
  - improves soil structure

- **cons**
  - persistency (short lived)
  - 4 year break needed
  - difficult to ensile (?)
  - less suitable for grazing (?)

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Making Silage without manufactured Nitrogen

- Twelve farms were selected to trial red clover silage swards
- Swards established during autumn 23 and spring/summer 24
- Similar yields & quality between Grass & Red Clover in 24
- Although red clover swards received 2.3x less Nitrogen
- 2024 a challenging year for clover!

Establishment

- Spray off, plough/disc/power harrow cultivations, surface seeding
- Fine, firm fertile seedbed, do not sow too deep: 5-10mm max
- 500 000 seeds per kg (x3 of WC)
- Less suited to stitching in than WC - distribution
- Less tolerant of fertiliser N than WC
- Warm soil temperature required (80C) late April/early May – late June
- Seed mix: 9kg grass & 4kg red/acre or monoculture of 6kg red/acre
- Hybrid and tetraploid PRGs
- Soil pH to 6.5 – n.b. not just for the soil

Post establishment weed control

- Ideal: clean ground in previous years with dedicated herbicides and land rotation
- Post emergence sprays: new *ProClova* only after first winter (chickweed, docks - not nettles, thistles – 8’C & before flowering)
- Always check label for clover safe
- Chickweed & annual weeds in reseed: one or two ‘fast’ grazings normally controls
- Alternatives: spot spraying

Frank's Establishment 2023

- Fields soil sampled

- Chose a mix to suit our land – heavy clay running into peat moss
- Sprayed off the weeds – mainly docks
- Covered with farmyard manure & slurry
- Limed 2.5t/ac
- Weather intervened

	Size (Ha)	P	K	Mg	Ph
RC	2.545	2-	0	2	5.8
Control	2.2	2+	0	2	5.7

Barenbrug Late Heading Version (with Timothy)

Barenbrug		AHDB Data			Teagasc Data				
Late Heading Version (with Timothy)	Seed Weights	Heading Date (AHDB)	Total Grazing Yield (% of 9.64t DM/ha) (% of 11.69t for RC) (% of 4.13t for WC)	Grazing D-Value (Midsummer)	Heading Date (Teagasc)	PPI	Grazing Utilisation	Total Yield (t/DM)	Mean DMD (g/kg)
Baronaise (Timothy)	1.0Kg	13-Jun	101	74.4					
Gracehill (Late Tetraploid PRG)	4.0Kg	02-Jun	104	76.9	04-Jun	241	**	11.31	840.9
Glenarm (Late Diploid PRG)	2.5Kg	04-Jun	98	76.8					
Ballyvoy (Late Diploid PRG)	3.0Kg	02-Jun	100	77.5	03-Jun	186	*	10.97	843.1
Ostro (Red Clover)	3.5Kg								
Barblanca (Large Leaf White Clover)	1.0Kg	LS 1118mm2	112	8 GC			LS 0.76	104.7	49.3%
	15Kg/acre								

2024

- Sown 26th June 2024
- Received 1 light application of slurry approx. 1000 Gallons/acre
- Mowed 1st September – light crop to tidy it up
- Baled 2nd September
- 21 Bales
- Don’t stack them!

2025

- 3rd March: 2500 gallons/ac of slurry on both field
- 29th March: Grass got 2 bags of 27 4 4+S/ac
- 9th May: Cut and harvested 24hrs later
- Both fields yielded the same 3.5tDM/ha (4.25tFW/ac @30%DM)
- Nearly 6.5 bales/ac (650KG)
- 16th May: 3000 gallons/ac on clover and 2000 gallons/ac on grass
- Grass got 2.5 bags of 27 4 4+S/ac after slurry

Red Clover Conservation

- First cut mid- late May (50% flower buds present)
- Avoid crown damage – traffic – rolling
- Mowing: Do not scalp (normal 5-6cm)
- Allow to flower once per year - persistence
- Graze or zero graze autumn re-growth
- 3-5 cuts at 6-8 week intervals
- Wilt to 35%DM (rubber conditioner) and additive
- Leave in swath – one tedding max
- Wilt for 36-48hrs max – leaf loss!
- Nutrition: for each 1tDM removed, needs 7kg Phophate & 25kg Potash.
- K luxury uptake – K after each crop (org or mineral)
- High K reqt: 15tDM/ha = 375kg/ha K (300 units/ac)

Available nutrients units/acre per 1000G

Farmer	Available Units (spring LESSE)/1000G			
	DM	N	P (P205)	K (K2O)
F1	10.80%	13	8	30
F2	1.83%	9	2	24
F3	2.97%	9	3	21
F4	9.07%	13	8	59
F5	8.45%	14	10	41
F6	5.07%	8	4	36
ZeroNsile Average	6.37%	11	6	35
Standard UK	6%	9.36	5.4	20.25

Grass silage demands per cut

GS Demand 3 cuts (Units/Acre)									
Index	N	P (1)	P (2)	P (3)	K (0)	K (1)	K (2-)	K (2+)	K (3)
1st	80	56	32	16	**112**	**88**	65	48	24
2nd	60	20	20	0	96	80	72	48	32
3rd	50	12	12	0	64	64	64	32	16

*To avoid luxury uptake in the spring never apply more than 70 unit of potash/ac, split application and apply in the previous autumn.

3rd cut nutrient planning

	N	P	K
Index	N/A	2-	1
Demand		12	64
Slurry 2000G/ac (3%DM)	18	6	42
Balance		6	22
MOP (60%) 1/3 of bag/ac			20
Balance		6	2

Sulphur the forgotten nutrient!

- Sulphur plays a major role in legume nodule formation and therefore nitrogen fixation in all legume plant.
- Sulphur deficiency has a similar appearance to nitrogen deficiency
- In both cases, plants will have a pale green or yellow colour.
- **Sulphur** deficiency symptoms are most strongly expressed in **new young leaves**
- **Nitrogen** deficiency symptoms are most strongly expressed in the **oldest leaves** as nitrogen is very mobile.

Sulphur in cattle slurry

- 6%DM of cattle slurry contains 0.7KG/m3 of SO3 or 3.18KG/1000G
- Availability of only 20-30% in spring and only 5-10 Autumn.
- Only 0.64Kg/1000G available of SO3 (@20% availability)

Sulphur requirements in silage

- 1st cut 40 units/Acre of SO3 (50Kg/ha of SO3)
- 2nd cut 20 units/Acre of SO3 (38kg/ha of SO3)
- Not needed for 3rd cut onwards, enough SO3 supplied by previous organic material undergoing mineralization

Importance of Silage Quality

- Timing of harvesting and stage of grass maturity
- Dry Matter optimum 25-35%
- Digestibility >70%
- ME 11.5 +
- Fermentation Characteristics – pH, Lactic Acid
- Fibre requirements!

Importance of Silage Quality

- Forage Dry Matter Intake – 3% BW + 10% Daily Yield
- Feed Space – 60cm/cow
- Feed Presentation and Routine
- Dry cow intakes have a major impact on early lactation intake

Results

- **Improved Feed Efficiency**
- **Increased yields/DLWG**
- **Lower dependence on purchased feed**

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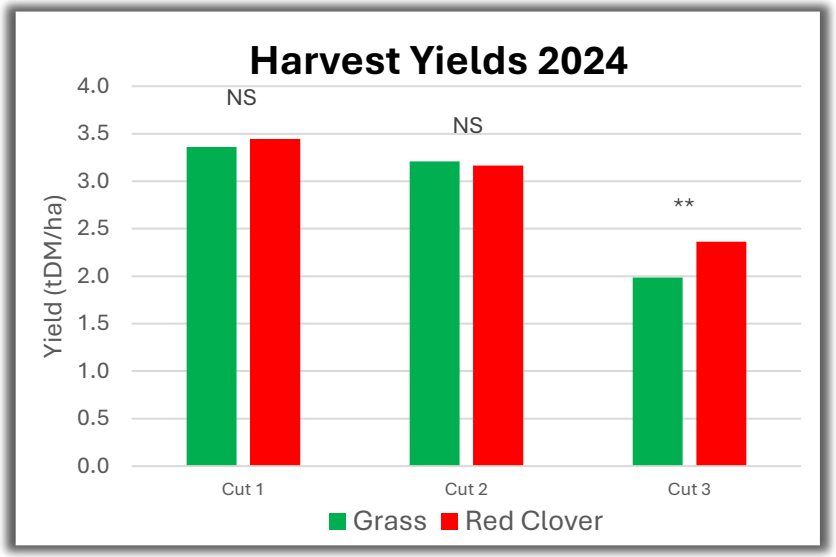
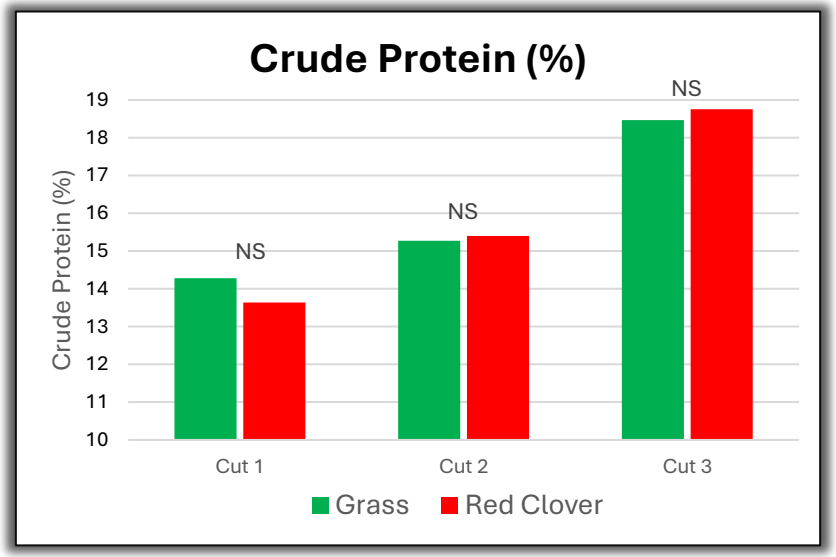
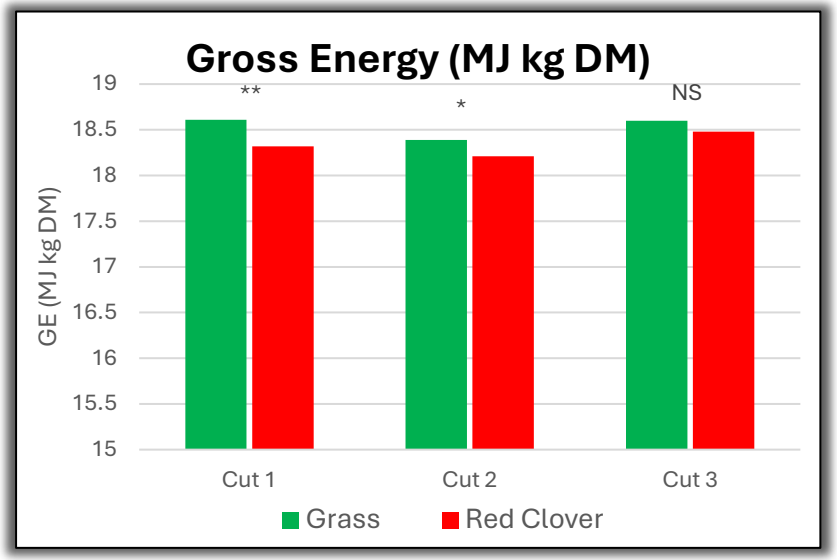
2024 Findings

Similar yields & quality between Grass & RC with a 2.3 : 1 Nitrogen ratio. 2024 a challenging year for clover!







Farmer findings

- "It can be slow in cold/wet spring compared to grass"
- "It feeds better than it tests"
- "It's difficult to get a nutrient balance right with slurry alone"
- "Needs to flower once a year, don't roll or scalp when mowing"
- "5-6 weeks cuts not 2 bulky cuts"
- "It needs to be grown for specific job"

Average Fertiliser and Slurry N Applied in 2024 across farms.

	Cut 1		Cut 2		Whole season		Ratio
	Grass	Red Clover	Grass	Red Clover	Grass	Red Clover	
N Applied (Units/Acre)	68	30	63	19	173	76	X 2.3

- RC received 97 less units of N/Ace (3.6 bags of CAN/Acre)
- Fertiliser saving of £53/Acre (CAN £300/T)