Future Beef Programme

National Beef Farm Walk

Ken Gill's Farm

Clonbullogue, Edenderry, Co. Offaly | 12th July 2024

Teagasc Future Beef Programme

The aim of Future Beef is to demonstrate to beef farmers how they can produce a quality product as efficiently as possible to make beef farming more profitable while also making it more environmentally and socially sustainable. Future Beef farmers are also participants in the Signpost Programme.

The whole programme hinges on our network of 21 demonstration farms. All our farmers have a very positive attitude towards suckler farming. They are willing to take on new technologies and develop efficiencies to improve profitability and reduce the negative effects of agriculture on the environment around them.

Key objectives:

- Create more sustainable and profitable farms
- Reduce greenhouse gas (GHG) & ammonia emissions
- Improve water quality
- Improve biodiversity

We will achieve this by focussing on reducing inputs and the costs of production while increasing the performance of every animal on the farm.

Acknowledgement

We wish to thank the farmers that have agreed to take part in the programme, particularly to Ken and his family for hosting this farm walk. We look forward to working with them and their local advisors over the coming years. We are confident that all parties involved in the programme will benefit hugely from the experience. We wish to acknowledge all the sponsors of the Future Beef Programme and thank them for their commitment to the programme.

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1. Introduction to Farm

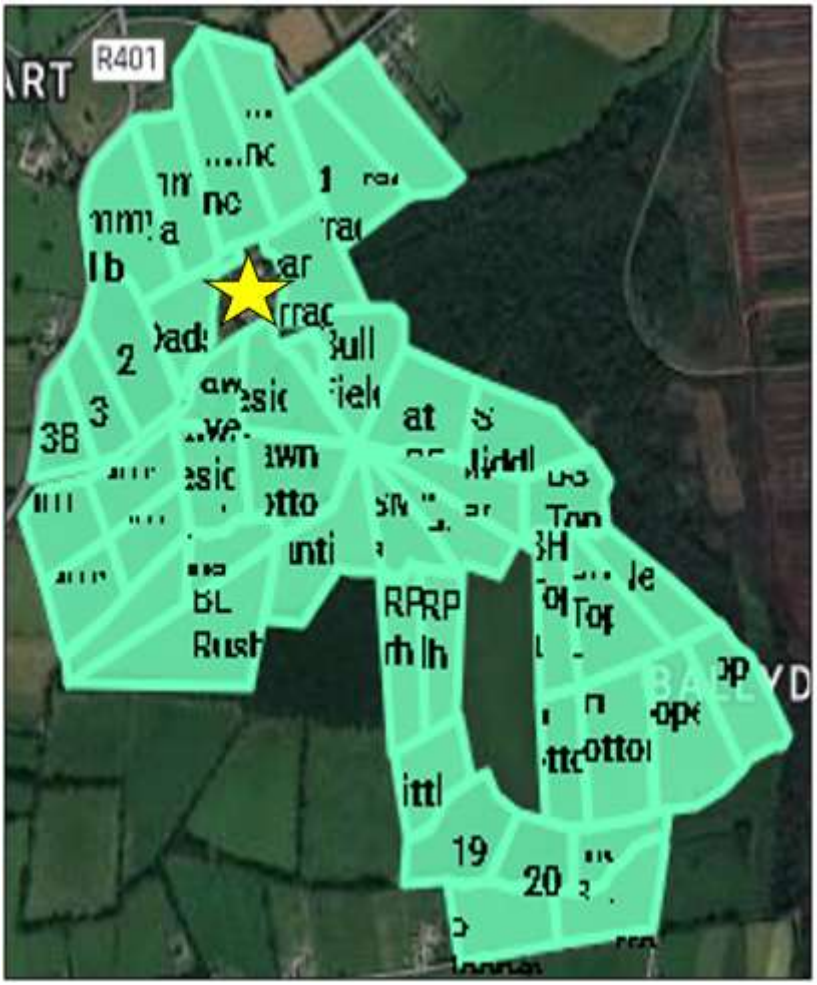


Figure 1: *Farm layout*

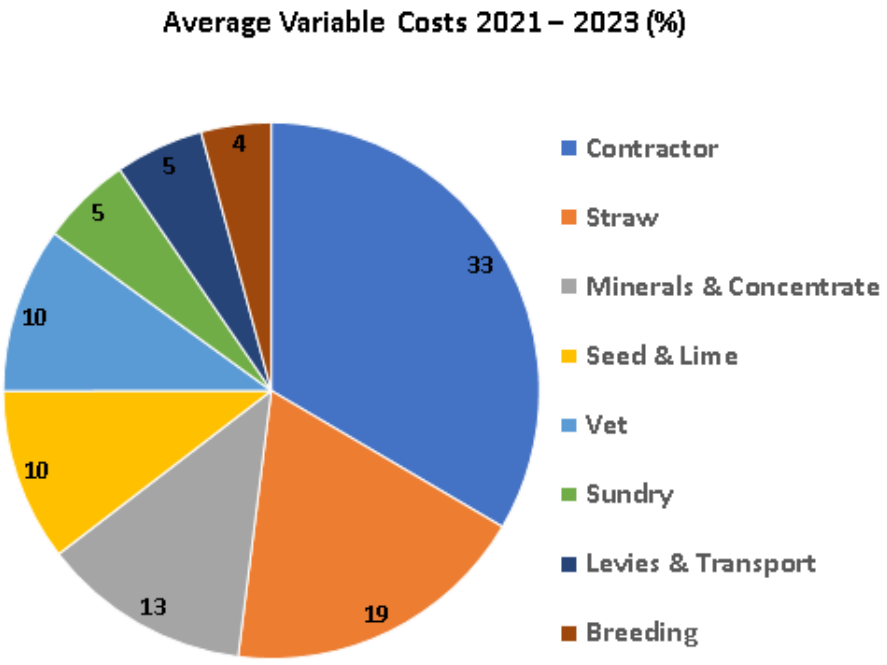
- **62** suckler cows
- Males finished as steers at **25 months**
- Females finished at **25.1 months**
- **100%** AI
- Grassland stocking rate 2023: **1.52 LU/ha** or **116 Kgs N/ha**
- Carbon footprint: **9.66kg CO2e per kg live weight gain**

2. Cattle Financials

Measure	2021	2022	2023	Target 2026
Output/LU (Kg)	369	350	316	380
Stocking Rate (LU/ha)	1.69	1.65	1.52	1.7
Output/Ha (Kg)	623	578	480	>650
Gross Output (€/Ha)	1,523	1,649	1,339	1,614
Variable Costs (€/Ha)	516	521	566	484
Variable Costs (% of gross output)	34%	32%	42%	30%
Gross Margin (€/Ha)	1,008	1,128	772	1,130
Fixed Costs (€/Ha)	308	294	290	308
Net Margin (€/ha exc. premia)	700	834	483	822
Organic Payments (€/ha)	132	132	198	198

Plan is to:

- Increase output/LU by selecting terminal bulls for lower index cows
- Make 74% DMD silage for store cattle – 170 bales for 105 days
- Maintain good animal health & low costs



3. Breeding Strategy

1. Where is the herd now?

€135

Herd Replacement Index (Cows)

★★★★★

- Calving at 24 vs. 36 months
- 7% Carbon Footprint
- Net Profit/LU by €64

9 (Kg) ★☆☆☆☆ Carcass Wgt	6.9 (Kg) ★★★★★ Daught Milk
-2.9 (Days) ★★★★★ Daught Calv Int	0.05 ★★★★☆ Docility

200 Day Weights

	Male Calves Kg/day	Female Calves Kg/day
2021	1.06	0.98
2022	1.01	0.91
2023	0.93	0.89

Breeding KPI's

Year	Calving interval (days)	Mortality at 28 days (%)	Calves per cow per year	% heifers calved 22-26 months	Autumn 6 week calving rate
2021	363	1.3%	1.02	100%	89%
2022	367	8.1%	0.91	92%	100%
2023	374	8.9%	0.89	59%	82%

2. Look at cow traits

Animal Details				Replacement Index				
Jumbo	Animal Tag / Date Of Birth / Breed	Sire ID / Dam Tag	Calvings	Index Value (€) / Across Breed Stars	Rel % / Herd Rank	Carcass Weight (Kg) / Across Breed	Daught. Milk (Kg) / Across Breed	Daught. Calving Interval (Days) / Across Breed
1593 1	372215880311593 10-AUG-2022 AA(94%),LM(3%)	AA4089 372215880321347		€193 ★★★★★	53% 6	+8.2 ★	+7.5 ★★★★★	-6.56 ★★★★★
1438 2	372215880321438 18-AUG-2020 AA(50%),SI(28%)	AA4089 372215880371285	2	€191 ★★★★★	62% 9	+23.3 ★★★★	+11.4 ★★★★★	-5.96 ★★★★★
409 3	372212903070409 15-MAR-2017 LM(50%),HE(25%)	IE131159550069 IE131316970295	5	€53 ★	64% 110	+1 ★	+6.1 ★★★★	+1.85 ★

Maiden heifer	Balanced cow	Unbalanced cow
- Calving difficulty? - Calving difficulty reliability? - Docility? -0.01	- Terminal or maternal bull? - Docility? 0.07 - Aim to maintain traits	- Terminal or maternal bull? - Aim for higher carcass weight & replacement index

3. Pick bull

Lisduff Red Pepper R368 AA4303 Cow C.D. 2.1% @ 96% rel.	Star rating across breed	Economic Index May 2024	€ value per progeny	Index reliability
	★★★★★	Rep. index	€152	88%
	★★★★	Terminal index	€105	92%
	★★	Carcass weight	13.6 kg	99%
	★	Carcass conformation	0.95	99%
	★★★★★	Age at finish	-16.22 days	96%
	★★★★	Daughter milk	+7.7 kg	88%
	★★★★★	Daughter calving interval	-6.16 days	64%
Grenache LM4351 Cow C.D. 2% @ 97% rel.	★★★★★	Rep. index	€162	85%
	★★★★★	Terminal index	€134	92%
	★★★★	Carcass weight	21 kg	97%
	★★★★★	Carcass conformation	2.19	96%
	★★★★	Age at finish	-4.28 days	90%
	★★★★	Daughter milk	+6.3 kg	89%
	★★★	Daughter calving interval	-0.89 days	61%
Goulding Man Oh Man AA4087 Cow C.D 4.6% @ 99% rel.	★★★★★	Rep. index	€126	93%
	★★★★	Terminal index	€125	95%
	★★★★★	Carcass weight	25.2 kg	99%
	★★	Carcass conformation	1.14	99%
	★★★★★	Age at finish	-18.42 days	99%
	★★★	Daughter milk	+3.2 kg	94%
	★★★★★	Daughter calving interval	-5.73 days	79%

Match bull to cow

Watch for calving difficulty

Reliability is Key

4. Beef Output & Finishing Performance

On-Farm Beef Output Report 2023

- Total Beef Output **39,620 kg**
- Total Livestock Units **128.2 LU**
- Total Hectares **84.2 Ha**

Key Performance Indicators (KPI's)

	Ken	National Average	Top 1/3
Beef Output per LU	316	295	323
Beef Output per Ha	470	450	484
Stocking rate per Ha	1.52	1.48	1.6

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Finishing Performance

Reduce age at finish by 1 month
8% Carbon Footprint
Net Profit/LU by 20%

Steers	Year		
	2021	2022	2023
Carcass Weight (kg)	363	362	361
Carcass Grade	R-	R-	R=
Carcass Fat	3=	3+	3-
Age at Finish (Mths)	25.1	24.2	25

Heifers	Year		
	2021	2022	2023
Carcass Weight (kg)	314	343	328
Carcass Grade	R-	R=	R+
Carcass Fat	3+	4-	3-
Age at Finish (Mths)	23.2	24.4	25.1

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Table 1: *Cattle weights*

Cattle Weights			
Stock Group	**No. Cattle**	**Weighing Date**	**ADG Since Last Weighing**
Yearlings	25 Heifers	1st Jul. 2024	307 kg 0.86 kg/day since 29/03/2024
	42 Bullocks	1st Jul. 2024	317 kg 0.84 kg/day since 29/03/2024
Stores	19 Heifers	1st Jul. 2024	501 kg 0.5 kg/day since 29/03/2024
	33 Bullocks	1st Jul. 2024	587 kg 0.77 kg/day since 29/03/2024

5. Red Clover Management

Red clover silage swards

- ✓High biological N fixation
- ✓High DM production (Potentially >15 t DM/ha)
- ✓High intake potential
- ✓High animal performance

Management

- Field should be pH >6.5, index >3 for P & K
- Use varieties from UK Recommended List
- Sow in spring
  - ✓7.5-10 kg/ha (3-4 kg/ac) with perennial ryegrass
- Grown in rotation
- Multi-cut silage system
  - ✓3-4 cuts @ 6-8 week intervals (mid-May to Sept)
  - ✓Wilt but avoid leaf shatter (<48 hr)
  - ✓Light covers over winter- set up for spring growth
  - ✓pH, P, K nutrients essential

Ken's Red Clover Silage Yields

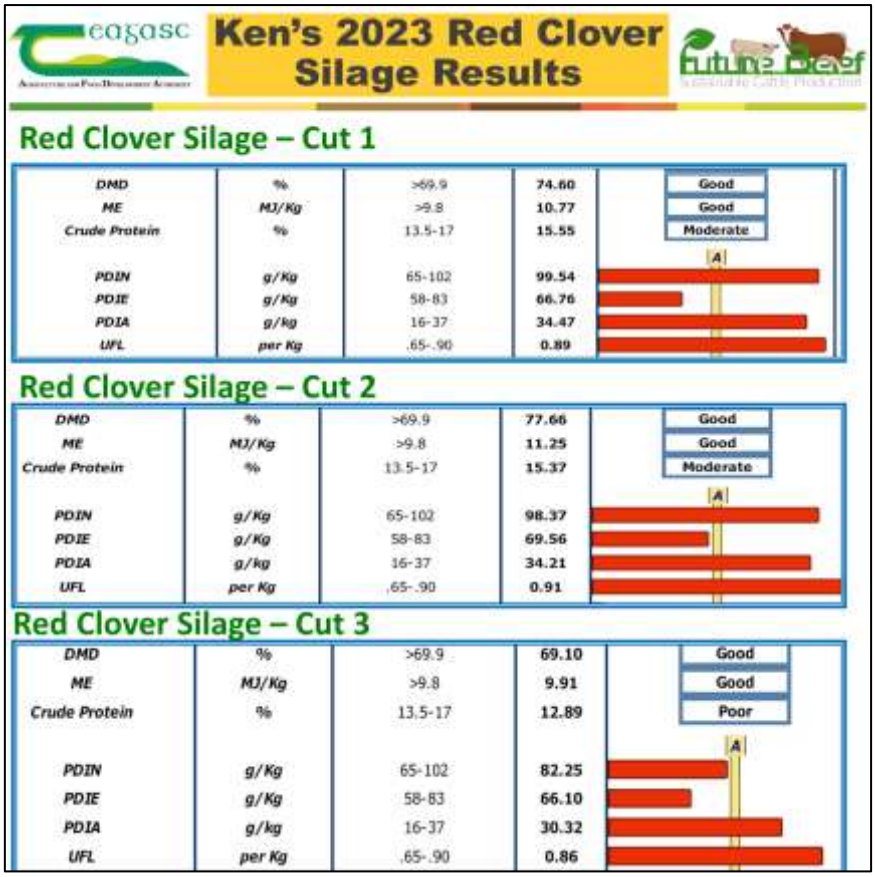
3 Cuts + Mulching

2023 (kg DM/ha)	2022 (kg DM/ha)
11,286	8,679

Potential Red Clover Yields

(Clavin et al., 2017)

Harvest	PRG & RC Kg DM/Ha – No Chem N	PRG KG DM/HA – 412 Kg N/Ha
Cut 1	6,364	6,683
Cut 2	4,459	3,610
Cut 3	3,847	3,222
Cut 4	1,115	2,183
Total	15,785	15,648



Feeding value

- **Higher digestibility!**
  Reduced particle size, faster rate of digestion
- **Higher dietary N**
  Lower rumen degradability – passes into the small intestine – better absorption similar to soya proteins – gives excellent weight gains
- **Higher Protein** content in cuts 2 & 3 due to higher red clover %
- **Higher intake and growth potential**

Key Take Home Messages

- Avoid crown damage: Poaching/Machinery
- Improved crude protein, palatability and intake
- Soil Fertility – Feed adequately with organic manures
- Low covers over winter to allow light to clover plant
- Silage - Wilt well but avoid leaf shatter

6. Animal Housing

Indoor Area (net area available to animals)	
Live Weight (kg)	**M^2/Head**
Up to 100	1.5
Up to 200	2.5
Up to 350	4
Over 350	5 (with a minimum of 1m2/100 kg)
Suckler / Dairy Cows	6
Bulls for breeding	10

At least half of the minimum surface of the indoor area shall consist of a solid construction

Calculate Space Required			
Animal Type	**M^2/Head**	**No.**	**Space Required**
300kg weanlings	4		
500kg 18 month olds	5		
Suckler Cows	6		
Total Space Required =			

Calculate Space Available					
	Length		**Width**		**Space**
Solid Lying Area		X		=	
Slatted Area		X		=	
Total Space Available		X		=	
Total Space Available =					

Cubicles & Organics

- Cubicles 3m2 per cow
- Cubicles of 2.62m2 for smaller animals
- Cubicles must be clean and dry and **sufficiently well bedded** to give comfortable conditions at all times.
- Concrete based cubicles are allowed provided that they are fitted with deep layered bedding or **other cushioned bedding materials - they must also have an additional layer of bedding or litter material on top**.

7. Soil Fertility

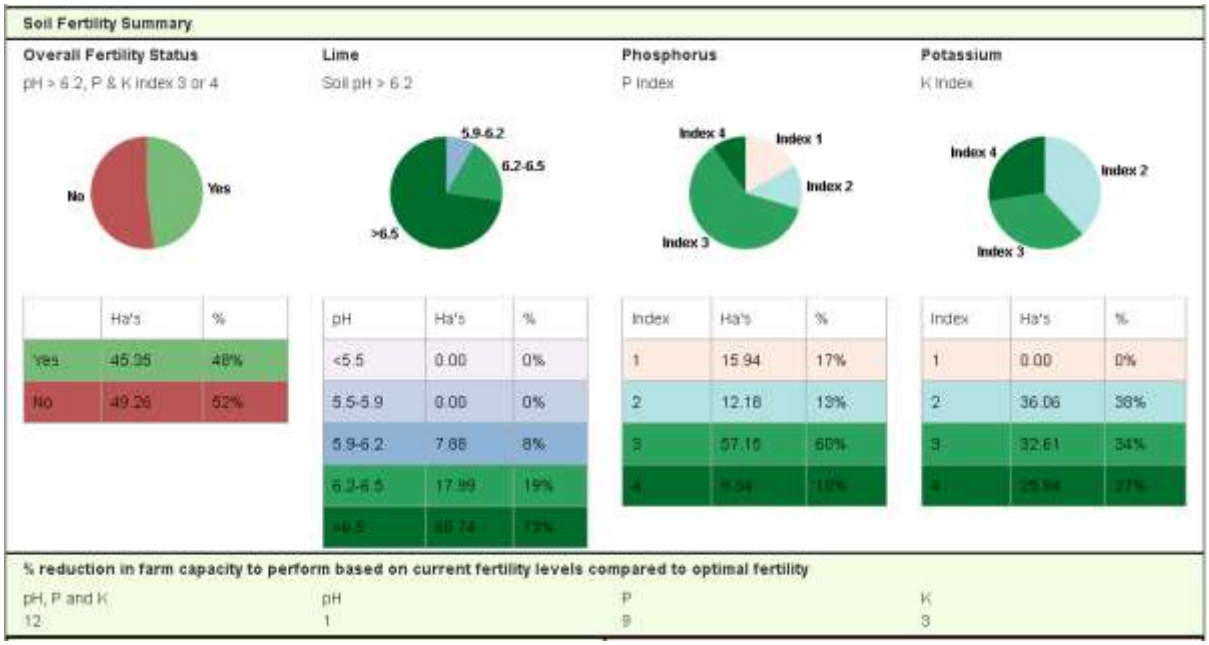
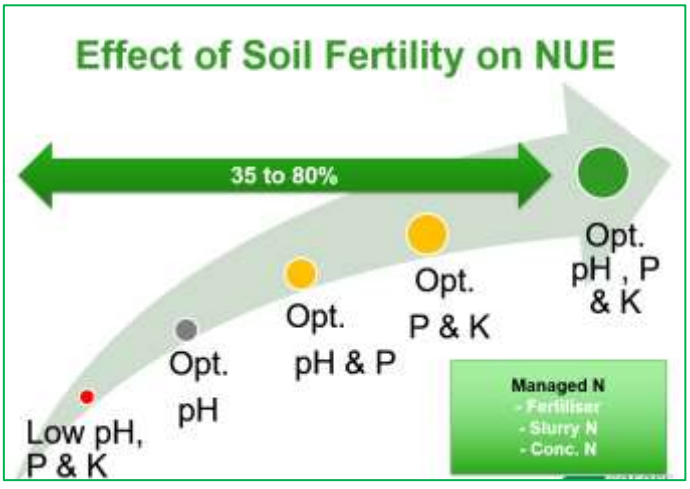


Figure 2: *Soil Fertility 2024*

- Firstly look at soil pH as this will release Nitrogen and Phosphorous. Lime spread regularly on the farm.
- Slurry is applied to silage ground first.
- Remainder spread on low index fields.
- Organic poultry litter imported to help maintain P & K levels.



8. Ken's Herd Health Plan

Vaccinations	Dosing
✓ Leptospirosis (Apr) ➢ 2 shot programme for heifers ➢ Annual booster for cows ✓ No IBR, based on vet advice & 0/20 positive in blood test	✓ Using AHI Beef HealthCheck reports ✓ FEC sampling yearlings & stores ➢ July (lung & GI worms) ➢ September(lung & GI worms) ➢ At housing (lung & GI worms, fluke) ✓ FEC sampling cows ➢ In autumn (rumen & liver fluke) 
Minerals	
✓ Administering bolus ➢ Helps to supplement low copper on farm ➢ Also contains iodine, selenium & cobalt	

9. Environmental Regulations

Round Bale Storage from 2023

In the absence of effluent storage facilities, including farmyards, bales should be;

- Stacked at a maximum height of **two bales**
- Stored **>20m** from surface water

Buffer Zones from Watercourses

- 3m for the application of chemical fertiliser
- 3m for arable crops (6m for late harvested crops)
- 5m for slurry spreading
  - Increases to 10m for first 2 & last 2 weeks of permitted spreading season

10. Calving Beef Heifers at 2 Years of Age

The percentage of beef heifers calved at 22-26 months of age nationally stands at 23%. This is compared to 74% of dairy heifers that calve at the same age.

What are the benefits to calving heifers at 2 years of age?

- Calving at a younger age means that breeding females have the opportunity to produce more calves over their lifetime.
- There will be a lower stocking rate on the farm than if older heifers are being carried as replacements.
- By getting your genetically superior heifers to calve down younger, you will get faster genetic improvement into your herd and can further improve this by breeding replacements from your best heifers and cows.
- If you calve your heifers at an older age, it will cost you €54/heifer/month in a 50 cow herd for the extra unproductive time she spends on the farm until calving.
- Heifers that calve at 24 months can reduce the carbon footprint on your farm by 7% vs. calving at 36 months of age.

How can you calve your heifers at 2 years of age?

- If you are breeding your own replacements, your replacement heifers should be identified early. These can be selected based on the following criteria;
    - ✓ Visual assessment: The heifer should have good feet and legs, which can also be assessed from her dam if possible. She should have a good frame too, particularly in the pelvic area but care should be taken that she is not too well muscled either as this can cause difficulties later at calving if she is small.
    - ✓ Weight for age: She should be gaining over 1.1 kg/day from birth and have a 200 day weight of over 250kg.
    - ✓ Eurostar index: Heifers should be genotyped as 4 or 5 star on the replacement index, with positive figures for milk and docility, and negative figures for calving interval.
    - ✓ Family history: The heifer should have a good milky dam that is docile and fertile. The sire should have positive figures for daughter milk and a negative figure for daughter calving interval.
- You should examine on your ICBF weaning performance report what the average weight of your cows are, and this will help to determine what the mature weight of your heifers will be. Based on this information, performance targets should be set as with the table below.

Table 2: *Performance targets for calving heifers at 24 months*

Performance targets for calving at 24 months				
Stage	**Age (mths)**	**ADG (kg/day)**	**Target Weight (kg)**	**How is this achieved on farm**
Birth	0		45	
Weaning/Housing	8	1.1	275-300	- Good grass management - High milk in cows
Turnout	12	0.6	335-375	Good quality silage + meal
Bulling	14	1	380-420	- 60% of mature bodyweight - Early turnout
Housing 2nd winter	20	0.8	540-570	Good grass management
Calving	24		550-590	- 80% of mature bodyweight - In correct body condition
Overall Lifetime ADG required		0.72		

- Heifers should be well fed over the first winter as they will have to gain between 60-80 kg to ensure they meet their weight targets. The silage on the farm should be tested and they should be given >70% dry matter digestibility (DMD) silage. Their diet should be balanced with ration as appropriate to ensure that there is adequate energy and crude protein for them to gain 0.6 kg/day over the housing period.
- Replacement heifers are priority stock on the farm and should be turned out to grass early in spring to help them settle at grass before breeding commences and so that they will reach their target weights before breeding at 15 months of age.
- When breeding the heifers, the bull selection is crucial. The bull's heifer calving difficulty should be less than 8%, with over 80% reliability to reduce the incidence of difficult calvings.

Pre-calving care for heifers

Over their second winter, heifers should be monitored closely. They should be dosed and vaccinated as necessary to ensure that they have no health setbacks which could impact their performance.

They should have a body condition score (BCS) of over 2.75 to ensure that they are fit and not fat at calving. If they are lower than this, there will be a slower return to breeding, the cow will be weaker at calving and the colostrum will be poorer. On the other side, if BCS is higher than 3.0 the cow will have greater difficulty calving and re-breeding could be delayed.

This can be assessed by handling cows for fat cover on the edge of the loin bones (transverse processes) and on the tail head and ribs. At a condition score 3.0 and greater, loin bones cannot be felt so focus on the tail head and the fat cover over ribs.

Figure 3: *Body condition score examples*

It is very easy for maiden heifers to be bullied by older cows when they are in the shed, which can cause injuries and affect their feed intakes. Ideally they should be housed in a separate pen to prevent this from happening, and to ensure that they have enough feeding and lying space.

As with all heifers, they should be supervised at calving.

Post calving care for heifers

After calving, heifers should be given good quality feed to help them meet their energy demands. If housed indoors, they should be given over 70% DMD silage and at least 2kg ration. They should be turned out to grass as early as possible to give them a chance to build condition before breeding again.

11. Fodder Planning

1. How much silage do you need?

Fodder Required				
	A	B	C	D
Animal Type	No. stock for winter	No. months (Including a 4-6 week reserve)	No. bales required per month (at 20% DM)	Total bales of silage needed (AxBxC)
Suckler cows			1.75	
0-1 yr old			0.9	
1-2 yr old			1.6	
2+ yr old			1.7	
Ewes			0.2	
Total bales needed				_____ bales
Total tonnes needed (bales divided by 1.25)				_____ tonnes

2. How much silage have you made?

Fodder Available	Total bales
Bales in yard	
Pit silage = Length ___m x width ___m x height ___m x 1.25	
Expected yield = ____ acres x ____ bales/acre	
Total bales available	_____ bales
Surplus/deficit	_____ bales

3. What are your options if you are short?

Reduce feed demand:

- Have you finishing stock that can be fed now at grass?
- Scan 5 weeks after breeding finishes & cull unproductive cows
- Wean early
- Sell stock

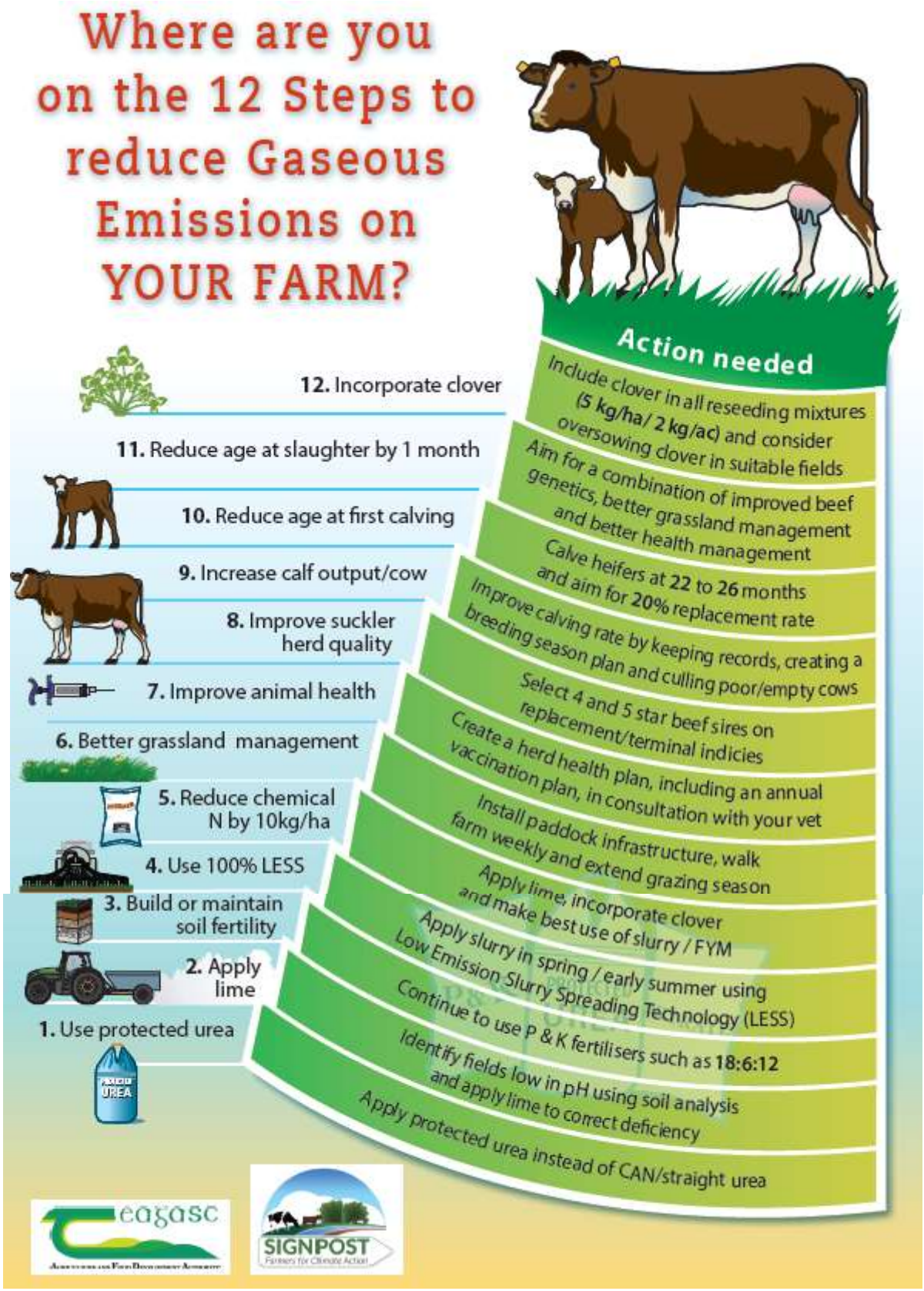
Increase feed supply:

- Can you take a third cut from some land?
- Can you buy in feed?
  - Or replace silage with ration – but very dependant on cost - check out Teagasc relative value of feeds calculator
- Could you grow a forage crop?
  - Need to consider lie back area, water & minimise poaching

Other points to note

- Don't ignore the risk of an early winter or late spring – safer to over-budget
- Spread fertiliser in early August to help build autumn grass covers
- Will cash flow be an issue for you this winter?

12. 12 Steps to Reducing Emissions



Notes

A to Z of FARM SAFETY

A	**Always** consider SAFETY on the farm.
B	**BULLS:** Beware of aggressive animals on your farm. Be sure to cull cross bulls, cows, rams, stags from your farm.
C	**CHILDREN:** Always supervise children on the farm, especially during machinery operations.
D	**DRAWBARS:** Never let anyone ride on the drawbar of your tractor or any other machinery. Do not allow anyone ride in an open trailer.
E	**ELECTRICITY** can kill. Beware of overhead power lines and buried cables.
F	**FORESTRY and tree felling:** Take care not to be caught under falling trees and logs. Attend a chainsaw and tree felling course.
G	**GAS:** Slurry gases can kill. Remove all stock from slatted sheds before agitating. Never enter a shed when slurry is being agitated. Close agitation point after each use.
H	**HORSES:** Some horses can be dangerous. Always wear safety equipment e.g. helmet when handling or riding horses. Be wary of being kicked by horses.
I	**INSPECT:** Check safety equipment on your farm regularly, e.g. machinery safety covers, PTO guards, fire extinguishers and First Aid kits.
J	**JAWS:** Keep away from blades of shear grabs, mowers, revolving knives and chainsaws.
K	**KEEP CLEAR** of machinery such as tractors, HiMacs, bulldozers when they are working. Stay in their line of vision and wear a high visibility jacket or vest.
L	**LIVESTOCK:** Be wary of being kicked or crushed while working in pens, yards or fields with livestock.
M	**MACHINERY:** Ensure safety covers and PTO guards are in place and working on all farm machinery. Avoid wearing loose clothing near machinery.
N	**NEVER** start a tractor when you are standing on the ground alongside it.
O	**OVERTURN:** Remember tractors have a high centre of gravity and can overturn easily. Drive slowly over uneven ground.
P	**PESTICIDES** and other toxic chemicals: Keep them out of the reach of children. Read the label and follow the manufacturer's advice on proper use, storage and disposal.
Q	**QUAD bikes:** Always wear a safety helmet when using a quad bike. Avoid letting children on them. Drive slowly over rough ground.
R	**ROOFS:** Use a roofing ladder when working on farm sheds. Stay clear of skylights.
S	**SAFETY:** Complete and update your Risk Assessment Document. This can be completed online at www.farmsafely.com. Take action on risks highlighted.
T	**TRAINING:** Attend a Farm Safety training course NOW at your local Teagasc centre.
U	**UNTIDY:** Poorly maintained farmyards/farm can lead to accidents. Keep your farmyard/farm neat, tidy and well maintained.
V	**VISION:** Your eyesight is vital – protect it. Wear safety goggles where your eyes are in danger.
W	**WARNING SIGNS** should be erected to warn the public of dangers or hazards such as "Tractors Crossing", "Beware of Bull".
X	**XTRA:** Be extra careful when there are children or elderly people on the family farm. Restrict access to dangerous ponds, tanks, unstable heights etc.
Y	**YOU and YOUR FAMILY:** Take every precaution to remain safe and healthy. Assess every farm task carefully for potential dangers or risks. Organise and complete tasks with safety in mind.
Z	**ZOONOTIC DISEASES** and infections which can be transmitted from animals to humans. E.g. TB, Toxoplasmosis, Weil's Disease, E.Coli ... Wear gloves when handling livestock. Always wash your hands after being in contact with animals.

REMEMBER: HEALTH IS WEALTH. THINK SAFETY. BE SAFE!

Thank you for your attention and safe home!