Future Beef Programme

National Beef Farm Walk

Shane & Gráinne Keaveney's Farm

Ballybane, Ballinlough, Co. Roscommon | 11th Sept. 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 23 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 Shane, Gráinne, and their 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

Farm Overview

- 35ha in 4 blocks
  - Incl 8ha rented + slatted shed
- 38 spring calving suckler cows
- Breeding Performance
- CH Stock Bull plus + AI
- U 16 Bull system
- Forward heifers – Sell Live/Finish
- Buys 20 heifer calves to finish
- 2023 GSR: 135kgs organic N/ha
- Full- Time

Carbon footprint: 12 CO2 eq./kg beef

Farm Performance 2023

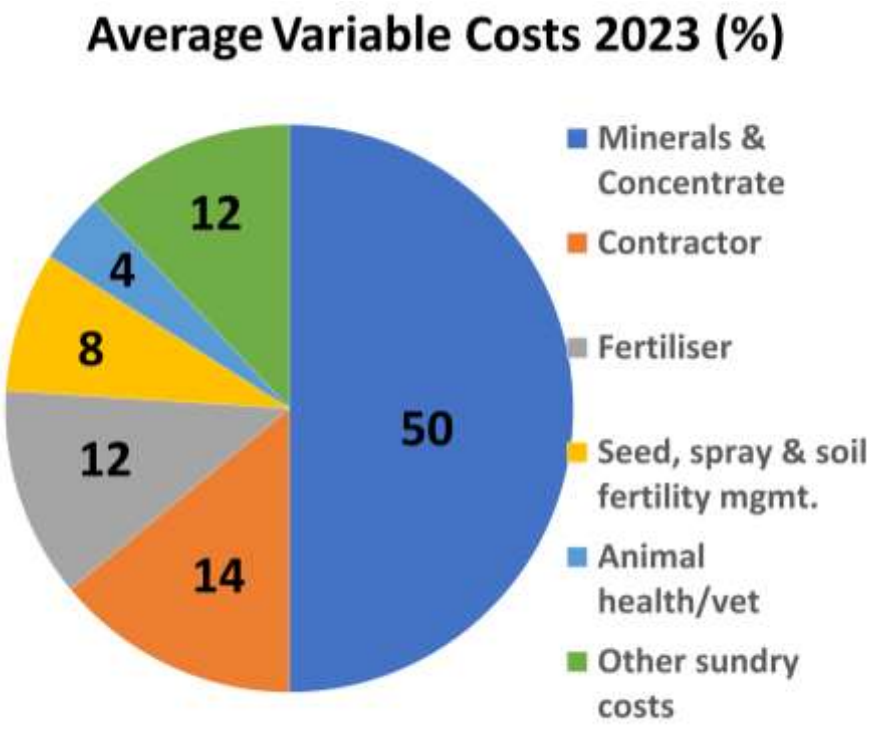
	Age at Sale (Months)	Performance	Price/head
Heifers (11) Live	18-21	490kgs	€1388
Young bulls (19) Finish	15.5	390kgs U- 3-	€2140
Cows (5) Live	culls	680-720kgs	€1417

2. Cattle Financials

Measure	2021	2022	2023	Target 2026
Output/LU (Kg)	369	391	422	~433
Stocking Rate (LU/ha)	1.93	1.63	1.71	2.00
Output/Ha (Kg)	711	638	720	866
Gross Output (€/Ha)	€1,850	€1783	€2,038	€2,200
Variable Costs (€/Ha)	€885	€1,029	€1,297	€1,152
Variable Costs (% of gross output)	47%	58%	64%	~50%
Gross Margin (€/Ha)	€965	€754	€741	€1,048
Fixed Costs (€/Ha)	€641	€561	€547	€600
Net Margin (€/ha exc. premia)	€324	€193	€194	€448

Plan is to:

- Increase output/LU through use of better genetics
- Sexed semen for replacements
- Reduce variable costs by improving weaning performance, silage quality & winter performance
- 20 x Dairy calf to beef system



3. Breeding Strategy

1. Where is the herd now?

Calving at 24 vs. 36 months
7% Carbon Footprint
Net Profit/LU by 33%

€110
Herd Replacement Index (Cows)

15 (Kg) Carcass Wgt	3.5 (Kg) Daught Milk
-2.25 (Days) Daught Calv Int	-0.01 Docility

200 Day Weights		
	Male Calves Kg/day	Female Calves Kg/day
2022	1.27	1.16
2023	1.3	1.18
2024	1.28	1.15

Breeding KPI's					
Year	Calving interval (days)	Mortality at 28 days (%)	Calves per cow per year	% heifers calved 22-26 months	Spring 6 week calving rate
2021	365	2.9%	0.97	100%	82%
2022	362	2.7%	1.04	60%*	89%
2023	360	0%	1.07	100%	97%
2024	379	5.6%	0.94	100%	91%

2. Key Questions

1. Are current breeding stock of high enough genetic merit?

- Avg. Replacement Index of your cows, heifers and bulls?
- Are indexes balanced (carcass, milk, fertility)? →avoid extremes
- What is the market?

2. Breed your own or purchase?

- Production system
- Herd size
- Pros and cons to both

3. Is AI an option?

Synchronisation

Sexed semen

- Access to elite genetics
- Option to use multiple sires → minimizing risk
- Select best cows and mate to high Rep Index AI sires
- Proven easy calving sires for heifers

3. Replacement Policy

Females with adequate carcass, milk & fertility

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
319	372218646550319 12-MAR-2020 SA(100%)	SA6604 372218646510249	3	€172 ★★★★ ★★★★★	52% 12	+18.2 ★★★★ ★★★	+5 ★★ ★★★★	-3.81 ★★★★ ★★★★★
344	372218646560344 24-FEB-2021 LM(63%),SA(38%)	IE271849410756 372218646530267	2	€135 ★★★★★	49% 26	+21.2 ★★★★	+1 ★★	-1.21 ★★★
281	372218646510281 20-FEB-2019 LM(75%),AA(13%)	IE271849410756 IE311700750161	4	€124 ★★★★	53% 36	+15 ★★	+3.8 ★★★	-1.74 ★★★★

Balanced indexes

Replacement Index

Carcass Weight

Daughter Milk

Calving Interval

- Well Grown
- Good mother
- Docile
- Good legs, feet, udder

Use the Right Bull

Applying to your herd in 3 steps

Stock Bull – CH483 Paircard Petie

Profit traits	Index Value	Reliability
Daughter Milk	- 3.10Kg	47%
Carcass Weight	+39.8Kg	63%
Daughter calving interval	-0.03 days	45%
Calving Difficulty		
Heifers	12.8%	
Cows	6.10%	

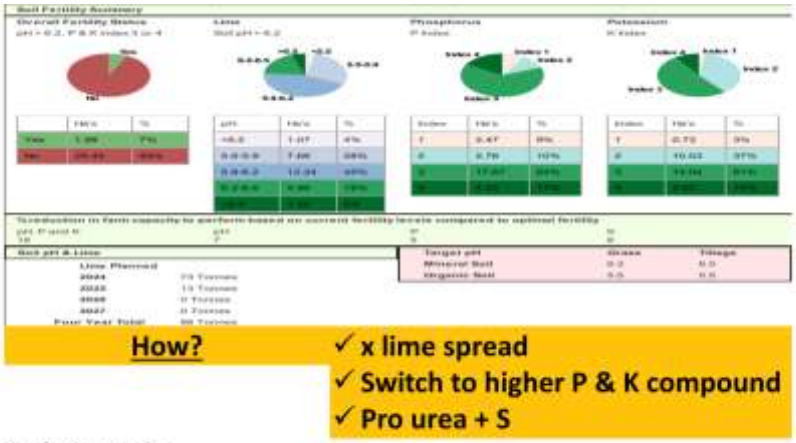
Use of AI for Replacements- Leeherd Lynx S7416 (Sexed)

Profit Traits	Index value	Reliability
Daughter Milk	+8.7kg	45%
Carcass Weight	+18.4kg	85%
Daughter calving interval	-1.84 days	44%
Calving Difficulty		
Heifers	10.8%	87%
Cows	4.5%	96%

Use of AI on Heifers-Powerful Proper LM74169

Profit Traits	Index value	Reliability
Daughter Milk	+5.4kg	50%
Carcase Weight	+23.8kg	99%
Daughter calving interval	+2.7 days	52%
Calving Difficulty		
Heifers	6.8%	98%
cows	3.5%	99%

4. Soil Fertility Improvements

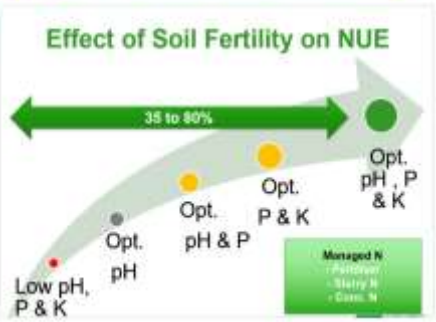


How?

- ✓ x lime spread
- ✓ Switch to higher P & K compound
- ✓ Pro urea + S

- ✓ **Soil Sample**
- ✓ **Spread Lime**
- ✓ **Target Slurry**
- ✓ **Replace P, K & S offtakes**
  - Grazing takes 82-8-12+16 units N-P-K+S/acre
- ✓ **Build up P + K Indexes**
  - Index 2: + 8 units P + 24 units K/acre
  - Index 1: +16 units P +48 units K/acre

NMP



5. Red Clover in a Beef System

Red clover silage swards

- ✓High N fixation — Free Nitrogen
- ✓High DM production (15-20 bales/ac/yr)
- ✓High intake potential
- ✓High animal performance

Management

- Field should be:
  - Dry, travelable in spring and autumn
  - Have a 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
  - ✓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
- 2023 silage analysis – 77% DMD, 16% CP, 31%DM, 11.13 ME MJ/kg

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. Spring U16 Month Bull Beef System

Spring U16 Mth Bull Beef: The Stages

Stage 1: Feb-Oct

- Properly wean a heavy calf
- 320kg + @ housing
- Vaccinations & dosing
- Forward grazing & easy wean
- Meal : 1kg pre-weaning and 2kg post

Compact Calving

Stage 2: Nov-Jan

- Housing Environment
- 2kg to 6kgs of meal
- Top quality red clover silage
- Routine

75%DMD silage

Stage 3: Feb-June

- Straw + ad lib ration
- Ensure balanced diet (Energy, fibre & protein)
- Health – FEC samples
- 500kg at 12 months
- 680-700kgs at finishing
- Fat class 2+

500kg @1yr

Spring Bull Performance

TARGET

500kgs@ 12 mths

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

Stage	2023 Born Bulls (19)	2022 Born Bulls (20)
Birth	45 kg (19th Feb)	45 kg (3rd Mar)
Housing -Stage 2	334kg (6th Oct) 1.26 kg ADG	351kgs(1st Nov) 1.27 kg ADG
Winter 4th Nov	369 kg 1.26 kg ADG	351kg 1.27 kg ADG
Mid Winter – Jan 4th	454kg 1.28 kg ADG	410kg 1.20 kg ADG
Birthday	532 kg (27th Feb) 1.31 kg ADG	520kg (18th Mar) 1.26kg ADG
Final weight -	671 kg 1.37 kg ADG	
Finishing Performance	390 kg, U-3- at 15.5* months, €2140/head	395kg,U-3-at 15.6months,€2154

*Must discuss with your factory agent before changing to a bull beef system

7. Water Quality

Water Quality

Is My Land Prone to Certain Losses

Phosphorus

Nitrogen

Overland flow pathways & delivery pts

Water Quality in my Local River

Identify Issue & Solution

Better Farming for Water
8 Actions for Change

Nutrient Management

01 Reduce purchased nitrogen (N) & phosphorus (P) surplus per hectare

02 Ensure soil fertility is optimal for lime, phosphorus and potassium

03 Ensure application of fertiliser and organic manure at appropriate times and conditions

Farmyard Management

04 Have sufficient slurry and soiled water storage capacity

05 Manage and minimise nutrient loss from farmyards and roadways

Land Management

06 Fence off watercourses to prevent bovine access

07 Promote targeted use of mitigation actions such as riparian margins, buffer strips & sediment traps to mitigate nutrient and sediment loss to water

08 Maintain over-winter green cover to reduce nutrient leaching from tillage soils

Take Home Message:

- Know your land & the losses it is susceptible to (PIP maps)
- What is your local water quality like?
- Identify issues & implement a plan

8. 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 on tillage land?
  - Need to consider lie back area, water & minimise poaching
- Can you rent land for grazing / silage?

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
- Will cash flow be an issue for you this winter?

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

Islands River Catchment

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*

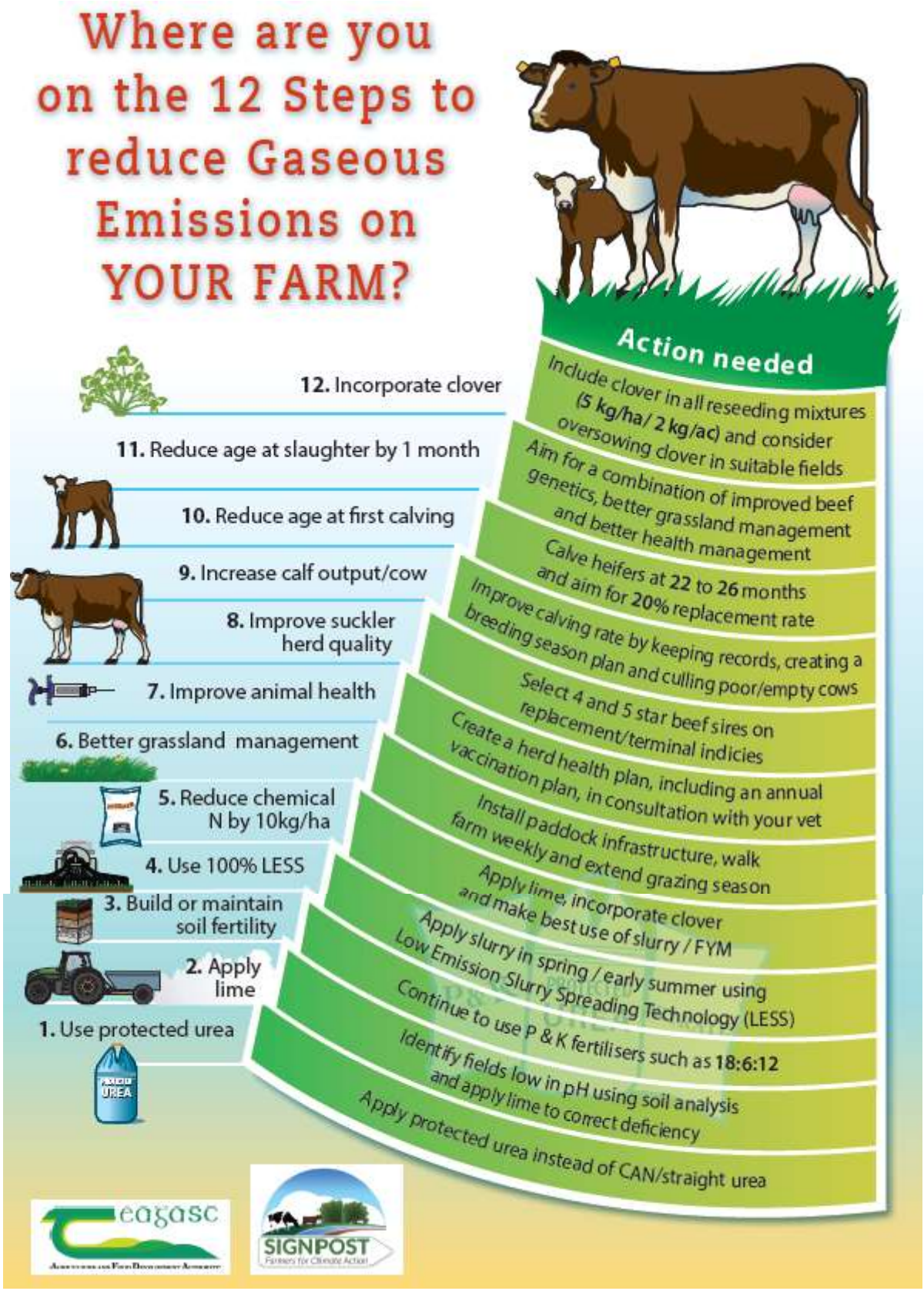
It is very easy for maiden heifers to be bullied by older cows when they are in the shed, which can cause injuries and affect their feed intakes. Ideally they should be housed in a separate pen to prevent this from happening, and to ensure that they have enough feeding and lying space.

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.

11.12 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!