



Sustainable Dairy Beef Production

# **Dairy Beef 500**

## ***Farm Walks***

***27 February 2024 | 12pm***  
***James O'Sullivan***  
***Myross, Co. Cork***

***5 March 2024 | 2pm***  
***Gareth Peoples***  
***Drumlougher, Co. Donegal***



# DairyBeef500 Programme

## Sustainable Dairy Beef Production

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*The DairyBeef500 Demonstration Farmers are sponsored by:*



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*Tipperary Dairy Calf to Beef demonstration farm is sponsored by:*



*For more information please visit: [www.teagasc.ie/dairybeef500](http://www.teagasc.ie/dairybeef500)*

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## Sponsors Welcome

### *Welcome from Industry Stakeholders – Volac Milk Replacer Ireland.*

On behalf of all the industry stakeholders I would like to welcome you to this DairyBeef 500 Programme demonstration spring farm walks. We are delighted to be involved with Teagasc as industry partners in the Signpost and DairyBeef 500 Programmes.

The funding of this programme by all involved shows a commitment to the beef sector by supporting a programme where the primary objective is to demonstrate a sustainable dairy calf to beef systems that will return a worthwhile margin to beef farmers while also helping to reduce the environmental footprint of Dairy- Beef production.

We hope that the success and knowledge gained from the previous Green Acres Calf to Beef Programmes in terms of calf rearing, animal health and grassland management can support the current participants in producing more environmentally conscious and financially sustainable dairy-beef systems.

We wish all the participants every success for the programme over the next five years.



**Una Hickey**

## Sponsors Note

### **MSD**

MSD Animal Health is one of Ireland's leading suppliers of animal health and technology products to veterinary practitioners and farmers. MSD employs approximately 2800 people across its sites in Ireland, which encompass manufacturing, R&D, commercial and marketing facilities in addition to global support services

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Munster Bovine is Ireland's market leader in cattle breeding and herd management services. The Munster Bovine technician service is recognized as the leader in its field with over 70 years' experience of carrying out artificial insemination in the Munster and Galway areas. With access to the best genetics, today we offer a complete and integrated range of breeding, milk recording, fertility and performance enhancing services

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Liffey Mills; Backing those who feed our nation. We work closely with our 10,000 customers to ensure a bright & sustainable future for generations to come in all aspects of agriculture including Dairy, Beef, Sheep & Tillage.

## **Volac Milk Replacer Ireland**

Volac is a fast-growing, ambitious international dairy business. We turn our passion for dairy nutrition into great products that advance the health and performance of consumers and farm animals. Volac's Animal Nutrition Business is a leading product specialist in Sustainably Advancing Livestock Efficiency in the key areas of young animal nutrition, feed fats forage conservation and feed additives

## **Corteva**

Corteva Agriscience™ is the only major agriscience company completely dedicated to agriculture. By combining the strengths of DuPont Pioneer, DuPont Crop Protection and Dow AgroSciences, we've harnessed agriculture's brightest minds and expertise gained over two centuries of scientific achievement.

# Welcome

## Alan Dillon

### *DairyBeef 500 Campaign Manager*

On behalf of Teagasc and all the sponsors of the Teagasc DairyBeef 500 Campaign, I would sincerely like to welcome you to our two spring walks as part of our 2024 DairyBeef500 spring farm walk series. I would like to express our gratitude to both James O'Sullivan in Cork, and Gareth Peoples in Donegal, and their respective families for accommodating us to showcase what has been achieved in recent years through their involvement in the DairyBeef 500 campaign.

Since both James and Gareth joined the Dairybeef 500 campaign they have demonstrated their open mindedness and ambition to improve profitability and performance of their farms. By focusing on calf rearing, grassland management and silage quality to reduce inputs and age of slaughter both farmers have seen steady improvements in their respective systems.

Both farm families have recently begun to use some higher quality beef sires, identified from the recently launched Commercial Beef Value (CBV), a tool which will bring more confidence to beef farmers that they can source calves that are of superior genetic merit in terms of carcass weight and conformation than the average dairy beef calf.

I wish to acknowledge the continued support of our programme sponsors: Munster Bovine, Volac Milk Replacer Ireland, Corteva Agriscience, MSD, Liffey Mills and Drummonds.

## Farmer Welcome – James O’Sullivan

On behalf of the O’Sullivan family, I would like to welcome you all here to the Co. Cork today. Since joining the Teagasc Dairybeef 500 campaign, the farm has undergone changes which have had a positive impact on both the profitability and productivity. No one area can be pinpointed as the turning point for the farm, but it was more so a series of small changes that have resulted in a more resilient farming system. A number of these changes will be discussed today, including improving liveweight gain from grass and herd health, and I hope that you will take home something from the event to help make your farming business more streamlined and profitable.

## Farmer Welcome – Gareth Peoples

On behalf of myself and my family I would like to welcome everyone here today to Co. Donegal to our farm. We hope you have an enjoyable visit and that you find the day both informative and worthwhile. Since joining the the DairyBeef 500 campaign the farm has undergone many changes. These changes were all simple steps but are all having a positive impact in the performance of the farm. The completion of the farm plan opened my eyes to the potential of the farm and the scope it had for improvement, it also gave me a huge focus on the key areas I needed to improve in order to achieve its potential.

The key areas I focused on improving were grassland management and increasing my farm output and these along with other small change and how they positively impacted my farm will be discussed here today.

Finally, we would like to thank both Teagasc and the industry stakeholders for their continued support of the programme.





## DairyBeef 500 Campaign Introduction

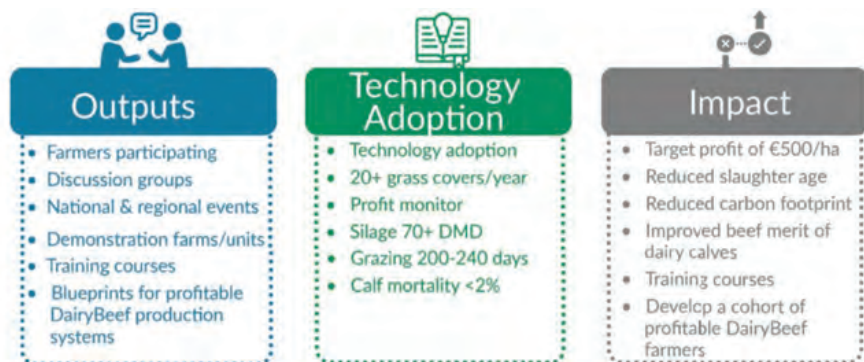
Teagasc has developed a new initiative which focuses on management practices for technically-efficient, dairy-beef systems called DairyBeef 500. The campaign will promote the adoption of technologies identified through research onto commercial farms, while monitoring their impact on farm sustainability.

### *Programme aims:*

- Target a net margin of €500 per hectare, excluding land and family labour.
- Increase the adoption of best practices, especially in relation to grassland management and calf rearing.
- Reduce the environmental footprint of dairy-beef production.
- Establish a cohort of profitable dairy-beef producers.
- Create greater integration between the beef and dairy industries.
- Improve the beef merit of calves coming from the dairy herd.

### Key performance indicators

The key performance indicators of the DairyBeef 500 Campaign are across three levels.





## Demonstration farms

The 15 commercially-operated demonstration farms enrolled will be a key pillar of the DairyBeef 500 Campaign. The demonstration farms will illustrate key technologies including: calf rearing; grassland management; calf health; nutrition; financial management; animal health and welfare; environmental sustainability; and the appropriate use of dairy-beef genetics.

In addition, the Tipperary Calf to Beef Demonstration Farm will demonstrate the deployment of best technologies in sustainable beef production. A joint venture between Teagasc, Dawn Meats and Shinagh Estates Ltd, the farm will be stocked initially with 300 calves, sired by a range of dairy and beef bulls, which will be reared through to beef as steers and heifers.



## Farm Overview – James O’Sullivan

James O’Sullivan farms 31 hectares in West Cork. The farm is split into two blocks with 10 hectares located at Leap and the remaining 21 hectares located on Myross Island near Union Hall. Most of the land is extremely dry free draining soils, which is a huge advantage to keeping costs down in a calf to beef system. The dry soil type allows grazing to begin by early February most years and this can extend into early winter with weanlings grazing off covers prior to housing. The farm has experimented with Multi Species Swards and Red Clover swards over the past few years in an effort to cut chemical nitrogen applications. The stocking rate on the farm has increased over the past few years with over 90 calves being purchased annually now and almost all stock finished between 20 and 23 months of age. James selects mainly angus bull calves sired by AI bulls of a high carcass merit. These bulls would have a commercial beef value (cbv) in excess of €90. James aims for a carcass of 260kg in early maturing heifers and 310kg in early maturing steers. A target of under 400kg of meal to be fed in the finishing period between steers and heifers was met in 2023 despite poor weather and below target weight gain from low dry matter grass. In 2023 the heifers averaged 244kg with an average grade of O=3+ at 21 months while steers averaged 295kg with an average grade of O= 3= at 22 months. James will aim to finish more cattle off grass next year.

# Farm Physical and Financial Performance – James O’Sullivan

The profitability on James farm has steadily improved over the past 4 years. James has managed to increase his output from forage in the form of both grazed grass and grass silage. Variable costs have increased over the years mainly due to price inflation and are running at 56% of gross output. Fixed costs are on the higher side on James farm with loan interest and depreciation making up over 40% of fixed costs following land purchase and a new shed in previous years. This will remain the case for a number of years with the possible need for further investment in infrastructure on the farm in the future. Net margin excluding subsidies was €552 per hectare after all costs were accounted for. This is predicted to increase to over €800/ha net profit in 2024 should the output to cost ratio remain the same. Yearling cattle are heavier going to grass in 2024 and should achieve high weight gain in the main grazing season. This should allow James to reach his target weight at a younger age.

Year	Hectares	Stocking rate lu/ha	Org N kg/ha	Gross Output kg/ha	Gross output €/ha	Variable costs €/ha	Gross Margin €/ha	Net Margin €/ha
2024	31	2.6	195	1550	3875	2130	1745	870*
2023	31	2.22	180	1308	3293	1866	1427	552
2022	31	1.95	158	1211	2351	1363	989	261
2021	31	1.9	154	1107	2085	1082	1003	190

\*predicted profitability for 2024

## Farm overview – Gareth Peoples

Farming in Drumlougher, Co. Donegal, Gareth Peoples and his family, run a mixed farm consisting of both tillage and dairy calf to beef enterprises. Farming a total of 79.5ha all of which is in one block. The grassland area extends to just shy of 50ha with the remaining ground dedicated to the tillage enterprise.


The tillage enterprise consists of winter and spring barley, fodder beet and a small area of beans. Many of the crops are retained on farm as winter feed for the beef finishing enterprise and excess cereals and beet etc are sold off farm.

The land's proximity to the yard brings benefits in terms of grassland management and Gareth has made improvements in this regard since enrolling in the campaign last summer. To date, all of the grazing fields have been subdivided with both permanent and temporary fencing; extra water troughs have also been installed. Along improving grazing infrastructure 14ac of reseeding was carried out in 2022 with plans for further reseeding works to take place this year.

A total of 85 calves were reared on the farm last year, 42 in the autumn of 2022 and 43 spring-born. This autumn 75 calves were purchased and reared with the plan been to add another 35-40 spring calves to get to the target number of 110 calves.

The calves bought in were mainly Friesian bull calves but this autumn some Angus sired calves were purchased and with the plan this spring been to add some more early maturing or continental bred calves depending on value. All calves on the farm are sourced locally direct from farmers whom he has a relationship built up with since he set up his dairy calf to beef system. Gareth believes in sourcing the calves locally creates less stress for young calves therefore minimising any potential disease outbreak. Ideally Gareth's preference is for a calf that is at least 3 weeks of age as he believes at that stage his immunity has increased and his is less vulnerable.

All male animals on the farm are finished as steers at approximately 24 months of age with the aim been to having the majority of the autumn born calves slaughtered prior to housing for the second winter.



## Farm Physical and financial performance – Gareth Peoples

Measure	2022	2023	2024 (Projected)
<b>Physical</b>			
Land base (adj. ha)	48.5	48.5	48.5
Stocking rate (LU/ha)	1.71	1.91	2.3
Calves purchased	84	108	110
Liveweight output (kg/ha)	924	991	1150
<b>Financial</b>			
Gross output (€/ha)	2362	2860	3150
Variable costs (€/ha)	1583	1650	1790
Variable costs (% of gross output)	67	57	57
Gross margin (€/ha)	779	1210	1360
Fixed costs (€/ha)	464	568	600
Net margin (€/ha)(excluding subsidies)	314	642	760

Although Gareth's beef system was profitable in 2022, achieving a net margin of €314/ha before subsidies, last year seen a substantial increase in net profit to €614 per/ha this increase was due to increased sales of over €30,000. While extra stock were put through the system there was very little increase in variable costs this would be due to a drop in input costs as well as improvements in technical efficiency.

There is scope to improve this closer to the target of €750/ha as set out under the farm plan. To achieve this, a focus must be placed on increasing output on a per hectare and livestock unit basis. The latter will be achieved by focusing on animal performance – through calf rearing through to finish, grassland management and silage quality

The profitability of beef systems, with dairy beef being no different, is linked to the level of output achieved. By increasing stock numbers, Gareth will have more animals to sell, have a higher output figure and - if costs are managed appropriately, with this extra beef produced from grazed grass - an increase in net margin will ensue. Over the course of 2022, the farm's gross output was 924kg/ha. However, the additional numbers will push the output figure closer to the 1,250kg/ha average achieved on the remaining farms involved in the DairyBeef 500 Campaign.

# Spring Grassland Management Application

## Early Grass

Grazed grass will continue to be the cheapest feed available to beef animals. Turning animals out early to spring grass will improve animal performance and reduce cost of production. The alternatives to growing and utilising grass will not make economic sense as concentrate prices have increased and the cost of replacing silage has increased. Early grazing enables the animal to feed itself and spreads its own slurry.

There is a grazing plan required to make the most of early spring grass. The lighter animals should be turned out first to grass as early as possible. Grazing the paddocks with the lowest cover of grass needs to be targeted to get started. Paddocks with covers of grass of about 700-1000 KgDM/ha are the most suitable. These are ideal for training/conditioning the animals to graze. These paddocks are also much faster to recover or regrow. Another advantage of grazing low cover grass is that if grass is left behind or dirtied, the future grass quality will be fine if these are grazed out well in April.

Most of the grazing ground should be targeted first. If the silage ground is to be grazed then it should be targeted for grazing in early March. This facilitates spreading of slurry for silage production. However, on many dairy-beef farms, the demand for grass is low, so often the silage ground doesn't need to be grazed. This approach is practised in the dairy beef programme in Grange.

Wet days arrive every spring so a plan has to be put in place to deal with these days. The driest paddocks with the lowest covers of grass need to be used on these days to ensure animals can still graze. Flexibility in approach is required to avoid damage. Sometimes smaller groups work better. Having fresh grass allocated or made available every day may also help. It is important to avoid long narrow strips of grass allocation as this encourages a lot of walking.

## Spring Fertiliser Planning

The timing of the first application of fertiliser needs to match the stocking rate on the farm and when soil temperatures are sufficient to ensure a reasonable return for the cost of the nutrients applied. Protected urea is are significantly cheaper per Kg of N than CAN and should be used where possible.

To optimise early N applications 25-30kg N/ha (20-23 units N/acre):

- Spreading conditions need to be optimum.
- Soil temperature must close to 5.50C and rising at the time of application
- Ensure there is no heavy rain forecast immediately after spreading.
- Target drier fields
- Target fields with good soil fertility
- Target fields that have at least 6cm (500kg DM/ha) of grass on them
- Recently reseeded fields will give a better response





### Slurry Plan:

Beef farmers should aim to have most of their slurry spread by the middle of April.

An early application of 2000 - 2500 gals/acre of slurry to grass (assuming ground conditions and growth conditions are correct) can replace 16 - 20 units of fertiliser N/acre (20-28 kg N/ha).

It is important to realise the nutrient potential of slurry. It must be used strategically to replace chemical fertiliser. For many beef farms it can deliver the majority of the P & K requirement for 1st cut silage.

Slurry can also be used to improve the soil fertility on soils with poor soil P&K status.

Spreading conditions should be optimum and the use of low emission slurry spreading (LESS) should be used where possible to further enhance nutrient availability.



## Calf health

### Rearing a healthy calf

From purchase until the calf is weaned off milk, is one of the most crucial period for the calf-to-beef enterprise. The growth rate achieved during these next few months will affect the lifetime performance of the animal therefore keeping the animal healthy is important to ensure full genetic potential for growth and feed conversion efficiency is obtained.

### Sourcing a healthy calf

Well-grown, healthy calves have the greatest earning potential. They are likely to respond well to feeding and grow quickly. This is why buying a healthy animal with genetic potential to perform well from birth right through to slaughter is essential for profitable calf to beef production.

Always aim to source calves directly from a farm with a known health status so you can

be sure you are not introducing disease to the rest of your cattle. When buying dairy calves directly from a farm, you will have the opportunity to ask more questions about the health and disease status of calves than purchasing at a mart.

Purchased calves should be alert, have clear eyes, dry navel, no swelling of joints, no signs of scour or pneumonia, a shiny coat and a correct weight for its age.

1. Calves ideally should be at least 21 days old and have good weight for age (min 50kg at 3 weeks of age).
2. Try to choose calves that have been fed sufficient colostrum.
3. Select calves from as few sources as possible.



Animal Health Plan

Taking a proactive and preventative rather reactive approach to herd health is the key in successful dairy –beef systems.

The first three weeks in a calf’s life is usually the danger period for when a calf picks up one of the diseases that can cause scour. A variety of infectious organisms can cause calf scours, including rotavirus, coronavirus, E. coli, cryptosporidia, coccidia and Salmonella species. However most of these organisms will generally occur in the first three weeks of the calf’s life. By beef farmers sourcing calves that are a minimum of three weeks of age, this will greatly reduce the chance of scour outbreaks occurring on farm. At this age, these calves will have come through the danger period with scour and even if they do get a scour they will be more than likely be able to overcome it without any adverse effects compared to younger calves.

On arrival, all calves should be checked to see if they are dehydrated by using the skin pinch method. If the skin on the calf is slow to snap back in place, feed the calf with two litres of electrolyte and water. Electrolytes should not be mixed in milk.

If buying calves from multiple sources or if there is history of coccidiosis on your farm, a preventive treatment for coccidiosis is advisable. At between

Calf age	Vaccine/ Dose	Prevents	Route of administration
1-3 weeks (depending on vaccine brand)	Pneumonia	RSV/Pi3	Intranasal
2 weeks	IBR live	IBR	Intranasal
6 weeks	Clostridia	Clostridial diseases	Subcutaneous
10 weeks	Clostridia	Clostridial diseases	Subcutaneous
12 weeks	IBR live	IBR	Intramuscular
6 months	Pneumonia	RSV/Pi3/ <i>Mannheimia haemolytica</i>	Intramuscular
7 months (at least 2 weeks pre housing)	Pneumonia	RSV/Pi3/ <i>Mannheimia haemolytica</i>	Intramuscular

Table 1: Vaccination plan covering pneumonia (RSV, Pi3 & Mannheimia haemolytica), IBR & Clostridia

3-6 weeks of age calves are particularly vulnerable to coccidiosis. Infection can result in watery feces which can slow growth rates and lead to failure of calves to wean at their optimal age and weight.

Pneumonia is the most common disease associated with housed calves. Mortality rates due to pneumonia are approximately 3% in calves in the first 12 weeks of life. The cost of treatment, loss in performance and time cost due to pneumonia can heavily reduce farm efficiency and profits. Many of the infectious agents commonly involved in calf pneumonia are actually present in healthy calves and in other livestock on farms without causing pneumonia outbreaks. However, these agents can cause pneumonia if the calf's immune system is compromised. Factors such as nutrition, colostrum intake, housing, hygiene, ventilation, overcrowding and stress all contribute.

Currently available vaccines protect against lungworm, IBR, RSV, PI3, Mannheimia haemolytica and Histophilus somni. While vaccines do reduce the level of mortality and production levels associated with pneumonia in calves, it will not eliminate pneumonia if management factors such as nutrition, colostrum intake, housing hygiene, ventilation and stress are not correct.



## Calf housing

Providing the correct environment is a fundamental aspect of keeping calves healthy. Once calves arrive on farm it is important they enter an environment which will not compromise their health. Housing needs to be well ventilated to ensure air is fresh but also designed so no draughts are created. Calf housing needs to be dry with a good drainage system as calves spend 80% of their time lying down so they need a dry bed. Regular cleaning and disinfection of all areas used by calves is important to keep bacteria which would bring the onset of scour from building.



## Calf feeding

Although a significant cost to the system, the focus should be placed on the constituents and nutritive value of a milk replacer rather than solely on its economic cost. By focusing your milk replacer purchasing choices solely on cost, you may end up with a product that fails to provide the calf with the adequate levels of nutrition to achieve its daily liveweight gain targets.

Along with being easily dissolvable, a suitable calf milk replacer for dairy-beef systems should have a protein content of >20%, oil content of 18-20%; ash content of <8% and a fibre content of <0.15%. In terms of the calf's ability to consume the product, milk replacers formulated from milk-derived proteins (skim milk powder or whey protein concentrate) are preferred.

Milk replacer should be considered as a feed; clean, fresh water should be available at all times. When moving calves in, always allow calves 2-3 hours rest after arrival before feeding a good rehydration electrolyte as a first feed. Where calves are purchased at 2 weeks old, each calf should receive at least 13-15% of its birth weight in a good quality milk replacer – typically

6L/day for a Friesian calf, with this level of feeding reduced in the period immediately before weaning to encourage concentrate intake.

Mixing rates may vary between products - always adhere to the manufacturer's instructions – but typically you are looking for a concentration of 12.5% solids (mix 125g of milk powder to 875ml of water). A high level of hygiene should be maintained throughout the mixing and feeding programme and consistency is key in terms of milk replacer volume. When formulating milk replacer, water below 40°C should be used, as boiling water damages the milk proteins and aim to feed calves milk replacer at their body temperature (37-39°C).

Days	Milk/MR per day per calf	Litres per feed	No. of feeds per day	Concentrates
7-12	500g of milk replacer		2	2 Ad lib
13-35	750g of milk replacer		3	2 Ad lib
35-49	375g of milk replacer		3	1 Ad lib
50+	If calves have not reached their targeted weaning weight of 85-90kg, continue to feed at same rate until heavy enough to wean	–	–	Ad lib up to 2kg/day

**Table 2:** Milk Replacer Feeding Schedule for Bucket Feeding, 49 Day Feeding Period





## Developing the rumen

Concentrate supplementation is the single most important factor for rumen development and a high-quality, palatable starter concentrate should be available to calves freely, as soon as they arrive on farm, and offered fresh daily. Calf concentrate should contain 17-18% crude protein and have an energy value of at least 12 MJ/kg (greater than 0.95 UFV/kg

Forage supplementation is beneficial to rumen development, but not as fundamental as concentrates. Calves only need small amounts of roughage; straw is easier to digest and is preferred to hay. A high consumption of hay in young calves will decrease the intake of concentrates, and the calves will often develop pot bellies. Water is often the most overlooked aspect of calf-rearing. Water consumption is important for the development of the rumen and to allow for timely weaning of calves off milk.





## Silage quality improvements – Ten point plan

On dairy calf to beef farms, all animals are priority stock and it is essential that all animals are gaining weight every day. As silage can make up to at least 1/4 of the annual diet on these farms, during the winter housing period, animals should be fed very high quality silage to achieve a min. average daily gain (ADG) of 0.6 – 0.7 kgs.

The difference in the amount of concentrates required to supplement a 62% Dry Matter Digestibility (DMD) silage versus a 72% DMD silage to achieve the targeted ADG is a very significant cost over a full winter period.

The following ten points are key to producing high quality silage and reducing winter feed costs.



### 1. Spring grassland management

A tight grazing of the silage ground in early to mid-March, allows any dead material to be removed from the sward and the silage crop can then start growing high quality leafy material from the base.

### 2. Closing date

Having the silage area grazed in time, applying slurry and chemical fertiliser before the end of March allows up to 50 days (7 weeks) of growth before harvesting the crop between the 16th and 20th May.

### 3. Soil test

Up to date soil analysis are essential to assess soil fertility in relation to phosphorus (P) and potassium (K) levels. Slurry and chemical fertiliser can then be applied at appropriate rates to take account of the soil status and the demands of the crop to be grown.

### 4. Application of slurry and chemical fertilisers

Slurry is a very variable product and should not be overvalued. Slurry on farms should be tested to determine its dry matter and N, P, K values. Following slurry application, chemical fertiliser can be applied to match N, P, K requirements (see table below). First cut silage crops require 16 units P & 100 unis K per acre (slurry/fertiliser).



### 5. Sulphur

Sulphur is an essential nutrient in silage production. It improves grass dry matter yields and quality. Sulphur allows N to be used more efficiently. Silage crop requires 20kgs S/Ha (16 units/acre) per cut.



	P (Kgs/Ha)	P (Units/Ac)	K (Kgs/Ha)	K (Units/Ac)
1T/Ha grass DM	4	3.2	25	20
1st Cut (5T/Ha DM)	20	16	125	100
2nd Cut (4T/Ha DM)	16	13	100	80

## 6. Weed control

Weed infestation (particularly docks) will devastate both silage quality and yield. For long term control, spray 2 to 4 weeks after fertiliser application and a minimum of 3 weeks before silage is harvested.

## 7. Cutting the silage crop at the right stage

Grass growth stage at harvest is the most important factor deciding silage quality. Once seed heads appear, DMD will be max. 70% and will drop by 1 point every 2-3 days after that. Lodged crops with dead material at base will have 3-4% lower DMD.



## 8. Do not sacrifice bulk for quality

Well managed silage swards closed from late March should yield 5.5 - 6t DM per Ha (9-10 tonnes per acre fresh weight) and be ready for cutting by mid-May. Using a 'one big first cut' approach by pushing the cutting date into June, decreases the quality of the silage and reduces the annual grass production of the field.



## 9. Don't wait for all Nitrogen to leave the crop

As a guide, grass uses 2.5 kg N (2 units) per day on average of fertiliser N, the final Nitrogen application should be applied approx. 50 days before planned cutting date. However, this should not be used solely to decide cutting date. If weather conditions are suitable for cutting, test the grass crop for sugars rather than sticking rigidly to the '2 unit rule'; the crop can be safely harvested sooner depending on conditions.

High sugar content allows the crop to ferment quickly, reduces pH and preserves the crop correctly. If sugars are >3% the crop will ensile readily, at 2-3% wilting will be beneficial, while <2% an additive will be required. Ideally, mow in the evening when sugars are highest.



## 10. Wilt for 24 hours where weather permits

Wilting grass to 28-30% dry matter is very beneficial for good preservation, especially if sugars are less than 3.5 and nitrate is somewhat elevated. Tedding out for 24 -36 hours is the recommended.



## The Signpost Programme: meeting our greenhouse gas emissions targets to 2030+ on beef farms

The main technologies that farmers are being asked to adopt to reduce greenhouse gas (GHG) emissions are those that reduce costs and/or improve profitability while also reducing emissions. These technologies include: improving animal performance through better genetics; reducing age at slaughter; implementing a herd health plan; increasing days at grass; using protected urea to replace CAN and straight urea; reducing chemical nitrogen use through improved soil fertility and in particular liming; optimising the use of organic manures; and incorporating clover into grassland swards.

### The Signpost Programme

The Signpost Programme, led by Teagasc, is a collaboration of farmers, industry, state organisations, farm organisations and media all working together to support and enable farmers to farm more sustainably. The main focus of the programme is to reduce greenhouse gas (GHG) emissions but also to improve water quality and enhance biodiversity on Irish farms. The Signpost Programme is taking a holistic view of sustainability, encompassing economic, social and environmental sustainability.

### Current technologies to reduce emissions

There are a suite of technologies currently available to beef farmers to reduce our greenhouse gas emissions. The key technologies available to beef farmers include:

#### *1. Reduced age at slaughter*

Finishing animals older at slaughter results in higher lifetime emissions from greater quantities of methane produced, additional emissions from slurry stored and spread and dung and urine excreted during grazing. The economic impact of increased weight gain is estimated at €0.21 per kg beef produced for an increase of 100g /head / day in lifetime performance. The impact of increased weight gain on GHG emissions is estimated at 2% per 100 g increase in lifetime average daily gain for beef cattle systems.

## *2. Health*

The implementation of a comprehensive health plan will improve the efficiency of the farming system and reduce GHG emissions by reducing age at slaughter.

## *3. Grassland*

Increasing the grazing season length lowers GHG emissions. Grazed grass has higher digestibility than grass silage resulting in improved productivity and less energy lost as methane. Also, the ensuing shorter housing period means less slurry stored and less slurry to be applied, resulting in less emissions.

## *4. Protected urea*

Nitrous oxide (N<sub>2</sub>O) is a GHG which has almost 300 times more global warming potential than carbon dioxide (CO<sub>2</sub>). It is lost to the atmosphere from the breakdown of organic and chemical fertiliser. The spreading of chemical fertilisers including calcium ammonium nitrate (CAN) emit high levels of N<sub>2</sub>O. Protected urea is designed to slow the rate at which urea is converted to ammonium, reducing N<sub>2</sub>O emissions. Protected urea is 25-30% cheaper than CAN and grows similar grass yields. Protected urea has 71% lower nitrous oxide emissions than CAN.


## *5. Reducing chemical nitrogen use*

In addition to switching to lower emitting forms of fertilizer, reducing total quantities of chemical N reduces N<sub>2</sub>O emissions. A reduction in N fertiliser of 10 kg per ha will reduce farm GHG emissions by 1% and improve income by €10 / Ha.

## **How to reduce farm inorganic fertiliser application rate?**

### *• Improving soil fertility and in particular liming*

Soil sampling and the implementation of a nutrient management plan are key to reducing chemical N fertilizer use. Spreading lime to increase soil pH has the potential to release up to 80 kg N from the soil and yield a return of €6-10 for every €1 spent on lime.



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- *Optimising the use of slurry*

Slurry is a valuable source of fertilizer particularly if it is applied at the right time of the year (spring), using the right equipment (low emissions slurry spreading (LESS) equipment). Spring application captures an extra 3 units N / 1,000 gals of slurry and using LESS contributes an additional 3 units N / 1,000 gals of slurry. Spring application also reduces the storage period and the associated emissions. A 20% shift to spring application can reduce farm GHGs by 1.3% while a shift to trailing shoe can lead to a reduction of 0.9% in GHG emissions.

- *Incorporating clover*

Incorporating clover into grassland reduces the demand for chemical nitrogen. Therefore, if there is less chemical N fertilizer spread, there is less N<sub>2</sub>O being emitted into the air. Clover has been shown to 'fix' the equivalent of 100 kg inorganic N/ha from the atmosphere.



## Notes

[illegible]

# Introducing the DairyBeef500 team



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