

Grassland Farmer of the Year 2017 Beef Winner

Ger Dineen, Kilnamartyra, Macroom, Co. Cork.

Friday 15th June, 2018



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Farm Open Day
at Dineen's Farm

Macroom, Co. Cork.

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Table of Contents

Grass10 Campaign	5
Introduction and welcome to the Dineen Farm.....	6
Grass10 Campaign	10
Grassland Farmer of the Year Competition.....	11
Grassland Management.....	12
Grazing performance of Dineen farm	13
Farm Performance	14
Investing in Grazing	16
Grazing infrastructure.....	19
The need for reseeding	22
Management of Reseeded Swards	27
Reseeding Investment	29
Sustainability of our Grazing Systems.....	30

Grass10 Campaign

Introduction

Grazed grass is the cheapest and most available feed for beef production systems in Ireland. As an abundant natural resource, grass provides Irish farming with a significant competitive advantage for beef production. Grass enables low-cost animal production and promotes a sustainable, high quality green image of meat production across the world. Recent industry reports (*FoodHarvest 2020 and FoodWise 2025*) have highlighted the important role grass can play in a profitable meat production industry. Through a combination of climate and soil type, Ireland possesses the ability to grow large quantities of high nutritive value grass which can be converted through grazing animals into high quality grass-based meat products.

Our competitive advantage in meat production can be explained by the relative cost of grass, silage and concentrate feeds. Therefore, increased focus on grass production and efficient utilisation of that grass should be the main driver for profitability of the livestock sector. A recent financial analysis by Teagasc demonstrated increased profit of €105/ha for every 1 tonne DM/ha increase in grass utilised. Additionally, environmental sustainability (*carbon footprint, nutrient use efficiency, etc.*) is also improved by increased grass utilisation.

Future profitability in grass-based beef production in Ireland will depend on an effective grass-based system. However, currently Irish farmers are not using grass to best effect and there is a need to increase grass production and ensure efficient utilisation of that grass.



Introduction and welcome to the Dineen Farm

Kilnamartyra, Macroom, Co. Cork.



I would like to welcome everyone to Kilnamartyra, and I hope you find your visit to our farm informative. I am married to Gobnait and have four children, Muireann, Ciara, Danial and Ciaran. I also wish to acknowledge the support over the years of my wife Gobnait and the continued help of my children who have always lent a hand when required.

I have around 60 suckler cows and finish the bulls under 16 months with surplus heifers sold for breeding. AI is carried out on all my cows, which I do myself, and keep around 20% for replacements. All cows and heifers are bred to high index maternal sires. I am using Simmental, Saler, Angus, Limousin and this year, Shorthorn. I am also using Fleckvieh and Simmental for more milk.

I farm around 50 hectares in West Cork. I have 12 hectares of forestry on the poorer ground and 32 adjusted hectares of grassland. My farm is 2/3 dry ground and 1/3 heavy ground. Grassland management has become a key driver to the business over the past few years. Emphasis has been placed on prolonging the grazing season, reducing feed costs and increasing animal performance as a means of increasing output and profitability.

Paddocks are closed on the 10th of October on rotation and all animals are in by the 1st of December, if weather permits. I calf to grass, cows and heifers start calving around the 1st of February and go straight out if the weather is ok but will come in again if they are doing a lot of damage. All cows are calved by the 1st of April, you now have a bunch of calves only 8 weeks apart. I have only one group of animals on my farm, cows and bulling heifers are run together to make it easier for AI.

I won Beef Grassland Farmer of the Year in 2017, growing an average 14 tonne per hectare in the previous year. My farm is good to grow grass when all the conditions are right. However the grass growing year of 2012 and spring of 2013 were awful, and now the fall of 2017 and spring of 2018 were even worse. However the farm was growing around 7 tonne per hectare in 2012. In 2016, I was growing an average of 14 tonne per hectare. It was like having an extra farm next to me and my stocking rate went from 1.4 to 2.4 LU/ha.

All my soil samples were low for P and K at the start of 2012, now they are at index 3 for P and K and lime is around 6.7. I also soil sample every 3 years. I reseed around 10-15% of my farm every year.

I walk the farm and measure my grass every week and upload it to PastureBase Ireland. On PastureBase you can see the paddocks that are doing well and the ones that are performing poorly. Last year my paddocks ranged from 8-18 tonne per hectare. At €105 per tonne for every additional tonne of grass utilised, this means that the 8 tonne paddock is producing €840 of grass per hectare and the 18 tonne is producing €1890 per hectare. That's a difference of €1050. The paddocks that are growing only 8 tonne per hectare are ok in Lime, P and K but it is cold peaty ground.

I also cut a lot of round bales of silage to keep grass in good condition. If a paddock is getting strong I will take it out if I have plenty of grass. This is where the PastureBase package comes in. It will tell you how much grass you have on the farm at all times. I cut around 5 bales per acre, most people think this is crazy but I feed the bales to the finishing bulls as they are around 75 DMD +. These bales save me around 1 tonne of ration per bull. Before I used the bales, I fed the bulls 2.5 tonne of ration. Now I feed 1.5 tonne/hd at €250 a tonne for ration which is worth €7500 for 30 bulls. I make between 200 and 400 bales every year keeping grazing paddocks in good condition.

My farm has 32 paddocks, roughly 1 hectare each. The more paddocks you have the more control you have over grass. I also have roadways running to most paddocks and every year I am putting in more roadways.

It is easy to grow grass but to graze to 4cm is the hard part. It was a tough year this spring to do that. I have lots of ways to do this but they all take time. The way I look at it is, it costs me around €1200 a week to keep my cattle inside. If I can get them out earlier and keep them out longer it will pay off. If I got €1200 a week to put up wires and move stock in and out in bad weather it is a difference between making money and losing it. In very bad weather cows and bulling heifers will be left out for 3 hours a day to save silage. I will put cattle out full time and block graze every 12 hours if they are not doing too much damage.

The suckler cows are separated from the calves 10 days before AI starts to get them cycling. The cows come in from the paddocks in the morning and evening to the calves. What I have found in bad weather is by letting the paddock wire open to the roadway, the cows are then waiting on the roadway to come into the calves. This way there is a lot less damage done to the paddock.

When my cows and calves are grazing together all the wires in the paddocks are raised so the calves graze ahead of the cows. I have no creep feeder, my calves' average 1.3kgs a day weight gain for the heifers and 1.5kgs for the males. Every 0.1kgs weight gain is worth €100 to me. When you are finishing bulls you should try and get them as heavy as you can before weaning them. Bulls at grass are costing 30cent per day, inside to be finished cost €3, that's a huge saving.

I reseed around 10-15% of the farm every year, usually at the start of August, depending on how much grass I have. I pick the worst performing paddocks and will drain it if it's wet. I have a low cost method for reseeding. I will burn off the paddock, if it has lots of grass I will cut it and bale it after 5 days or else get cattle in to graze it tight. After 2 weeks I will use a spring harrow and give the paddock 2 runs to make a fine seed bed. The paddock will get Lime at 2 tonne per acre and 2 bags of 10-10-20. I will set the seed with a Vicon fertiliser spreader at 14kgs per acre. At the moment I am using Abergain (T), Aberchoice (D) and Drumbo (D). I will use up to 60% Tetraploid in dry ground and 40% in heavy ground and then the field is rolled. I will spray the paddock with an undersown spray to kill the seedling weeds. It will get 27 units of N/acre and I will graze it mid-September with weanlings and might get another grazing if the weather is ok. All this costs around €100 per acre, I think it pays off for itself in one year. Normally you get 2- 4 tonne/ha boost from reseeding which is worth around €105 per tonne utilised. For 2018 I will incorporate clover into some of my paddocks.

For me, the more grass I grow the more profit I make!

Current Grazing Performance on Beef Farms

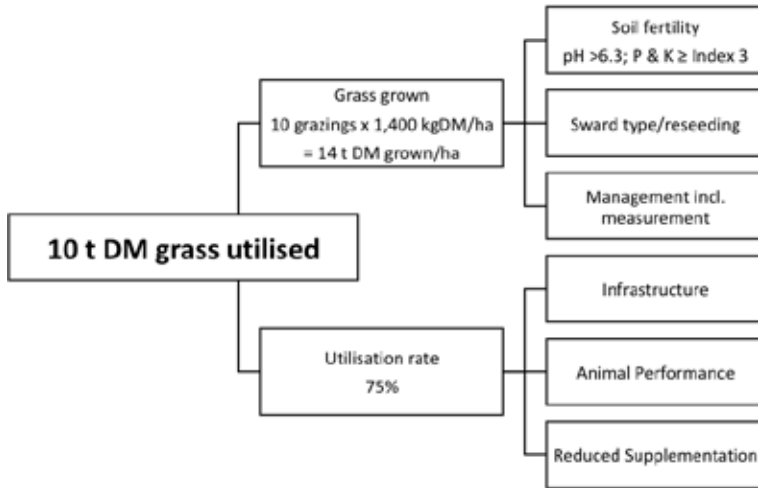
Currently, it is estimated that about 5.6 tonnes grass DM/ha/year are utilised nationally on drystock farms (*Teagasc National Farm Survey data*). There are major improvements required in the areas of grass production and utilisation. Data from the best commercial grassland farms and research farms indicate that the current level of grass utilised on drystock farms can be increased significantly, to greater than 10 t DM/ ha (i.e. 14 t DM/ha grown with a 75% utilisation rate).

It is important to recognise that improvements in soil fertility, grazing infrastructure and a level of re-seeding are required to achieve higher levels of grass production and utilisation. To achieve greater change in the amount of grass utilised, farmers will need to upskill their grazing management practices. This means regular measurement of grass supply using specialised grassland focused software to analyse grass production.



Grass10 Campaign

Grass10 is a new four-year campaign recently launched by Teagasc to promote sustainable grassland excellence. The Grass10 campaign will play an important part in increasing grass growth and utilisation on Irish grassland farms, thereby improving profitability at producer level and helping to ensure the long term sustainability of Irish beef, dairy and sheep production. Significantly, it can provide the platform or framework to enable various industry stakeholders to collaborate for collective action. Given the current performance in terms of grass growth and utilisation, the need for 'collective action' should be clear.



Objective

The objective of the campaign is to achieve 10 grazings/paddock/year utilising 10 tonnes grass DM/ha. In order to achieve this objective, we will need to achieve significant changes in on-farm practices, specifically:

- Improved grassland management skills
- Improved soil fertility
- Improved grazing infrastructure
- Improved sward composition
- Increased grass measurement and usage of PastureBase Ireland

Grassland Farmer of the Year Competition

With 2017 designated the Year of Sustainable Grassland, and a proven link between increased grass utilisation and increased profitability, the Department of Agriculture, Food & the Marine, in collaboration with numerous industry stakeholders including Teagasc, launched a competition as part of the Grass10 initiative to find the Grassland Farmer of the Year. Teagasc research indicates that grass utilisation can be increased significantly on farm.

With this background Grass10 has launched a grassland competition to recognise those farmers who are achieving high levels of grass utilisation in a sustainable manner. Practises used by these farmers to increase grass production and utilisation, include soil fertility management, sward renewal, grassland measurement and improving grazing infrastructure.

The objective of the Grassland Farmer of the Year Competition is to promote grassland excellence for all Irish livestock farmers.



Ger Dineen is the Beef winner of the Grassland Farmer of the year Competition 2017. Congratulations Ger and Family!

Grassland Management



PastureBase Ireland: Technologies to assist grassland management

Technologies which enable data-informed decision-making on the farm can help to increase farmers' confidence and greatly improve grassland management. Huge leaps have been made in developing decision support tools to improve resource farm efficiency, profitability and sustainability. The primary objective of most of these tools is to increase the information available to assist in farm-management decision making as well as to collect and collate large amounts of data in a centralised database.

Teagasc launched PastureBase Ireland (PBI) – an online grassland management decision support tool – in January 2013 and Grass10 will see the roll-out of the new PastureBase Ireland website as a key component of the campaign. Upon entering data from their own farm (*e.g. grass measurements*), the platform provides real-time and customised grassland management advice to the farmer to assist their decision-making. These reports are developed in such a way that allows farmers to benchmark their individual farm with farm in their discussion group or in their region. The data accumulated to date indicate that PBI participating farms have achieved improvements in grass DM production and grazing management.

PastureBase Ireland is informing us that farmers need to have a good control of current grass supply in order to manage grass well. Grass cannot be managed correctly without knowledge of farm cover, grass demand and grass growth. The crucial point on any farm is utilising the feed resource produced on the farm.

The average number of grass measurements completed per year by Ger over the last 3 years is 31. This shows that the farmer is constantly monitoring grass growth and supply which enables him to graze grass at the right cover which in turn allows them to grow more grass as re-growths are faster. The table below outlines the average grazing performance of the Dineen farm in 2017, Beef winner of the Grassland Farmer of the Year Competition.



Grazing performance of Dineen farm

Grazing Performance	
Grass production (t DM/ha) (2017)	13.5
No. grass measures completed/yr (2015-2017)	31
No. of grazings/paddock/year (2017)	8
Days at grass (2017)	270

The average number of grazings being achieved was 8 including the paddocks cut for silage as well as grazing. Maximising the number of grazings achieved on each paddock is a very effective method of increasing farm grass utilisation. Every extra grazing/paddock achieved increases annual grass DM production by 1.5 t DM/ha. PastureBase Ireland enables the farmer to keep track of grass growth per paddock, the number of grazings per paddock and the quantity of grass being consumed at each grazing. This highlights poor performing paddocks and deficiencies in grazing management. The length of the grazing season in 2017 was about 270 days. The autumn came very wet and this shortened the grazing season a little. However the grazing season runs from mid-February to mid-November.



Farm Performance

This focus of output and profit on this farm is stemmed from high grass utilisation. The target is to produce over 1000kg of live weight/ha from a predominately grazed grass diet.

As with high grass utilisation good herd genetics has also a role to play in the high performance of this farm. The herd has a replacement index of €132 (National average is €78). Calving interval was 363 days in 2017 and the six week calving rate was 80%. Compact calving is key to profitability where Ger can get high numbers of cows to grass early in the spring, which reduces feed costs. Getting high volumes of cows out to grass in February is the first key step to achieving more grazing rotations.

The beef output report from ICBF outlines the excellent performance achieved on this farm.



Beef Output Report
01/01/2017 - 31/12/2017

Herd Owner: GERARD DINEEN

		2. Key Performance Indicators (KPI's)		
		Bottom 1/3	Average	Top 1/3
A. Beef Output per Livestock Unit. (LU)	Your Herd	423 Kgs		
	National Average	294 Kgs		
Total beef output (31,862) ÷ Total livestock units (75.3)		250 Kgs		315 Kgs
B. Beef Output per Hectare.	Your Herd	1028 Kgs		
	National Average	455 Kgs		
Total beef output (31,862) ÷ Total Hectares (31)		284 Kgs		487 Kgs
C. Stocking Rate per Hectare.	Your Herd	2.43 LU		
	National Average	1.41 LU		
Total Livestock units (75.3) ÷ Total Hectares (31)		1.02 LU		1.57 LU

Ger has been completing a Teagasc E-profit monitor since 2011. This gives him a better overall picture of how his farm is performing, rather than focusing on one year where individual circumstances may give a distorted picture.

Cattle performance and breeding performance on the farm are excellent. Since 2011, the farm's stocking rate has increased by 41% from 1.71LU/ha to 2.42 LU/ha. Increasing stocking rate on the farm has resulted in higher output from a lower-cost, grass-based system and is the key driver in profitability on farm. Ger's excellent grassland management skills have been the main driving force behind this increase and it has had a positive impact on output and margin.

Over this period output value increased by €1,123/ha to €2,519/ha in 2017, with gross output exceeding 1,000kg/ha. As a result of the increased grazing demand from the higher stocking rate, there has been an increase in variable costs. Part of the additional cost comes from greater use of compound fertiliser, rather than CAN, to improve soil fertility. However, gross margin on the farm has almost tripled to €1,493/ha.

The output of the farm and the financial performance is outlined in the table below:

Farm output and financial performance		
	2011	2017
Stocking rate LU/ha	1.71	2.47
Total Farm kg LW	22,745	31,862
Kg LW/ha	729	1021
Gross Output €/ha	1,396	2,519
Variable costs €/ha	844	1,026
Gross Margin €/ha	552	1,493



Investing in Grazing

In order for farming to be successful, there will be a requirement for investment on many farms. The available capital for this investment will be scarce. Therefore, investment on farm should be prioritised at areas that increase efficiency and reduce the exposure of the business to external shocks such as lower price of product or higher price of inputs etc. All investments that give the highest returns should be prioritised.

Every ton of additional grass eaten by the grazing animal will add €105/ha additional profit to a beef farm. Therefore it is important that investment in grazing is prioritised to give the maximum return. The table below summarises the potential return on investment for different investments in a beef farm business. Bottom Line: The level of return to these investments is high because it is investing in grazing. These investments will either enable the farm to grow more grass or lengthen the grazing season or both.

Investment	Cost	Impact	Annual Return (€/ha)
Increase soil P & K levels	P & K application of 20 and 50kg/ha (€100/ha)	+1.5 t DM/ha/year grass growth	120
Improve grazing infrastructure	€300/ha for fencing and water	+ 1.0 t DM/ha/year grass eaten/utilised	80
Reseed full farm in eight year cycle	€650/ha	+ 1.5t DM/ha/year grass growth	120

Soil Fertility Management

Good productive soils are the foundation of any successful farming system and key for growing sufficient high quality grass to feed the herd. Therefore, the management of soil fertility levels should be a primary objective of every farm. A recent review of soils tested at Teagasc indicates that the majority of soils in Ireland are below the target levels for pH (i.e. 6.3) or P and K (i.e. Index 3) and will be very responsive to application of lime, P & K. On many farms sub-optimal soil fertility will lead to a drop in output and income if allowed to continue. Teagasc is highlighting 5 steps for effective soil fertility management.

- Have soil analysis results for the whole farm (soil sampling every 2 years).
- Apply lime as required to increase soil pH up to target pH for the crop
- Aim to have soil test P and K in the target Index 3 in all fields
- Use organic fertilisers as efficiently as possible
- Make sure the fertilisers used are properly balanced

For those farmers aiming to improve soil fertility on their farms, following these 5 steps provides a solid basis for success.

Phosphorus (P)

The proportion of soils tested with low soil P fertility (*i.e. P Index 1 and 2*) has increased to approximately 62%. This overall trend reflects the soil P fertility status on many farms, and indicates a serious loss in potential productivity. Recent research has shown that soils with P index 3 will grow approximately 1.5 t dry matter (DM)/ha per year more grass than soils with P Index 1. Most of the DM yield response in these experiments took place in spring and early summer.

Potassium (K)

Soil analysis also shows that the trend in soil K status, across dairy and drystock enterprises, broadly mirrors that for P. Despite no legislative limits on K fertilisers, K usage dropped in line with P fertiliser applications. Consequently soil test results indicate a sharp increase in soils with low K status between. Over half of the soil samples tested by Teagasc had very low to low soil K status (*i.e. K Index 1 or 2*)

Increasing Soil Nutrient Availability-Lime

Lime is a soil conditioner and corrects soils acidity by neutralising the acids present and allowing the micro-organisms and earthworms to thrive and break down plant residues, animal manures and organic matter. This helps to release stored soil nutrients such as nitrogen (N) phosphorus (P) potassium (K) sulphur (S) and micro-nutrients for plant uptake. In addition, ryegrass and clover swards will persist for longer after reseeding where soil pH has been maintained close to the target levels through regular lime applications.

- Liming acidic soils to correct soil pH will result in the following:
- Increased grass and crop production annually
- Increase the release of soil N by up to 60 units N/acre/year
- Increase the availability of soil P and K and micronutrients
- Increase the response to freshly applied N, P & K as either manures or fertiliser

Ground limestone is the most cost effective source of lime and can be applied throughout the year when the opportunity arises. Lime is the foundation of soil fertility and is a primary step to take when correcting soil fertility.



Grazing infrastructure

Grazing infrastructure in relation to roadways, paddock layout and water supply systems will be important in terms of overall herd performance as it can allow more days at grass and therefore greater profitability. Proper subdivision of grazing land into paddocks is essential to be able to successfully manage pastures and achieve desirable rotation intervals.

On a high proportion of drystock farms the number of paddocks is inadequate leading to a small number of large paddocks. The net result of this approach is long residency times (*up to two weeks*) and the productivity of these paddocks can be significantly reduced. A number of issues arise in these situations, regrowths are continually being regrazed, proper grazing heights are not achieved, nitrogen application is irregular and in many cases pre-grazing yields are too high, which results in swards needing to be topped on a number of occasions across the season.

There is a strong relationship between the number of paddocks per farm and the total number of grazings achieved per farm. PastureBase Ireland data has identified that the advantage of creating one new paddock on a farm will give five extra grazings from the farm annually. The creation of additional paddocks makes management of pasture more streamlined and leads to better control of grass, especially during periods of high growth. A key finding from the grazing performance of drystock farms recording on PBI showed the greater the number of grazings achieved, the higher the grass DM production produced. Every extra grazing achieved increased annual grass DM production by 1.5 t DM/ha.

Maximising the number of grazings achieved on each paddock is a very effective method of increasing farm grass utilisation. Paddock residency should be no longer than three or four days on drystock farms during the mid-season. It is critical that all drystock farms sub-divide existing paddocks into smaller areas with three or four day residency time. Grow the grass in 3 weeks and graze it in 3 days.

Calculate paddock size: (April–June)

- **Step 1:** Establish animal numbers (*Plan for long term*)
- **Step 2:** Establish daily demand. e.g. 60 heifers (*average weight 400kg*).
60 animals X 8kg DM= 480kg DM for 24 hours
- **Step 3:** Ideal pre-grazing yield is 1,500kg DM/ha in mid-season
- **Step 4:** To calculate paddock size: 3 days in a paddock = 3 x 480 = 1440 kgs DM
 - » *If paddock has 1400-1500 kg DM/ha. Then 1 ha is needed to keep 60 400kg heifers for 3 days*

Fixed or Flexible Paddocks

A fixed or flexible system of paddocks can be used for grazing – flexible paddocks should be considered by some farmers who are either constructing new paddocks, trying to develop paddock grazing or reorganising their existing systems. If we examine the advantages and disadvantages of both paddock systems, farmers should be able to decide which system best suits their own farm and management ability. Both paddock systems have advantages and disadvantages (see table). A fixed paddock system gives structure to grazing on the farm and will generally be more stock-proof. A flexible system would ensure better utilisation of grass in wet weather and less poaching damage. It would also result in quicker mechanical operations such as topping, cutting, fertiliser spreading, etc. In order to facilitate efficient grazing of silage fields in spring (*before closing*) and again in the autumn, flexible paddocks can be operated. This would ensure no re-growths are eaten.

Advantages and disadvantages of fixed and flexible paddock systems.	
Fixed Paddocks	Flexible Paddocks
Advantages	
Suits inexperienced operator	Less expensive to construct
Set area	Very flexible
See quantity and quality of grass ahead	Less under or overgrazing
Achieve recommended rotations	Interchange of grazing & silage fields
No daily movement of fences	Easier for machinery to work
Good electric current transmission	No weeds under wire
	Encourages active grazing management
	Easier to graze when ground conditions are poor
Disadvantages	
Expensive to construct	Higher level of grassland management ability may be required
Less flexible	Daily assessment of herds needs
Risk of under-grazing or over-grazing	Daily assessment of grass supply
Doesn't allow for changing herd	Daily movement of temporary fence
Fertiliser spreading, topping/cutting & reseeding more difficult	More water troughs required to allow flexibility
Less paddock access points	Difficult to manage calves

Water System

A good water supply is extremely important for production, health and welfare of livestock. The water supply system must be good enough to supply adequate water needs in paddocks. On most farms the water system consists of a series of expansion or additions carried out over the years as requirements changed. Only when the system fails to cope, such as during a dry summer, do people realise how marginal their system has become. Common problems on most farms centre on inadequacies in areas such as, water source, pumping plant, pipe sizes, ballcocks and troughs.

Portable Water Troughs

It may be necessary to use portable water troughs in some situations e.g. strip grazing. To provide a portable trough, the use of frost-proof gate valves and good quality non-restrictive quick-couplers. Connection points should ideally be away from fixed troughs because they can be damaged and some valve types can be opened by stock, causing leaks.



The need for reseeding

As grass is our main feed during the main grazing season, and the primary source of winter forage in the form of grass silage, the low level of reseeding must be addressed. Reseeding must be combined with managing, and where necessary increasing, soil fertility. Ireland will continue to increase milk production and the focus on efficient production of this milk is critical to maintain our industry competitiveness. Teagasc have developed a national grassland database (*PastureBase Ireland*), and the initial results show that there is huge capacity on Irish farms to grow more grass. The objective of this handbook is to outline the key points in grassland reseeding and to ensure farmers making the investment in renovating grassland get the best possible result.



Why reseed?

Productive grassland farms must have perennial ryegrass dominated swards. Recent Moorepark research shows that old permanent pasture produces, on average, 3 t DM/ha per year less than perennial ryegrass dominated swards. Old permanent pasture is up to 25% less responsive to available nutrients such as nitrogen than a perennial ryegrass dominated sward. Reseeding is a highly cost effective investment. With regular reseeding the grass growth capacity of the farm can be increased substantially and the annual return of investment is large.

Objectives of reseeding are to create swards that:

- Increase the overall productivity of the farm
- Increase grass quality
- Are responsive to fertiliser - at least 10 kg DM/kg N applied
- Allow higher animal output - 8% higher milk output per hectare relative to permanent pasture
- Increase grass utilisation
- Reduce silage requirement
- Increase the productivity of the farm (*carry a higher stocking rate*)
- Can allow clover to establish

Reseeding Checklist

- Identify paddocks for reseeding (*poorer performing paddocks; low perennial ryegrass content*)
- Soil test and lime
- Sowing date
- Method of reseeding
- Spray off paddock
- When cultivating - prepare a good seed bed
- Choose appropriate grass cultivars
- Sowing rate
- Roll
- Slug and other pests
- Control weeds early
- Graze at 2 leaf stage
- Avoid poaching and over grazing

Cultivation techniques

How paddocks are prepared for reseeding depends on soil type, amount of underlying stone and machine/contractor availability. There are many different cultivation and sowing methods available. All methods, when completed correctly, are equally effective.

Key points

- Spray off old sward
- Graze sward tightly or mow to minimise surface trash
- Apply lime
- Choose a method that suits your farm
- Soil test
- Firm fine seedbed with good seed/soil contact is essential
- Roll after sowing



Cultivation techniques		
	Do's	Do not's
Ploughing	Shallow plough. Develop a fine, firm and level seedbed	Plough too deep (>15 cm). Cloddy, loose seedbed
Discing	Graze tight, apply lime. 3-4 runs in angled directions	Forward speed too fast - rough, uneven seedbed
One-pass	Graze tight, apply lime. Slow forward speed at cultivation	Forward speed too fast - rough, patchy seedbed
Direct drill	Graze tight, apply lime and slug pellets. Wait for moist ground conditions (slight cut in ground)	'Trashy' seedbed - no seed/soil contact. Use when ground is dry and hard

Variety choice

The DAFM publish the recommended list, showing the Pasture Profit Index values and agronomic values of the evaluation on the same table (see <https://www.teagasc.ie/crops/grassland/pasture-profit-index/>).

The Recommended List has evaluated varieties across years and sites and is the only evidence available of the potential performance of grass cultivars in Ireland. Using varieties not on this list is basically poor decision making, as is buying grass seed on price. The varieties you use on the farm, will be there for 8-12 years, choosing to use cheap mixes, with non-recommended varieties will increase the chances of those varieties failing to perform on the farm.

When the decision to reseed is made, the next major decision is selecting the most appropriate grass variety or varieties. The first thing to consider is the primary target use of the field. Is it predominantly grazing or is it generally used as a silage paddock? How much tetraploid should be used? A balance between quality, dry matter productivity and sward density is generally what must be achieved.

The key traits in a seasonal grass based production system are:

- High quality
- High seasonal production
- Good persistency score

Differences between diploid and tetraploid varieties	
Tetraploid varieties	Diploid varieties
Tall upright growth habit	Prostrate growth habit
Create more 'open' sward	Create a denser sward with less "open" spaces
Higher digestibility value	Generally lower digestibility and yield

Combining diploids and tetraploids in a mixture will create a dense, high quality sward – ensure you select varieties which express high performance in the key traits. Increasing the proportion of diploids on heavier soils is recommended to create better ground cover. However, tetraploids should be used on heavy soils. Choosing all dense varieties will compromise DM production and grazing utilisation.

Key points when formulating a grass mixture

- Decide what the end use is – grazing or silage – formulate based on this
- Focus on the key traits increase the proportion of the varieties with the key traits
- Minimum of 3 kg of an individual variety
- There should be no more than three to four variety in a grass mix
- Sow 35 kg/ha (14 kg/ac) of seed
- Less than 7 days range in heading date between varieties

Grazing specific mixtures

- Varieties exhibiting high seasonal (*Spring and Autumn*) PPI values
- Varieties with high quality sub index values
- Use 40-50 per cent tetraploid varieties in mixtures on dry soils
- Use 15-20 per cent of highly persistent tetraploids on heavy soils
- Small/Medium leaf white clovers for dairy cows/cattle, small leaf white clovers for sheep

Silage specific mixtures, e.g. 2-cut system

- Varieties which have high silage sub index values
- High level of tetraploid (40%)
- Ensure proximity of heading dates
- Avoid low silage sub index diploids and poorly persistent tetraploids



Choosing the right white clover cultivar

White clover is used in grazed grassland. White clover cultivars are categorised by leaf size.

Small leaf white clover

- Lower yielding
- More persistent
- Tolerant of tight grazing, e.g. sheep grazing

Medium leaf white clover

- Intermediate for yield and persistency
- Suitable for cattle grazing

Large leaf white clover

- Higher yielding
- Aggressive and can dominate a sward

Small leaf white clovers are recommended for sheep grazing and medium leaf white clovers for dairy or beef cattle grazing.

In general to establish a sward with >25% white clover, which is the level required for an animal production benefit, 4 kg white clover seed/ha (1.5 kg/ac) should be included in the seed mix.



Management of Reseeded Swards

It takes about 11 months for a new sward to establish and settle down; therefore the management of the reseed in this period is important.

Management of New Reseeds		
	Do's	Do not's
First 8 weeks	<ul style="list-style-type: none"> • Graze at 2-3 leaf stage • Spray weeds before grazing • Nitrogen and P & K • Slug pellets (if required) 	<ul style="list-style-type: none"> • Graze at high cover (>1400 kg DM/ha) • Do not harvest for silage
Second grazing onwards	<ul style="list-style-type: none"> • Graze at 1,200 - 1,600 kg DM/ha (6-8 cm) • Re-spray weeds if necessary 	<ul style="list-style-type: none"> • Allow high covers to develop • Graze in really dry or wet conditions
Autumn	<ul style="list-style-type: none"> • Keep grazing at 1,200 - 1,600 kg DM/ha • Graze off well before first winter (>4 cm) • Light slurry application 	<ul style="list-style-type: none"> • Overgraze or poach • Apply excessive slurry
Second year	<ul style="list-style-type: none"> • Ensure the new sward receives adequate nitrogen • Monitor soil P and K status 	<ul style="list-style-type: none"> • Overgraze or poach

Graze the new reseed as soon as the plants do not pull out of the ground. Plants will normally be 6–8 cm high. It is especially important that autumn reseeds are grazed before the first winter.

The first grazing does not have to be completed by the main grazing herd, calves or young stock may be a better option, particularly during poor grazing conditions.

All the benefits of reseeding can be lost after sowing due to:

- Poor soil fertility - poor establishment and tillering
- Grazing at high grass covers or cutting for silage – tiller/plant death
- Weed infestation (especially docks) – loss of ground cover
- Pest attack (frit fly, leatherjackets and slugs) – tiller/plant death

Tillering

- Tillering is the production of new grass plants by the main grass plant established from the seed
- The process of grass tillering is critical for successful sward establishment
- Tillering helps reduce the space available for weeds
- To encourage tillering:
 - » Apply 40 kg N/ha 3-4 weeks after sowing
 - » Graze the reseed when it is about 6-8 cm high
 - » Continue to graze the reseed in the first year of production
 - » Avoid cutting the new reseed for silage in the first year

Weed Control

- Weeds in new reseeds are best controlled when the grass is at the 2-3 leaf stage
- Docks and chickweed are the two most critical weeds to control in reseeds
- High populations of other weeds such as fat hen, charlock, redshank, and mayweed can cause problems.
- It is essential to control docks and chickweed at the seedling stage and this is achieved by applying a herbicide before the first grazing
- To achieve the best lifetime control of docks in a sward, eradicating the dock at seedling stage in a reseed is the best opportunity
- Herbicide choice for dock control will depend on the presence of clover in the reseed (*see Herbicide Guide*)
- Chickweed can be a problem particularly where regular grazing is not expected to take place (*silage fields*), therefore herbicide choice is important
- You should consult your local adviser or merchant representative for correct herbicide choice
- Remember to keep the prescribed cross-compliance records and follow the instructions on the product label

Reseeding Investment

Reseeding is one of the most cost effective investments that can be made on a grassland farm.

Projected costs	
	€/acre
Spraying	10
Glyphosate (Gallup 360) (Round-up (2 litre/acre)	16
Ploughing (€30)/ Till & sowing (one pass) (€30)	60
Fertiliser (2 bags × 10:10:20)	37
Fertiliser spreading	10
Levelling	10
Rolling	10
Grass seed	60
Post emergence herbicide sprays	30
Spraying	10
Costs (ex- post emergence sprays)	253

Useful Links

National Recommended List - sources

DAFM <http://www.agriculture.gov.ie/publications/2018/>

Teagasc <http://www.teagasc.ie>

Sustainability of our Grazing Systems

Climate change is one of the biggest challenges of modern times, and is hugely significant for global agriculture which must both adapt to changes in climate and find ways to reduce greenhouse gas (GHG) emissions from agricultural activity. Agriculture accounts for almost 33% of Irish greenhouse gas emissions. Even though agricultural emissions have declined by 9% since 1990, Ireland is committed to reduce GHG emissions by 20% by 2020. However, the Irish grass based beef production systems are relatively carbon efficient. While it is accepted that agricultural GHG emissions are difficult to reduce knowledge transfer is necessary to reduce them further. Farmers who adopt a number of key practices and technologies can significantly improve efficiency, improve profitability and lower GHG emissions.

The Carbon Navigator is a decision support tool to help farmers reduce their carbon footprint. This support collects a small amount of information and uses this to assess the performance of the farm against peers. It rates performance from poor to excellent. The Carbon Navigator estimates the percentage reduction in GHG emissions that can result from increasing technical efficiency in certain areas on the farm. It also estimates the improvement in profitability that will result from achieving these targets.

The carbon footprint of beef, and economic performance, are strongly influenced by farm management practices. One of the main farm management practices that is associated with improved profitability and reduced carbon footprints is extending the length of the grazing season and increasing carcass yield/ha. However, increasing meat production through greater concentrate feeding will have a negative effect on profit and increase the carbon footprint. Increasing the grazing season length lowers GHG emissions in two ways. Having grazed grass in the diet of the animal early and late in year is a higher quality more digestible feed than grass silage – this leads to improvements in animal productivity and a reduction in the proportion of dietary energy lost as methane. The shorter housing season leads to reduced slurry, Methane (CH_4) and Nitrous Oxide (N_2O) emissions from slurry storage and spreading. Energy used spreading slurry is also reduced.

Improved Nitrogen fertiliser use efficiency leads to improved utilisation of N by plants and lowers losses to the air and water. Improving grassland management and match crop requirements with fertiliser application are key factors. Urea fertiliser requires less energy (and CO_2) to produce than CAN fertiliser and leads to lower N_2O Emissions.

Spring application of slurry reduces emissions, which are lower in cool conditions with low sunlight. The shorter storage period also reduces losses of methane. The resulting reduction in ammonia losses increases the fertiliser replacement value, thereby reducing GHG losses associated with chemical N fertiliser. Low emissions slurry application technologies also lead to reduced ammonia losses.

The objectives of the Grass10 campaign support both increased productivity of grassland and reduced agricultural greenhouse gas emissions. Irish farms have the capacity to significantly reduce GHG emissions through the adoption of better grazing practices and fertiliser use.

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