

Moorepark Dairy Levy Research Update

Pocket Manual for Reseeding

Moorepark Animal & Grassland Research and Innovation Centre

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Contents

Reseeding checklist	3
Introduction – the need for more reseeding	4
Timing of reseeding	9
Soil fertility - need soil index 3 for P and K	11
Drainage	14
Cultivation techniques	15
Management of reseeded swards	24
Weed control	26
Reseeding investment	30
Reseeding – what to watch for	31
2014 Irish Recommended List	32

Written and Edited by
Staff of the Grassland Department, Dairy and Beef Specialist teams

Reseeding checklist

- Identify paddocks for reseeding (poorer performing paddocks; low perennial ryegrass content)
- Soil test
- Spray off paddock
- Method of reseeding
- Prepare a good seed bed when cultivating
- Apply adequate N, P, K and Lime
- Choose appropriate grass cultivars / mixture
- Sowing rate
- Roll
- Slugs and other pests
- Control weeds early
- Graze when herbage mass is 1000 – 1200 kg DM/ha
- Avoid poaching and over grazing

Introduction – the need for more reseeding

Reseeding levels in Ireland are low. Less than 2 per cent of our annual grassland area is reseeded annually. 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. Ireland will increase milk production following the abolition of milk quotas in 2015, and the focus on efficient beef and sheep meat production was never as important as it is now due to high input costs. Teagasc have developed a national grassland database (PastureBaseIreland), and the initial results show that there is huge capacity on Irish farms to grow more grass. The objective of this pocket manual 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/year less than perennial ryegrass dominated swards. Old permanent pasture is up to 25 per cent less responsive to available nutrients such as nitrogen than perennial ryegrass dominated swards. 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 on investment is large.

Many farmers do not recognise the economic loss of underperforming paddocks. Low producing paddocks are grazing paddocks which are grazed on average 4 - 6 occasions/year. PastureBaseIreland shows that there is large variation in the grass growing capacity both within and between farms in Ireland. To improve overall farm grass production this variation needs to be reduced. Economically a low proportion of perennial ryegrass in the sward is costing dairy farmers up to €300/ha in lost grass production during the growing season.

Objectives of reseeding are to create swards that:

- Increase the overall productivity of the farm
 - *Increase the carrying capacity (stocking rate)*
 - *Allow higher animal output – 8% higher milk output per hectare relative to permanent pasture*
 - *Increase grass quality*
- Are more responsive to fertiliser
- Increase grass utilisation
- Allow white clover/perennial ryegrass pastures to establish



Figure 1. Old permanent pasture



Figure 2. Newly reseeded pasture

Reseeded swards are more productive

Perennial ryegrass is a high quality feed. Figure 3 shows the grass production across the grazing season of a sward containing 15% perennial ryegrass compared to a sward containing 100 per cent perennial ryegrass. The swards with 100 per cent perennial ryegrass grew 2.7 t DM/ha more than the 15 per cent perennial ryegrass sward. Most of the difference in grass production between the two swards occurs in the spring period, up to mid-May. Swards that have poor grass production in spring will not support early spring grazing. It is recommended that pastures with less than 40 per cent perennial ryegrass should be reseeded.

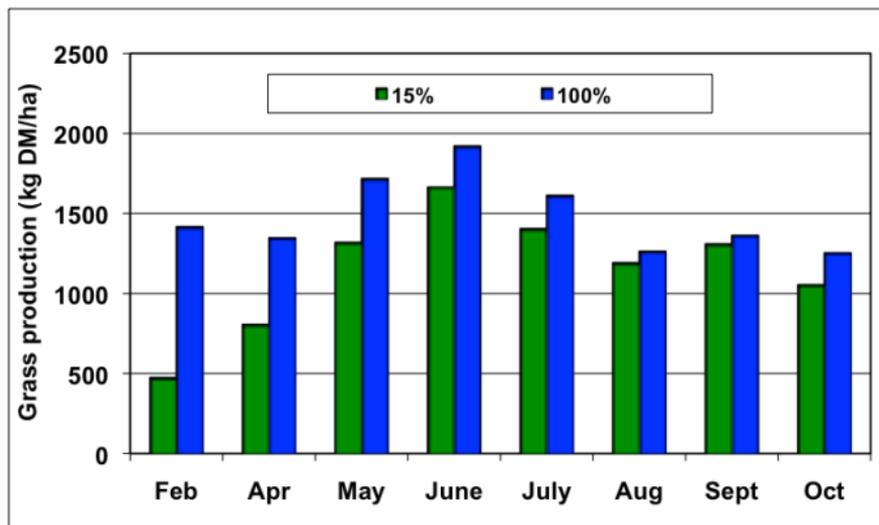


Figure 3. Grass production per month (February to October) in a sward containing 15% perennial ryegrass and 100% perennial ryegrass.

Figure 4 shows the range in paddock grass production across a farm which grew an average of 13.8 t DM/ha last year. The red paddocks are those which were reseeded the previous year. The highest producing paddock produced 16.5 t DM/ha, while the lowest produced 8.1 t DM/ha. Reseeded paddocks were the highest producing paddocks.

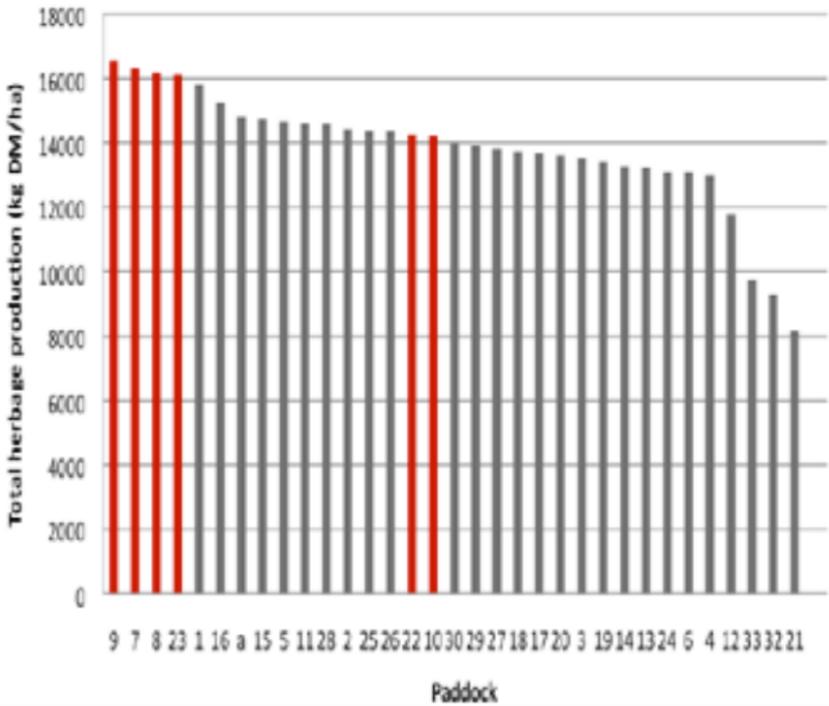


Figure 4. Distribution of individual paddock growth across a farm producing an average of 13.8 t DM/ha. Red bars are paddocks reseeded in the previous year.

Timing of reseeding

Most reseeding in Ireland takes place in autumn. This may make sense from a feed budget perspective but it does have some negative consequences. Soil conditions deteriorate as autumn progresses – lower soil temperatures can reduce seed germination, and variable weather conditions reduce the chances of grazing the new sward. The opportunity to apply a post-emergence spray in autumn is also reduced as ground conditions are often unsuitable for machinery. Pest damage can also be a problem in the autumn.

Spring reseeding offers farmers greater flexibility. Swards reseeded in spring will have similar, or even greater, total herbage production in the year of reseeding as will old permanent pasture. Establishing white clover in a spring reseed is more reliable than in autumn due to the stability of soil temperatures in late spring. Post emergence spraying for weed control is usually very successful with spring reseeding due to favourable weather conditions in summer.

Whether reseeding in spring or autumn, it generally takes a sward around 11 months to fully establish, so good grazing management in that early growth phase is very important.



Turnaround time

The target turnaround time in which to get a reseed back into production should be 60 days. Generally farmers are slow to reseed pastures because they view that paddocks are out of production for too long. The time that the sward is out of production can be minimised by cultivating 7-10 days after spraying off the old grass – a major failing at farm level is to wait too long after spray off. Prevailing weather conditions will influence this decision, but the objective must be to minimise the non-productive period and weather conditions in spring are generally more stable and predictable than in autumn.

What is important about timing in Spring and Autumn?

- Spray off the old sward. If there are perennial weeds such as docks and ragwort present use a glyphosate spray.
- Begin cultivation 7-10 days after spray off
- Ensure a low level of thrash in the pre-cultivation sward, particularly for minimum cultivation techniques (graze tight or top or mow tightly). Trash will be buried if ploughing.
- Target a short turnaround time - <60 days
- Use a post emergence spray early (5-6 weeks post sowing/at the seedling stage of weeds)
- Ensure a firm seed bed, irrespective of reseeding method used
- Roll to ensure seed to soil contact, even if rolling isn't possible at sowing, roll before first grazing – otherwise loose plants will get pulled at grazing
- Monitor for pest attack, especially in autumn (slugs, leatherjackets, frit fly and rabbits are the main threats)



Soil fertility - need soil index 3 for P and K

Reseeding can improve the productivity of a sward; however, for it to have maximum effect soil fertility must be correct. Getting soil fertility right is crucial if perennial ryegrass is to establish well and persist after reseeding. Soil testing provides information on the soil fertility status of a field or paddock. Once soil test results are available, appropriate applications of P, K and lime can be made to ensure adequate soil fertility for perennial ryegrass germination, establishment and production.

Getting soil fertility right

- Soil test for P, K and lime requirements (pH) before reseeding
- Soil test in the autumn before planned reseeding
 - *Make sure to test to an adequate soil depth – 10 cm*
- The target soil pH is 6.3 for mineral soils and pH 5.5 for peat soils
 - *Do not apply more than 7.5 t lime/ha (3 t/ac) in a single application*
- P and K must be brought up to soil Index 3
- N is essential for good grass establishment and growth
 - *Apply 40 kg N/ha (30 units N/ac) when reseeding*
- After ploughing permanent pasture for reseeding, paddocks should be soil tested again the following year to ensure that the fertility of the soil brought to the surface by ploughing is correct for grass growth.

Phosphorus and potassium

Phosphorus (P) is essential for root development. It is immobile in the soil, and if the young seedling roots are to get adequate P, there must be an abundance of this element dispersed in the soil. Table 1 shows the P and K requirements when reseeding grassland at the different P and K index levels.

Table 1. P and K rates required for pasture establishment

Soil P Index	Soil P range (Morgan's mg/l)	P application rate (kg/ha)
1	0.0-3.0	60
2	3.1-5.0	40
3	5.1-8.0	30
4	>8.0	0
Soil K Index	Soil K ranges (mg/l)	K application rate (kg/ha)
1	0-50	110
2	51-100	75
3	101-150	50
4	> 150	30

An additional 15 kg P/ha is permitted in addition to normal allowances for reseeded grassland on index 1, 2 and 3 soils. These advice rates must be checked against total annual P allowances for the farm under Nitrates rules.

The value of slurry

Slurry is a good option to maintain soil nutrient status. With the increased cost of compounds (P and K) slurry should be used when reseeding to replace some of the P and K fertiliser. At soil Index 3, 3-4,000 gals/acre of slurry is sufficient to supply required P and K nutrients.



Drainage

Perennial ryegrass will struggle to persist in wet soil

On heavy soils the rate of water infiltration is significantly reduced compared to free draining soils, resulting in a significant reduction in grass production and utilisation. Land drainage can improve the water movement off a paddock or field. Land drainage must be approached in a strategic and planned manner if it is to be of benefit to the productivity of the farm. All other land on the farm should be highly productive before attempting to drain and reclaim wet land. Soil fertility must be addressed before drainage and reseeded. When undertaking land drainage, it is best to invest in those areas that will give the greatest return in terms of grass production and utilisation.

- Clean all fences, cut hedges and clean out old drains before reseeded
- Undertake drainage before reseeded
- Proper site and soil assessment must be undertaken
- Dig test pit(s) to identify drainage problems
- Soil fertility must be corrected
- Good farm infrastructure should be in place
- Select appropriate drainage system to address the problem specific to the field
 - *Shallow drainage system (e.g. mole drains) – use on very impermeable soil*
 - *Ground water drainage system – use where there is a permeable layer in the soil (identified through a test pit) (Ref. Moorepark Dairy Levy Research Update, Series 20 “Land Drainage - A Farmer’s Practical Guide to Draining Grassland in Ireland”)*



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

- Soil test
- Spray off old sward – a contact spray can be used if there are no perennial weeds; glyphosate should be used if perennial weeds such as docks and ragwort are present.
- Graze sward tightly or mow to minimise surface trash
- Apply lime
- Choose a cultivation method that suits your farm
- Apply fertiliser
- 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. 2-3 passes in angled directions. Apply lime	Drive with fast forward speed - rough, uneven seedbed
One-pass	Graze tight, apply lime. Slow forward speed at cultivation	Drive with fast forward speed - 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

Ploughing

- Avoid ploughing too deep (>15 cm) as this can bury the top layer of soil (the most fertile soil)
- Use land leveller until an even seedbed is generated
- Aim to develop a fine, firm and level seedbed
- If seedbed is cloddy and loose, grass seed (and especially white clover seed) will be buried too deep and will not germinate
- **Plough/Spread Lime/Land Level/Spread Fertiliser/One pass with Seed/Roll**



Discing and One-pass

- Aim for 2/3 passes of the disc harrow in angled directions to break the sod and turn up enough soil to form a seedbed
- Forward speed must not be excessive as it can lead to rough, uneven seedbeds
- **Disc (2-3 passes)/Land Level/Spread Lime and Fertiliser/One pass with Seed/Roll**



Use a heavy disc harrow to do the primary cultivation followed by a final pass with a power harrow that can also be fitted with a seed box to till and sow with a 'One-pass'.

One-pass

- The slower the forward speed of the machine the better in terms of finish
- Often left rough and patchy due to operators moving too fast across fields
- **Spread Lime/One Pass (twice) with Seed (on second run)/ Spread Fertiliser Between One Pass Runs (if possible)/Roll**



Use shallow surface cultivation with a rotary power harrow to produce a seed bed with seed sown using an air seeder attached to the power harrow.

Direct Drill

- Difficult environment for seeds to establish in as there is no cultivation of the soil
- A slight 'cut' in the ground will allow more seed/soil contact
- Results can be variable
- Not suitable on dry, hard ground
- Need to use slug pellets
- **Spread Lime + Fertiliser/Direct drill**

Effect of reseeding method on grass production

The effect of reseeding method has been investigated at Moorepark. Figure 5 shows that, when compared on a proportionate basis to ploughing set at 1.0, the disc method was equal in terms of grass production, with the one-pass method slightly behind at 0.94 and the direct drill method at 0.87.

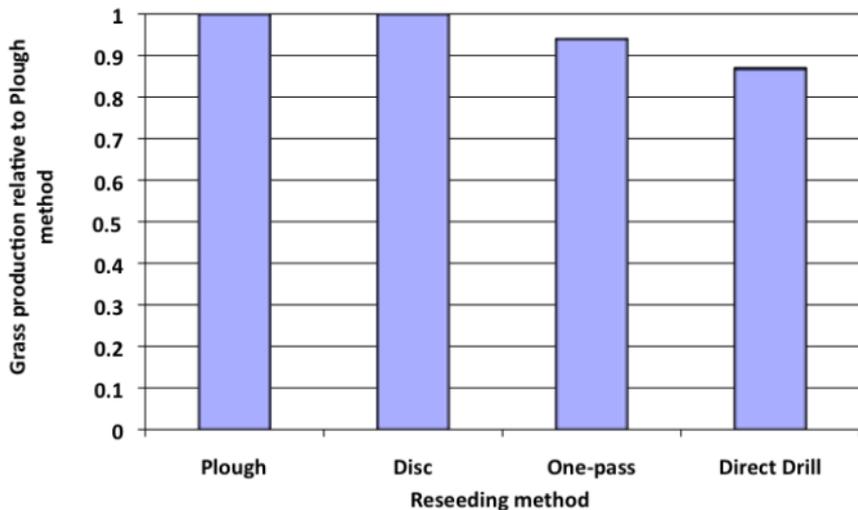


Figure 5. Comparison of reseeding methods in terms of grass production potential.



Cultivar choice

Use the DAFM Recommended List, the AFBI Recommended List (Northern Ireland) and the Pasture Profit Index to identify suitable cultivars. The Recommended List evaluates cultivars across years and sites and is the only evidence available of the potential performance of grass cultivars in Ireland.

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

- High seasonal production (spring and autumn)
- High mid-season quality
- Good ground cover or persistency score

When the decision to reseed is made, the next major decision is selecting the most appropriate grass cultivar or cultivars. 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.

Differences between diploid and tetraploid cultivars

Tetraploid cultivars	Diploid cultivars
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 cultivars which express high performance in the key traits. Increasing the proportion of diploids on heavier soils is recommended to create better ground cover.



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 cultivars with the key traits
- Minimum of 3 kg of an individual cultivar
- There should be no more than three to four cultivars in a grass mix
- Sow 35 kg/ha (14 kg/ac) of seed
- Less than 7 days range in heading date between cultivars

Grazing specific mixtures

- Cultivars exhibiting high simulated grazing yields in Recommended Lists
- High seasonal growth to extend grazing season
- Cultivars with high digestibility values
- Use 35-50 per cent tetraploid cultivars in mixtures on dry soils
- Use 15-20 per cent of highly persistent tetraploids on heavy soils
- Medium leaf white clovers for dairy cows/cattle, small leaf white clovers for sheep

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

- Cultivars which exhibit high silage yields (especially first cut) in Recommended Lists
- 40% tetraploid (less on heavy soils)
- Ensure proximity of heading dates
- Avoid 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, 4-5 kg white clover seed/ha (1.5-2 kg/ac) should be included in the seed mix.

Alternatives to perennial ryegrass

Hybrid and Italian ryegrasses are an alternative to perennial ryegrass but are more suited to silage systems. Both are less persistent and have lower mid-season digestibility than perennial ryegrass, but have a higher annual yield. Hybrid and Italian ryegrasses have a shorter lifespan than perennial ryegrass, generally 2 to 4 years.

Management of reseeded swards



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

Management of New Reseeds

	Do's	Do not's
First 8 weeks	Spray weeds before grazing Graze when grass is at 2 leaf stage Nitrogen and P & K Slug pellets (if required)	Graze at high cover (>1200 kg DM/ha) Do not harvest for silage
Second grazing onwards	Graze at 1,000 - 1,400 kg DM/ha (6-7 cm) Re-spray weeds if necessary	Allow high covers to develop Graze in really dry or wet conditions
Autumn	Keep grazing at 1,200 - 1,400 kg DM/ha Graze off well before first winter (<4 cm) Light slurry application	Overgraze or poach Apply excessive slurry
Second year	Ensure the new sward receives adequate nitrogen Monitor soil P and K status	Overgraze or poach

Graze the new reseed as soon as the plants do not pull out of the ground, approximately 700 – 1000 kg DM/ha. 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
- Poaching – don't damage new reseeds

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 6-7 cm high*
 - *Continue to graze the reseed in the first year of production*
 - *Avoid cutting the new reseed for silage in the first year (if possible)*

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, mayweed can cause problems (see Herbicide Guide)
- 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 white 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
- Pesticide users must comply with the regulations as outlined in the Sustainable Use Directive (SUD).

Herbicides in New Leys

Herbicide Guide

Weed Problem	Trade Name	Clover Safe	Pack Size	Rate/ Ha	Comment
Docks and most other less important weeds	Underclear etc.	YES	10 L	7 L/ha	Controls moderate levels of docks, thistles, chickweed, etc. and most annual weeds.
	Legumex DB Undersown DB Plus CloveX etc.	YES	5 L	7 L/ha	Similar weeds controlled as above but weaker on chickweed and certain annual weeds.
Docks and Chickweed	Legumex DB + Triad	YES	5 L 5 tabs	5.0 L/ha + 10g/ha	Similar weeds controlled as Underclear etc. Add Triad to the tank first and then Legumex DB.
	Starane2, Binder, Hurler, Reaper, etc.	NO	1 L	0.75 L	Use where docks and chickweed are in high numbers Apply from 3 leaf grass stage

Seedling Broad-leaved Dock



Photo of seedling dock taken 5 weeks after re-seeding

Seedling Chickweed

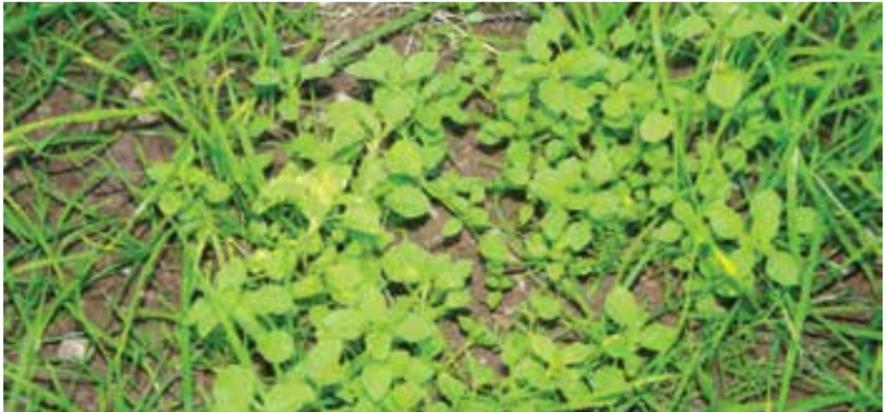


Photo taken 5 weeks after re-seeding

Pest Attack

The three most significant pests of re-seeds are:

- Frit fly
- Leatherjackets
- Slugs

Frit Fly

Frit Fly is most prevalent in autumn after a dry summer, and in reseeded swards with high levels of debris (minimum cultivation).

- The maggots (larvae) bore out the centre shoot
- The centre shoot will turn yellow and the plant dies
- New grass sown after grass or grassy cereal ground is most at risk
- Reseeding carried out by direct drilling is also at risk

Control involves:

- Leaving ground unsown for 6+ weeks after ploughing (not a very practical option)
- Spraying an insecticide if 10% or more of shoots of plants are damaged*

** Walk diagonally across the field and tug 100 central shoots of new plants. If 10% of shoots pull away easily apply an insecticide. You may need to consult your local adviser or merchant representative.*

Leatherjacket

Leatherjacket is most active in wetter/heavier soils. Leatherjacket damage is characterised by dead plants on the soil surface. Control is achieved by application of an insecticide.

Slug

Slug attack is most prevalent during wet weather or where fields tend to be damp, such as headland areas. Having high levels of trash in the seedbed will also increase the likelihood of slug attack. The most common evidence of slug attack is shredded leaves. Slug attack is more prevalent where reseeded is carried out by direct drilling. This method creates slits in the ground which act as a protective shelter for slugs. The likelihood of damage to the new grass plants can be greatly reduced by ensuring a firm seedbed by rolling. Most of the major slug species cannot burrow into the soil. Slug pellets can be applied to control the problem. Usually applying slug pellets to the margins of fields/paddocks is adequate. Higher seeding rates should be considered where reseeded is carried out by direct drilling to counteract slug attack.

Reseeding investment

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

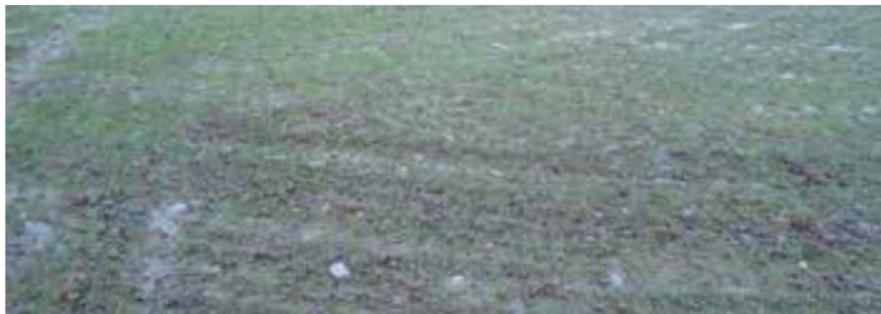
	Projected costs	Actual costs
	€/acre (/ha)	
Spraying Glyphosate (Round-up (2 litre/acre)	10 (25) 16 (40)	
Ploughing (€30)/ Till & sowing (one pass) (€40)	70 (173)	
Fertiliser (2.5 bags × 10:10:20) Fertiliser spreading	54 (134) 10 (25)	
Levelling	10 (25)	
Rolling	10 (25)	
Lime + Spreading (2t/ac)	24 (60)	
Grass seed	70 (173)	
Post emergence herbicide sprays Legumex DB - (2.8litre/ac - €18)	18 (45)	
Spraying	10 (25)	
Total Costs	302 (750)	

**Both fertiliser and Lime are common grassland costs*

Reseeding – what to watch for

1. Patchy establishments

Over sow with extra seed or direct drill new seeds



2. Mild damp autumns

Monitor reseeded closely for leatherjacket and slug infestations

3. Rolling

Make sure the reseed is rolled – even post emergence, unrolled reseeded loose moisture fast and plants can be pulled up when grazed



4. Weed Infestation

Post emergence weed control is either forgotten or weather conditions are not suitable (particularly in autumn) for spraying and large populations of weeds can become established. Chickweed in particular can be a problem as it will smother new grass.

2014 Irish Recommended List

Department of Agriculture Food and the Marine 2014 Grass variety Recommended List from General purpose protocol

			t DM/ha	Kg DM/ha	Kg DM/ha	Kg DM/ha	t DM/ha	DMD %	
Intermediate	Heading date	Ploidy	Total general purpose	Total Frequent cutting	Spring growth (GP)	Autumn growth (GP)	First cut silage (GP)	DMD (GP)	Ground cover
Giant	19 May	Tetraploid	15.0		1035	3116	5.40	81.4	6.6
Magician	21 May	Tetraploid	15.2	10.9	1069	3165	5.38	81.8	6.1
Boyne	22 May	Diploid	15.5		1107	3218	5.59	80.3	6.8
Solomon	22 May	Diploid	14.9		1177	3128	5.26	81.0	6.6
Carraig	23 May	Tetraploid	15.4		1115	3221	5.50	82.0	6.7
Rosetta	23 May	Diploid	15.2		1182	3252	5.33	81.4	6.6
Trend	24 May	Tetraploid	15.4	11.0	970	3140	5.63	82.1	6.0
Rodrigo	26 May	Diploid	14.7		1019	3066	5.18	81.0	6.8
Seagoe	28 May	Tetraploid	15.2		1037	3153	5.56	82.4	6.0
Dunluce	29 May	Tetraploid	15.3	11.4	939	3351	4.90	83.2	6.1
Abermagic	30 May	Diploid	14.9	11.8	905	3491	4.79	82.9	6.9
Stephani	1 June	Diploid	14.4		868	3085	4.91	82.0	6.8

Delphin	1 June	Tetraploid	15.0	10.9	954	3202	5.12	82.9	6.1
Majestic	2 June	Diploid	14.4		892	3264	4.71	81.1	6.8
Glenveagh	2 June	Diploid	14.3		769	3233	4.91	81.8	7.4
Denver	2 June	Diploid	14.1	10.2	777	3013	4.88	81.6	6.9
Glencar	2 June	Tetraploid	14.7	10.7	909	3184	4.92	82.0	6.1
Piccadilly	3 June	Diploid	14.5		861	3171	5.22	81.2	6.9
Soriento	3 June	Diploid	14.0	10.0	789	2945	4.77	81.6	7.0
Tyrella	3 June	Diploid	14.2	10.3	1016	2995	4.92	82.0	6.6
Abercraigs	4 June	Tetraploid	14.9	10.5	941	3209	4.95	82.7	6.2
Clanrye	5 June	Diploid	14.7		811	3091	4.75	81.7	7.0
Portstewart	5 June	Diploid	14.1	10.3	754	3106	4.62	82.2	6.7
Aspect	5 June	Tetraploid	14.7	11.0	945	3221	4.68	83.3	6.7
Mezquita	6 June	Diploid	14.1	10.3	815	3012	4.72	81.3	7.1
Navan	6 June	Tetraploid	14.8	11.1	759	3478	4.68	82.9	6.3
Abergain	6 June	Tetraploid	15.5		1121	3404	5.07	84.1	6.3
Twymax	6 June	Tetraploid	14.7	10.7	783	3156	4.78	82.9	6.4
Drumbo	7 June	Diploid	14.4		932	3277	4.41	82.8	6.7
Kintyre	7 June	Tetraploid	15.2		909	3528	4.66	83.2	6.0
Aberlentful	7 June	Tetraploid	15.3		922	3475	4.77	82.9	6.2
Aberchoice	9 June	Diploid	14.7		851	3373	4.45	83.6	6.8
Malambo	10 June	Diploid	14.3	10.3	843	3209	4.51	81.3	6.8

Useful Links

National Recommended List - sources

DAFM

<http://www.agriculture.gov.ie/publications/2014/>

AFBI(N.Ireland)

<http://eservices.afbini.gov.uk/recommendedvarieties/herbage/>

Teagasc

<http://www.teagasc.ie>

Contact Details

Moorepark Animal &
Grassland Research and Innovation Centre,
Teagasc,
Moorepark,
Fermoy,
Co. Cork

Tel : 353 (0)25 42222

www.teagasc.ie

