Advisory Programme

Oakpark

Grass Reseeding

Teagasc
Agriculture and Food Development Authority

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Welcome to our

Grass Reseeding Demonstration

Soil Fertility, Benefits of Reseeding, Weed Control, Long Term Management
4 systems of Reseeding on the day
BTAP eligible Event

at
Ian & Noeleen & Eoin O'Byrne,
Rathoe, Carlow
Tuesday, 9th July, 2013
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Reseeding Demonstration

Hugh Mahon
Drystock Advisor
Teagasc, Oak Park, Carlow
hugh.mahon@teagasc.ie

1) Introduction	H. Mahon (Teagasc, Oak Park), E. O'Byrne (Host Farmer)
2) Soil Fertility	M. Plunkett, (Soil & Plant Specialist) V. O'Connor Teagasc, Oak Park
3) Benefits of Reseeding	M. McEvoy (Moorepark Research), M. Fitzgerald (Teagasc, Enniscorthy)
4) Weed Control	C. Maughan (TPWhelehan's), T. Carroll (Teagasc, Kilkenny)
5) Management of Reseeds	B. Sherriff, (Teagasc Tinahely) D. Forristal, (Research, Oak Park)
6) Moore Drill	C. Hickey (Teagasc, Enniscorthy) E. Roche (Demonstrating the system)
7) Guttler Drill	A. Flavin Teagasc, Mullinavat) S. Eustaces (Demonstrating the system)
8) Horche	P. Keogh (Teagasc Tinahely) J. O'Toole (Demonstrating the system)
9) Plough and Sow	M. Slattery, (Teagasc, Dungarvon) I. O'Byrne (Host with conventional system)

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The benefits of sward renewal

Philip Creighton1, Michael O'Donovan2 and Laurence Shalloo2
Grassland Science Research Department
Animal & Grassland Research and Innovation Centre
Teagasc
Athenry1 and Moorepark2

Introduction

Grassland in Ireland including rough grazing accounts for over 90% of agricultural land use. *Lolium perenne* (Perennial ryegrass) is by far the most widely sown grass species accounting for over 95% of for a ge grass seed sold each year. It produces a dense sward, highly acceptable to livestock with the ability to produce high dry matter yields, especially in spring and autumn reducing the seasonality of production. Achieving good performance from grass is dependent on having high quality perennial ryegrass/clover swards. This paper will outline the important aspects of reseeding pasture, what's happening at farm level, why and when reseeding should be completed, its benefits and costs.

What is happening at farm level?

A recent survey of a proportion of co-op suppliers from Kerry, Connaught Gold and Glanbia (Creighton et al., 2011) found a number of significant findings from a reseeding perspective, these are listed below.

i. Regular reseeding took place on 50% of participants farms, 25% reseed infrequently, 25% never reseed.
ii. Of those reseeding, 50% of participants reseed 2-4ha/year, 20% <2ha/year.
iii. 75% of participants prioritise reseeding the grazing area.

iv. The experienced benefits of reseeding are increased spring/autumn DM production and improved sward quality.
v. Autumn reseeding was the preferred time of 66% of survey participants, 13% in spring, the remaining 21% did a combination of both.
vi. Only 50% of the participants soil test the area being reseeded.
vii. 50% plough, 20% use minimum cultivation, 30% use a combination of both.
viii. When seeding, 40% use the fertiliser spreader, 35% seed barrow.
ix. Post emergence spray was used on 50% of farms.
x. 85% of participants have swards affected by docks, directly linked to low usage of post emergence spray and timing of reseeding.

In general the results of the survey are encouraging; the farms which are reseeding are experiencing good results and consider it a good investment. A number of key areas need to be addressed however, which is the purpose of the following paper.

Why reseed?

Many farms in Ireland have swards that can not grow enough grass during the year especially in spring and autumn. This is mainly due to the absence of a sufficient quantity of perennial ryegrass in pastures. There are many beneficial reasons for reseeding as perennial ryegrass dominant pastures:

i. Provide more grass in the shoulder periods (early spring and late autumn).
ii. Are 25% more responsive to nitrogen compared to old permanent pasture.
iii. Have higher feeding quality.
iv. Faster re-growth.
v. Support higher stocking rates.

How much more grass does a reseed produce?

Recent research in Moorepark has shown old permanent pasture produces on average 3 – 5 t DM/ha less grass than newly reseeded pastures. Figure 1a shows a paddock where grass is at least 20-years old – this paddock produced 8 ½ tonnes DM/ha in 2009. Figure 1b shows a newly reseeded pasture produced 13 tonnes DM/ha. Ten grazing rotations were achieved in the newly reseeded paddock while the paddock with the old grass was only grazed times.

Figure 1a.
Old permanent pasture

Figure 1b.
Newly reseeded pasture

How will you gain?

As well as having more grass in early spring and late autumn, newly reseeded swards are more responsive to nitrogen. This means that compared to old permanent pastures reseeded swards yield more grass per kg of nitrogen applied. Economically pastures with a low proportion of perennial ryegrass are costing farmers up to **€300/ha** due to a loss of DM production and reduced nitrogen efficiency during the growing season. If the cost of reseeding is estimated at approximately €700/ha, the increased profitability of the reseeded pasture would cover the cost in just over 2 years. This means reseeding is one of the most cost effective on-farm investments. Continuous progressive developments are being made in the areas of grass and clover breeding and are providing improved grass varieties. Harnessing these developments presents an opportunity to make more money from grass.

Where will you see the benefits?

Figure 2 shows the spring and autumn DM production of four pastures ranging from 15% - 100% perennial ryegrass content. It is clear that pasture with high perennial ryegrass content produces more grass in spring and autumn.

Pastures with less than 60% perennial ryegrass will not support early or late grazing systems as insufficient grass is being produced.

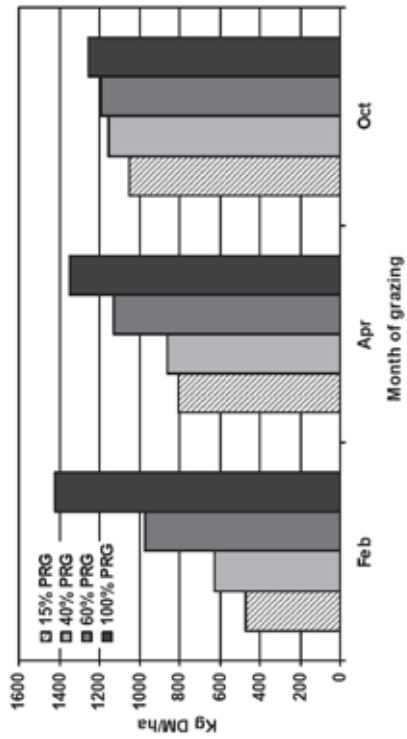


Figure 2. Effect of pasture perennial ryegrass content on spring and autumn DM production

How often should you be reseeding?

Assuming a germination level of 95% at reseeding in Year 1, followed by a 3-5% reduction in PRG content per year

thereafter, the PRG content of the pasture will have reduced to 50 – 60% after 8-10 years. Figure 2 shows the effect of having <60% perennial ryegrass in pastures and as a result reseeding every 8-10 years is recommended.

A major issue on farms is the lack of reseeding planning, farmers should be able to pin point the paddocks that are not performing and target those for reseeding. At the start of each year a proportion of the lower producing paddocks should be planned to be reseeded in that year.

Reseeding methods

How paddocks are prepared for reseeding comes down to soil type, amount of underlying stone and machine/contractor availability. There are essentially two methods of preparing the seedbed. The most common method is ploughing, however in many areas this is not possible because the ground is too stony, soil too shallow and topography too steep or there is no tradition of ploughing. Recent technological advances, such as minimal cultivation techniques enable reseeding to be carried out without ploughing.

Conventional Reseeding

Ploughing, although the most expensive, is probably the most reliable method. The advantages of ploughing are that pests, thrash and native competitors are buried. Ploughing can also help the drainage of the soil profile. In addition, it provides the basis for a sound seedbed and more level surface. Care must be taken however not to plough too deeply (>15 cm) as this can bury the top layer of most fertile soil. After ploughing the objective is to develop a fine, firm and level seedbed. If the tilt is too fine, grass seed (especially clover seed) will be lost too deep into the soil and will not be able to germinate.

Minimum Cultivation

Minimal cultivation techniques allow perennial ryegrass to be introduced into swards without ploughing. Most techniques involve spraying the existing vegetation – the seedbed is then prepared using shallow cultivation equipment. Soil disturbance is minimised so the more fertile soil remains at ground level for use by the young seedlings as well as better support for both machinery and animals at the early stages of pasture establishment. This is a fast and simplistic method of reseeding. It is important that the sward is grazed tightly if minimum cultivation techniques are to be used as surface trash will not be buried. Some surface trash will remain and as this thrash (dead organic matter) decays it releases organic acids which may inhibit seed germination. Applying about 2 ton of lime/acre before cultivation will help neutralise this effect. With minimum cultivation more weeds may appear making the use of a post emergence spray even more critical.

Reseeding management

Shalloo *et al*. (2010) demonstrated that increasing the level of reseeding on farm had a positive effect on profitability through an increase in total and seasonal herbage production and, when accompanied by an increased stocking rate, increased herbage utilisation. The greatest gain in terms of DM yield will be achieved when the new sward is replacing a sward which is producing less grass than it potentially could, especially when there is a high proportion of weeds and unwanted grasses present. Creighton *et al*. (2011) reported that just 0.068 of the land area on specialist dairy farms in the Republic of Ireland are reseeded annually. It is likely that low sward perennial ryegrass content is a significant factor in the underperformance of swards, particularly in spring. A recurring issue with reseeding and the assessment of DM production benefits associated with it is the level of

production lost in the year of sward renewal. Conijn (2004) and Hopkins et al. (1990) concluded that the production increase following reseeding is at best more or less equal to the production loss in the year of renewal.

Two studies have taken place in Moorepark in the last three years investigating the effect of timing of reseeding and method of reseeding on herbage production. Table 1 outlines the results of an autumn reseeding study, where direct drilling (DD), discing and one pass (DO), onepass (OP), ploughing (PLO) and a control (old permanent pasture) were compared. Table 2 outlines the performance of a spring reseeded sward with the same methods with an additional fifth treatment added; the chemical application of diquat (DIQ) to suppress the existing sward followed by direct drilling without spraying off with a glyphosate product, represented a rejuvenation method as opposed to full renewal. The autumn reseed in Year 1 out yielded the control sward by 958 kg DM/ha (11,326 versus 10,368 kg DM/ha), in Year 2, this difference increased to 2410 kg DM/ha (12,749 versus 10,339 kg DM/ha). For the spring reseed there was virtually no difference in DM production in the establishment year (swards yielded 9700 kg DM/ha), while in Year 2 this difference increased to 2033 kg DM/ha in favour of the reseeded swards. It could be concluded from the study that irrespective of timing of reseeding the swards required time to settle, allow perennial ryegrass hierarchy establish and then the advantage to reseeding became apparent.

The results of these two studies demonstrate that reseeding provides a benefit in terms of the seasonal distribution of herbage DM yield, with improved spring growth in the autumn sown trial and improved spring and autumn DM yield in the spring sown trial, relative to old permanent pasture.

The substantial increase in perennial ryegrass following reseeding contributed to the increase in spring DM

production. In the summer period, autumn reseeded swards in both years out produced the control sward by 17%. The results were not as straightforward for the spring reseed where summer DM production declined by 10% in Year 1 (sward was still establishing), however DM yield increased by 17% in Year 2. In the establishment year, Autumn DM yield on autumn sown reseeds was 1200 kg DM/ha less than on the control sward, however, in the two following years autumn DM yield increased by 10 and 21% compared to the control. Autumn DM yield was significantly increased on the spring reseeds in their first (34%) and second (23%) year

Table 1. Effect of reseeding method on swards sown in Autumn 2008 on DM yield (kg DM/ha) and tiller density/m^2 in 2009, 2010 and 2011.

Treatment	Control (C)	Direct Drill (DD)	Disc (DO)	One pass (OP)	Plough (PLO)
Total DM yield '09	10368	11134	12144	11820	10205
Total DM yield '10	10339	13568	13135	12082	12211
Spr. DM yield '09	1881	1424	1808	1743	1313
Spr. DM yield '10	1336	2204	1924	2038	2004
Spr. DM yield '11	1640	1679	1608	1919	1821
Sum. DM yield '09	5236	6012	6481	6141	5901
Sum. DM yield '10	5597	6960	6849	6060	6390
Aut. DM yield '08	1902	242	393	486	358
Aut. DM yield '09	3251	3699	3855	3935	2990
Aut. DM yield '10	3407	4404	4362	3984	3816

PRG=Perennial ryegrass; Spr. =Spring; Sum. =Summer; Aut. =Autumn;

Table 2. Effect of reseeding method on swards sown in Spring 2009 on DM yield (kg DM/ha) and tiller density/m^2 in 2009, 2010 and 2011.

Treatment	Control (C)	Direct Drill (DD)	Disc (DO)	One pass (OP)	Plough (PLO)	Diquat (DIQ)
Total DM yield '09	9781	9233	10395	10191	8949	9567
Total DM yield '10	10001	11308	12586	12040	12674	11564
Spr. DM yield '10	1740	1945	2299	2278	2444	1613
Spr. DM yield '11	1328^a	2166^b	2016^b	1990^b	1949^b	1908^b
Sum. DM yield '09	6286^a	5211^b	6311^a	5875^{ab}	5186^b	5509^{ab}
Sum. DM yield '10	4980	5631	6103	5613	5958	6118
Aut. DM yield '09	1616	2142	2205	2437	1883	2179
Aut. DM yield '10	3281^a	3733^{ab}	4184^b	4149^b	4272^b	3833^a

PRG=Perennial ryegrass; Spr. =Spring; Sum. =Summer; Aut. =Autumn

The objective of traditional cultivation and tillage methods (ploughing, discing, rolla-tilling, levelling) is to obtain a fine, firm competition free seedbed. Conventional methods of grassland reseeding, the plough, till, sow method, is seen by most as the most consistent and reliable method of seedbed preparation and sowing but it does have its disadvantages. One of the main aims of the studies above was to evaluate alternative grassland reseeding methods in terms of their effect on DM production potential, sward

establishment and persistence. Bartholomew et al. (1981) concluded from a comparison of cultivation methods for the establishment of ryegrass, that there was no significant difference in dry matter yield over the 2.5 year trial due to establishment method.

While all having different modes of action each of the full sward renewal methods evaluated performed satisfactorily. While the DD and PLO treatments were slower to establish in both the autumn (lower spring 2009 DM yields) and spring sown swards (lower summer 2009 DM yields) both increased their contribution to established swards with the DD treatment the highest yielding of the autumn sown swards in 2010 and the PLO swards showing the highest proportional increase in total DM yield in 2010 compared to the control in the Spring sown swards. It can be concluded that on balance all sward renewal methods evaluated are equally as effective as the conventional method of grassland reseeding. The length of the study probably may be too short to full evaluate the lifetime performance of the swards, but after 24 months of establishment, prevailing grazing management is more likely to influence DM production than the reseeding method.

From the survey information, it is evident that up to 70% choose to reseed during the autumn. This may make sense from a feed budget point of view but it does have some negative consequences. Conditions deteriorate as autumn progresses – lower soil temperatures can decrease seed germination and variable weather conditions reduce the chances of grazing the new sward.

Table 3 outlines the effect of autumn sowing date on seedling and tiller population and grass availability (kg DM/ha) in spring. The opportunity to apply a post-emergence spray in autumn is also reduced as ground conditions are often unsuitable for machinery to travel, consequently, over 50% of farmers who said they reseed in

autumn, don't apply post emergence sprays. This is likely to be linked to 90% of surveyed farms reporting dock problems. With this in mind if planning to reseed, the spring period should be considered for at least a proportion of the area, with all reseeding completed as early as possible in the autumn.

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 think 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 the old grass off – a major failing at farm level is to wait too long after spray off. Obviously prevailing weather conditions dictate this, but the objective must be to minimise the non-productive period. Weather conditions in spring are generally more stable and predictable than in autumn.

Table 3. Effect of Sowing Date on subsequent grass performance

Sowing Date	September 3rd	October 4th
Seeds sown/sq. m	1030	1030
Seedlings 6 weeks later/sq. m.	760	570
Tillers/sq. m. in March	7190	3110
Kg DM/ha in March	913	478

Culleton et al., 1992.

Reseeding cost

Reseeding is a medium term investment (Table 4). Swards renovated in 2013 can be expected to last for 8-10 years or longer if correctly managed. Such swards will be required to sustain production over that time period. When looking at the full costs of reseeding it must be remembered that costs can vary as a range of different reseeding systems exist and some costs are lower on farms depending on machine availability and the amount of work that is completed by the farmer.

Table 4. Conventional Method Reseeding costs 2013

	€/acre
Spraying	10
Glyphosate	16
Ploughing	30
Lime	44
Till & sowing	30
Fertiliser (2 bags of 10-10-20)	47
Fertiliser spreading	10
Levelling	12
Rolling	12
Grass Seed	75
Post emergence herbicide sprays	
Alistell (1.5 Litre/ac)	31
Spraying	10
Total	**327**

Soil fertility

Poor soil fertility is one of the reasons for the disappearance of ryegrass from pasture. Reseeded pastures will not perform to their potential if soil fertility is not correct. The exact quantities of lime and fertilisers required can be gauged from a soil test which should be carried out once the soil has been cultivated as it is this layer of soil that the seedlings will be established in. A soil test can be carried out by your local Teagasc advisor or private company. Farmers need to consider when they are involved with nitrates, if no soil test is taken then the land is considered to be in soil index 3. Soil testing is well worth completing.

New seedlings are particularly susceptible to a lack of lime and phosphorus. If the pH of the soil is low, the seedlings will not establish well. The ideal pH for the establishment of a ryegrass sward is 6.2 to 6.7. It is common on Irish farms that the pH is too low. The pH of the soil can be increased by applying lime – the quantity of lime that needs to be applied can be obtained from your soil test report.

Phosphorus 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 5 shows the P and K requirements when reseeding grassland at the different P and K index levels.

Table 5. Phosphorus (P) and Potassium (K) rates required for pasture establishment at 2.5cows/ha

Soil P Index	Soil P range (Morgan's mg/l)	P application rate (kg/ha)
1	0.0-3.0	64
2	3.1-5.0	54
3	5.1-8.0	44
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

Slurry is a good option to maintain nutrient status. With the increased cost of compounds (P and K) slurry should be used in reseeding, 1000 gallons of slurry at 7% DM is equivalent to 4kg N, 3kg P and 19.5kg K**.** At soil index 3, slurry (3000gals/ac) is sufficient to supply the P and K nutrients.

Weed control

The best time to control docks and all other weeds is after reseeding. By using a post emergence spray seedling weeds can be destroyed before they properly develop and establish root stocks. Established weeds can seriously reduce the yield potential and economic lifetime of the reseeded sward. From the survey information it is clear that only 50% of farmers are applying a post emergence

spray, resulting in over 90% of surveyed farms having problems with dock infestations.

To ensure that a post emergence spray can be applied reseeding should be targeted for the spring or early autumn when establishment conditions are much more suitable and the opportunity for weed control is guaranteed. The post emergence spray should be applied approximately 6 weeks after establishment just before the first grazing takes place. With weed control it pays to be proactive, spraying when grass is at the two leaf stage works well.

Grazing management of reseeded swards

Care needs to be taken when grazing newly reseeded swards. The sward should be grazed as soon as the new grass plants roots are strong enough to withstand grazing (root stays anchored in the ground when pulled). Early grazing is important to allow light to the base of the plant to encourage tillering. Light grazing by animals such as calves, weanlings or sheep is preferred as ground conditions may still be somewhat fragile depending on establishment method used. Grazing new reseeds with larger animals can create high levels of tiller pulling. The first grazing of a new reseed can be completed at pre grazing yields of 600-1000kg DM/ha.

Frequent grazing of the reseeds at light covers (<1400kg DM/ha or less than 10cm) over the first year post establishment will have a beneficial effect on the sward. The aim is to produce a uniform, well tillered, dense sward. Particular care is needed during periods of wet weather as damage to newly established swards can have long term detrimental consequences as it gives weed grasses an opportunity to invade.

If possible newly reseeded swards should not be closed for silage in their first

year of production as the shading effect of heavy covers of grass will inhibit tillering of the grass plant resulting in an open sward which would be liable to weed ingress.

Summary

Reseeding is well worth the investment on dairy farms, even though grass seed costs will increase in 2013, this still should not deter dairy farmers to continue with an aggressive reseeding program. Many management factors affect the success of newly sown swards. The timing of reseeding should preferably take place in spring. There is little difference between reseeding methods once a firm, thrash free seed bed is established. The timing of weed control is crucial and has a major effect on weed contributions to the established sward, weed control needs to place at the two leaf stage- with a firm focus on controlling seedling docks. Farmers need to remember that when they are putting in a new sward, it will probably last 10 -12 years, which could represent 20% of their career as a grassland farmer, reseeding is an important job that needs to be done correctly.

Role of Lime in Grass / Crop Production

Hugh Mahon, Teagasc Drystock Adviser, Teagasc Oak Park, Carlow.

Lime is a soil conditioner that is essential in the soil to obtain the desired pH for the crop present in the field. Low soil pH's, (i.e. lime is required for soil) will be reflected by reduced crop yields, i.e. grass, cereal and root crops.

It can be compared to building a block wall with a very poor foundation. The block wall will fall due to inadequate foundation being provided. Likewise, growing a crop (block wall) will not yield to it's potential due to high lime requirement or low pH which can be compared to poor foundation for the block wall. Therefore, lime requirement (or soil Ph) is the first item to be examined with Soil Analysis Report.

Liming

Liming soils has many indirect beneficial effects such as soil structure. For example, liming an acid soil increases the population of bacteria, fungi and earthworms, which are responsible for the break-down of soil organic matter. The decomposition of soil organic matter will assist in soil crumb formation and improve the environment for plant root development and nutrient uptake. It is widely recognised that liming heavy soils improves soil structure and reduces stickiness, lightens cultivations and makes it easier to prepare a satisfactory seedbed

.

Lime Removal

Lime is continually being lost from the soil and needs to be maintained as part of a nutrient management programme. For example, drainage water can remove approximately 250 – 635 kg/ha/year depending on soil type. Light, free-draining soils will lose lime more quickly than heavy retentive soils. Therefore, light land needs extra attention, especially where the soil is not a limestone soil. Crops and livestock also remove lime. For example, a crop of first-cut silage can remove approximately 190 kg/ha/yr..

Lime Applications

The application of lime has declined from over 1.5m tonnes per year in the 1970s and early 1980s to around 0.5 – 0.8m tonnes in the past decade. In order to reduce soil acidity and maintain adequate lime status, we should be applying in the retention of 1.5m tonnes annually.

That means that we are only applying between 30 – 50% of our annual requirement, which is needed to maintain and an adequate soil pH level throughout Ireland.

Farmer soil samples tested through Teagasc reflect his reduction in lime usage as 60% of grassland soils are below a soil pH 6.0 and 40% of tillage soils are below a soil pH 6.5. Lime is being forgotten about on Irish farms and the post-ponement of lime applications will only build up future soil problems and add to the costs of production.

Maintaining the correct soil pH will increase the microbiological activity of the soil and will result in a whole series of responses.

For example:

1. Applied fertilisers will give a better response on soils maintained at the correct soil pH. Where two bags of 0:10:20 are applied on well-limed soils, it will give the same return as three bags spread on land needing lime;

2. The most productive and high yielding perennial rye grasses will thrive resulting in maximum sward productivity.

3. Where lime is applied to land with a low soil Ph, the equivalent of two bags of 27% N will be released each year for several years. This is due to the beneficial effects of liming on soil life (e.g. bacteria, earthworms, etc) and better nutrient recycling from soil sources;

Soil Analysis & Liming

Routine soil sampling should be carried out once every three to five years to check soil pH and apply lime where required. Soil laboratory analysis will tell us exactly the amount of lime to apply and is the most reliable method to determine the lime for your particular soil type.

Lime and Fertilisers

Generally, when a crop is performing poorly, it is attributed to a shortage of one of the major nutrients, such as nitrogen (N), phosphorus (P) potassium (K) or magnesium (Mg). Lime can be overlooked, yet it's effect on the efficient use of both minor and major

nutrients is enormous because of it's effect on soil pH.

Fertilisers are now a significant proportion of production costs and we must look at the soil pH in order to maximise the return from every kilogramme of applied N, P and K. For maximum return from applied nutrients, it is essential to maintain soil pH within the optimum range pH 6.5 – 7.0 for tillage crops and pH 6.3 – 6.5 for grassland soils.

Timing of Lime Application

Ground limestone can be applied at any convenient time of the year. For lime sensitive crops such as beet, cereals and maize, apply lime two years before sowing. If lime has not been applied, it should be spread after spring ploughing so that it can react with the soil and be thoroughly mixed with soils during spring cultivations.

In grassland, apply lime and keep grazing animals off the grass until the lime is well washed in.

In silage land, apply before mid-March for first cut or within one week after cutting on land being closed for a second cut.

Liming and slurry Applications

Applying slurry on recently limed soils should be avoided s it will result in a loss of nitrogen through accelerated ammonia volatilisation. Where lime is applied, slurry should not be applied until the lime is well washed into the soil. The same holds true for lime and urea applications – avoid spreading urea on recently limited soils to reduce the loss of N.

Liming and Grass Reseeding

Lime is essential for good grass production and is a basic requirement during grass seedling establishment. In addition, sufficient lime levels are required to maintain good grasses and clovers growing in the sward. Grass reseeding offers a good opportunity to correct acid soils. Identify fields that are to be reseeded in the current year and apply lime in advance of reseeding. This will give plenty of time for the lime to be washed in and will also assist with the breakdown of the turned-in sod.

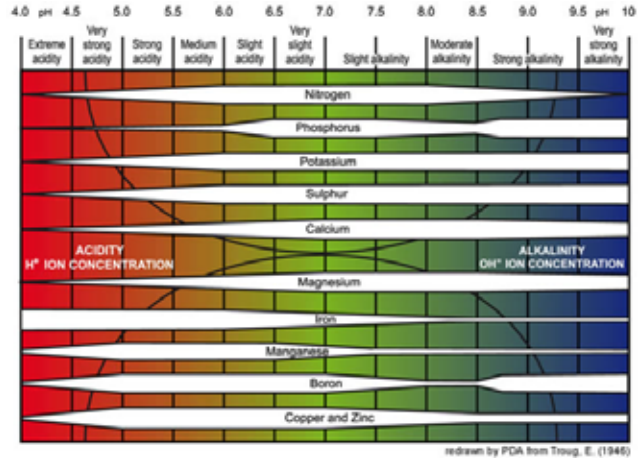
Where lime recommendations are greater than 7.5t/ha, half of the lime should be applied now and the remainder applied at reseeding time. Early lime application will help insure against poor grass establishment and yield.

Cost of Lime

Lime costs in the region of €22/t (delivered and spread). Based on this price, lime only costs €8-10/ac/year to maintain the soil's pH status once it has been brought to satisfactory level. It's a small annual cost to incur.

Summary

As with building the wall, get the foundation right. The same applies to establishing and maintaining grass swards. Therefore it is essential to have soil analysis carried out before reseeding takes place in order to determine lime requirement. Following the lime status, the analysis will also recommend the Phosphorous and Potash requirement which are essential nutrients for optimum production. Soil analysis should be carried out every five years on established swards.



pH Range and influence on Nutrient Availability

Choosing the right grass mixture

Mary McEvoy and Michael O'Donovan
Grassland Science Research Department, Animal & Grassland Research and Innovation Centre, Teagasc, Moorepark, Fermoy, Co. Cork

Summary

- Use recommended list grass varieties
- Take time to choose the right varieties for your farm
- Seasonal growth and quality are key traits when choosing a variety
- Keep heading dates of the chosen varieties within 7 – 10 days of each other

Variety choice

Grass seeds make up only 20% of the total cost of reseeding however putting some time into deciding what varieties suit your system is worthwhile. Varieties perform differently depending on the system they are used in. As the swards sown will be in use for 7 – 10 years putting effort into deciding the varieties that you require is time well spent.

Tillage farmers place a lot emphasis on what cereal varieties they use, grassland farmers need to adopt this attitude. There are two recommended lists for grass available in Ireland, from DAFF (www.agriculture.gov.ie) and AFBI (www.darni.gov.uk). Only grass cultivars which have been tested on recommended lists (DAFF or AFBI) should be used.

No single grass variety has all the desired agronomic traits. At Moorepark there are currently a number of studies investigating the merits of mixtures and monocultures (one variety). Some varieties have better characteristics than others. Within the first 11 months of sowing the sward hierarchy will be established. If the beneficial effects of a variety are to be utilised it needs to be included at a high level within the mix.

The following guidelines should be used when choosing a seed mixture:

1. Good spring and autumn production**,** mid season DM production is consistent across varieties, a more flattened grass supply is advantageous (more grass in spring and autumn and less surplus mid-season).
2. Sward quality – consistent with the mean value
3. Choose varieties with a narrow range in heading dates (7-10 days).
4. Adequate ground cover, this very important especially for wetter soils.

Varieties for grazing

Grazing mixes should be dominated by late heading diploids but should also have a proportion of tetraploid varieties. Tetraploid varieties have the highest DM yields and large leaf area, even though their tiller density is lower than diploids. In general terms they have an average 1 t DM/ha higher yield than diploids. Tetraploids should be combined with high ground cover, highly digestible diploids. 40% tetraploid is sufficient in a seed mix, higher levels of tetraploid can be used, but sward management should be adjusted to protect it from damage during the shoulder grazing periods. When

considering heading date it is better to use a small range in heading dates (e.g. 7-10 days), a wider range in heading dates will be reflected in a longer heading period. All varieties will head, however some with a greater tendency to head and continue to re-head, which is not desirable in a grazing sward.

Varieties for silage

Intermediate heading varieties should be included in the seed mixes for intensive silage swards. Tetraploid varieties should make up about one third of silage mixes. For swards cut once a year and then grazed, the amount of intermediate can be reduced, and late heading cultivars can be used. Low yielding late diploids should be avoided on the land targeted for continuous silage harvests. Whatever the varieties in intensive silage systems, persistency will become an issue if high silage yields are harvested to low cutting heights.

Clover

Small leaf varieties are lower yielding but more persistent than large leaf varieties and vice versa while medium-leaf varieties are intermediate in terms of yield and persistency. In grazing swards small and medium leaf clover varieties are recommended in combination with late heading perennial ryegrass varieties. Care must be taken with the larger leafed clovers as their aggressive growth habit dominates swards over time. Varieties with high yield potential and good grazing persistence at both high and low nitrogen levels should be used.

Post reseeding management

Philip Creighton, Michael O'Donovan and Emer Kennedy Grassland Science Research Department, Animal & Grassland Research and Innovation Centre, Teagasc, Moorepark, Fermoy, Co. Cork

Summary

- Best time to control docks and other weeds is after reseeding
- Apply post-emergence spray 6 weeks after establishment
- Graze swards as soon as the new grass plants roots are strong enough to withstand grazing
- First grazing after reseeding at 600 – 1000 kg DM/ha
- Frequent grazing of light covers (<1400 kg DM/ha) during first year after establishment will help the sward to tiller and reduce opportunity for weed establishment
- Check reseeds for slug/leatherjacket attack
- If possible avoid cutting silage on the reseed during the first year

Introduction

To ensure the establishment and longevity of the newly reseeded sward, management in the months immediately after reseeding is critical. Minimising weed invasion and ensuring that the sward tillers well, will ensure a dense sward dominated by perennial ryegrass.

Weed control

The best time to control docks and all other weeds in a sward is after reseeding. By using a post emergence spray seedling weeds can be destroyed before they are properly developed and have established root stocks. Established weeds can seriously reduce the herbage production potential and economic lifetime of the reseeded sward. From a survey of dairy farmers undertaken by Teagasc Moorepark, it is clear that only 50% of farmers are applying a post emergence spray, resulting in over 90% of surveyed farms having problems with dock infestations.

To ensure that a post emergence spray can be applied reseeding should be targeted for the spring or early autumn when establishment conditions are much more suitable and the opportunity for weed control is guaranteed. The post emergence spray should be applied approximately 6 weeks after establishment just before the first grazing takes place. With weed control it pays to be proactive, spraying when grass is at the two leaf stage works well. If there is clover in the sward, and it is to be maintained, caution must be exercised when selecting a post emergency spray as not all are clover friendly. The cost of post-emergence spraying will depend on the product used and whether or not there is clover present in the sward.

Grazing management of reseeded swards

Care must be taken when grazing newly reseeded swards. The sward should be grazed as soon as the new grass plants roots are strong enough to withstand grazing (root stays anchored in the

ground when pulled between thumb and forefinger). Early grazing is important to allow light penetrate to the base of the plant to encourage tillering. A light grazing by animals such as calves, weanlings or sheep is preferred as ground conditions may still be somewhat fragile depending on establishment method used. Grazing new reseeds with larger animals can create high levels of tiller pulling. The first grazing of a new reseed can be completed at pre-grazing yields of 600-1000 kg DM/ha.

Frequent grazing of the reseeds at light covers (<1400 kg DM/ha or less than 10 cm) over the first year post establishment will have a beneficial effect on the sward. The aim must be to produce a uniform, well tillered, dense sward. Particular care is needed during periods of wet weather as damage to newly established swards can have long term detrimental consequences as it gives weed grasses an opportunity to invade.

If possible newly reseeded swards should not be closed for silage in their first year of production as the shading effect of heavy covers of grass will inhibit tillering of the grass plant resulting in an open sward which would be liable to weed ingress.

Slugs

Slugs are mainly a problem associated with direct drilling but they can be a problem in all reseeds. The likelihood of damage can be greatly reduced if the seedbed is firm because most of the major slug species cannot burrow. Slugs are more active in wet weather and also at headlands. If slugs are a concern, a plastic fertiliser bag can be placed in the field, (weighing down the four corners) leaving it overnight and coming back and checking to see if there are any slugs underneath. Control can be

achieved by applying slug pellets, e.g. Draza (2-4 lbs/acre).

Frit Fly

Every so often the frit fly causes sporadic and sometimes very serious damage especially to autumn sown swards. They eat the centre leaf of new seedlings and affected plants and tillers turn yellow and die. Grass stitched in after grass or grassy stubble is most at risk as the larvae can migrate from the old sward into the new seedlings. Frit fly is always more active in fine weather.

- Decis, Dursban, Clinch or Grubber can be used to control frit fly
- Check crops regularly from 1 - 2 leaf stage by gently pulling the centre shoot of a representative number of plants.
- Infected shoots, although still green, will pull away easily, exposing the brownish feeding area. By dissecting the stem, a frit fly maggot will be found.

Leather Jackets

Tend to be a problem in wetter areas. Can be controlled with Dursban spray.

Recommended Grass and Clover Varieties 2013

RECOMMENDED ITALIAN, HYBRID and EARLY PERENNIAL RYEGRASSES 2013

Variety Name	Group	Ploidy	Heading Date	Total Yield	Ground Cover 1-9	Spring Growth	Silage Yield	OMD %	WSC %	Year 1st Listed	Breeder	Origin
Italian Control Mean t DM/ha				16.2	5.1	1.4	8.6	78.2	19.2			
Fabio (T)	Italian	T	18-May	99	4.9	98	100	100.7	101	1998	Euro Grass	NL
Nabucco (T)	Italian	T	20-May	101	5.1	100	101	100.1	100	2007	Euro Grass	NL
Davinci	Italian	D	22-May	102	5.5	103	99	98.6	85	2011	ILVO	BE
Hybrid Control Mean t DM/ha				16.0	5.3	1.2	8.6	79.2	18.9			
AberEcho (T)	Hybrid	T	18-May	99	5.6	95	102	(104.7)	(129)	2013	IBERS	UK
Alliance (T)	Hybrid	T	20-May	102	5.2	100	103	100.7	107	2011	Limagrain	NL
Pirol	Hybrid	D	22-May	103	5.6	98	105	(98.0)	(90)	2009	Euro Grass	DE

Variety Name	Group	Ploidy	Heading Date	Total Yield	Ground Cover 1-9	Spring Growth	Autumn Growth	OMD %	WSC %	Year 1st Listed	Breeder	Origin
Early PRG Control Mean t DM/ha				14.8	6.0	1.3	3.1	80.4	18.4			
Moyola	Early	D	11-May	105	6.4	109	107	100.0	102	2012	AFBI	NI
Genesis	Early	D	12-May	103	6.7	118	102	99.7	103	2012	Teagasc	IRL

Italian, Hybrid and Early PRG: variety descriptions Page 11; Control varieties Page 16.
( ) indicates provisional data.

RECOMMENDED INTERMEDIATE PERENNIAL RYEGRASS 2013

Variety Name	Group	Ploidy	Heading Date	Total Yield	Ground Cover 1-9	Spring Growth	Autumn Growth	DMD %	WSC %	Year 1st Listed	Breeder	Origin
Inter PRG Control Mean t DM/ha				14.9	6.6	1.0	3.1	81.4	19.6			
Boyne	Inter	D	20-May	104	7.0	111	104	98.6	92	2013	DLF	DK
Solomon	Inter	D	21-May	100	6.8	118	101	99.5	96	2011	Teagasc	IRL
Rosetta	Inter	D	22-May	102	6.8	118	105	100.0	96	2013	AFBI	NI
Premium	Inter	D	23-May	98	7.0	92	97	99.3	96	1997	Innoseeds	NL
Rodrigo	Inter	D	25-May	99	7.0	102	99	99.4	92	2013	Euro Grass	DE
AberStar	Inter	D	27-May	98	6.9	90	105	100.7	103	2008	IBERS	UK
AberMagic	Inter	D	29-May	100	7.1	91	113	101.7	123	2010	IBERS	UK
Malone (T)	Inter	T	18-May	103	6.1	103	103	100.6	108	2009	AFBI	NI
Giant (T)	Inter	T	18-May	101	6.8	104	101	100.0	105	2011	Teagasc	IRL
Magician (T)	Inter	T	20-May	102	6.3	107	102	100.5	100	1999	Teagasc	IRL
Trend (T)	Inter	T	23-May	103	6.2	100	101	100.8	104	2007	NPZ	DE
Carraig (T)	Inter	T	23-May	103	6.8	112	104	100.7	107	2012	Teagasc	IRL
Dunluce (T)	Inter	T	28-May	103	6.3	94	108	102.2	115	2007	AFBI	NI

Intermediate PRG: variety descriptions Pages 12 and 13; Control varieties Page 16.

RECOMMENDED LATE PERENNIAL RYEGRASS 2013

Variety Name	Group	Ploidy	Heading Date	Total Yield	Ground Cover 1-9	Spring Growth	Autumn Growth	DMD %	WSC %	Year 1st Listed	Breeder	Origin
Late PRG Control Mean t DM/ha				14.5	6.7	0.9	3.1	82.0	19.9			
Stefani	Late	D	31-May	99	6.9	96	100	99.9	97	2012	DLF	DK
Majestic	Late	D	01-Jun	100	7.0	99	105	98.9	93	2012	Teagasc	IRL
Glenveagh	Late	D	02-Jun	99	7.5	85	104	99.7	102	2012	Teagasc	IRL
Denver	Late	D	02-Jun	98	7.0	86	97	99.5	91	2003	Advanta	NL
Piccadilly	Late	D	02-Jun	100	7.0	96	102	99.0	94	2012	Euro Grass	DE
Soriento	Late	D	03-Jun	97	7.2	88	95	99.5	95	2005	Euro Grass	DE
Tyrella	Late	D	03-Jun	98	6.7	118	98	100.0	105	2008	AFBI	NI
Portstewart	Late	D	05-Jun	97	6.8	84	100	100.2	102	1994	AFBI	NI
Mezquita	Late	D	06-Jun	97	7.4	91	97	99.1	93	2008	Euro Grass	DE
Drumbo	Late	D	07-Jun	99	6.9	103	106	101.0	112	2011	AFBI	NI
AberChoice	Late	D	09-Jun	102	7.0	94	109	102.0	128	2012	IBERS	UK
Malambo	Late	D	09-Jun	99	7.0	94	104	99.1	95	2010	Euro Grass	UK
Cancan	Late	D	10-Jun	98	7.1	84	106	99.8	105	2000	Limagrain	F
Orion (T)	Late	T	31-May	101	6.3	89	100	101.3	111	2002	NPZ	DE
Delphin (T)	Late	T	01-Jun	103	6.2	106	103	101.1	107	2002	NPZ	DE
Glencar (T)	Late	T	02-Jun	102	6.2	101	103	100.1	102	2005	Teagasc	IRL
AberCraigs (T)	Late	T	04-Jun	103	6.3	105	104	100.9	110	1999	IBERS	UK
AberGain (T)	Late	T	05-Jun	107	6.5	125	110	102.6	123	2013	IBERS	UK
Navan (T)	Late	T	05-Jun	102	6.4	84	112	101.1	112	1999	AFBI	NI
Twymax (T)	Late	T	06-Jun	101	6.5	87	102	101.1	112	2007	CPB Twyford	UK
Kintyre (T)	Late	T	06-Jun	105	6.2	101	114	101.5	110	2012	Teagasc	IRL

Late PRG: variety descriptions Pages 12 to 14; Control varieties Page 16.

RECOMMENDED WHITE CLOVER VARIETIES 2013

Variety Name	Total Yield	Leaf Size*	Av Clover %	Year 1st Listed	Breeder	Origin
Control Mean t DM/ha	9.1					
Aran	98	VL (1.00)	48	1983	Teagasc	IRL
Barblanca	102	L (0.80)	52	2009	Barenbrug	NL
Alice	103	L (0.75)	51	1995	IBERS	UK
Chieftain	101	M (0.66)	46	2005	Teagasc	IRL
Avoca	102	M (0.58)	47	1995	Teagasc	IRL
AberHerald	98	M (0.56)	46	2003	IBERS	UK
Crusader	95	M (0.53)	43	2009	Barenbrug	NL

Notes

Notes

Teagasc
Advisory
Programme,
OakPark, Carlow
info@teagasc.ie

www.teagasc.ie

NDP
National Development Plan 2007 - 2013

teagasc
Agriculture and Food Development Authority