

# Reseeding

Grazing Guide

# Two-year payback on reseeds

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 – 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



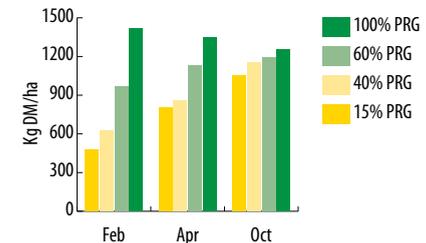
Photo 1a. Old permanent pasture



Photo 1b. Newly reseeded pasture

has shown old permanent pasture produces on average of 3 – 5 t DM/ha less grass than newly reseeded pasture. Photo 1a shows a paddock where grass is at least 20 years old – this paddock produced 8 ½ tonnes DM/ha. Photo 1b shows a newly reseeded pasture (re-seeded the previous year) that produced 13 tonnes DM/ha in the same year. Ten grazing rotations were achieved in the

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



newly reseeded paddock while the paddock with the old grass was only grazed 6 times.

## Where will you see the benefits?

Figure 2 shows the spring and autumn DM production of four pastures ranging from 15% to 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.

#### 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 kilo 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 reseeded is estimated at about €600/ha, the increased profitability of the reseeded pasture would cover the cost within two years. This means reseeded is one of the most cost-effective on-farm investments.

#### KEY POINTS

- ↘ 3 – 5 t DM extra produced from reseeded pastures, mainly in spring
- ↘ Require >60% perennial ryegrass in pastures to see benefit
- ↘ Costs of reseeded can be recovered in 2 years
- ↘ More nutrient efficient- more responsive to applied N (+25%)
- ↘ Reseed paddocks every 8 – 10 years

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. How often should you reseed? Assuming a germination level of 95% at reseeded in Year 1, followed by a 3-5% reduction in perennial ryegrass content per year thereafter, the perennial ryegrass 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 reseeded every 8-10 years is recommended.

## What is the best way to reseed?

As reseeded is a substantial investment and one which is expected to last for 8 – 10 years, it is important that it is carried out properly. This will ensure that best results are achieved and high levels of production are attained from newly reseeded paddocks.

#### What is the best method of preparing the seedbed?

The best way of preparing for reseeded 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.

#### **Should old sward be sprayed before reseeding?**

By spraying old swards with a glyphosate spray all weeds (docks, thistles etc.) and weed grasses will be killed. Where the existing sward is cultivated without spraying, weed grasses e.g. scutch have great ability to regenerate and appear in the new sward.

Both silage and grazing paddocks can be sprayed before grazing or harvesting. Spraying should be carried out 7-10 days before harvesting silage or 5-7 days before grazing. This allows enough time for the active ingredient of the spray to be carried throughout the plant to ensure adequate kill.

#### **Conventional Reseeding**

Ploughing, although the most expensive, is a reliable method. The advantages of ploughing are that pests, thrash and native competitors are buried. But also it can 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 (>6 inches) as this can bury the top layer of most fertile soil. Shallow ploughing is more appropriate but would require the use of skimmers.

After ploughing the objective is to develop a fine, firm and level seedbed. This can be completed by firstly levelling the field. 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. Again the seedbed should be rolled after sowing to ensure good seed-soil contact.

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 tonne of lime/acre before cultivation will help neutralise this effect. With minimum cultivation more weeds may appear in the germination, this is why the use of post emergence spray is crucial.

### **Benefits of a fine firm seedbed**

A firm seedbed will conserve moisture, necessary for germination, whereas a loose seedbed allows moisture to evaporate drying out seeds inhibiting germination. When a seed germinates and sends out its first leaf, the leaf must appear above the ground quickly and start to photosynthesise. If the seed is buried too deeply it will not have enough energy to push the leaf through the soil and will die. After sowing, the seedbed should be rolled to “press-in” the seeds and ensure good seed-soil contact. Loose seed beds will only cause seed to be lost from the germination.

# How to manage new reseeds

**Soil Testing:** 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.

**Lime:** 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. In many Irish farms pH is too low. The pH of the soil can be increased by applying lime – with quantity based on a soil test report.

**P & K:** 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



**New seedlings are particularly susceptible to a lack of lime and phosphorus. The pH can be increased by applying lime**

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

## The value of slurry

Slurry is a good option to maintain nutrient status. With the increased cost of compounds (P and K) slurry should be used in reseeding – 1,000 gallons of slurry at 7% DM is equivalent to 4kg N, 3kg P and 19.5kg K. At soil index 3, slurry (3000 gals/ac) is sufficient to supply the P and K nutrients.

## KEY POINTS

- Choose method based on suitability of the paddock and farm
- Spraying off old grass and weeds reduces competition post reseeding
- If ploughing, try to keep as shallow as possible to avoid burying fertile soil
- Firm fine seedbed with good seed/soil contact is essential
- Apply lime to counteract organic acids produced with min-till methods

**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

## Weed control

The best time to control docks and all other weeds is after reseeding. Weeds generate stronger root mass as they mature and therefore are more difficult and expensive to control. 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. Failing to apply a post emergence spray will result in problems such as dock infestations.

Weeds such as fat hen, redshank, hemp nettle and chickweed will be controlled by grazing/or topping provided levels are low in the sward. Generally weed populations can get larger and problem weeds such as docks, thistles, chickweed and cleavers will require chemical control. The product to use will depend on the presence of clover and the main weeds present in the new swards.

**Table 1. Some of the possible herbicides to use on new leys**

	Alistel	Eagle	Bandock	Doxstar	Starane	DB Plus
Young leys	Y	Y	Y	Y	Y	Y
Clover safe	Y	Y	N	N	N	Y
Chickweed	S	R	-	S	S	R
Docks	MS	S	MS	S	S	S*
Nettle	MR	R	S	S	S	-
Ragwort	R	R	MS	R	R	R
Rush	-	R	MS	R	R	-
Thistle	MS	R	MS	R	R	MS

Y = Yes; N = No; S = Susceptible; MS = Moderately Susceptible; R = Resistant; MR = Moderately Resistant; \* = Seedling stage

### When to spray

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 six 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. The cost will depend on

the product used and whether or not there is clover present in the sward.

### What spray to use

Table 1 shows a summary of the possible products that can be used on new leys. As ever it is better to discuss your chemical control options with your local adviser, seed merchant or co-op representative. When using sprays make sure to consult the directions on the packet for the appropriate rate to apply and also for the stock withholding period.

# Grazing management of reseeded swards

Frequently the initial grazing of reseeded swards is delayed on farms. The grass covers build up and when animals graze it, a high level of sod pulling takes place. The first grazing is critical. The sward should be grazed as soon as the new roots are strong enough to withstand grazing (test this by using your fingers to see if 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 advisable. Grazing new reseeded swards 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.

New swards can grow at exceptionally high levels in the first season; this is basically the competitive effects of the plants, and generally settles down in subsequent years. However they will need frequent grazing during the

first year and should be grazed at light covers (<1400kg DM/ha or less than 4 inches) over the first year post establishment. This will have a beneficial effect on the sward. Particular care is needed during periods of wet weather. 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 weeds.

## KEY POINTS

- Complete soil test to establish exact quantities of lime and fertilisers needed
- Make use of slurry where available
- Apply post emergence spray to control weeds
- Docks are most easily controlled by using a post emergence spray
- Check reseeded swards for slug/leatherjacket attack
- Graze the new sward as soon as grass plants do not pull out of the ground
- No silage in reseeded ground for first year

## Slugs

Slugs are mainly a problem associated with direct drilling but they can be a problem in all reseeded swards. 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 (2-4lbs/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 sown 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.

# Timing of reseeding

## Timing

A high percentage of farmers choose to reseed during the autumn. This may make sense from a feed budget point of view but it does have some negative consequences. Soil conditions deteriorate as autumn progresses – lower soil temperatures can decrease seed germination and variable weather conditions reduce the chances of grazing the new sward. Grazing newly reseeded pastures at low covers is an important management factor as it encourages tillering of the new seedlings which produces a dense, even sward. The opportunity to apply a post-emergence spray in autumn is also reduced as ground conditions are often unsuitable for

**KEY POINTS**

- ↘ Spring period more suitable for reseeding
- ↘ Total DM production from a spring reseed can produce as much if not more grass than old permanent pasture in the year of reseeding
- ↘ Target a 60-day turn around from spraying off to grazing new reseed

machinery to travel. 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 by early August at the latest.

## Spring reseeding

Paddocks reseeded in spring can produce as much if not more grass in the year of reseeding as a paddock of old permanent pasture. Also, establishing clover in a spring reseed is more reliable than autumn due to the stability of soil temperatures in late spring.

In a study which compared methods of reseeding it was found that most grass was grown on paddocks established using the one pass or by direct drilling.

## 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

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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 and weather conditions in spring are generally more stable and predictable than in autumn.

# Choosing the right grass mixture

## 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 (e.g. silage or grazing) 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 much emphasis on what cereal varieties they use and grassland farmers need to adopt this attitude. There are two recommended lists for grass available in Ireland, from DAFF ([www.agriculture.gov.ie](http://www.agriculture.gov.ie)) and AFBI ([www.darni.gov.uk](http://www.darni.gov.uk)). Only grass cultivars which have been tested on recommended lists (DAFF or AFBI) should be used.

As with selecting bulls no one bull has all the desired characteristics, the same is true for grass

as no one grass variety will cater for every requirement. At Teagasc Moorepark there are a number of studies investigating the differences between using a number of grass varieties in a mixture compared to using one variety on its own. When grass is sown in a mixture it takes about 11 months for the different varieties to establish their dominance. However, there is no point including <3kg of seed of any one grass variety within a seed mixture as it will contribute very little to the overall mixture. For the variety to have an effect it needs to be included at a high level within the mixture.

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

1. Spring and autumn production, mid season DM production is consistent across varieties, a more flattened grass supply is advantageous (more grass in spring and

## KEY POINTS

- 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

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 is very important especially for wetter soils.

## Varieties for grazing

When choosing a grazing mixture the majority of the varieties in the mix should be diploid varieties that head from 2 June onwards (late heading) but there should also be a proportion of tetraploid varieties. Tetraploid varieties have high DM yields and large leaf area, but a lower tiller density than diploids (i.e. they are more open and less suitable for heavier soil types). In general terms they have an average 1t DM/ha higher yield than diploids. If using, tetraploids should be included in a mix with dense grow-

**Table 3. Key differences between diploids and tetraploids**

Diploid	Tetraploid
Higher tiller density	Higher quality
Denser swards less liable to poaching	More palatable (higher intake)
Lower seed rate due to smaller seeds	Generally more drought tolerant
	Lower tiller density therefore more open swards
	Larger seed size therefore higher seeding rate
	More upright growth habit (generally, with larger leaf size)

ing diploids (i.e. high ground cover score) that are highly digestible. No more than 40% tetraploid varieties should generally be used 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 (early spring/late autumn) or during periods of wet weather.

When choosing a mix, the heading date of the varieties needs to be considered. It is best 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 (i.e. time when there

is a lot of stem and seed head present in the grass which will reduce the nutritive value of the grass). All varieties will head, however some have a greater tendency to head and continue to re-head, which is not desirable in a grazing sward.

#### Varieties for silage

Varieties with a heading date between 21 May and 1 June (intermediate) should be included in the seed mixes for intensive silage swards. Tetraploid varieties should make up about one third of silage mixes with the remaining two thirds made up of diploids. For swards cut once a year and then grazed, the amount

of varieties used that head between 21 May and 1 June can be reduced, and a greater proportion of varieties that head from 2 June onwards (late) can be used. Low yielding diploid varieties that head from 2 June onwards 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.

## 👉 Nitrogen application throughout the year

Recommended rates of fertilizer N for grassland during the year where approximately half of the farm is cut for first-cut silage and the amount of second cut is kept to a minimum (0 – 30% of the grassland area). Rates of fertilizer N are presented in kg per ha (units per acre in brackets)

Stocking rate (kg/ha organic N)	Jan/Feb	March	April	May	June	July	August	September	Total (kg/ha)	(u/ac.)
155 – 170	0	28 (23)	43 (35)	34 (28)	34 (28)		25 (20)		164	(133)
170 – 180	28 (23)	28 (23)	43 (35)	34 (28)	34 (28)		25 (20)		192	(156)
180 – 190	28 (23)	37 (30)	49 (40)	34 (28)	34 (28)		34 (28)		216	(175)
190 – 200	28 (23)	49 (40)	49 (40)	34 (28)	34 (28)	34 (28)		25 (20)	253	(205)
200 – 210	28 (23)	49 (40)	49 (40)	51 (41)	34 (28)	34 (28)		34 (28)	279	(226)
211 – 250	28 (23)	43 (35)	49 (40)	34 (28)	34 (28)	34 (28)		25 (20)	247	(200)

The recommendations in this table are for farms on soils of average natural fertility. At stocking rates less than 200 kg organic N/ha substantially more fertilizer N than is recommended in this table can be applied on poorer soils. Less than recommended fertilizer N is needed on soils with above average natural fertility or where there is plenty of clover in the sward. At very high stocking rates of greater than 200 kg organic N/ha slightly more fertilizer N (for example 8 kg/ha) than is presented in this Table can be applied in southern counties and this should be applied in spring as part of the first or later applications

Fertilizer N for different stocking rates on the area available for grazing during the year. Rates of fertilizer N are presented in kg per ha (units per acre in brackets)

Stocking rate (LU/ha)	Fertilizer N kg/ha (u/ac.)		Stocking rate (LU/ha)	Fertilizer N kg/ha (u/ac.)		Stocking rate (LU/ha)	Fertilizer N kg/ha (u/ac.)				
	Jan/Feb	March		May & June	April		May	July & August	June	July	August
<1.2	0	28 (23)	<3.50	28 (23)	17 (14)	<2.00	17 (14)			17 (14)	
1.2 – 1.4	28 (23)	28 (23)	3.50 – 3.75	28 (23)	26 (21)	2.0 – 2.5	26 (21)			25 (20)	
1.4 – 1.6	28 (23)	38 (30)	3.75 – 4.00	38 (30)	34 (28)	2.5 – 3.0	34 (28)			34 (28)	
1.6 – 1.8	28 (23)	49 (40)	4.00 – 4.25	49 (40)	42 (35)	3.0 – 3.5	34 (28)	26 (21)		25 (20)	
>1.8	28 (23)	49 (40)	>4.25	49 (40)	51 (41)	>3.5	34 (28)	34 (28)		34 (28)	

# Top tips to successfully grazing bulls



The lure of an increase in liveweight gain, improved feed efficiency and a higher killout percentage has resulted in a growing number of farmers now grazing bulls as opposed to steers. While bull beef does have the potential to significantly boost margins, grazing bulls is a highly specialised system. In this article we outline some top tips for farmers planning to graze yearling bulls.

## Can you graze bulls at grass?

The first question you should ask yourself is – are you in a position to graze bulls at grass? Putting bulls out to grass is simply not an option on many farms due the fragmented nature of the grazing block. You cannot allow bulls to graze in fields next to cows and calves or heifers – no matter how good you think the fences are. Even if they don't manage to get through the fence they will still become unsettled when fe-

**Everything you do with bulls, from letting them out to grass to bringing them in for dosing must be carried out in such a way that stress levels are minimised.**

male stock are in an adjacent field. Therefore it is extremely difficult to graze bulls in boundary fields as you will have not control over the type of stock grazing alongside. Also bulls don't do stress. Therefore if you are in a position where you have to move stock during the summer to different grazing blocks using a trailer then bulls are not an option for you. Even where your grazing block is suited to grazing bulls you need to take into consideration other animals on the farm. You will need to plan your grazing rotation extremely carefully where you have cows and calves or heifers on the same farm.

## Stress must be minimised

Just about all of the management tips in this article will be focused on reducing stress. Bulls are fragile animals. They have a much lighter bone structure than steers, yet are much heavier and stronger.

Therefore dislocated shoulders and possibly broken bones are a real problem on farms where bulls are not managed correctly. Even where management is of a very high standard there is still a risk of bulls getting injured. The key to reducing the risk is keeping the stress levels down and preventing bulls from getting excited. Everything you do with bulls, from letting them out to grass to bringing them in for dosing, must be carried out in such a way that stress levels are minimised. You cannot handle a bull in the same way as you do a steer.

## Fields must have mains fencing

There is no exception to this rule. When bulls get strong they will use your five strands of barbed wire as a scratching pole. Mains electric fencing is a must-have when grazing bulls. If bulls get into a habit of breaking through fences early in the grazing season it will become



very hard to get them settled. You need to get your fencing right from the start.

### **Group size must be kept small**

The number of bulls in a group should not exceed 25-30. The smaller you can keep the groups the better. Smaller groups tend to be more settled and you are less likely to get bulls fighting. You should also try and keep the age and weight range of bulls within the group as tight as possible. This will help avoid bullying and aggressive behaviour. Where there is a significant variation in age/weight the lighter bulls tend to get picked on, especially during periods when the group become unsettled.

### **Never let bulls go hungry**

The best way to keep a bull settled is to keep his belly full. Therefore it is essential that you never let bulls go hungry. To achieve your target of 1.4-1.6kg of liveweight gain per day you need to keep a supply of good quality grass underfoot at all times. If you let bulls get hungry they will become unsettled and



**Smaller groups tend to be more settled and you are less likely to get bulls fighting**

start to get aggressive. While you can force steers, cows or heifers to graze fields out completely (sward height 4-5cm), you cannot do this with bulls. Therefore during the summer you will have to top the paddocks that are being grazed by the bulls. Using dry cows to graze paddocks down is difficult as they cannot be allowed to graze adjacent to the bulls.

### **Never allow bulls to mix**

You must take whatever action is necessary to ensure that bulls are not allowed to mix. Never let groups of bulls graze in paddocks next to each other. Even two or three strands of mains electric fencing will not keep them apart. Where you have more than one group of bulls on the same grazing block always keep at least one paddock between them. If bulls do mix it is simply a case of damage limitation. Even bulls that were originally in the same group will get aggressive towards one another. The only advice is to try and pick out the bulls that are doing the most fighting and remove them from the group. Don't bring the entire group into the yard as this will only increase the chance of injury. At least when out in the field they have nothing to hit up against. Also, whatever about the bulls, take precautions with your own safety.

### **Handle with care**

At various stages during the grazing season you will have to bring bulls into the yard, either for dosing

or TB testing. This is one of the high-risk periods in terms of bulls getting injured. To avoid injury you must insure that you have good handling facilities that will allow you to keep control over stock at all times. Gates bursting open or animals jumping out of crushes is a recipe for disaster. The secret to avoiding injury is minimising the length of time that bulls are stressed. Therefore you need to get them back out to grass as soon as possible.

Before gathering bulls make sure you have everything you require to treat the animals. Don't bring them into the yard and then go off and get your worm dose. When they come into the yard your aim is to get them back out as quickly as possible. In the event of TB testing don't be tempted to bring them in the night before. Bring them into the yard just before the vet arrives, test them first, and then get them back out immediately.

It is important to realise that a bull similar in size to a steer could weight up to 100kg more. This is important when it comes to setting the dosing gun, pour on rate etc.

Make sure that you judge the weight accurately when treating animals.

#### **Treatment of sick animals**

The treatment of sick animals is a problem when grazing bulls. The reason is that when a bull is removed from the group it can be difficult to re-introduce him. Where possible you should bring the entire group into the yard, treat the sick animal and then let the entire group back out to grass. There will be situations where you will have no choice but to remove a sick animal from the group. In this situation it will be difficult to re-introduce him. It is often the case that this bull will have to be grazed separately for the remainder of the grazing season. Some farmers do try and re-introduce them. If you are going to do this, reintroduce him back into the group at the same time as you are moving them into fresh grass.

#### **House early**

Even where weather conditions remain fair you should still house forward bulls early in the autumn. Generally the power has gone out

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of the grass by mid September and in order to keep performance levels high, bulls aged 16 months plus should be housed. Younger bulls that are not going to be slaughtered until after Christmas can be held out until early October. The fact that bulls are housed early tends to suit farmers who are operating a weanling to bull beef system. Housing the bulls early allows a grass bank to build up. This can then be used to graze the light bull weanlings into November. On some dry farms weanlings are held out on grass until the forward bulls are slaughtered out of the shed.

#### **Always treat with respect**

You must always treat bulls with respect. I would certainly not advise elderly farmers who have traditionally grazed steers at grass to switch over to bulls. While bulls can often appear sluggish and docile they can turn aggressive extremely quickly. It is often the quietest bulls that are most dangerous. Never go into herd bulls without a stick in your hand. Never let children go near fields where bulls are grazing.

# Understanding how ryegrass grows



The vast majority of farmers have a good understanding of how the engine in their tractor operates. They are aware of the importance of regular servicing and maintaining oil levels in ensuring they get maximum performance from their machine. Unfortunately, farmers do not have the same understanding of how rye grass actually grows. As a consequence they are not as familiar with the key management practices required to ensure they get maximum performance from their grass sward. In this article we outline in simple terms how the engine in the rye grass plant operates.

## Similar to shamrock

You should think of rye grass as being a bit like the shamrock. Both plants can only support the growth of three leaves at any one time. When a fourth leaf starts to emerge out of the top of the plant the leaf at the bottom starts to die away. The

rate at which the plant produces a new leaf will obviously depend on the time of year and growth rates. For example, in early spring a new leaf is produced every 30-40 days and therefore you need a long grazing rotation. However, during peak growing periods in May and June, a new leaf is produced every 7-8 days, requiring a grazing rotation in the region of days. The variation in the rate at which the plant produces a new leaf is the reason why you need to carry out a grass budget on a weekly basis. The aim of the grass budget is to simply match your rotation length to the time taken for the plant to grow three leaves.

## Grass budgeting

The inability of the rye grass plant to support the growth of more than three leaves at any one time is the reason why you need to monitor growth rates and control pre-grazing covers throughout the grazing season. Figure 1 shows the

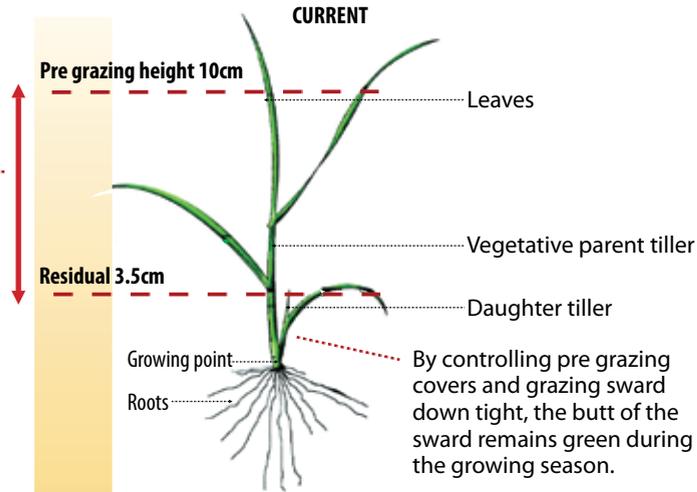
stage at which rye grass should be grazed. If the plant is allowed to continue to grow past this stage (above 10-12cm), then a fourth leaf will appear out of the top. However, the bottom leaf will start to die away. It is these dead leaves that prevent swards from being grazed down tight (sward height of 3.5-4cm). As a result a butt of white dead grass accumulates at the bottom of the sward. This not only delays re-growth rates but also grass quality.

## White butt slows re-growth.

To understand the importance of grazing management it is essential that we understand the re-growth cycle of the rye grass plant. Firstly it is important to realise that rye grass is designed to survive continuous grazing. When the plant is grazed out the first thing it has to do is get enough energy to grow the first leaf. This happens quickly where the butt of the grazed out sward is still green and free from

**Figure 1:  
Pre and  
post grazing height**

For optimal utilisation you should move in and graze swards out at 10-12cm down to a height of 3.5-4cm. This will ensure that the butt of the sward remains green and daughter tillers are established.



dead leaves. The green leaf quickly traps the energy from the sun and along with energy reserves stored in the crown of the plant re-growth kicks in quickly. However, where butt of dead white grass has been allowed to accumulate and the bottom of the sward the plant has to rely solely on reserves of energy stored in the crown to produce the first green leaf. The establishment of this green leaf can delay sward re-growth rates by 10-14 days. This is shown in figure two. The letter B denotes the stage at which re-growth commences when the butt of the sward is green and free

from dead white grass. As you can see growth rates kick in right away. However, point A is the starting point for a sward that has not been grazed out properly and the butt of the sward is white. The lag phase between A and B reflects the time taken for the energy reserves in the crown to grow the first green leaf. This is the reason why silage swards that contain no green leaves after harvest are so slow to green up. They are relying solely on energy reserves in the crown to grow the first green leaf.

When the first green leaf has been established (point B fig 2) the

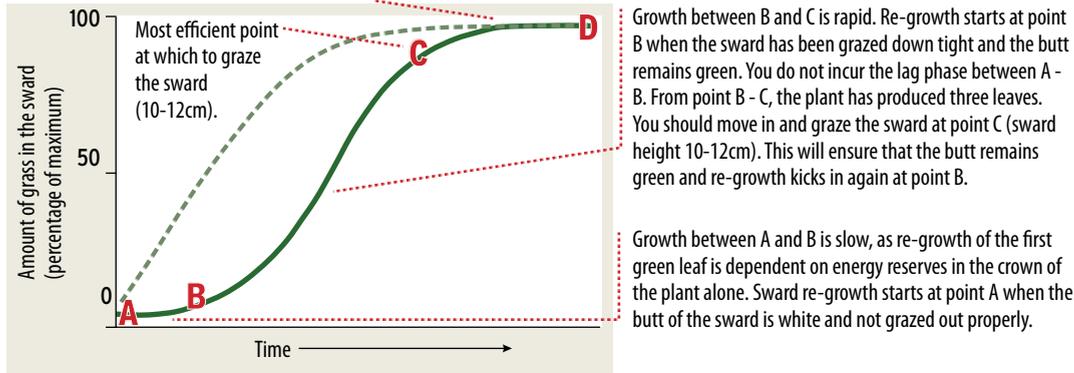
plant quickly draws energy from the sun and then starts to grow the second leaf. When the second leaf is established growth is rapid as you have two leaves drawing in energy. The third leaf quickly appears and surplus energy is transferred back to the crown of the plant and stored for when the sward is grazed out.

### Keeping growth in top gear

Figure two also shows the importance of grazing paddocks out after the third leaf has formed. From point C onwards the increase in the amount of grass in the paddock remains steady as the rate of growth is offset by the level of decay at the butt of the sward – remember the rye grass plant can only support three leaves. The secret to keeping growth in top gear throughout the year is to keep the grass your paddocks between points B and C.

Point B denotes the stage at which re-growth kicks in when a paddock is grazed down to 3.5-4cm and the butt of the sward still green. At point C, a sward height of 10-12cm, you move in a graze the sward back down to 3.5-4cm and the cycle starts

**Figure 2:**  
**The re-growth cycle**  
**for ryegrass sward**



over again. By doing this you avoid the lag phase between point A and B and the lag phase between C and D. By not letting paddocks get to strong and slip into between points C and D you will also ensure that the butt of the sward remains green when the paddock is grazed out. If you start letting paddocks move above point C before grazing a butt of dead white grass will quickly form at the bottom of the sward. This in turn will see re-growth starting at point A, with the plant depending solely on the energy reserves in the crown to get growth going again.

### **Do not tighten up the rotation**

The growth cycle of the rye grass plant highlights the importance of not being tempted to tighten up the rotation when grass supplies are tight. If you move in and graze paddocks when only two leaves are established the plant will not have had sufficient time to replenish energy reserves in the crown. This will significantly reduce subsequent re-growth rates and therefore tighten grass supplies further.

### **White butt prevents tillering.**

Rye grass is unique in the fact that

it can reproduce in two ways. Like weed grasses it can re-produce by going to seed. However, unlike your weed grasses, rye can also reproduce by tillering.

Figure 1 shows the daughter tiller sprouting at the bottom of the sward. However, the daughter tiller will only appear where light is allowed to penetrate the butt. This is one of the reasons why you need to continuously graze swards down tight to at least 3.5-4cm. Not controlling pre-grazing covers and allowing a white butt of dead and unpalatable grass to accumulate at the bottom of the sward makes it almost impossible to graze swards out and let light penetrate the bottom. It is especially important to ensure swards are grazed down tight in the spring when daughter tillers are at their peak.

As each tiller only lasts 3-6 months you need to ensure that new tillers are continuously being produced. This is the reason why grass growth rates and quality decline in the second half of the grazing season in swards that were not grazed down tight in the spring.

### Seed head reduces growth rate

Producing the seed head takes a lot of energy out of the plant. Energy that would have otherwise been used for leaf growth. Therefore if you allow rye grass to go to seed you are effectively reducing annual growth rates by up to 50%. Again grazing swards down tight in the spring and early summer will ensure the seed head is continuously being grazed in the early stages of development. When the seed head is eaten this will encourage the crown of the plant to produce more tillers and therefore increase sward density. A knock-on benefit of this will be that you will also be grazing out the seed head of the weed grasses. As their only means of reproduction is by going to seed many of the weed grasses will naturally die out of swards that are grazed tight during the spring.

### More grass less fertilizer

Growing more grass does not mean spreading more fertilizer. By understanding how the rye grass plant works beef and sheep farmers have the opportunity to increase annual

### KEY POINTS

- ▶ The rye grass plant can only support three leaves. When the fourth leaves starts emerge the primary leaf at the butt of the sward starts to die away
- ▶ It is these dead leaves that cause the butt of the sward to turn white.
- ▶ This white butt delays re-growth rates as there is not green material in the sward to pull energy out of the sun and give growth a kick start. The plant has to rely on energy reserves stored in the crown alone.
- ▶ Where swards are grazed down tight during the summer and pre-grazing covers are restricted to 10-

12cm then the butt of the sward will remain green when grazed out. This will speed up re-growth rates and increase annual production.

▶ By grazing swards down tight during the spring you will quickly remove the seed head from the plant. This will encourage the crown of the plant to produce more tillers and therefore improve sward quality and density.

▶ By control pre-grazing heights and ensuring paddocks are grazed down tight throughout the spring there is the potential to increase annual growth by up to 100% without the need for additional fertiliser.

pasture growth by at least 50-60%. While most farms spreading 200kg of N per ha are growing 8-10t/DM/ha per year there is the potential to increase this up to 16-18t/DM/ha without spreading any additional fertilizer. This is effectively increasing output on some farms by 100%. It all comes back to understanding the re-growth cycle of the rye grass plant and ensuring the plant does not go to seed. How you ensure this happens is by keeping your sward between points B and C (figure 2) during the first half of the grazing season – grazing down to 3.5-4cm

and not allowing pre-grazing covers to exceed 10-12cm.

### More grass more gain

By controlling pre and post grazing covers you will also significantly improve grass quality and ultimately animal performance. When that first leaf emerges from the plant it is equivalent in feed value to the best concentrate ration on the market. However, if you let your pre-grazing covers exceed 10-12cm and allow that leaf to decay its feed value at point of grazing has been reduce to little more than straw.

# Getting clover to work on the farm



On beef farms the role of clover is not used enough even though grazing stocking rates are low. There are two ways of ensuring clover is in the sward either over sow after a silage cut or incorporate a high level of clover in the grass mix at reseeding.

The clover content of the sward is at its highest during the autumn and this contributes to maintaining high sward quality under long rotations. Recent research has shown that grass clover swards on a 42 day rotation have similar nutritive value as grass only swards on a 28 day rotation during the autumn. Rotation length can be extended to around 45 days with little effect on sward quality. A key aspect of managing clover in swards is to graze paddocks out well (4cm) when grazing for the final time before closing. The loss of stolons over the winter and the fact that the clover does not start to grow until April makes

**Table 1. Ways of getting clover working on the farm**

Establishment	Management
Use medium leafed varieties in a grazing situation – Chietain, Crusader, Avoca, Aberherald	Graze clover paddocks at 1400-1600kg DM/ha (-9cm)
2kg clover/ha should establish a sward with 20-25% at peak clover content	Graze out tight (4cm) – allow light to the stolons
Don't sow clover too deep – see will not germinate	Apply Nitrogen in spring, then allow clover to fix nitrogen
Use clover safe sprays, spray when established grass is at two leaf stage	When closing graze clover paddocks last in autumn
Sow clover when soil temperature is high >8 degrees	

clover very vulnerable to competition from the grass swards in early spring. The excessive loss of clover stolons over the winter could result in the elimination of clover from the sward. One disadvantage associated with very heavy covers during the autumn and winter is the risk of not getting the paddocks grazed

**Table 2. Rotation lengths for clover based swards during the grazing season**

Rotation	Length (Days)
Rotations ending mid August	30
Rotations ending mid September	40
Rotations ending mid October	50
Rotation ending in early December	Up to 50
First rotation in spring (1 Feb – April 15)	Up to 70
Mid April to mid May	18 - 24
Mid May to mid July	18 - 24

out correctly – especially if there are wet conditions during the autumn. It is extremely important to graze paddocks out correctly without poaching damage so that light can reach the base of the dormant clover plant which promotes stolon survival over the winter.

## EIGHT STEPS

Eight steps for successful over-sowing of clover into permanent grassland

**1** Soil fertility: Need soil pH between 6.0 and 6.5, and adequate soil P and K levels (target index 3).

**2** Open swards: For over-sowing to work the clover seed has to come in contact with the soil. Therefore over-sowing will work only where there is a reasonably open sward. For old dense swards and swards heavily infested with broad-leaved weeds reseeding is a better option.

**3** Get rid of docks and other broad-leaved weeds: Spray with a suitable herbicide before over-sowing if docks or other broad-leaved weeds are a problem (Dockstar is recommended). Once the clover is established the range of herbicides that can be used is

greatly restricted.

**4** Sowing date: The best time to over-sow is during May and June before the ground gets too dry. Moist soil conditions during and after over-sowing are crucial to success.

On heavy wetter soils the ideal time is after harvest of first cut silage in late May or early June.

On light drier soils it is better to over-sow earlier in May – after grazing or a harvest of bales.

Hard grazing before and afterwards is important to ensure success. One method that works well is where a leader-follower system is in operation. The sward is partly grazed by the leaders and the clover seed is broadcast and walked in by followers allowed in to graze out the

remainder of the sward. Over-sowing during late summer and autumn is rarely successful and is not recommended.

**5** Sowing rate: Apply clover seed with 0:7:30 or similar fertilizer at a rate of around half a bag per acre. Apply 2 kg seed per acre of a mixture of two clover varieties; Crusader and Cheiftain are recommended although there are a number of other good varieties on the recommended list. Pelleted or unpelleted seed can be used with equal success.

**6** Broadcasting the mixture: Seed can be broadcast with fertilizer using a fertilizer spreader or using a slug pellet applicator. Mix the clover seed with the fertilizer in the field. This will avoid the fertilizer and seed sorting out while on

route to the field. While pouring in the fertilizer, simultaneously mix in the seed to ensure an even mixture of fertilizer and seed. Up to 12 acres can be done at one time.

**7** Post sowing management: Apply slurry after over-sowing but apply no nitrogen fertilizer for the remainder of the year. Nitrogen fertilizer will drive on the grass to the detriment of the clover seedlings. Hard grazing is important. Do not allow covers to get too high (>800 to 1000 kg DM/ha) and graze out to low residuals <4 cm. As the clover seedlings get established they will start to supply nitrogen to the sward.

**8** Over-winter management: Graze tightly before closing up for the winter and do not leave a heavy cover build up over the winter. Graze tightly again in spring to allow light to penetrate down to the clover stolons. More stolon growth in spring greatly increases the clover content and productivity of swards later in the growing season.

