

Reseeding Options to Improve Pasture Productivity

Philip Creighton

Animal & Grassland Research and Innovation Centre

Teagasc, Mellows Campus, Athenry, Co. Galway.

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

- Provide more grass in the shoulder periods of early spring and late autumn.
- Are 25% more responsive to nitrogen compared to old permanent pasture.
- Have faster re-growth.
- Support higher stocking rates.

Increased Productivity

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. Figure 1 shows the spring and autumn DM production of two pastures, an old permanent pasture and a new reseed. It is clear that the reseeded pasture with its high perennial ryegrass content produces more grass in spring and autumn compared to the old permanent pasture (30% perennial ryegrass) which will not support early or late grazing systems as insufficient grass is being produced.

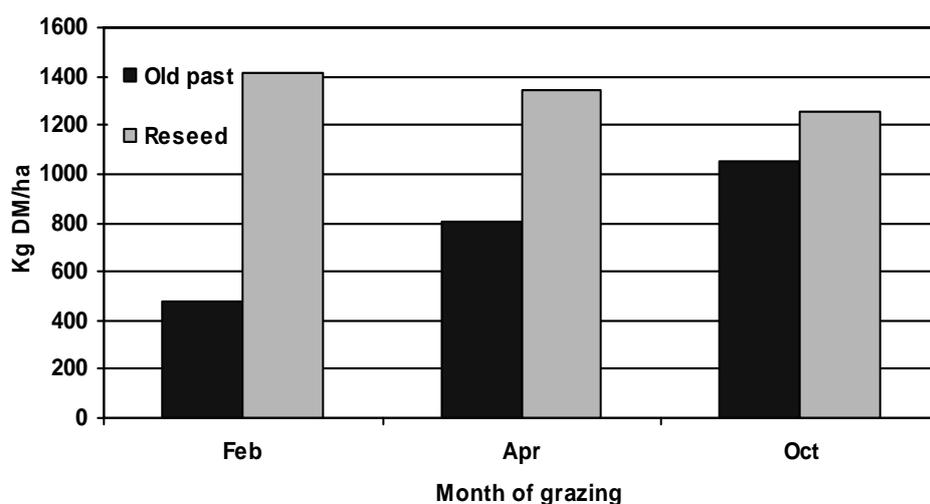


Figure 1. Effect of pasture perennial ryegrass content on DM yield.



Reseeding should be considered when the amount of open ground and broadleaved weeds present becomes excessive.

Methods of Reseeding

There are essentially two methods of preparing the seedbed. The most common method is ploughing. However, on many farms this is not possible because the ground is too stony, soil is too shallow and topography too steep or there is no tradition of ploughing. Minimal cultivation techniques enable successful reseeding to be carried out without ploughing. Regardless of reseeding method, the old sward should be burned off using Glyphosate (Roundup) 10-14 days prior to cultivation to allow enough time for the active ingredient of the spray to be carried throughout the plant to ensure adequate kill. After sowing, the seedbed should be rolled to “press-in” the seeds and ensure good seed-soil contact. Loose seed beds allow moisture to evaporate and cause drying out of seeds thus inhibiting germination.



A firm, level seed bed is required for small grass and clover seeds

Conventional Reseeding

Ploughing, although the most expensive option, is probably the most reliable method. The advantages of ploughing are that pests, thrash and native competitor grasses 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 the most fertile soil. After ploughing the objective is to develop a fine, firm and level seedbed. If the tilt is not fine enough, grass seed (especially clover seed) will be lost too deep into the soil and will not be able to germinate.

Minimal Cultivation

Minimal cultivation techniques allow perennial ryegrass to be introduced into swards without ploughing, 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 trash (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.

Results from Teagasc Studies

A study at the Animal & Grassland Research and Innovation Centre, Moorepark, compared a number of reseeding methods as follows:

- i) Plough + level + one pass cultivation (PLO),
- ii) One pass cultivation (OP),
- iii) Direct drill (DD),
- iv) Discing + one pass cultivation (DOP)

These methods were compared to a control (C), old permanent pasture which was not reseeded. All swards (excluding the control) were sprayed with Glyphosate (Roundup) ten days prior to reseeding on May 7th and the initial grazing took place on July 2nd. Dry Matter yield was measured across the year pre spraying off and after cultivation to document the cumulative DM production for the year.

Table 1. Effect of reseeding method on DM yield in year of establishment

Treatment	C	PLO	OP	DD	DOP
DM yield (t DM ha)	9.8	9.5	10.9	10.7	9.8

The results in Table 1 clearly show that although the reseeded areas were out of production for over two months their annual dry matter production was similar, if not greater than, the control area

which was accessible for the entire year. The DM production of the swards with the imposed treatments was also quantified in their second year. The ploughing treatment produced 27% more grass DM than the control, followed by one-pass (+26 %), Direct drill (+20%) and Disc (+13 %). Little difference was found between reseeding methods. Choice of cultivation method comes down to soil type, degree of stoniness and proximity to machines. The majority of the difference in DM yield between the reseeded swards and the old permanent pasture was accounted for in the spring, a critical period for grass supply.



Reseeded pastures will not perform to their potential if soil fertility is not corrected. New seedlings are particularly susceptible to a lack of lime and phosphorus.

Timing of Reseeding

Most reseeding takes place in the autumn on sheep farms. This makes 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 2 outlines the effect of autumn sowing date on seedling and tiller population and grass availability (kg DM/ha) in spring. If clover is to be included as part of the seed mix it should be noted that the threshold soil temperature required for clover growth is much higher (8°C) than for grass (6°C). With this in mind if planning to reseed, it should be completed as early as possible (July/early August).

Table 2. Effect of Sowing Date

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.

Soil fertility

Poor soil fertility is one of the main reasons for the disappearance of ryegrass from pastures. Reseeded pastures will not perform to their potential if soil fertility is not corrected. New seedlings are particularly susceptible to a lack of lime and phosphorus. The exact quantities of lime and fertilisers required can be determined 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.

Weed control

The best time to control weeds is after reseeding. By using a post emergence spray seedling weeds can be destroyed before they develop and establish root stocks. Established weeds can seriously reduce the yield potential and economic lifetime of the reseeded sward. The post emergence spray should be applied approximately six weeks after establishment just before the first grazing takes place. Again, the later reseeding takes place, the opportunity to apply a post-emergence spray is reduced as ground conditions are often unsuitable for machinery to travel on.

Summary

Reseeded pastures provide more grass in the shoulder periods (early spring and late autumn), are up to 25% more responsive to nitrogen compared to old permanent pasture, and are capable of supporting higher stocking rates. Reseeding should be undertaken as early in the autumn as possible using a method of seedbed preparation best suited to your farm. Prepare a fine, firm seedbed applying fertiliser and lime according to soil test results and apply a post emergence spray 6-8 weeks after sowing for weed control..

References

Culleton N, Murphy W.E. and McGilloway, D. (1992) A note on the effects of date of autumn sowing on establishment of *Lolium perenne* L. *Irish Journal of Agricultural and Food Research*, **31**,185-187