

# Grassland Management on Organic Farms



AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY



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## Background

For many Irish farms the simplest and most financially rewarding system of production will be based on maximizing the use of grazed grass. With good grassland management it is possible to have a long grazing season of high quality feed at low cost. On an organic farm, clover is the driver of grassland production.

Clover has made very little contribution to the value of pasture on most Irish farms in recent decades. There are many reasons for this including the relatively good value of fertiliser nitrogen, the ease of establishing and maintaining nitrogen-based pastures relative to clover based ones, and the higher stocking rate potential from grass/N systems.

However, farming circumstances are changing rapidly and clover-based pastures can now maintain stocking rates suitable for 80% of Irish farms. With this in mind farmers are now looking at organic farming with renewed interest. On farms where the stocking rates are in the range 1.2 to 1.7 Lu/Ha and there is little or no clover present, making the switch to organics will require clover to be incorporated into the grassland prior to conversion because it takes time to get clover up and running.

The purpose of this booklet is to give you the basic knowledge required to manage grass/clover swards in an organic system of farming. Increasing the clover content of your pastures and managing grass/clover swards through out the year are dealt with in detail. However in practise the best way to get a handle on managing grass/clover swards is to join a discussion group and use the local Teagasc advisory service to help you gain the required skills.



## Potential

Herbage production from good quality grass / white clover swards is approximately 80 – 85% of grass swards receiving the maximum chemical nitrogen allowances in a conventional system.

A well managed perennial ryegrass / white clover sward is capable of sustaining stocking rates of 1.3 to 1.7 livestock units/ha. If you are farming at lower stocking rates clover will not be as important, however it will still make a valuable contribution to silage yields.

The nutritive value of white clover in terms of intake, digestibility, metabolisable energy and feed conversion is higher than any other herbage species. Because of this, individual animal performance in terms of milk, beef and lamb on grass/clover diets has often been found to be higher than on grass/fertiliser N diets. Clover also has a higher mineral and trace element content than grass.

## Proportion Of Grass To Clover

In a very good grass / clover sward the percentage of clover ground cover varies from 5% in spring up to 70% in late summer. It is important to keep the balance right because too much clover will reduce the herbage yield of pastures while too little may not make a significant contribution to the sward. Strategic management will help to maintain optimum levels of clover in a sward. Target clover contents are shown in table 1.

**Table 1. TARGET CLOVER CONTENT**

	% Ground Cover	% Clover in Dry Matter
Spring	5	-
Early Summer	20	10
Mid Summer	40	20
Late Summer	70	35

## White Clover Varieties

Traditionally, we have used only one variety of clover in a mixture. Yet in the case of grasses, it is generally accepted that mixtures give more stability and consistency of yield over the years. If the logic is correct for grasses, why not apply it also to clovers? This thinking has led to a re-appraisal of clover use, and many modern mixtures use a blend of clovers. Some combination of large, medium and small leaved clovers can lead to more successful establishment of clovers and can also allow for more management flexibility.

**Table 2: RECOMMENDED WHITE CLOVER VARIETIES** (Ireland, 2008)

Variety	Classification (leaflet size)	Total yield*	Avg. Clover Content July-Sept	Year first listed
Aran	Large	101	69	1983
Alice	Large	103	56	1995
Chieftain	Medium	102	*	2005
Avoca	Medium	100	49	1995
AberHerald	Medium	96	55	2003

\*Insufficient data

Control varieties; Alice, Aran, Avoca, and Aberherald.

**Total yield\*** (based on the combined yield of both clover and grass) is expressed as a percentage of the mean yield of the control varieties (10.3 t DM/ha).

## Seeding Rate

Generally seeding rates should be 20 to 22 kg Perennial Ryegrass seed and 5 kg clover seed per ha. Farmers must source organically certified seed, where such seed is unavailable specific derogations for the use of untreated non organic seed may be sought from the Organic Certification body.

## Companion Grasses

Late heading diploid varieties of perennial ryegrass make the best companion grasses. This is due to the fact that they produce dense swards, which compensate for the tendency for clover to make swards more open.

However the mix best suited for your farm should be discussed with your Teagasc adviser.

### **Timing Of Sowing**

Clover should be sown in spring or before mid August. Later, autumn sowing (September) usually results in poor clover establishment.

### **Methods Of Establishing Clover**

There are many different methods for establishing good grass clover pastures. Regardless of the methods used, clover seed must be sown not deeper than one cm and there must be good seed / soil contact.

### **Conventional Method**

Grass / clover swards can be successfully sown after ploughing and tilling directly or under-sown with barley or arable silage. If under-sowing, it is important to do so on the same day as the cover crop. Be careful to ensure that the clover seed is not buried too deeply. It is important to roll well after tilling to give a firm, fine seed bed. This should be followed by a very light harrowing before sowing and good rolling after sowing.

Some very successful grass / clover pastures have been established by sowing the grass seed and clover seed separately. The clover is spread on to the lightly harrowed firm seedbed and well rolled. This system reduces the risk of clover seed being buried too deeply, and is an excellent method of successfully establishing clover.

The disadvantage of ploughing pastures for direct reseeding is that the top, most fertile, soil is buried and sometimes there is a need for a lot of stone picking. As a result, ploughing as a method of direct reseeding pastures is being partly superseded by minimum cultivation systems, except in situations where ground levelling or breaking up shallow compaction layers is required.

### **Minimum Cultivation Methods**

Minimum cultivation is suitable for all types of reseeding but is particularly useful for grass / clover. It minimises the risk of clover seed being buried too deeply, if properly carried out.



### **Sowing Into Existing Pastures**

This system of adding clover to a sward should only be used where you are happy with the performance of the existing grass species already present in the sward. This system is most successful after a heavy cut of second silage when the regrowth from the existing grasses is very slow to recover. Again the stubble should be as bare as possible to ensure seed-soil contact. We recommend to use 5 kgs clover seed per ha which can be stitched into the bare stubble. It is vitally important to keep the existing grasses as bare as possible until the clover is well emerged and able to compete with the grasses.

Where silage is not being taken from the pasture to be reseeded clover can also be successfully stitched in, provided it is grazed very bare and kept bare until the clover is able to compete.

There is no point in stitching clover into old pastures unless it contains a reasonably high level of ryegrass because most of the feed from a grass / clover pasture comes from the grass which the clover helps to grow. The grass species found in old permanent pasture generally are lower yielding varieties.

## Soil Fertility

Very often pastures have poor botanical composition because the fertility of the soil is very poor. There is little point in reseeding these soils until the basic fertility is improved. The soil nutrient status can only be found out from a soil test.

When reseeding is being carried out by ploughing and tilling, it is important to soil test after ploughing. It is important to know the nutrient status of the soil that is in intimate contact with the seed.

Maintain soil pH at between 6.0 and 7.0. Maintain soil phosphorus (phosphate) levels at between 3.1ppm and 8.0ppm (soil index 2 and 3) and soil potassium (potash) levels between 51ppm and 150ppm (soil index 2 and 3)

## Increasing Clover In Existing Pastures

There is evidence that clover content in existing pastures can be greatly increased through grazing management. However for this system of developing good grass / clover pastures to be successful it is essential to start off with a reasonable level of clover evenly distributed around the pasture (10 – 15%) and ryegrass. As a guideline there should be clover adjacent to 80% of steps while walking through the pasture.

Key management practices for increasing clover are: very tight grazing in November / December (with sheep if possible), frequent tight grazing in spring to reduce the risk of shading, and resting for at least 4 weeks (or silage) in mid summer. Taking out a cut of silage also improves clover content. With this type of management and adequate lime and fertility, satisfactory levels of clover could be achieved within a few years.

However, if the clover present in the existing sward is of the old natural indigenous type it will not be as productive as more recently bred clover varieties.

Trials have shown that clover levels in a good grass / clover sward increased each year for 3 years when grazed tightly in November. In similar swards not grazed in autumn, clover levels dropped from 30% to 9% in 3 years.

## Post Sowing Management

In order to encourage clover, developing grass / clover swards should be well grazed off before winter, so that the clover stolons can creep along the ground and spread out. The level of clover in the pasture in the following year depends on the growth of these stolons which in turn are dependent on having bare pastures over winter / early spring.

## Maintenance Of Grass / Clover Pastures

Proper management and sensitivity to the requirements of clover are critical for the long-term maintenance of highly productive grass / clover pastures. This management is somewhat different to that for conventional grassland pastures but is not necessarily more difficult when the requirements of clover are properly understood.

The following are among the critical management practices for the maintenance of good grass / clover pastures.

- Clean off well in autumn / early winter so that light can get down to the clover stolons.
- Frequent tight spring grazing up to late April.
- Lengthen grazing rotation to about 4 weeks in mid summer or ideally take a silage crop.
- Alternative cutting and grazing helps to maintain clover levels.
- Regularly soil test and maintain lime status.
- Slurry can be applied in spring time to overcome slow spring growth.
- As with all pastures, avoid poaching.
- To avoid the risk of bloat hungry animals should not be let into clover rich pastures especially if damp.





## Grassland Measurement Guidelines

Grassland measurement and budgeting are skills that anybody can learn. Managing grass efficiently can:

- Contribute to cost savings.
- Improve animal performance.
- Increase farm profit.

In order to achieve this you need to be able to:

1. Measure the average farm grass cover.
2. Complete a grass budget.
3. Complete a winter feed budget.
4. Follow the guidelines for the season.

## Measuring Grass

This takes the guesswork out of managing grass. The best way to learn this skill is from your local adviser or discussion group. To get started you need some equipment. A grass shears, weighing scales and a quadrant (0.25m<sup>2</sup>)

Cut the grass in the quadrant above 4cm and weigh. Calculate the amount in 1 ha, then calculate the dry matter, this will depend on the conditions of the day.

Do this a number of times to calibrate your "eye". Walk your farm taking note of the covers in each field and calculate the total amount of grass on the farm.

## The Grass Budget

Teagasc have a computer based programme available to clients to take the work out of budgeting. Budgeting grass involves working out:

- How much grass you need each week to feed the stock.
- How much grass is growing each week.
- The effect the above factors have on the farm cover.

By knowing this data you will be able to ration/use the grass for the optimum farm performance.



## Winter Feed Budgeting

When completing a grassland budget it is important to know how much feed will be required for the following winter. This is because if land needs to be cut for silage then it is not available to graze for a time.

The information required is:

- How much stock will be carried for the winter?
- How long will the winter housing period be?
- How much feed will be required?
- How much silage will need to be cut to get this amount?
- How many cuts of silage will you make or will you make silage from surplus grass during the main grazing season?

## Grass Season Guidelines

For the purposes of managing grass we divide the grassland measurement into three distinct periods:

1. Autumn / Winter management.
2. Spring.
3. main grazing season.

Autumn/Winter management (late August to December).

The aim of this period is to finish out the season, by making the maximum use of grass available and also to set up the farm for early spring let out. However we must be careful as carrying high covers of grass over the winter has a detrimental effect on clover the following spring.

1. From August onwards rotation length from 28 days to 35.
2. The last rotation should start in late September with those fields for grazing in early spring.
3. Swards should be grazed down to 4.0 cm to enable light to reach the clover stolons, this encourages budding and growth the following spring.
4. It is essential to avoid poaching at all costs as this has severe detrimental effects on clover.
5. The closing grass wedge should range from 400 to 750kg DM/ha.

## Spring Management

The aim of this period is to get animals out as early as possible to minimise cost of production and maximise animal performance from grass

1. It is essential to avoid poaching at all costs as this has severe detrimental effects on clover production for the remainder of the season.
2. The first rotation should be timed to finish around the end of April.
3. Avoid grazing below 4.5cm as it will slow down re-growth.
4. Get animals out on time as late turnout to a high farm cover can lead to poor utilisation and grass quality later in the season.
5. A good road network is essential to maximise the use of grass at the shoulders of the year.



## Main Grazing Season

The aim of this period is to maximise animal performance from a complete grass/ clover diet. This is achieved by providing a consistent quality supply to the herd/ flock on a daily basis.

- Rotation length should be maintained at 28 to 30 days to allow clover re-growths.
- If grass is in short supply supplements should be fed to stock.
- Farm grass covers should be maintained at 200-240 kgs grass per livestock unit.
- The quality of the pasture should be maintained by topping pastures to 4cm. Topping should take place from mid May rather than later in the season.
- Measure the farm grass cover weekly to identify surpluses/ deficits and take remedial action.

Avoid grazing high covers as this will affect animal performance.



## Further Information

For further information contact your local Teagasc adviser or one of the specialist organic advisers listed below.

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The background of the cover is a photograph of a lush green grassland under a blue sky with a few white clouds. The grass is tall and dense, filling most of the frame. A dark green horizontal band is positioned at the top, containing the title and date.

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