

ORGANIC FARMING

A Guide to White Clover



A full plough and reseed has several advantages:

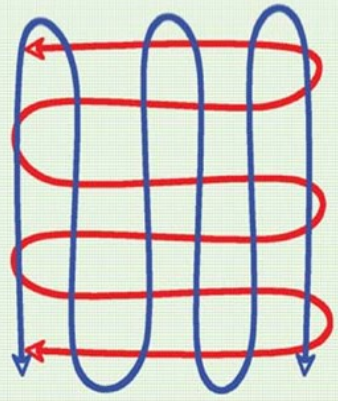
- Pests, weed seeds and diseases at or near the surface are buried, as is the existing sward, reducing competition
- Ploughed soil can be cultivated to provide the ideal seedbed
- Organic manures and lime can be worked into the rooting layer of the soil
- Ploughing should only be to a depth of 15cm

Broadcasting/Surface Seeding/Over-sowing

Broadcasting clover seed into existing pastures offers a cheaper method with a 75% success rate, but management of the sward before and after over-sowing is the key to success.

- Spread after a tight grazing or cut
- Broadcast clover seed using a fertiliser spreader or air seeder, mixing 5kg/ha of clover seed with mixing agent such as Physiolith or Gran-Lime as shown below

As each bag of lime is filled into the spreader, the clover seed is poured in simultaneously and mixed around by hand



Example: 3 hectares
 - First run: 4 bags of granulated lime plus 8kg seed applied
 - Second run: 4 bags plus 8kg seed is applied
 - Second run (red) is at right angles to the first (blue)

Minimum Cultivation

Take a close-cut silage crop off the site prior to reseeding, to slow regrowth of the existing sward. Liming improves success as it neutralises acidic conditions caused by decay of the old sward.

After the silage is removed, the soil can be tilled with power machinery. Ideally the seeds should be broadcast rather than drilled so as not to bury the small clover seed too much.



Air-seeder for sowing grass/clover

- Avoid scratching the soil surface with a harrow or strip slot seeder: These methods can damage the sward and increase weeds
- Putting clover seed into slurry before spreading is not a reliable method of getting even application of seed

White Clover Maintenance

The following principles should be followed to maintain good white clover levels in the sward:

- Graze out well in Autumn to allow light penetrate
- Frequent tight Spring grazing up to ~late April
- 25 day+ grazing interval mid-Summer
- Alternate cutting and grazing to maintain clover levels
- Regular soil test to check lime and nutrient status
- Apply slurry in Spring
- Avoid poaching

More information: www.teagasc.ie/organics

Benefits of White Clover in Organic Farming

White clover is crucial to production and profitability on grass-based organic farms.

For anyone considering organic farming, a grasp of the role and establishment of white clover is essential.

Home-grown Nitrogen

The primary benefit of clover on organic farms is the ability to capture or 'fix' nitrogen from the air and feed it into the soil and surrounding plants.

- Can supply 100-150kgN/ha/year, driving output
- At a cost of €1/kg for artificial fertiliser N this supply can be worth up to €150/ha

High Quality Feed

Clover-rich swards have multiple nutritive benefits including:

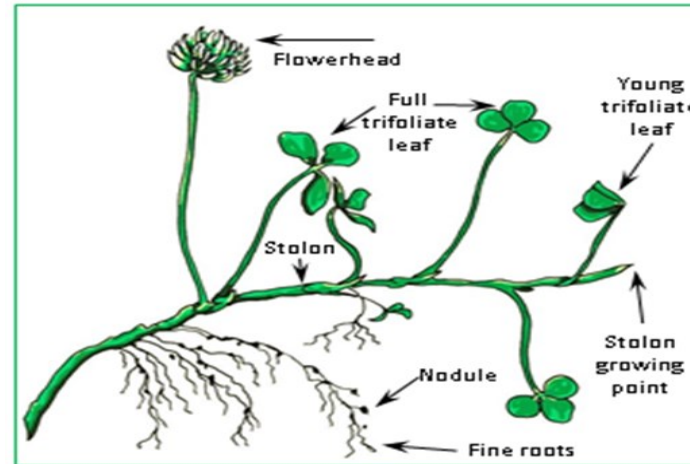
- High protein content, which reduces the need for concentrate feeds
- High mineral content, especially magnesium, which reduces the risk of animal diseases and disorders linked to mineral deficiency
- High palatability and digestibility throughout the grazing season, leading to 20-30% higher intake and increased animal liveweight gains
- Grazing season can be extended by one month

Driving grass production



How White Clover Works

The various parts of white clover are displayed in the diagram



Source: EBLEX BRP Managing Clover for Better Returns Manual

and explained below.

Nitrogen

The roots have nodules which contain *Rhizobia* bacteria. Clover provides food and shelter for the bacteria, which in turn convert atmospheric N to usable nitrate in the soil.

Growth and Reproduction

As seen in the diagram, stolons are above-ground creeping reproductive stems. During the summer, stolons can grow by as much as two metres in length, sending up new leaves and putting down new roots. Clover can also reproduce using seed. The stolon stores reserves of carbohydrates, used to survive the winter.

Recommended Varieties

Each year DAFM produces a list of recommended grass and white clover varieties, see www.agriculture.gov.ie The DARDNI recommended list may also be relevant.

Leaf Size for Intended Use of Ley

- Smaller leaf is lower yielding but more persistent: recommended for sheep farms
- Large leaf: higher yielding, more suitable for silage
- Mixture of small and medium leaf varieties is recommended for sheep and cattle grazing
- Mixture of medium and large leaf varieties is recommended for grazing cattle and also for silage

Establishing White Clover in Pasture

There are a number of sowing options available:

1. Plough and reseed with grass and clover
2. Broadcasting white clover into existing swards
3. Minimum cultivation for reseeding grass/clover

Principles of Clover Establishment

White clover seeds are tiny, with very small energy reserves. For that reason, the following principles must be applied, regardless of sowing option used:

Timing of sowing: April to June, to ensure suitable temperature and moisture for germination.

Depth: Seeds should not be sown deeper than 1cm, so seedlings have sufficient energy to emerge.

Soil: Contact with soil is essential for seed establishment. Soil testing is important, especially after ploughing, as a pH of 6.0-7.0 and phosphorus levels at between 3.1ppm and 8.0ppm, are necessary for successful establishment.

Clover/grass mixture: Choose a late-heading companion grass that will derive benefit from the fixed N, but will not quickly out-compete the clover.

Clover seed: Pelleted clover seed is not permitted. Use organically certified grass and clover seed – may seek derogation from Organic Certification Body for conventional untreated seed.

Good clover cover



Plough and Reseed

This is the most reliable method of establishing clover in very dense pasture. The grass/clover seed mixture can be under-sown into a cereal crop or arable silage crop in the spring, or sown directly in spring or autumn. Typically 25-30kg/ha grass seed is sown along with 5kg/ha of white clover seed mixture.