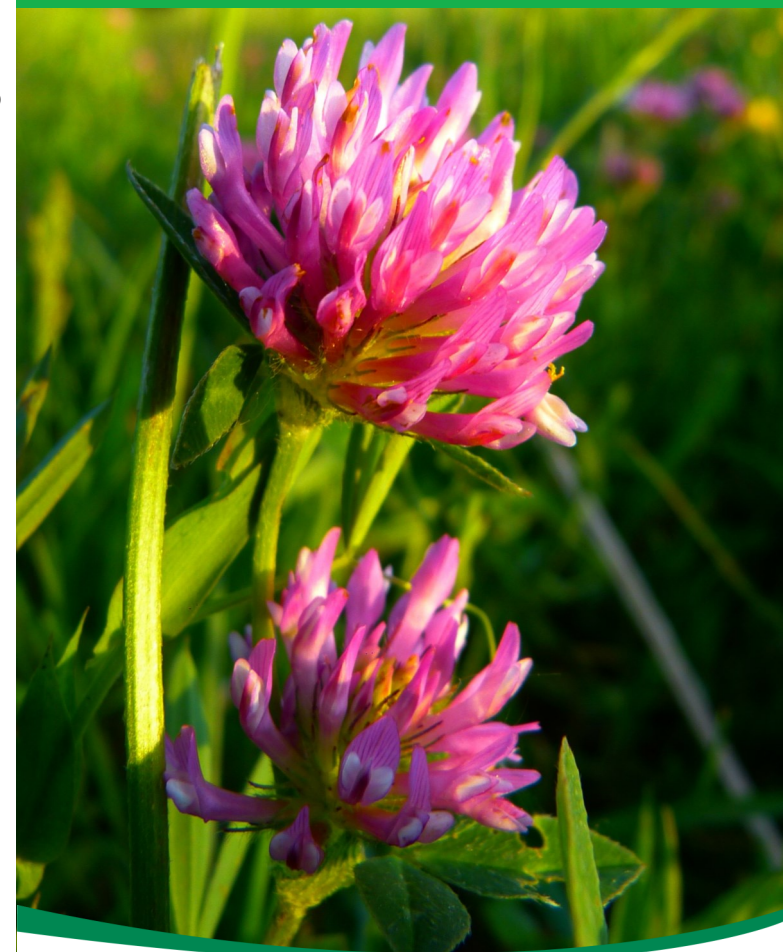


ORGANIC FARMING

A Guide to Red Clover



Principles of Red Clover Establishment

Timing: Red clover can be sown from April to late July.

However, sowing in the spring gives greater forage yields of up to 60% during the establishment year and the first harvest year than later sowing.

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

Seed Bed: A fine, firm seed bed is required to ensure contact with soil, which is essential to seed establishment. The use of a roller prior to and after sowing is recommended.

Soil: Soil testing is important, especially after ploughing, as a pH of 6.0-6.5 and Index 3 for P & K are necessary for successful establishment.

Method: Can be drilled at 0.5-1cm deep or broadcast. Red clover can also be over-sown into existing swards, or undersown in an arable silage crop, or after a cereal grain crop.

Rotation: Red clover should be used as part of a rotation, with a six year break between leys to reduce the risk of sclerotinia and stem eelworm, which are both soil-borne.



Red clover sward

Preserving Red Clover Silage

Unlike white clover which has a low, creeping growth habit, red clover only grows from its crown, and so requires careful management to protect the crown and ensure good persistence. The following guidelines should be adhered to for a 3-4 year ley:

- Cut three to four times per year
- Cut before red flower develops
- Avoid crown damage caused by cutting too tight: aim for 7-8cm
- Important to wilt (48 hours if possible) after cutting due to high nitrogen content
- When applying slurry or cutting silage it is important to avoid wheel damage to the red clover
- Often given a 'light' graze at end of year
- Avoid grazing in damp conditions to limit bloat and poaching
- Ensure grazing height of aftermaths is kept above 6cm and crop is over-wintered at 4-6cm



Red clover cover

Sheep Grazing

Red clover contains varying amounts of phyto-oestrogens, which may be linked with lower conception rates in breeding ewes. Oestrogen from red clover is very mobile and does not accumulate or remain long in the blood. For these reasons it is recommended to keep ewes off red clover for six weeks either side of mating. This also applies to red clover in silage.

Benefits of Red Clover on organic farms

Nitrogen Fixation – High Volume Silage

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 200kg N/ha/year, driving grass silage production
- Outputs of 12-15 tonnes of dry matter/ha. To achieve this output in conventional farming, up to 375kg N/ha of chemical fertiliser would be required at a cost of around €375/ha/year.

High Quality Silage

Red clover-rich swards have multiple nutritive benefits including:

- High crude protein content, which reduces the need for concentrate feeds
- High mineral content, especially magnesium, reducing the risk of animal diseases and disorders linked to mineral deficiency
- High palatability compared to grass silage, leading to higher intake and increased liveweight gains or milk and protein yields
- Lambs fatten very well on red clover grass aftermaths

Break Cropping

Red clover can act as a valuable break crop as part of a rotation in organic horticulture and cereal production, improving soil structure and fertility, limiting weed invasion, and supplying organic matter.

Driving
grass
production

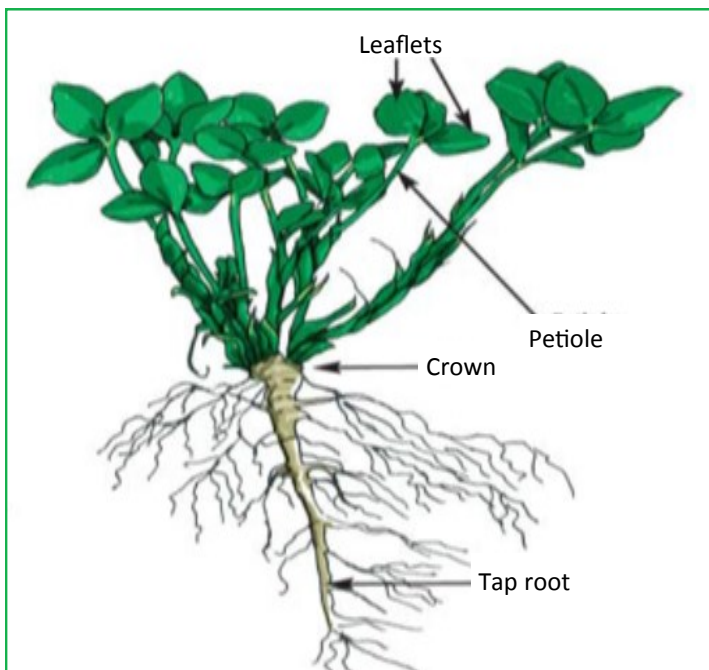


Introduction to Red Clover

Red clover is relatively short-lived, and so is used primarily for silage production and soil fertility building.

How Red Clover Works

The various parts of red clover are displayed in the diagram and explained below.



Source: EBLEX BRP Managing Clover for Better Returns Manual

As can be seen in the diagram, red clover has an upright, tufted growth habit, limiting its suitability for grazing. Its strong, deep taproot acts as a nutrient pump, and makes it more suitable for deep, fertile soils.

Nitrogen Fixation

The finer roots seen in the diagram above have nodules which contain *Rhizobia* bacteria. These bacteria have a mutually beneficial (symbiotic) relationship with the plant. Clover provides food and shelter for the bacteria, which in turn convert atmospheric N to usable nitrate in the soil.

Persistence

Red clover has little winter growth, but has good tolerance to winter cold and good drought resistance. It is generally expected to have a lifespan of 3-4 years in the sward, depending on management and the future planned use of the ley.

Varieties and Seeding Mixture

The variety of red clover used will determine persistence, yield and the most suitable companion grass.

Red clover varieties can be classed by timing of flowering; early or late, with early flowering towards the end of May, and late flowering 10-14 days later.

Early flowering varieties such as Merviot start growth earlier in spring and have two main growth flushes during the growing season. The later varieties are more persistent and tend to produce more of their annual yield in the main first growth flush, and are better mixed with later heading perennial ryegrasses.

Teagasc researchers are carrying out on-going research into red clover varieties with a view to improving production and persistence. Improving disease resistance and tolerance to grazing are thus two key components of this research.

Red clover can also be classed as ‘diploid’ or ‘tetraploid.’ Tetraploid red clover varieties have larger leaves than diploids and can smother commonly used companion grasses including hybrid and perennial ryegrass. This feature makes tetraploid more suitable for sowing in a short-term ley, with a competitive Italian ryegrass.

Seeding Mixture

Red clover can be sown in monoculture at 5-6kg/acre for silage, but a mixture with grass is recommended for higher yield and quality. For a short-term two year ley, Italian ryegrass is an excellent choice, but for over three years a mixture of intermediate and late perennial ryegrass, with some hybrid ryegrass is a better option.

It is best to use tetraploid ryegrass varieties as they tiller less densely than diploids, and they should mature at the same stage as the clover, improving digestibility.

May add white clover to mix for grazing after red clover dies out.

Successful mixtures used by Teagasc include of 13.5kg/ha perennial ryegrass, 13.5kg/ha red clover and 4.5kg/ha white clover, giving good silage yields for four years.

See DARDNI grass and clover variety catalogue for recommended red clover varieties.