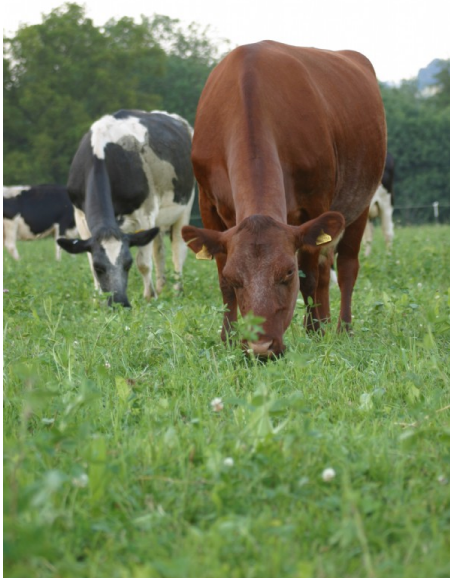


## Common species in UK grass seed mixtures



When we consider the different species that can be utilised in a grass seed mixture, grasses and clovers can be viewed as a versatile array of tools, which when carefully selected and combined in the correct mixture, can provide a range of different types of forage and fodder for livestock.

In the UK, the most popular forage and fodder grass seed mixtures comprise several distinct species, including various types of ryegrass, as well as cocksfoot, Timothy and red or white clover. These species have a range of attributes as single species, but when combined, the benefits are significantly increased and improved, and in some cases the drawbacks of some species can be overcome.

### Ryegrass

Ryegrasses can be highly productive, often producing bumper yields with high sugar levels. They respond very well to nitrogen fertiliser inputs especially on moisture retentive soils. After sixty years of improved plant breeding there are a wide range of varieties to fit many different situations. This has made them very popular because growers can select varieties with a life span and growth habit to suit a range of different farming systems. Hence, adaptable ryegrass is often used for grazing, or in conservation situations like silage, haylage and hay.

From the 1960 onwards, the work of the Aberystwyth Plant Breeding Station has led to a comprehensive range of ryegrass strains available today. They can be broken down into 4 distinct types:

### Westerwold ryegrass: 1 year duration

Westerwold is a very fast establishing annual ryegrass, with a similar yield but greater vigour to its cousin, the well-known Italian Ryegrass. It is largely used for silage production, providing several bulky cuts throughout the year. However its habit of putting up a seed head in the year of sowing means that it can also be utilised for hay production in the year of sowing.

It is often sown in the autumn for utilisation the following spring and summer, or it can be sown in the spring for a quick summer crop. During the autumn sowing of a long term ley, 3 kgs of

Westerwold may be included in a mixture to act as a sheltering nurse crop and to provide an 'early bite' of forage the following spring.

From a spring sowing first cut can be taken after just 10 weeks, with subsequent high yielding cuts taken 6 weeks later. This type of ryegrass needs to be grown on soils with a good moisture content to gain the maximum yields, with applications of nitrogen after each cut.

#### Italian ryegrass: 1-2 year duration

A slightly longer term version of the Westerwold, the Italian ryegrass can be relied upon as a two year grass. When grown on heavier soils and high rainfall areas, this type of ryegrass can produce 18t DM per hectare, although yields may be lower in drier areas. Italian ryegrass has an upright growth habit which makes it an ideal plant for cutting. It is regularly used for short-term silage mixtures and hay or wrapped haylage bales.

#### Hybrid ryegrass: 3-4 year duration

The hybrid ryegrass is a cross between the Italian ryegrass and longer term perennial ryegrass species. Combining the characteristics of this parentage can give a high yielding crop with a longer life-span than the traditional 2 year Italian persistence. An extra bonus of the hybrid ryegrass is that the perennial parent gives this grass more tillers and therefore a more leafy form, making it suitable for the grazing animal as well as cutting.

In a cutting regime the hybrid ryegrass will provide 2 – 3 cuts of quality silage per year for up to 4 years. However it can also be added to longer term grass mixtures to provide an earlier growing grass component in an otherwise later heading grazing ley. This can be especially useful for systems looking to get stock outdoors early in the spring, to reduce feeding and input costs.

#### Perennial ryegrass: 5-7 year duration

This is one of the most popular species in the UK, sown to provide a long term cutting or grazing option. It can also be formulated to provide a versatile cutting and grazing mixture. This grass will often be grazed in the early spring and then 'shut up' for later season hay or silage cuts.

There are a wide range of perennial ryegrass varieties available, with a choice of heading dates, which is important when deciding on the optimum mowing times for quality in a silage system, or to provide the maximum amount of grazing before the plant throws up a seed head and reduces quality.

Tetraploids v. diploids ryegrass: more aggression or more persistence?

Within the ryegrass family, each species comes in the form of a tetraploid or a diploid. A tetraploid has twice the amount of chromosomes per cell than a diploid, which means that it is often a more aggressive fleshier plant, while the diploid has a lower water content with more tillers and longer persistence. A high water content can be a drawback when drying grasses for hay crops, however an aggressive growth habit can be useful when used to improve existing swards, as part of an over-seeding mixture.

Although ryegrass is the most popular grass species in UK agriculture, other grass species have positive qualities different to ryegrass. When species like cocksfoot and Timothy are included as part of a mixture, for instance, they can provide deeper root structures, or plant growth earlier and later in the season.

Cocksfoot: Early bite and drought resistance

Cocksfoot can be a useful partner in a seed mixture as it is significantly different to ryegrass. It has a very deep root system which lends this species to surviving well on dry, poor ground. This helps to keep forage production up in dry summers.

Cocksfoot has a D-value similar to ryegrass when young, however its quality can decline as the grass matures. This means that it is important to graze it regularly once established to keep it leafy. It will grow in early spring, which can help provide an 'early bite' for lambs, with a quick recovery time after grazing.

Timothy: Long-term persistence

This is another popular component of grass seed mixtures and frequently sown throughout the UK. Timothy does well on heavier ground, especially when the soil has a good level of moisture. However it can also persist for many years on lighter soils, with less chance than ryegrass of burning up in dry conditions.

Timothy is slow to establish and not suitable for short term leys. It can take up to 2 years to establish properly in the sward but offers good quality herbage and makes excellent hay. Like clover this is a small seed, so it should not be sown deeply as it may struggle to establish.

#### White Clover: Mainly for grazing

White clover is the most popular true clover used in agricultural seed mixtures and is used for grazing and cutting. It is often used in longer term mixtures where it is given time to establish. The low prostrate growth habit means that it sits in the bottom of the sward, while grass species provide more aerial growth. Although not the deepest rooting plant, white clover has good drought resistance during hot summer seasons due to an extensive network of creeping roots.

The choice of white clover variety is important because they have different persistence and tolerance to grazing. White clover is characterised by leaf size; the smaller leaf varieties will tolerate closer grazing from sheep and generally have a longer persistence. The medium leaf varieties are more productive and can be grazed by cattle and sheep, with medium persistence. The larger leaf varieties offer the highest yield but are shorter lived if close grazed frequently with sheep. They are most suitable for hay or silage and can be grazed by cattle.

#### Red Clover: Best for cutting

This is predominantly used in cutting seed mixtures, although it is sometimes used in grazing mixtures to improve the protein content and drought tolerance. Its upright growth habit means that it combines well with similarly upright plants such as Italian or hybrid ryegrasses as a cutting sward.

Clover provides a nutritious high protein source to any seed mixture: generally white clover has the highest protein content at 25-27%, with red clover having a slightly lower protein content of around 20%. One of the main advantages of including it in a seed mixture is that clover keeps its nutrient quality and palatability for longer after flowering than many grass species, providing a more productive forage later in the season.

Clovers have the added bonus of forming a relationship with bacteria in the soil to 'fix' atmospheric nitrogen and convert it into a useful substance to enhance plant growth. Red Clover is

estimated to provide around 250kg of nitrogen per Ha, provided it is included in high quantities in the seed mixture (2.5-3kgs) for a red clover cutting ley.

Just focusing on these most popular species demonstrates the wide variation between the forage species and the benefits of mixtures, in which the variety of attributes of different plants are combined, and the disadvantages of individual species can be mitigated. But this is by no means the extent of a farmer's forage toolbox. There are a wide range of other less utilised grass and legume species which can also be added to a seed mixture, each with their own unique benefits and characteristics. For example, meadow fescue has good deep roots and is suitable for heavier wet ground and uplands and crimson clover is a high yielding annual legume traditionally used in short-term bulky competitive silage mixtures to increase short term yield and protein.

To use a different analogy, a chef can choose from an array of ingredients to put together a variety of recipes, depending on what he wants or needs to cook, taking into account factors such as the dietary requirements or preferences of diners and the quality of his kitchen; is he cooking on a gas stove or an Aga!. Food for livestock in the form of forage and fodder provided by grass seed mixtures is not so very different.

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