

Good Grass Guide



The simple **grassland**
management guide

Proudly supporting British farmers





GRASS UK FARMING'S CROP

Barenbrug - grass experts since 1904.

Barenbrug is one of the UK's largest grass seed producers – breeding varieties for every possible forage and turf application, and distributing more than 4,500 tonnes of seed each year to agricultural, equestrian, amenity and residential markets.

Part of the Royal Barenbrug Group, the company was founded in the Netherlands in 1904 and operates in 16 countries worldwide. With proprietary plant breeding and production technologies, Barenbrug works closely with academic institutes, customers and the international research community to develop improved grass seed varieties. Barenbrug's portfolio includes grass varieties and mixtures that offer improved yield, disease resistance, drought tolerance, palatability, nitrogen efficiency, winter survival, rumen stimulation, protein production, cool-temperature germination, and rapid recovery from damage.

Experts in agricultural grass, Barenbrug has a team of specialists located across the UK. Working closely with farmers, the team provides practical advice to help farmers get more from their grass in terms of yield, quality and persistency.

Barenbrug's UK headquarters are in Bury St Edmunds, Suffolk with additional regional centres in Falkirk, Scotland and Loughgall, Northern Ireland plus trials sites throughout the UK. The company has ISO9001 certification plus Soil Association accreditation for its organic varieties.

Good quality grazed grassland is the cheapest feed for ruminant livestock and is the base upon which profitable farming is built. Over 70% of utilisable agricultural land in the UK is grassland with nearly 57% given over as permanent pasture.

The UK has the ideal climate for growing grass. Ryegrass grows best at between 5°C to 25°C – and most of the UK is between these temperatures 95% of the time.

Like all other crops, growing grass requires careful management to maximise yields and utilisation. It is a science – but a relatively simple one to grasp once you have a basic understanding of plant as well as animal physiology and good soil management techniques.

Armed with information about how grass grows and the different species and management techniques available, it is easy for farmers to make informed choices about what kind of grass to grow; when to sow it; when to graze it; how long to graze it for; and what to do to ensure its performance long-term.

TREAT YOUR GRASSLAND LIKE AN ARABLE CROP



GRASS THE BENEFITS

Aside from farm gate prices, which are not within our control, there are two driving factors in every farming enterprise:

- Production costs
- Animal and crop performance

By aiming to reduce production costs and improve animal and crop (especially grass) performance we can maximise productivity and therefore improve profitability.

One of the best ways of doing this is to grow as much top-quality forage as possible – reducing your reliance on bought-in feed products.

Grazed grass is the cheapest feed available on most British farms.

Whether grazed or fed as silage, it can provide more than half of the dry matter intake of most dairy cows and, as a general rule, more for beef animals and sheep.



GRASS THE POTENTIAL

The UK has over 17 million hectares of managed grassland – yet much of it is poorly utilised.

To grow top quality forage efficiently, it is important that leys are in good condition and not overrun with weed grasses that have little or no nutritional value.

The best way to get the most from your grass is to maintain young, well-managed clover / ryegrass-based swards – either by regularly reseeding or overseeding.

By treating grass like any other arable crop; selecting the right grass seed products for your farm; and reseeding regularly, it is possible to have a major impact on milk and meat production costs.

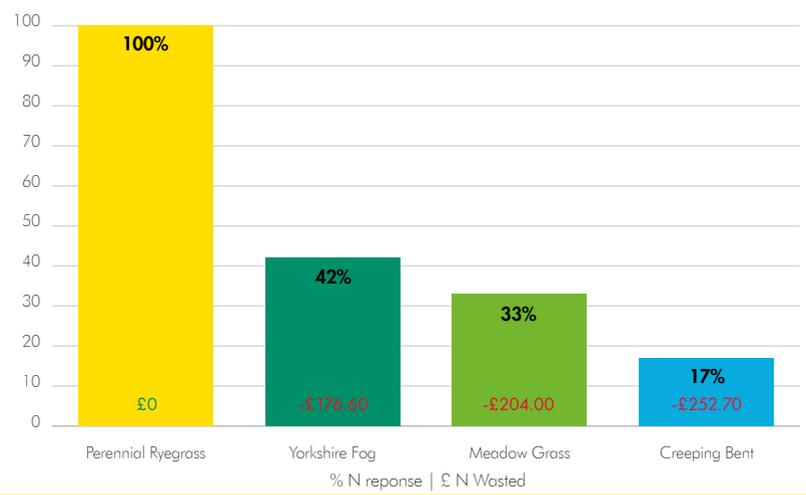
Did you know that making a relatively small investment in your grass can have a major impact on its quality, productivity and utilisation.

A reseeding rate of just 10% is enough to prevent a decline in grass productivity while a 15% rate will start to deliver real gains. Conversely, fields that are not reseeded will quickly become overrun with weed species with little or no nutritional value.

< POTENTIAL GRASS YIELD: 15T DM/HA/ANNUM



AVERAGE BEEF & SHEEP FARM YIELD : 4.1T DM/HA/ANNUM
AVERAGE DAIRY FARM YIELD : 7.5T DM/HA/ANNUM



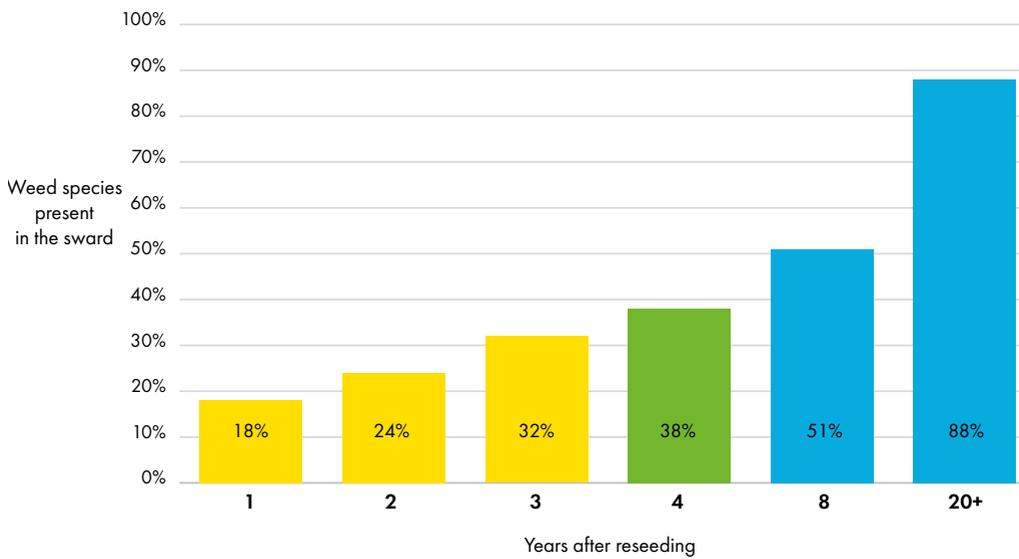
Perennial ryegrass and weed grass response to nitrogen and £ Value of N wasted

THE COST OF DOING NOTHING

Another way to look at the numbers is to assess the amount of dry matter produced. A field that is 50% ryegrass and 50% weed grasses will obviously not be as productive as a young sward.

The graph below shows that just one year after reseeding, weed species can make up to 18% of a sward. After four years, that figure has more than doubled to 38% and, after eight years, weeds will be starting to dominate the sward (51%).

On average, an eight-year old field will typically yield around 5.5T DM/ha compared with a new field, which could produce around 15T DM/ha - meaning you could be missing out on three times as much grass.



A WASTE OF FERTILISER

Older fields will also prove problematic when it comes to the use of fertiliser - wasting around £105's worth per year.

Figures are based on:
 - Ammonium nitrate at £350/tonne, with an assumed application rate of 300kg/ha.

TRANSFORM YOUR FARMING

Benefits of 1st year reseed

Field Age	TDM/ha
1 year-old field	15T
8 year-old field	5.5T

£1,330 EACH FIELD!

* Figures are based on Dry matter value of £140/t



REASONS TO RESEED RETURN ON INVESTMENT

Reseeding can feel like a major investment but if you look at the numbers they are actually very persuasive. Yes, there is an initial outlay, but if you consider the DM, animal and milk gains to be had, it is definitely worthwhile.

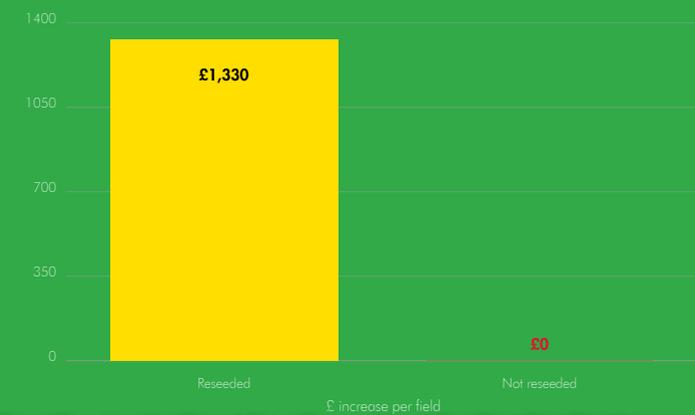
On average, a reseed will cost around £650 per hectare (ha). After a reseed, new grass, in a two-cut system, will typically provide an ME of 133,320 MJ/ha.

This energy is capable of producing more than 25,150 litres of milk, 2050 kg of lamb or 2400 kg of beef. Using average milk and meat prices that equates to:

- £6,966 worth of milk
- £8,544 worth of beef
- £8,286 worth of lamb.

Animals are also more likely to eat young, high quality grass. New swards are significantly more digestible and offer higher protein content. Research has shown that animals will eat more of varieties with a high digestibility (D-value) and are able to absorb a greater proportion of the feed, which they have eaten. Achieving just a 1% improvement in digestibility can improve animal output by 5%.

- Figures are based on:
- The five-year rolling average price for milk of 27.7p (AHDB Farmgate milk prices 11/5/18)
 - The average UK Beef price of 356ppk (for 2013 – 2016, AHDB)
 - The average UK Lamb price of 404.2ppk (for 2013 – 2016, AHDB)



REASONS TO RESEED ACTUAL COSTS

Here's an overview of typical costs associated with reseed and overseeding. When you compare costs with the financial return on offer in the first year after a reseed, we think the numbers are compelling.

There aren't many investments where the return on investment is so good.

Cost of reseed (ha)

Spraying material	5l/ha Glyphosate	£ 15.00
Spraying costs	x2	£ 40.00
Ploughing		£ 60.00
Rotovating	x2	£ 128.00
Rolling	x4	£ 80.00
Fertiliser	250kg/h 8.20.30	£ 98.00
Fertiliser application		£ 14.00
Grass drilling		£ 60.00
Grass seed		£ 175.00 (Just 20-25% of total cost)
Post emergence spray		£ 35.00
Total Cost		£ 650

COST OF OVERSEEDING (HA)

Soil sample	£ 15.00
Lime/Fert/Spray as needed	£ 50/ha
Grass drilling	£ 60/ha
Grass seed	£ 75/ha
Total Cost	£ 200

THERE ARE NOT MANY INVESTMENTS WHERE YOU CAN DOUBLE YOUR MONEY THAT EASILY!

4 STEPS TO SUCCESS

Hopefully we've convinced you that doing nothing with your grass is actually the worst decision you could make. Assuming you've decided to invest in a new sward, we suggest these four steps. The following pages walk you through our phased approach to turning your grass into gold.

UNDERSTAND

- Get a grasp on your grass
- Use our Field Indexing guide

1

THINK SOILS

- Get soil structure and soil fertility right to optimise grass growth and quality
- Regularly dig soil assessment pits to examine soil structure and check for compaction
- Soil sampling should be conducted every 3 – 5 years and any deficiencies addressed

2

PLAN

- Reseed 15% of your grass per year
- Understand and select the right grass mixture for your needs
- Treat your grassland like an arable crop
- Understand when to sow

3

ESTABLISH & DEVELOP

- Reseeding
- Overseeding
- Managing and plan ahead

4



GET A GRASP ON YOUR GRASS FIELD INDEXING

STEP

1

UNDERSTAND

All farmers are used to looking at the condition of their stock with most using the 1 to 5 condition index as a way of monitoring performance.

We apply a similar principle to gauging grass quality - with 5 being a good sward that is highly productive, and 1 being a field that needs addressing straight away.

Coming up, we'll show you how to apply our field indexing system to monitor your sward so you can maximise your profit from good grass.

The first step is to complete a visual assessment of your field/s. Areas of grassland that need most attention should be easy to spot. Look for unhealthy shades of yellowy green, a clear indicator of stress. Patchy areas of growth are also a definite sign of compaction and poor soil structure.

5 INDEXES



This field is past its best and is classed as an INDEX 1.

HOW TO SCORE

Walk the field and assess grass content.

An INDEX 1 field will have less than 25% sown productive species left and the ryegrass that remains will be of very poor quality.

The gaps created by the disappearing ryegrass have been filled up with broad-leaved weeds and weed grasses like annual meadowgrass, yorkshire fog, bent grasses, chewings fescue and strong creeping red fescue.

All these weed grasses are totally unproductive to the field, delivering less than 25% of what perennial ryegrass will produce.

An index 1 field will deteriorate quicker than other fields as it is not wear tolerant, so will not be able to resist poaching by grazing animals.

WHAT THIS MEANS

A field with a classification of INDEX 1 is not nutritious, has no feed value and is therefore of no use to ruminant livestock.



WHAT TO DO

The field has gone past the stage of being profitable.

It isn't worth putting any fertiliser on the grass that is left as it will not be used efficiently (you'll get around 10-15% efficiency from any fertiliser that is applied).

In this situation, with less than 25% of productivity from the field, the best course of action is to plough up the field and start again with a re-seed.

KEY POINTS

- Less than 25% sown species
- Extremely open sward
- Gaps these are filled with weed grasses/weeds
- High weed content
- Applying fertiliser will not help the situation
- Only course of action is to plough field and reseed.



There is evidence throughout this field that it has been considerably damaged by overwintering of stock - making it an INDEX 2.

HOW TO SCORE

Walk the field and assess grass content.

An INDEX 2 field will have less than 40% sown, productive species with less than 10% clover (if sown), coupled with more than 40% weed content or gaps.

The sward will be very open.

There is some ryegrass left in the field, but it is of very poor quality.

This could be because of a number of factors including poor weather or a lack of density in the existing sward.

WHAT THIS MEANS

A field at INDEX 2 needs to be looked at immediately. If something is not done with this field very soon it will be a complete write-off.



WHAT TO DO

There are still a couple of options available to fix an INDEX 2 field.

- 1) Burn off the existing sward and reseed
- 2) Use the less expensive options and overseed.

When considering overseeding, we suggest using national recommended lists and consider varieties based on sward density, palatability and yield.

Overseeding this sward could easily turn it from an INDEX 2 to an INDEX 3 or 4 and we could get three to four extra years production from the field without having to do a complete reseed.

KEY POINTS

- Less than 40% sown species with less than 10% white clover (if sown)
- More than 40% weed content or gaps
- Sward very open and annual meadow grass present
- pH and nutrient levels low
- Field will be a write-off unless something is done urgently
- The cost of replacing lost forage with concentrate or bought in forage will be incurred.



This field is five years old.

There are lots of open spaces and this is allowing plenty of room for weeds (such as docks) to come in and dominate the sward, meaning this can be classed as an INDEX 3.

HOW TO SCORE

Walk the field and assess grass content.

An INDEX 3 field will have a total of 50-60% sown, productive species (including any clover at less than 10%, if sown).

It will also have approximately 40% weeds or gaps.

There will be docks covering around 20-25% of the field and at this level it means you are losing up to a quarter of yield from it.



WHAT THIS MEANS

At INDEX 3, the field is in an ideal situation to correct the problem and extend the life of the sward.



WHAT TO DO

This is an ideal stage to correct the problem.

Between March and April, the docks are healthy and actively growing, with good weather conditions. To tackle docks, use an overall spray such as Dockstar Pro.

Once the docks have been removed, overseed with a quality grass seed to get productivity back into the sward before weeds get a chance to thrive in the bare earth.

Follow manufacturers instructions in regards to when to over sow after using a herbicide to avoid any issues with young grass seedlings.

This is also an ideal time to add clover. This will boost the durability of the sward, extending its lifetime by a couple of years.

KEY POINTS

- 50-60% sown species with less than 15% white clover (if sown)
- 20-25% weed content = losing a quarter of grass yield
- Sward starting to look quite open with annual meadow grass starting to appear
- pH may be below optimum of pH 6
- Macronutrient levels below optimum
- Soil sample and check docks infestation
- Treat perennial weeds and oversow with grass and clover (where applicable) to extend the life of the sward.



Some parts of this field are starting to show signs of low level damage. Grass growth is less vigorous and there are some weeds visible; however, there are still plenty of healthy target plants in the sward and it can be classed as an INDEX 4 field.

HOW TO SCORE

Walk the field and assess grass content.

The goal is to achieve as dense a sward as possible to eliminate any invasion of unproductive species.

An INDEX 4 field will have a total of 60-70% sown, productive species (with ryegrass content of 60-70%, and clover making up 30-40% of the plant population).

If these levels of productive species content are achieved the clover will be adding 170-220kg N/ha/yr, coupled with a high protein content of 27%, which helps ensure high animal performance.

WHAT THIS MEANS

This field will be good for the coming season, but it will have to be monitored and planned improvements (overseeding) will be needed if the productive species drops below 60%.

WHAT TO DO

In these swards nutritional quality will generally not constrain animal performance. The energy content of good, well-grazed ryegrass swards is consistent at above 11.5 MJ/kg DM.

Nitrogen can influence the ability of the grass plant to tiller. The more tillers ryegrass plants have, the denser they are, and the less prone they are to weed invasion, which is one of the reasons why clover is so important.

To keep on top of an INDEX 4 field you need to check soil fertility regularly and apply a light application of summer Nitrogen to encourage tillering.

This field will probably be good for the coming season but if the ryegrass content drops below 60% it will require further action.

KEY POINTS

- 60-70% sown species
- Ryegrass between 60-70% and clover content 30-40%
- Some weed ingress, less than 10%, but not a significant burden
- This field is in good condition, but there may be signs of wear and tear
- Still a good proportion of healthy plants
- This field will probably be good for the coming season
- Planning of its maintenance needs to be scheduled.



This is a nice healthy sward. It has a high content of productive grasses, creating a nice tight, dense sward and can be classed as an INDEX 5.

HOW TO SCORE

Walk the field and assess grass content.

An INDEX 5 field will have at least 80% sown, productive species (with clover making up 30-40% of the plant population).

There will be minimal weed content or gaps.

WHAT THIS MEANS

The key here is to maintain the field at this level and use it as an example to get as many fields up to this level as possible.

WHAT TO DO

In order to maintain a sward like this it is important to have good soil fertility.

Regular soil sampling, every three to five years, will ensure you monitor where you are and what you need to focus on.

50% of UK grassland soils tested have a pH of between 5 and 6. A pH of 5 means the grassland has a maximum yield potential of around 88%.

When planning a liming policy it is important to aim for maintaining pHs of 6 or above.

Regular soil sampling will also give you Phosphate and Potash indices.

The use of Nutrient Management Guide (RB209) gives recommendations for all cutting and grazing regimes for Phosphate and Potash, Nitrogen and Sulphur fertilisers as well as values for slurry and farmyard manure. All of these need to be taken into account when planning a fertiliser regime.

KEY POINTS

- Greater than 80% sown species, with 30-40% white clover (if sown)
- This is a healthy sward with high content of productive grasses; the key here is to maintain it
- Dense, leafy sward with tight sole
- Regular soil testing and soil structure monitoring
- Maintaining an optimum of pH 6
- Use the RB209 to plan a fertiliser regime.



SUMMARY FIELD INDEXING

Many fields may look good from afar, but you need to get up close to see if there any problems.

REMEMBER

- Grass is the cheapest source of animal feed
- Walk your fields regularly conducting a visual health check using our field indexing system
- Fields that are INDEX 4 or 5 are profitable, highly productive and worth maintaining
- Fields at INDEX 3 have some problems but are salvageable with some attention and investment
- With INDEX of 1 or 2 fields it is best to start again
- Remember, doing nothing can be a costly decision.

HELPING YOU MONITOR AND SCORE YOUR FIELDS

At the back of this notebook is our simple field indexing scoring chart to enable you to keep checking and analysing your fields.

See opposite for a sample scorecard.

SCORING INDEX

FIELD NAME: Example - Barenbrug Field
MIXTURE/SPECIES SOWN Example - BarForage Barmix

Date:	Sept 2014	April 2015	May 2016	May 2017
Score:	3	4	5	5
pH:	5.9	6.1	6.3	6.3
P and K Index:	1 & 1	2 & 2	2 & 2	2 & 2
Fertiliser Applications:	Dung 200kg 2t Ca Lime	Slurry, 2t Ca Lime, 150 25.5.5 150kg	Slurry & 150 AN. 150kg	
Cutting/Grazing Regime:	grazed all year	graze, 1 cut, graze	2 cuts, graze	graze

NOTES/PLANNED ACTIONS

Sep 12: Field looking open and not performing. Soil test showed low fertility.
 Also sprayed for thistle and nettles.

July 14: Added white clover to sward and more lime. Fertiliser applications match to expected yield.
 Field looking much better, few thistles, spot sprayed.

May 15: Soil results much better. Grass performing and clover well established.

NEXT STEPS

BLANK SCORING INDEX SHEETS AT THE REAR OF THIS NOTE BOOK.

Watch video guide at:
www.barenbrug.co.uk/GoodGrassGuide



SOIL MANAGEMENT NUTRIENTS & STRUCTURE

STEP

2

THINK SOILS

SOIL SAMPLING

When soil sampling, pay particular attention to areas prone to compaction. Possible areas of runoff should be examined, for example, headlands and wet spots. Areas where crop growth is poor should also be looked at.

Normally you'll need to dig at least three holes need to be dug in a field to get an accurate reflection of the field's condition. More holes may be needed in large fields and where there are a range of soil types. Mark out a square area of about 50cm then dig down to a depth of at least 30 – 40cms. Take a close look at the soil structure you've dug out. If the grass roots aren't penetrating below 10cm then you are dealing with a clear case of compaction. Another sign is the water content of the soil. If the soil is bone dry from 7 - 15cms down then that's another sign of compaction.

Soil pH is more important than NPK. To enable nutrients to be optimally available to the plant's roots, aim for a pH of at least 6, especially where clover is sown and P & K indices of 2/moderate. Just a small decline in target pH to 5.5 can reduce grass yields by 35-40%. The more acidic the soil, the greater the chance of lock up – which makes vital nutrients unavailable to plants.

Remember to consider trace elements. Some bedrocks are deficient in particular elements, which are important to cattle. If the elements are not present in the soil, they cannot be taken up by grass and so need to be supplied by other methods e.g. supplementation, fertilisers or boluses.

Farm Yard Manures (FYM) are another important source of nutrients. The table below shows typical values, however these can vary by enterprise, application timing and ground conditions. It is therefore essential to analyse batches of FYM to make best allocation of nutrients within a farm nutrient management plan.

Manure	Available N (kg/t)	Available P (kg/t)	Available K (kg/t)
Cattle Slurry	1.2	0.6	2.9
Cattle Manure (old)	0.6	1.9	7.2
Pig Slurry	2.5	0.9	2.2
Broiler Litter	10.5	15	16.2

Farmers looking for advice on soil management best practice can contact the Barenbrug team for more information or can consult Refer to Nutrient Management Guide (RB209) produced by the Agriculture & Horticulture Development Board.

There is a saying, it isn't the animal or the bag that feeds the crop, it's the soil. Looking after soil fertility and structure are the two key fundamentals of any good grassland management scheme. Soil structure affects root penetration, water availability and soil aeration - so it's important to take time to look at your soil structure and make sure it is healthy and capable of giving your grass exactly what it needs.

Good soil structure has many benefits. It allows the roots of crops to go much deeper into the earth, providing a better supply of water and allowing crops to access the full range of benefits from the soil. Land with a good soil structure will drain more quickly in the spring and take longer to wet up in the autumn, giving you a longer, safe working period on the land.

Poor soil structure can lead to increased surface water runoff, poor yields and excessive use of nutrients and pesticides. There are many ways to tackle poor soil structure. These need to be tailored to the unique needs of each field.

Ideally soil sampling should be conducted every 3 – 5 years to help maintain healthy soil conditions and correct any issues that arise. Soil sampling can take place at any time of year but is best done when the soil is moist. If the soil is too dry or too wet it is difficult to obtain a representative sample. Roots are best seen in an established crop or for some months after harvest. Ideally, you should soil sample six months before reseeding to allow time for any deficiencies to be rectified before sowing valuable seed.





PLANNING RESEED 15% OF YOUR GRASSLAND EVERY YEAR

Planning to reseed 15% of your grassland every year will ensure that, within six years, you'll have the latest modern grass varieties available across your farm.

When deciding what grass to sow, think about the options and do your research. Don't just rely on what you know. Grass genetics have changed a lot in the last twenty years - with our grasses showing an average year-on-year improvement in yield of 0.5%. It is unlikely that you'd rely on genetics from a quarter of a century ago for your livestock - so why do the same with grass?

When choosing a grass seed mixture/product, think about what you want the crop to achieve:

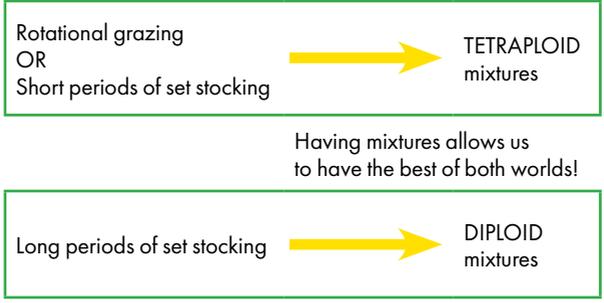
- How long do you want it to last? (See the table below for a rough guide)
- What to sow?
- When to sow?
- Will it be cut or grazed? Or both?
- How will your field be grazed?
- Do you need strong ryegrass growth rates early in spring or is late spring feed quality more important?
- Which stock class will use the grass?

Grass mixture type	Typical duration
Annual	Less than 1 year
Italian Ryegrass	1 – 2 years
Short Rotation	2 – 4 years
Long Rotation	5+ years
Perennial	8+ years

WHAT TO SOW

DIPLOID V TETRAPLOID

If you don't know much about grass, deciding between a diploid and tetraploid can be difficult/confusing. Below we've detailed some differences to help making the decision-making process easier.



DIPLOIDS

- More dense pasture
- More forgiving under grazing in stress environments
- More competitive with weeds
- Improved persistence



TETRAPLOIDS

- More palatable (higher soluble carbohydrate)
- Improved & faster digestibility (higher cell content ratio)
- Improved utilisation & intake
- Improved animal production
- More clover friendly (10% more clover)
- Visually more impressive

If you are still undecided, you could go for a mixture - giving you the best of both worlds. Whatever route you choose, make sure the seed you pick is able to meet your needs. There can be a big difference in the quality of mixture ranges available. Try to choose products or mixtures that contain grasses which feature on national recommended lists. This will make sure you get a modern, well-developed variety, that will perform as it should.

Once you've picked your grass seed mixture, the next step is to create a grassland management plan and decide when would be the best time to take a field out of rotation to sow. Grass seed can be sown at anytime from April to September - ideally when the soil is moist or when rain is forecast and the weather is frost free. If possible keep animals off as long as possible to enable establishment and manage the swards effectively - see Step 4 for other top tips.

PRODUCTIVE SPECIES GUIDE

There are over 10,000 species of grass in the world. Naturally we can't list them all here, so we've concentrated on a selection of key productive species, which you can find detailed here. Of course, if you need more grass advice specific to your needs and situation, get in touch.



PERENNIAL RYEGRASS
Lolium perenne

DESCRIPTION Dark green, densely or loosely tufted. Folded shoot and leaves.

FLOWERING HEAD Flattened spike with the spikelets arranged alternately on opposite sides of the stem. The spikelets are stalk-less with the narrow, rounded face fitting against the stem.

LEAF BLADE Ribbed on upper surface, smooth and shiny underside. Red at base of stem.

AURICLES & LIGULE Auricles are usually well developed, up to 1/12 of an inch (2 mm) long, or are sometimes lacking.



ITALIAN RYEGRASS
Lolium multiflorum

DESCRIPTION A brighter green than perennials, densely or loosely tufted. Similar to ryegrass but leaves rolled into the bud and not folded. Tends to be larger, stouter and more densely tufted than ryegrass.

LEAF BLADE Ribbed on upper surface, smooth below. Red at base.

AURICLES & LIGULE Narrow, spreading, prominent when old. Small, 2mm. Blunt



HYBRID RYEGRASS
Lolium perenne

DESCRIPTION The hybrid ryegrass is a cross between the Italian and perennial forms of ryegrass and shares characteristics of both.

The dominant parent determines how the variety performs in the field.

Characterised as a rapid growing variety lasting from 1-5 years or longer depending on summer conditions and endophyte status.



WESTERWOLD
Lolium mul. westerwoldicum

DESCRIPTION An annual ryegrass. Recent breeding advances in the development of quality Westerwold varieties mean it is now a serious option for UK farmers.

Westerwold annual ryegrass is an ecotype of Italian ryegrass selected for earliness, and is not botanically different from Italian ryegrass and its characteristics are also similar.



TIMOTHY
Phleum pratense

DESCRIPTION Our modern Timothys are bred to have softer leaves and higher palatability. The coarse tufted grass with many varieties covering a range of growth habits. Generally light green or greyish-green. Flattened shoot.

FLOWERING HEAD Dense cylindrical spike giving the alternative common name. Spikelets are small, single flowered and tightly packed; green, often tinted pink or white.

LEAF BLADE Flattened Broad leaves. Smooth, double rib down the centre. Boat shaped at tip.

AURICLES & LIGULE Small and spreading, minutely hairy. Short, 2mm. Finely serrated



COCKSFOOT
Dactylis glomerata

DESCRIPTION Our modern Cocksfoots are bred to have softer leaves and higher palatability. Large, coarse-looking tufted grass often bluish-green in colour.

FLOWERING HEAD One-sided, distinctive flower/feather like seed head. Spikelets are small flattened and condensed into oval shaped clusters.

LEAF BLADE Dull leaf, flattened, wide and flat



TALL FESCUE
Festuca arundinacea

DESCRIPTION Very tall tufted perennial forming dense tussocks. Tillers large and foliage coarse. Short bristles along edge of collar (visible with magnification).

LEAF BLADE Broad green leaves, fringed auricle and strongly ribbed leaves, glossy lower surface. Harsh to touch with fine silica teeth which can be felt.

AURICLES & LIGULE Small and spreading, minutely hairy. Short, 2mm. Finely serrated



WHITE AND RED CLOVER

DESCRIPTION Clover fixes nitrogen in the soil (figures of 170-220kg N/ha/yr are achievable) – and is therefore a very valuable species in efficient grassland management.

WHITE CLOVER (white flowers) A perennial legume with round leaves and very long stalks. Key to its survival is its multi-branched creeping stem (stolon), which provides sites for new leaves, roots, and flowers.

RED CLOVER (red flowers) A short-lived perennial legume that typically lasts for two to four years. In contrast to white clover, it has oval leaves, an upright growth habit, and a strong deep tap root.



STEP

4

ESTABLISH & DEVELOP

ESTABLISH & DEVELOP OVERSEEDING RESEEDING MANAGING

RESEEDING

For fields beyond repair and needing rejuvenation

Reseeding grassland can feel like a major investment, especially if you've got a big farm, but you shouldn't underestimate its importance. Did you know that in order to just 'stand still' in terms of grass quality, you should, ideally, reseed a minimum of 10% of your grass every year! While a 15% reseeding rate will start to deliver real gains - and make a difference to your bottom line. Conversely, fields that are not reseeded will quickly become overrun with weed species with little or no nutritional value.

See the next page for our simple guide to reseeding.

Choosing whether to go for a full reseed or to overseed can feel like another difficult decision - so feel free to use our field indexing system as a guide. Generally we suggest that:

Field Indexing 2 – 4 = overseeding

Field Indexing 1 = reseeding

OVERSEEDING

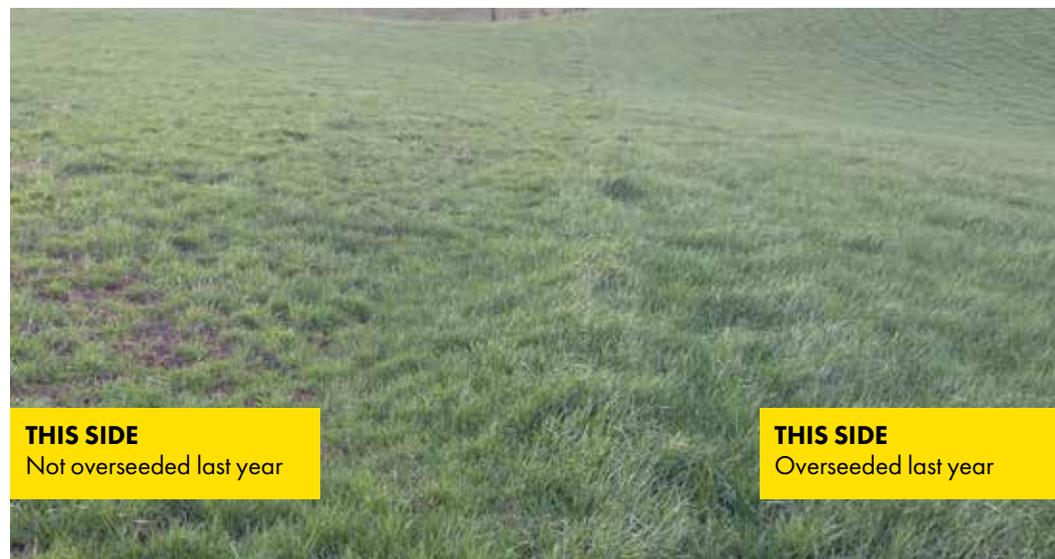
Don't be afraid of overseeding - A short- to medium-term fix

Currently only around 2% of UK grassland is being oversown. Overseeding is a short- to medium-term option but it does provide a quick fix and is ultimately an effective method of improving productivity - while keeping investment costs to a minimum.

Overseeding is ideal for farmers who need to improve grassland performance to help boost profits but, understandably, feel nervous about investing in a full reseed or taking a field out of rotation.

While brand new swards will always outperform older grasses, overseeding can help to increase dry matter yields short-term – reducing farm reliance on expensive bought-ins and even improving live weight gains. Implemented carefully, overseeding has the potential to improve pasture productivity by between 30 to 40% for between three to four years, depending on field quality.

When overseeding, it is crucial to use a mixture designed specifically for this purpose. Any existing productive grasses in the ley already have an established root system and an established leaf canopy to capture light for photosynthesis. Any new grass seed that is introduced needs to be able to work with these conditions and overseeding mixtures are blended accordingly. Typically, they contain tetraploid perennial ryegrass varieties whose seeds are larger, have more aggressive growth habits and are faster to establish within an existing sward. As well as tetraploid-based varieties, introducing clover could be another option. Clover can fill in gaps to reduce weed ingress. It can also improve nitrogen levels – encouraging tillering, which makes swards denser. Crucially, clover can also encourage higher voluntary intakes, improving live weight gains.



SEEDING STEPS

1

Dig a soil assessment pit to look for compaction and plant rooting structure, which should go 30cm deep in a perennial ryegrass/Timothy sward.

Address compaction with aerators or sub-soilers as needed.

2

Soil testing (4" deep) would also be advantageous as high levels of water can leach nutrients and reduce pH significantly.

Assess what plants are there – learn to identify what species you want to have e.g. perennial ryegrass/Timothy. Check for weed grasses, they are usually shallow rooted and pull out very easily.

If they make up more than 30% of the sward, harrow hard to remove them.

With a sward of more than 70% weed grasses the best option is to reseed the sward.

4

Control perennial weeds before seeding by spraying with a selective herbicide.

5

Use a spring tine harrow to remove any dead stalks, thatch and shallow rooted weed grasses. Make sure that the tines are working the top 1 cm of the soil as this will create the seed bed for the new seeds.

7

Roll the sward to ensure good seed contact with the soil to conserve moisture.

6

Choose a grass seed mixture designed for the job.

Sow when the soil conditions are neither excessively dry nor wet and use a specialist mixture designed to establish rapidly.

8

Graze lightly when the seedlings are 10cm high and continue at frequent intervals until the plants are well established.

3

Minimise competition to new seedlings by grazing tightly with sheep or taking a silage cut. DO NOT fertilise before overseeding.



GRASS WHEN TO GRAZE

THE FIRST 12 MONTHS ARE CRITICAL

Sowing is not the end of grassland establishment. Newly sown leys should be considered as 'establishing' for the first 12 months. Many new leys achieve high DM yields in the first year, even though their rooting structures are often poor - but management during the first year is critical to achieve longer-term persistency of growth and performance.

The better the underground rooting system, the better the plants are able to withstand future adversity. Generally, but not always, the more cover there is, the better established the grass sward.

Cherish new swards like growing young stock – they are the production house of the future.

- Treat your grassland like an arable crop
- Fertiliser - New grassland responds well to light applications of N fertiliser
- Watch out for sulphur deficiency
- Early weed control is key
- Measure, monitor and test (Use the sward stick and soil sampling)
- Plan ahead and field index.

Knowing when to graze grass and for how long requires careful judgement and it is wise to conduct regular visual checks of the number of tillers present to avoid problems.

GRAZING TOO EARLY

On a new ley, grazing grass too early – before a second new tiller leaf appears – can damage grass persistency. If a plant's reserves have not been fully restored, future growth will be in jeopardy. Repetitive early grazing can permanently decrease grassland yield and persistence. Grazing grasslands at the right time is especially important through dry summer periods when plants are under stress; grazing the first new growth after a period of drought and before a tiller has two and a half new leaves in place can kill grass.

GRAZING TOO LATE

If grassland is left to grow too long (>3500 kg DM / ha) it will enter the ceiling phase of grassland growth. In this phase, tillers continue to produce new leaves, however, there is no further increase in net grassland mass due to the dying off of older leaves. If grassland isn't grazed, dead material, which has little feed value, will build up in the base of sward. This can lead to:

- Reduced grassland ME
- Increased risk of disease – rust and other forms of fungi can build up on dying leaves
- Decreased grassland utilisation – due to the factors above
- Reduced clover content – due to shading.

TRY THE PLUCK TEST. Grasp the ryegrass seedling firmly between your thumb and forefinger, then tug in a single, quick movement (to mimic an animal biting). If the leaves break off and the roots stay in the ground, the pluck test is passed.

In the photos above:

Left: Roots being pulled from ground

Right: Leaves breaking = a good time to start the first grazing.

FIRST GRAZING

The role of first grazing is to stimulate tillering and allow light to the base of the sward, enabling clover to flourish.

Remember:

- Don't graze too soon
- Understand how the 'Pluck Test' can help timing
- First grazing is not about feeding animals
- It's about removing the tips of the plant to encourage new growth
- It's also about ensuring clover has access to light and an opportunity to establish
- This will likely be at the 6-8 week stage under good conditions
- Light grazing should occur when a grass passes the "pluck test"
- This will accelerate the growth rate and tillering process
- Try to use the lightest stock class available
- Leave a 4-5cm stubble to allow the plants to recover quicker
- In spring, don't let the grassland cover build up too much
- This significantly reduces quality and discourages tillering
- In autumn the plant is directing photosynthates to the root system
- The more green material it has after grazing, the quicker the plant can recover
- This will help the plant to put reserves into the root system aiding the overall persistence
- A consistent 4-5cm residual will encourage growth and tillering
- It will also help shading and suppression of white clover.

FIRST CUTTING

- When cutting leys, leave 8-12cm stubble
- This will allow speedy regrowth from live leaves
- Try and avoid making heaving cuts of silage within the first 12 months
- This damages plants, reduces tillering and growth.

WEED CONTROL

A weed is "a plant in the wrong place", but weeds can have significant consequences for grass leys. For example, where a field contains a 20% dock infestation, this can equate to a loss in 20% of potential grass production. This is due to the persistence of weeds competing for light, nutrients and moisture. Many weeds will thrive in newly sown leys with less competition. Weeds also love land with poorer soil conditions.

Tackling weeds is essential as they can:

- Lead to grazing rejection of surrounding plant material meaning grass is then wasted
- Reduce the overall palatability of the sward
- Decrease the overall digestibility and energy of the sward
- Be injurious when ingested e.g. thistles and nettles
- Be poisonous e.g. Ragwort (poisonous to ALL grazing animals) and buttercup
- Produce tens of thousands of seeds per year some of which can be viable for 80 years!
- Host diseases and pests, which affect other crops as well as grass.
- Look unsightly – the worst field is always next to the road!
- Trials have shown that up to 15% of grazing losses can be associated with as little as two creeping thistles/m².

FERTILISER

The UK's grassland is always deficient in nitrogen (N), which assists with the tillering of ryegrass plants as well as overall grass health. In a new sward, a clover component will not contribute N immediately - so it is important to add fertiliser. New grass responds well to regular, light applications of N.

SEVEN HABITS OF HIGHLY EFFECTIVE GRASSLAND MANAGEMENT

- Control the area grazed each day (or rotation length) to manipulate grass eaten to meet average cover targets for the farm
- Estimate the area and pre-grazing cover required for the animals based on the target grazing residual and adjust after observing when / if the cows achieve a "consistent, even, grazing height".
- Make management decisions to maximise per animal production for the season not at any one grazing, the "main course principle - no dessert"
- Treat grassland as a crop - remove grass grown since last grazing and prevent post-grazing height increasing over the season
- Use a Sward Stick to monitor height. Maintain cover above 1800kg DM/ha in early spring and between 2000-2400kg DM/ha for the season to maximise grass growth rates
- Manage weed control
- Plan fertiliser programme.

BARENBRUG
SWARD STICK

USE WEEKLY TO MONITOR
SWARD HEIGHTS.

• Walk each field in a similar pattern
• Take 30-40 leaf-top readings per field
(ignore stems, flowers and weeds)
• Add measurements from all readings
• Calculate averages and record
• Collect data for seasonal and year-on-year assessment

MEASURE AVERAGE GRASSLAND HEIGHT
Height of tallest clover leaf or average ryegrass height typically determines production in kg DM/ha.

DAIRY

HEIGHT (cm)	RYEGRASS (kg DM/ha)	CLOVER (kg DM/ha)	TOTAL (kg DM/ha)
15	2980	2800	5780
14	2850	2670	5520
13	2720	2540	5260
12	2590	2410	5000
11	2460	2280	4740
10	2330	2150	4480
9	2200	2020	4220
8	2070	1890	3960
7	1940	1760	3700
6	1810	1630	3440
5	1680	1500	3180
4.5	1550	1370	2920
4	1420	1240	2660
3	1290	1110	2400
2	1160	980	2140
1	1030	850	1880

SWARD STICK

Knowing when to graze grass and for how long requires careful judgement. To help farmers gauge when to graze grass, we've developed a brand new sward stick, which is available completely free of charge. Printed with the optimum heights for grass for both sheep and beef, our sward stick is designed to help growers decide when to turn livestock out, and when to adjust grazing pressure.

We recommend using sward sticks on a weekly basis – to build up a log of grass growing information. Farmers should walk each relevant field, once a week, to monitor sward height. Following a similar route each time, they should take 30 to 40 leaf-top readings per field – before calculating an average and recording it in a notebook. This information can then be used to aid decision-making and for longer-term seasonal and year-on-year assessments and adjustments.

We've created sward sticks in the past and they've proved really popular so make sure you get hold of yours quickly. Order your FREE Sward Stick at www.barenbrug.co.uk





PLANT PHYSIOLOGY

In the UK, perennial ryegrass is the most widespread species of grass for grazing animals. A perennial ryegrass field is made up of a population of ryegrass tillers. A tiller is made up of a basal stem, a leaf sheath and – at any one time – three growing leaves.

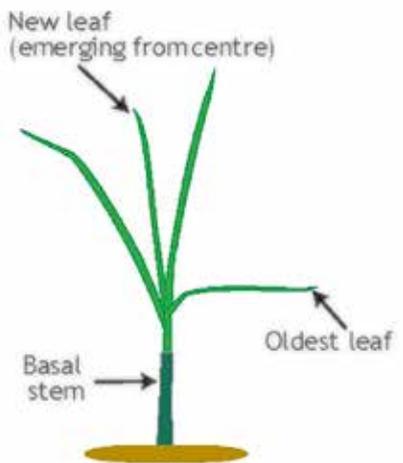
When the tiller has developed three leaves it will continue to grow. As a fourth new leaf is produced the oldest leaf starts to die. Then a fifth leaf is produced and the second leaf dies – and so the process continues.

Tillers are largely individual but are clumped together, meaning they can (to some degree) exchange nutrients. The average field will contain between 3000 to 5000 tillers per square metre.

Perennial ryegrass plants will produce new tillers throughout the growing season with peak production occurring from late April to July. The time it takes for a tiller to produce three leaves will vary, depending on the plant, the local climate and the time of year.

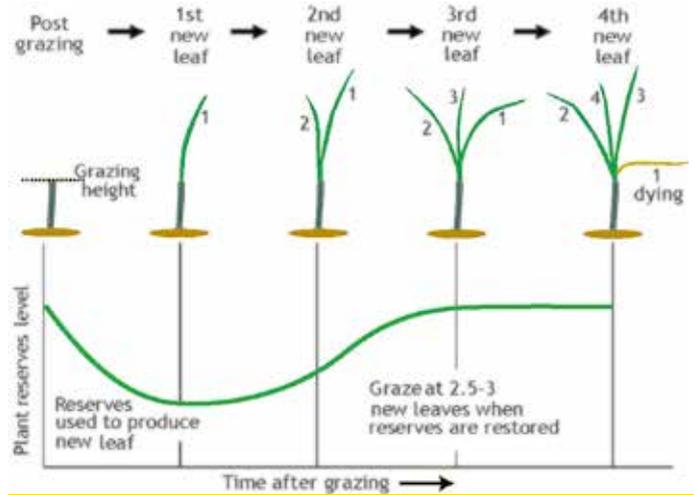


Ryegrass clump



Ryegrass tiller

In mid spring it may take 15 days for a tiller to produce three leaves, with a new leaf produced every five days thereafter. In colder periods, it may take up to 50 days for a tiller to reach the three-leaf stage, with a new leaf produced every 17 days.

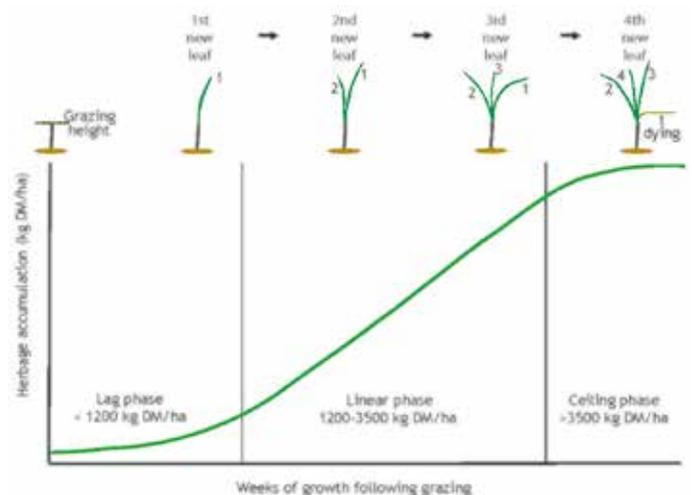


Tiller leaf production

- Typically, fields grow in three phases, working in line with tiller production and energy reserves:
- The lag phase – where grass is typically less than 1200kg DM / ha
 - The linear phase – where grass is typically between 1200 and 3500kg DM / ha
 - The ceiling phase – where grass is typically above 3500kg DM / ha.

During the lag phase the tiller grows its first leaf; in the linear phase the second and third leaves develop; and in the ceiling phase the fourth leaf develops and the first leaf starts to die off.

When striving for peak grass performance, the aim should be to maintain grass growth in the linear phase of development, where high net growth rates and high grassland quality are achieved.



Three phases of grassland development

GRASS SEED QUALITY

IMPORTANT FACTS TO CONSIDER WHEN BUYING SEED

TOOLS

Few farmers would rely on genetics from the past for livestock breeding but many stick with the same grass seed varieties and mixtures year after year – even if they aren't delivering the best results.

For some farmers, the prospect of picking a new grass can seem daunting. There are hundreds of different varieties, blends and mixtures available – so how do you know which one will work best?

If you are unsure about which product to pick, we advise selecting a grass seed from one of the UK's Recommended Lists. Bred to perform in UK conditions, grasses included on Recommended Lists have been tried and tested by farmers, who've seen real results.

As a starting place, perennial ryegrass remains the most popular form of grass for grazing animals in the UK. But there are many other varieties that the farming sector relies on including clover, herbs and other forms of forage crops. Used in conjunction with modern grass varieties, in specially devised blends and mixtures, these can bring big yield benefits – giving animals additional essential vitamins and minerals to help weight gain, while also reducing nitrogen fertiliser requirements.

Over the following pages we've put together a quick guide to the main species available, and most beneficial to UK farmers.

Species	Description	Min germ temperature	Seeds/kg
RYEGRASSES	All ryegrasses are capable of producing high yields of very high quality, high-energy grass for cattle grazing. They are all very flexible and can be used for both cutting and grazing. They are very effective users of nitrogen but must be maintained well to maximise productivity.		
PERENNIAL RYEGRASS <i>Lolium perenne</i>	The most popular grass used for dairy enterprises. Generally persistent for up to five years.	7-8°C	600,000 (dip) 290,000 (tet)
HYBRID RYEGRASS <i>Lolium perenne</i>	Can extend the shoulders of the grazing season. Hybrid grasses are also persistent for three to five years depending on genetic capabilities and can produce up to 10% more dry matter than perennials.	5-6°C	450,000 (dip) 269,000 (tet)
ITALIAN RYEGRASS <i>Lolium multiflorum</i>	Generally found in short-term silage mixtures, it is a two-year species that grow to temperatures as low as 3-4°C and can extend the grazing season by three to four weeks in spring and autumn. Italian ryegrasses are capable of producing up to 20% more dry matter than perennials.	4-5°C	430,000 (dip) 265,000 (tet)
WESTERWOLD <i>Lolium mul.</i> <i>westerwoldicum</i>	Rapidly establishing annual species which gives high productivity within 12 months of sowing. This species is useful for sowing immediately after maize or cereal harvest in autumn or in spring, when high yields are required within 3-6 months of sowing.	3-4°C	400,000 (dip) 221,000 (tet)

Species	Description	Min germ temperature	Seeds/kg
CLOVER	Clover fixes nitrogen in the soil (figures of 170-220kg N/ha/yr are achievable) - and is therefore a very valuable species in efficient grassland management.		
WHITE CLOVER	An absolute essential for any grazing livestock system. This perennial species provides 'free' nitrogen, which has been fixed from the atmosphere, and can feed companion grasses. Adding white clover to grassland can increase sward digestibility, especially in the summer period. It can also improve grass protein levels and trials have proved increase intakes on grass / clover swards compared to grass alone.	9-10°C	1,500,000
RED CLOVER	Red clover is a useful plant for lactating cows and can help boost milk production but should be avoided by pregnant and breeding animals. When well managed, red clover can persist for up to five years, fixing around 50 kg N/ha/annum more than white clover. Usually sown with Italian ryegrass in short-term leys, it can also be sown with perennial and hybrid grasses to extend the lifetime of a sward by helping to suppress weeds. Red clover is typically quicker to establish than white clover although not as long lasting or tolerant of poorer conditions/management.	9-10°C	520,000



Annual Meadow-grass is a low-growing grass which is a light green colour. It grows from a central base, to which all the shoots can be traced, and has a creeping rootstock.

The blade-like leaves are blunt-tipped and the yellow-green flower head is triangular with branched spikelets that contain the flowers.

ANNUAL MEADOWGRASS
Poa annua



Docks (*Rumex* spp.) are the most pernicious and damaging of all grassland weeds.

- Docks compete with grass for light, nutrients and moisture and reduce grass yields and have less than 65% of the feed value of grass
- Docks are unpalatable and, in general, animals will only eat them if there is nothing else available. Excessive quantities of docks in the diet can cause dietary upsets, especially in young animals. When fields become infested with docks, the available grazing is reduced, which then impacts on the planned grazing cycle. Presence of docks in silage can affect fermentation, thus reducing overall quality.

DOCKS
Rumex spp.



A critical weed to be able to identify, and remove, is Ragwort. This weed is potentially deadly to livestock and is listed in the Injurious Weeds Act, which occupiers can be required by law to control. Under the Ragwort Control Act (2003), a code of practice was developed giving guidance on identification, priorities for control, methods, environmental considerations, and health and safety issues.

- They have a daisy-like yellow flower, flowering from May to October
- Ragwort is a danger to all stock, but particularly horses, cattle, free-range pigs and chickens. Alkaloids cause cirrhosis of the liver and there is no known antidote
- Ragwort is largely unpalatable; ragwort may be eaten when green, particularly when other grazing is sparse. It is palatable when dead or dying because of the release of sugars, so contamination of hay or silage is very dangerous.

RAGWORT



Creeping buttercup is the most common species and is a problem in heavily grazed, poached or wet pastures.

- Animals tend not to graze areas infested with buttercup as it has an acrid taste and affects grass yield and reduces hay value.

BUTTERCUPS



There are 150 species of thistles worldwide, with 20 in the UK.

- Thistles need controlling as they compete with grass for space, light, nutrients and water
- Thistles are unpalatable to stock and reduce the available grazing, whilst increasing the incidences of Orf.
- The two most common and damaging are creeping thistle and spear (Scotch) thistle.
- Creeping Thistle (*Cirsium arvense*): A perennial that grows from seed or from root sections in the soil. Once established, the root mass can be greater than the plant above ground, competing effectively with the grass.
- Spear Thistle (*Cirsium vulgare*): A biennial that grows from seed, and in the first year often goes unnoticed, since it produces only a small rosette. In the second year the plant can grow to over a metre in diameter before flowering, posing a serious economic threat.

THISTLES



Favouring high-fertility sites, nettles spread through tough roots forming clumps.

- Nettles compete with grass for light, water and nutrients and, where nettles are dense, will out-compete the sward
- Grazing stock avoids mature nettles, reducing the productivity of the swards.
- Nettles in hay or silage may cause rejection by stock because of the contamination
- Best controlled in the spring when they are 30-45cm tall
- Frequently cutting nettles often results in more vigorous regrowth.

NETTLES



Common Chickweed is the most common annual weed and can persist in rotational grass and establish in long-term pastures where there are gaps in swards due to poaching or slurry injection.

- With a prostrate habit and fast growth, chickweed restricts tillering of establishing grass and clover and fills in bare spaces in swards
- Autumn sowings can be a problem as chickweed may overtake the slower establishing grasses and clovers, filling in bare patches
- Its high moisture content will cause difficulties when trying to wilt for silage and also upset silage fermentation affecting the feed value
- It will also mean a longer drying time for hay-making with loss of quality
- Large chickweed populations may cause digestive upset in grazing lambs and calves.

CHICKWEED

There are lots of weeds that can invade pastures, and here we have tried to list all the ones that are relevant to grassland and pasture in the UK.

For more specific advice on how to control weeds in your grassland visit Dow Agrosiences website at <http://uk.dowagro.com/product-category/grassland/>

DISEASES

IDENTIFICATION



Characterised by scattered orange spores over the leaves, seen in late August and September.

Occurs with high rates of grass growth combined with warm days and dewy nights i.e more uncontrolled growth results in more dead material at base of plant (higher probability of harbouring spores).

Tends to reduce yield as a result of plant stress and decrease in palatability.

Spread by wind and rain splash.

CROWN RUST



Characterised by White "sappy substance" and becomes more active during the spring and autumn periods.

Spores are produced in warm, humid conditions and damage leaf area, reducing yield and palatability. Particularly susceptible plants are the faster growing ryegrasses species such as Italians.

Spread by wind and rain splash and remain dormant through winter periods to become active early spring. Dead material and excess growth provide shade and high humidity, the ideal environment for mildew!

MILDEW



A fungal infection that produces brown spots surrounded by yellowing tissue, which is encouraged by wet and cloudy weather.

Cattle reject infected areas leading to excess growth and more disease build up.

Controlled by variety selection and excess growth management, topping grazing and encouraging new growth.

Spread by spores, wind and rain.

LEAF SPOT
Drechslera



Brown Rust occurs early in the season, during April and May and throughout England and Wales.

It only affects ryegrasses and is a different species to the brown rusts that infects wheat and barley. It can reach moderate levels in some varieties, but most have good resistance.

It can reach moderate levels in some varieties, but most have good resistance.

BROWN RUST

PESTS

IDENTIFICATION

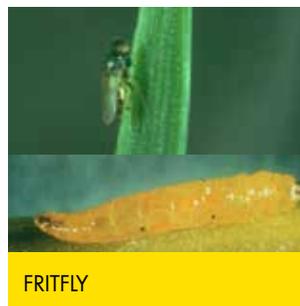
TOOLS



The Grey Field Slug (*Deroceras reticulatum*) is particularly active in wet seasons especially on the heavier soil types.

It feeds on the shoots of newly germinated seeds, killing the plant entirely and may leave large areas completely devoid of plants. Damage is therefore most likely on direct reseeded leys. Other symptoms include shredding of the leaves of older plants. Slime trails would also be obvious.

SLUGS



This larva of the Frit fly (*Oscinella frit*) attacks all cereal and grass crops especially those following grassy stubbles or grass. The Frit fly larvae are yellow-whitish in colour and can grow to 5 mm long.

To help prevent Frifly, leave a 10 week gap between the previous grass crop or grassy stubble. If grass is sown after, grass seedlings will be attacked by larvae migrating out of the old sward in addition to those hatching from eggs laid by incoming adult flies. The problem is more acute in direct drilled reseeded than reseeding after ploughing.

FRITFLY



Leatherjackets are the larvae of Crane-flies (*Tipula* spp), also known as Daddy-long-legs. These soil living larvae cause considerable damage to roots and stems of many agricultural and horticultural crops, particularly of young plants.

- Legless, grey brown thick, tough wrinkled skin - growing to about 2 inches in length
- On established grassland high infestations may result in large bare patches appearing in the field. With low levels of infestation spring growth may be impeded.
- Reduces yield and, at the economic threshold of 1 million leatherjackets per ha, the weight of leatherjackets feeding below ground can be greater than the weight of livestock above ground. New sowings or reseeded leys may be completely destroyed
- The presence of large numbers of rooks, crows and starlings also indicates the presence of large populations of leatherjackets.

LEATHERJACKET



The larvae of several species of chafer beetle can also cause damage to grassland in various parts of the UK. The adults are 8-10 mm long with a green head and thorax and reddish brown wing cases:

- The grubs are white and about 18-20 mm long when fully grown
- The feeding of the larvae produces patches of poorly grown grass that may turn very brown in dry weather
- Damage is most likely to be seen in September–October
- Substantial bird activity may indicate infestation, as they actively search out the grubs
- Once infested, pastures tend to be re-infested in subsequent seasons unless they are treated with an appropriate agrochemical.

CHAFERS





Barenbrug UK Ltd,
33 Perkins Road,
Rougham Industrial Estate,
Bury St Edmunds,
Suffolk
IP30 9ND

Phone: +44 (0) 1359 272000
www.barenbrug.co.uk

Barenbrug UK Ltd,
Units 5-7 Abbots Road,
Bankside Industrial Estate
Falkirk,
Scotland
FK2 7XP

Phone: +44 (0) 1324 633188
info@barenbrug.co.uk

