



GRASSLAND MANAGEMENT GUIDE



About Us

Grass experts since 1904

Our profession is plant breeding; selecting and developing quality varieties with the essential, unique characteristics to meet the ever-increasing demands from farmers for top quality forage grass, environmental and sustainable crops.

From its founding days in 1904 the Royal Barenbrug Group has grown into a global seed company with breeding and research stations on 6 continents.

Still privately owned, our knowledge and experience of grass seed is second to none.

We specialise in plant breeding, seed production and the international marketing of forage grass, forage crops and turf grasses.

With operating companies in 18 countries on 6 continents, we have been the leading grass seed business in the world for over 120 years.

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THE STORY OF GRASS



Year 7 Final Cross

A new variety is created by crossing the very best of the previous generations



Years 3-6 Selection

Plants with desirable traits are trialled and chosen for further crossing



Years 1-2 Crossing

Parents are crossed & selected for desirable characteristics



Years 8-10 Performance Trials

Varieties are trialled in several locations to measure performance including yield, quality, density, & disease resistance



Years 11-12 Multiplication

Varieties that have topped the performance trials are multiplied to generate larger seed quantities



Years 13-17 Variety Registration

Varieties are entered into official independent trials for UK Variety Registration, & entry onto Recommended Lists



Years 18-19 Production

Varieties that are successfully registered in the UK go into commercial seed production, & then become commercially available

The breeding & commercialisation of a new grass variety is a long & complex process



The Value of Grassland

Good quality grassland is the cheapest feed for ruminant livestock and is the base upon which profitable farming is built.

Of the UK's 17-18 million hectares of Utilised Agricultural Area, 57% is permanent grassland, and a further 7% is temporary grassland (DEFRA Farm Evidence Pack, July 2024).

Grass is important in all areas of agriculture, not only for livestock but as a component in arable rotations to interrupt pest cycles, improve soil health and promote bio- and income diversity.

The UK has an ideal climate for growing ryegrass. Ryegrass grows best at between 5°C and 25°C – and most of the UK is between these temperatures a great deal of the time. Like all other crops, growing grass requires careful management to maximise yields and utilisation. Treat your grassland like a perennial crop, and under ideal conditions grass can yield up to 15T of dry matter/hectare/year.

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

With access to information about grass physiology and types, different pasture species, and management techniques, farmers can make informed choices to optimise their grass and pasture growth, quality, utilisation, resilience, persistence, and ultimately, its contribution to the bottom line.

4 Steps to Success

If you want to turn your grass into gold, take into consideration these 4 things:

1. Understand



- Learn more about: pasture species, ryegrass varieties, plant growth, and management
- Use our Field Indexing Guide to understand what conditions fields are in and how they're contributing to farm production

2. Think Soils



- Get soil structure and soil fertility right to optimise grass growth and quality

3. Plan



- Consider farm production goals, and how forage can help to achieve them

4. Establish & Develop



- Reseeding
- Overseeding
- Establish and manage through the first year

Pasture Species Guide

1. Understand



Perennial ryegrass remains the most popular grass for pastoral agriculture in the UK. But there are many other species that the farming sector relies on including clover, herbs, brassicas, and other grasses. Other species can be used to fill gaps in the farm fodder flow, reduce fertiliser inputs, improve soil structure, provide biodiversity, and thrive in conditions where ryegrasses struggle.

All ryegrasses are capable of producing high yields of high quality grass for cattle grazing. They can be used for both cutting and grazing. Ryegrass varieties are either diploid (two sets of chromosomes) or tetraploid (four sets of chromosomes) forms. In general, tetraploid varieties are larger plants with wider leaves and higher water-soluble carbohydrate content, meaning improved digestibility, intake, utilisation and animal performance. A lower tiller density makes tetraploids more clover friendly in a mixture. Diploids have a higher tiller density making them more robust to hoof traffic and weather conditions, as well as more competitive with weeds. Used together in a mixture, diploids and tetraploids provide the best of both worlds.

Grasses

PERENNIAL RYEGRASS - *Lolium perenne*



- Very high palatability and nutritional quality
- Favourable response to nitrogen fertiliser
- Strong establishment and tillering under favourable conditions
- Good persistence under regular defoliation and in well managed swards
- Wide use in UK mixtures; many varieties bred for disease resistance, different heading dates (early, intermediate, late) to spread growth curve.

ITALIAN RYEGRASS - *Lolium multiflorum*



- Very fast establishment and rapid early growth
- High yield potential
- Beneficial bulk / leaf production (large root and leaf systems)
- Useful in short leys or catch crop situations; provides quick "bite" or fill in mixtures
- Good response to nitrogen fertiliser
- Growth at lower soil temperatures

HYBRID RYEGRASS - *Lolium X hybridum*



- Combines beneficial traits of perennial and Italian ryegrass: higher yield (especially in early years), better persistence than Italian, and good quality forage
- Extended growing season
- Advantageous flexibility: usable for both grazing and conservation cutting
- Good ground cover / sward density
- Potential to respond quickly to rainfall

WESTERWOLD - *Lolium multiflorum westerwoldicum*



- Very vigorous growth, high biomass production in its short life span
- Rapid establishment and quick production, useful for silage or "bulk up" cuts
- Often used in short term leys
- Good for zero grazing systems or high cut frequency

Other Grasses

TIMOTHY - *Phleum pratense*



- Very winter hardy and well adapted to cooler, wetter climates
- Good persistence in wetter soils and in soils of moderate fertility
- Maintains palatability into mid summer when some other grasses may become less digestible
- Provides "mid season lift" in mixtures when ryegrasses slow
- Useful in mixtures targeted for grazing, particularly sheep/mixed swards

COCKSFOOT - *Dactylis glomerata*



- Deep rooting, good drought tolerance and resilience in drier periods
- Good early spring growth ("early bite")
- Reasonable persistence under less intensive management
- Compatible in mixed swards, especially in lower fertility or lower input systems
- Tolerant of stress, lower fertility, and less intensive management

TALL FESCUE - *Festuca arundinacea*



- Very hardy and persistent; tolerant of a wide range of soil types including wetter and drier soils
- Deep root system gives better drought resilience and capacity to access deeper moisture
- Good resistance to extremes (frost, heat)
- Modern varieties have softer leaves for increased palatability and ease of management
- Tolerant of waterlogging and acidic soils
- Long persistence under grazing if properly managed

MEADOW FESCUE - *Festuca pratensis*



- Useful tolerance to both wet and dry soils
- Good digestibility
- Cold tolerant and persistent in temperate climates
- Moderate grazing tolerance
- Tolerant of stress and low fertility

Herbs

CHICORY - *Chicorium intybus*



A herb with salad-like leaves, and blue flowers. Has very good nutritional quality, and can be used to finish fattening animals. Often used in a mix with grass to augment pasture quality and provide biodiversity. Has a very deep taproot which can help to improve soil structure and drainage, and access water and nutrients below the grass root zone. Has anthelmintic properties.

PLANTAIN - *Plantago lanceolata*



A perennial herb with a deep tap root, making it tolerant to dry conditions. The taproot can improve soil structure and drainage, and brings up minerals from below the root zone that augment a ruminant diet. Plantain has high digestibility and palatability. Also known as ribwort plantain.

BURNET - *Sanguisorba minor*



A perennial herb commonly used in multispecies mixtures. Deeply taprooted for tolerance to conditions, with strong spring growth. High forage quality and frost tolerance. Requires careful management to maintain it in grass swards.

Deeply toothed pinnate leaves on central stalks. Grows from a basal rosette. Attractive red flowers.

YARROW - *Achillea millifolium*



A perennial herb commonly used in multi-species swards. Deep rooting, allowing for drought tolerance and mineral uptake. Tolerant to frost.

Requires careful management to maintain it in a grass sward. Small fern-like leaves, and small white flowers.



SHEEPS PARSLEY - *Petroselinum crispum*



A perennial herb commonly used in multi-species swards. Deeply taprooted for increased plant and sward resilience, as well as mineral content and nutrition to livestock. Frost tolerant. Requires careful management to maintain it in a grass sward.

Growing from a low crown, deltoid leaves looking very much like culinary parsley. White flowers.

ALSIKE CLOVER - *Trifolium hybridum*



A short-lived perennial legume, with good winter tolerance. Greater tolerance to acidic soils than other clovers. Fixes nitrogen for the benefit of accompanying species and improved forage quality.

Low growing but can be cut. Upright and hairless, leaves have toothed margins. Pin to white flowers. Fibrous rather than tap-rooted, but root systems are extensive. Not recommended in mixtures for horses

Legumes

WHITE & RED CLOVER

Clovers fix nitrogen in the soil and are a valuable contributor to high quality pastures. The amount of N fixed depends on several factors including clover species, soil temperature, amount of artificial nitrogen present, and rainfall. Adding clover to grassland can increase sward digestibility and protein levels.



White Clover - *Trifolium repens*

A perennial legume with round trifoliolate leaves. Spreads vegetatively using stolons - above-ground branches that provide sites for new leaves, roots, and flowers. White clovers have a low growing point making them very well suited to grazing.



Red Clover - *Trifolium pratense*

A perennial legume that typically lasts for two to four years. Oval leaves, an upright growth habit, and a strong deep tap root. Red clovers are larger and taller than white clover, and are excellent at attracting pollinators. Their growing point is higher up the plant and they are less tolerant of close or constant grazing, making red clovers more suited to cutting systems.

SAINFOIN - *Onobrychis viciifolia*



A perennial legume that fixes nitrogen, and has a deep taproot. Very palatable, can be cut or grazed. Requires careful management to maintain it in a grass sward. High drought tolerance. Non-bloating legume due to condensed tannins. Very frost tolerant.

Elliptically-shaped, pinnate leaves, growing on stalks from a basal crown. Distinctive pink florets arrange conically.

BIRDSFOOT TREFOIL - *Lotus corniculatus*



A perennial legume that fixes nitrogen, often included in multispecies swards. Winter hardy, typically low-growing, and provides improved forage nutrition. A medium-deep but laterally spreading root system. Requires careful management to maintain it in a grass sward.

Alternating trifoliolate leaves with a pair of leaflets at the base. Typically low-growing. Vibrant yellow flowers typically found in groups of 5. Seed pods resemble a bird's foot.

For more information on brassica crops, please consult our [Brassica & Forage Crops Guide](#).



Grass Seed Quality

Quality in Every Bag

In addition to breeding high performing varieties and designing products that provide solutions for on-farm production goals, selling high quality seed relies on sound production principles. Barenbrug UK has an excellent seed production team and group of seed growers, dedicated to making sure that everything we sell is up to standard.

For more information on varieties, consult the latest Recommended Grass and Clover List. Varieties included on Recommended Lists have been have been trialled in robust small-plot trials and subjected to rigorous scientific review.

All seed crops are inspected by trained and registered seed inspectors, who examine crops to make sure they are the correct variety, as well as crop cleanliness.

After harvest, all crops are tested for purity and germination. Purity is a count of the amount of weed seeds, inert and other matter in the seed sample, and germination is the percentage of seeds that germinate in standard conditions over a set amount of time. Both factors must achieve a minimum to be sold in the UK, and we strive to far exceed both of those standards.

When the seed production process has been followed to the letter, certified seed is the result, which means we can guarantee the quality of every bag of seed that we sell. We can trace the origin of that seed right back through our entire production process to the basic seed sown in the ground, and know what has happened every step of the way.

Cheap seed makes expensive feed – buying certified seed is the best way to guarantee the successful establishment of a field, and its long term success as a result.

Forage seeds are generally small; ryegrass seeds range between 221,000 seeds/kg for tetraploid Italians, to 600,000 seeds/kg for diploid perennial ryegrass. Clovers and brassicas are smaller again, with 1.5 million seeds/kg for white clover. There is a lot of potential feed in one kg of seed. For more information on brassica crops, please consult our Brassica & Forage Crops Guide.

Plant Physiology

A ryegrass field is made up of a population of ryegrass plants, each of which is comprised of tillers. A tiller is comprised of a basal stem, a leaf sheath and up to 3 growing leaves.

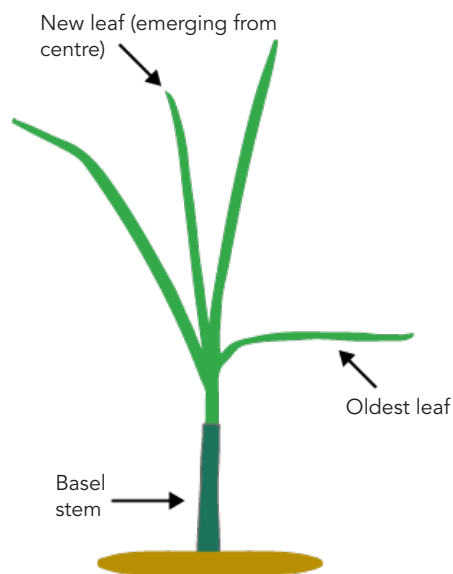
A tiller will only support 3 live leaves. As a fourth new leaf is produced, the oldest leaf starts to die. When a fifth leaf is produced, the second leaf dies and so on.

What appears to be one ryegrass plant is an amalgamation of mother and daughter tillers, sharing the same rooting space. 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 3 leaves will vary, depending on growing conditions.

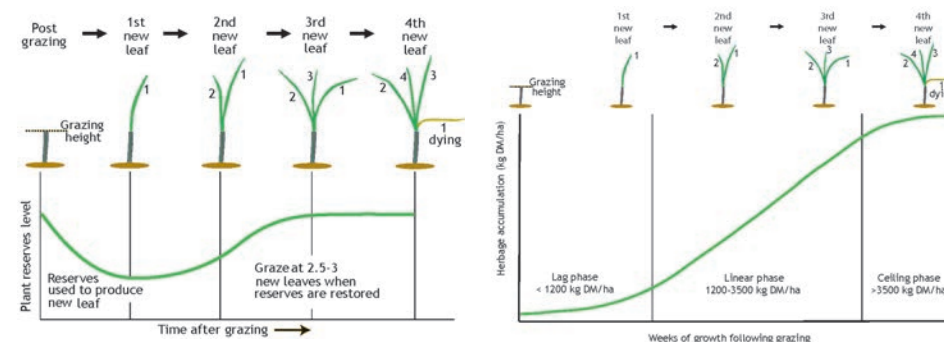


Ryegrass clump



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

Three phases of grassland development

Typically, fields grow in 3 phases, working in line with tiller production and energy reserves:

- The lag phase – where grass is less than 1200kg DM/ha
- The linear phase – where grass is between 1200 - 3500kg DM/ha
- The ceiling phase – where grass is above 3500kg DM/ha.

During the lag phase the tiller is using energy reserves stored in the bottom 5cm of the above-ground plant to furnish the growth of its first leaf. In the linear phase the second and third leaves develop, at an increased rate because photosynthesis can be used to power further leaf development. In the ceiling phase the fourth leaf develops, and the first leaf starts to die off, meaning that there is little gain in biomass, and the beginnings of reduction in stand quality. Additionally, the accumulation of dying older leaves can create an ideal environment for fungal disease proliferation.

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 quality are achieved. This means not grazing or cutting too low, leaving the plant sufficient energy reserves to grow the first leaf, as well as resting plants long enough to replenish energy reserves ahead of the next defoliation. It also means cutting or grazing relatively frequently before bottom leaf senescence.



7 Habits for Effective Grassland Management

- Control weeds
- Limit soil damage (compaction or poaching) wherever possible
- Make a fertiliser plan - soil test and take a long-term view
- Set up fields to promote even and consistent grazing; this can include altering field size based on the number of animals, and the position of water trough and gates, but also minding the size of flock or herd and how long they are in a field
- Graze to an appropriate residual, leaving at least 5cm of plant behind so that the first leaf can regrow efficiently
- Rest the field long enough so that the ryegrass plants have a chance to replenish their reserves; ideal time to return is at the 2.5 - 3 leaf stage, also coinciding with when pasture quality and quantity is optimised
- Consider mowing to even up a field and maintain the grazing height, particularly during reheading season or if patches are consistently ungrazed

Fertiliser

Current soil tests are the best way to measure and manage the nutrient and pH profile of your soil. Ryegrass swards are responsive to nutrient additions, particularly in light and frequent applications.

Aim to maintain a soil pH of 6 or above, and soil nutrients at the appropriate levels for soil type. Feed soil including nutrients removed as crop or grazing offtake.

The AHDB's Nutrient Management Guide (RB209) and the Farm Advisory Service's Technical Not TN726: Fertiliser recommendations for Grassland both give information for all cutting and grazing regimes for fertilisers as well as values for slurry and farmyard manure. Monitor areas that are prone to compaction, like gateways and around troughs, to ensure soils are not being damaged. Also, wherever possible, strive for optimal grazing management so that grass plants and populations are kept in good condition.

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 sward stick, which is available free of charge. Printed with the optimum heights for grass for both sheep and cattle, 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. Walk all relevant fields once a week to monitor sward height. Following a similar route each time, take 30 to 40 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.

You can order **FREE** sward sticks from our website
www.barenbrug.co.uk

BARENBRUG
SWARD STICK
Cattle

Designed for rotational grazing of cows and calves.

How to use a sward stick
 Measuring grass regularly is a crucial part of many rotational grazing systems to allow for planning and allocation. As well as the information gathered when measuring, regular walking of grass crops also gives an opportunity to quickly identify problems such as weed ingress.

- Measure every week to 10 days. Walk the same route in a 'W' pattern, with 30 readings in each field. Avoid any unrepresentative patches.
- Take a reading by placing a light object (such as a Barenbrug catalogue) on the sward to compress the grass slightly. Place the swardstick upright next to the catalogue and record the corresponding reading for your records.
- Move livestock into the field at the maximum optimum grazing zone and take out of the field at minimum grazing zone.
- Don't let the swards get too long or over grass - this reduces sward density, regrowth, clover content and overall quality.

HEIGHT (cm)	SPRING	LATE SPRING & SUMMER	AUTUMN	
	Kg DM/ha			
15	2900	3800	3500	TOO LONG
14	2850	3670	3470	
13	2720	3540	3370	
12	2590	3400	3180	
11	2460	3250	3040	OPTIMUM CATTLE GRAZING ZONE
10	2330	3100	2880	
9	2200	2950	2700	
8	2070	2800	2500	
7	1930	2640	2300	
6	1790	2450	2100	
5	1640	2250	1900	DO NOT GRAZE
4	1480	1950	1680	
3	1300	1650	1460	
2	1080	1300	1180	
1	800	900	860	



5 INDEXES

Understand your Grass Field Indexing

The same way that livestock can be body condition scored, so too can pastures.

This section will explain our field indexing system, wherein fields are examined, scored, ranked, and can be put into a complete farm reseeding plan.

The first step is to complete a visual assessment of your fields. Cues such as grass colour, sward density, weed content, patchiness, and preferential grazing of some areas are all factors to take into consideration.



This field is classed as an INDEX 1.

How to Score

Walk the field and assess grass and weed content.

An INDEX 1 field will have less than 25% sown species remaining and unlikely to be very productive.

The gaps created by the disappearing ryegrass have created space for weeds and low-value grasses like annual meadowgrass, yorkshire fog and bent grasses.

Weed grasses deliver less biomass than ryegrass.

An INDEX 1 field is not traffic tolerant, as lower ground cover makes the field more susceptible to poaching and damage to soil structure. In addition, an open sward means that the water cycle is compromised, from decreased plant uptake and increased run-off.

What this Means

A field with INDEX 1 is not yielding much quantity or quality of biomass and is more prone to soil damage. It is important to try to ameliorate these fields to improve the overall grass platform on the farm.



What to Do

A fertiliser application is not likely to help the situation very much, as the weeds will benefit from the nutrients as well, and there will be nutrient loss in bare patches. In this situation, a reseed is recommended.

It is important to identify any factors that might be causing the grass stand to become poor, beyond the field being old or having been managed poorly in the past. Look for issues with drainage, soil compaction, slope and aspect, and conduct a soil test to identify any nutrient deficiencies. While some issues cannot be addressed quickly, it is better to be aware of them and begin to manage accordingly.

Key Points

- Less than 25% sown species and a high weed content
- Extremely open sward increasing risk of erosion and nutrient run-off and allowing weeds and weed grasses to dominate
- Applying fertiliser will not rectify the situation
- The cost of replacing lost forage with concentrate or bought in forage will be high
- Only course of action is to do a full reseed including correcting any soil fertility or compaction issue



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 and weed content.

An INDEX 2 field will have less than 50% sown species with less than 10% clover (if sown), coupled with more than 40% weed content or gaps.

The sward will be very open.

There will be some ryegrass and sown species left in the field, but it is of poor quality.

This could be because of a number of factors including poor weather, nutrient deficiency, soil compaction or poaching in the existing sward.

What this Means

An INDEX 2 field is low yielding, low in feed value and has limited ability to cope with wear (grazing) or stress such as drought. The open areas of the field will not protect soil, hold nutrients or promote biodiversity.



What to Do

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

1. Reseed
2. Overseed to ameliorate to an INDEX 3 or 4, and give the field a few extra years of life before requiring a reseed.

It is essential to address soil fertility and compaction as part of the remedial process. When considering overseeding, select species and varieties with the vigour to compete in an overseeding situation.

Key Points

- Less than 50% sown species with less than 10% white clover (if sown)
- More than 40% weed content
- Sward very open with soil visible meaning risk of erosion and nutrient run-off is high
- pH and nutrient levels low. Compaction likely
- The cost of replacing lost forage with concentrate or bought in forage will be high



While still productive, due to age and conditions this field has some open spaces that are allowing for weed incursion. This field is classed as an INDEX 3.

How to Score

Walk the field and assess grass and weed content. An INDEX 3 field will have a total of 50-60% sown species (including clover at less than 15%, if sown). It will also have up to 40% weeds and/or gaps.

These fields can be difficult to score as they are not too bad but have some issues starting, which need to be addressed through management. Do not be afraid of scoring a field incorrectly, as any action will still help to ameliorate the grass platform.

What this Means

At INDEX 3, management can be used to correct the problem and extend the life of the sward.

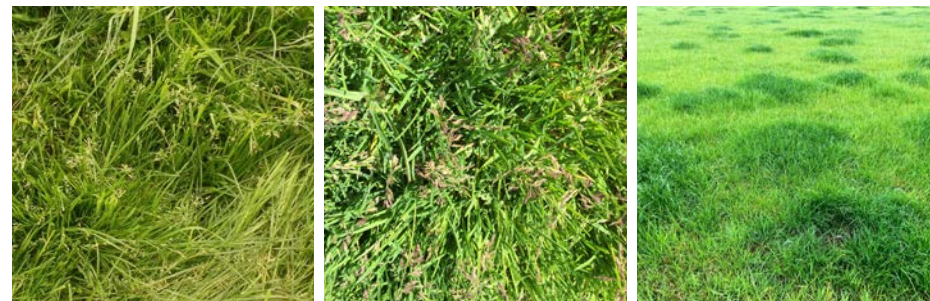
INDEX 3 fields are providing reasonable quantity and quality of forage, have sufficient ground cover, nutrient efficiency and biodiversity but still have clear room for improvement on specific issues to optimise productivity and environmental benefit.

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

What to Do

Determine what is causing the field to lose condition in order to decide what changes need to be made. This can include changes to grazing management, but also soil sampling or fixing areas of compaction.

If broad leaved weed burdens are significant, spring is an ideal time to control them chemically, as this is when the plants are actively growing. Take advice on herbicides from a BASIS qualified agronomist. Once weeds have been removed, if there are open spaces, overseed with a quality grass seed and encroach before weeds get a chance to thrive in the bare earth. This is also an ideal time to add clover which will boost the quality of the sward.



Key Points

- 50-60% sown species with less than 15% white clover (if sown)
- Open spaces allowing weeds and weed grasses to appear
- pH and nutrient levels may be sub-optimal – do soil samples
- Soil compaction may be occurring – check soil structure particularly in gateways and around water troughs
- Oversow with grass and clover (where applicable) to extend the life of the sward and prevent further decline
- The cost of replacing lost forage with concentrate or bought in forage will be low to moderate



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 and weed content. An INDEX 4 field will have a total of 60-80% sown species, and clover making up 30-40% of the plant population, if sown.

If these levels of productive species content are achieved, the clover has the potential to add 150kg N/ha/yr, a high protein content, which helps ensure high animal performance and reduced reliance on nitrogen fertiliser. In these swards nutritional quality will generally not constrain animal performance. The energy content of good, well managed ryegrass and clover swards is consistent at above 11.5 MJ/kg DM.

What this Means

This field is not a problem, but it will have to be monitored, and planned improvements (e.g weed control or overseeding) will be needed if the productive species drops towards 60%. This field provides good yields of quality forage, has good ground cover meaning soil is protected, and the high proportion of sown species means the plants are cycling efficiently and utilising any fertiliser applied. A range of sown species promotes biodiversity. The goal is to achieve as dense a sward as possible to eliminate any further invasion of unproductive species.

What to Do

To maintain an INDEX 4 field, check soil fertility regularly and apply a light application of summer nitrogen to encourage tillering. Maintaining a soil pH above 6 will help promote clover and rhizobia activity as well as promote general soil health. Regularly monitor this field to keep it from declining to INDEX 3.



Key Points

- Good proportion of desirable healthy plants; 60-80% sown species and clover content 30-40% if sown
- Some weed ingress, less than 10%, not a significant burden
- Mild signs of wear and tear
- Immediate action to improve this field is not required
- Plan field maintenance to prevent the field condition diminishing to an INDEX 3
- Animals will perform well on these fields. The cost of replacing lost forage with concentrate or bought in forage will be low to none



Vigorous growth from a dense and healthy sward free from weeds means this field is an INDEX 5.

How to Score

Walk the field and assess and weed grass content.

An INDEX 5 field will have over 80% sown species with clover making up 30-40% of the plant population, if sown.

There will be minimal weed content or gaps.

What this Means

This field is high yielding and of high quality; animals will perform well on this field. It is efficient in its use of fertiliser and water because plants are well established with a good root system. It has excellent sward density to carry livestock and protect soil and, when sown with a broad range of species, will promote plant and animal diversity within the ecosystem.

What to Do

The key here is to maintain the field at this level. In order to maintain a sward like this it is important to have good soil fertility. Regular soil sampling every 3-5 years will monitor nutrient and pH levels.



Key Points

- Greater than 80% sown species, with 30-40% white clover (if sown)
- Dense, leafy sward
- Conduct regular soil testing and soil structure monitoring to maintain this field
- Use the AHDB Nutrient Management Guide (RB209) to make a Nutrient Management Plan
- Animals will perform very well on these fields. There will be no requirement for concentrate or bought in forage



Field Indexing - Summary

There is no substitute for walking through a field and seeing it up close. Make time to walk through all the grass fields on the grass platform in order to monitor how they are performing, and how they are changing.

Remember

- Grass is the cheapest source of animal feed
- Walk your fields regularly using our field indexing system
- Fields that are INDEX 4 or 5 are 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
- Not monitoring or ameliorating fields can be a costly decision in terms of animal performance, purchased feed, and inefficient nutrient and water cycles

Next Steps

Once all fields have an index score, it will become apparent where reseeding or overseeding are most urgently required, and where improvements will have the greatest return to the farm. Continue to index fields at regular intervals to monitor changes, and for changes in management to show their effect.



Soil Structure & Nutrition

Looking after soil structure and nutrition are two key fundamentals of any good grassland management scheme. It is important to take time to assess soil structure and health to ensure it can support a productive grass ley.

Good soil structure has many benefits. It allows the roots of crops to penetrate deeper into the soil profile, improving drought tolerance and enabling crops to reach more available nutrition. Good structure will also allow better infiltration of water, reducing the risk of erosion from runoff. This means that any nutrition applied to the crop is better utilised and poses less risk to the environment.

A well-structured soil will also better retain the water that infiltrates it, reducing drought pressures. The improved drainage and water holding capacity will also help to reduce poaching and ruts from livestock and machinery.

Assessing Soil Structure

When assessing soil structure there are a few factors to consider. Soil must have moisture but not be too wet or dry, as this can make it difficult to see the structure. It is also important to pick representative areas of the field; ideally choose areas where crops are performing poorly (yellowing, stunted growth, high weed populations, poor drainage etc.) as well as areas where crops are performing well.

This will allow for comparison and to assess if structure is an issue. If there are varied soil types though a single field, then these should also be assessed separately. Areas around gateways and feeders should be avoided as these will not be representative of the field as a whole.



2. Think Soils



Dig as many soil profile pits as necessary to assess the condition of the soil. Mark out a square 50x50cm then dig to a depth of at least 30 – 40cm. Is the structure granular and blocky and easy to break apart? Or platy and difficult to split? Also look out for evidence of worm channels, root penetration and water infiltration across the whole profile. A lack of these can be a sign of poorly structured soils and compaction.

For further information, please see ahdb.org.uk/knowledge-library/soil-structure

Assessing Soil Nutrition

Assessment of nutrition should be conducted through soil sampling. Samples should be taken every 3-5 years and/or prior to reseeding and sent to the same laboratory to maintain consistency in results. Between 25-30 soil cores should be taken to 7.5cm depth in a "W" pattern across the field, avoiding gateways, feeders, water troughs etc. Sampling should be done when soils are moist. If the soil is too wet or dry it can be difficult to obtain a representative sample.

When assessing soil fertility, soil pH is as important as the quantity of nutrients present. Soil pH effects nutrient availability to the plant. A target of pH 6-6.5 is optimum for healthy grassland. A decline to pH 5.5 can reduce grass yields by 35-40%.

Remember to consider trace elements as well as the major ones. Some bedrocks are deficient in particular elements, so they will not be present in plant tissues, and therefore in the pasture component of animal diets.

Soil fertility requirements can be augmented or entirely met with the use of manures, which can also help to improve soil structure and reduce purchased fertiliser costs. Nutrient contribution of manures depends on type, system, application timing, and ground conditions. It is recommended to send off samples for analysis, to allow for more accurate nutrient management planning. For more information, please consult the AHDB's Nutrient Management Guide.



3. Plan



Making Plans to Improve the Grass Platform

Grass genetics have changed a lot in the last 20 years - with grasses showing an average year-on-year improvement in yield of 0.5%. The same as livestock genetics - don't use what's 30 years old when better is available.

Planning to reseed 15% of your grassland every year will ensure complete platform renovation every 6 years.

When choosing a grass seed mixture, think about the goals for that field in particular, but also the goals for the entire farming enterprise, and how this field fits into those.

How much feed is required in total for the year for all animals, to achieve all animal production goals?

What time of year is the feed required and in what quantities?

What is the desired life span of the ley?

Will it be sown in the spring or the autumn?

Should the ley include other species besides ryegrass - especially clover?

Will the ley be cut or grazed, or both?

What class of livestock will the ley be supporting? What are your production goals for that class?

What time of year is the most important for strong growth rates?

Are there extreme conditions that need to be taken into account - areas or fields prone to waterlogging, drying out, frost, high traffic, etc?

Grass seed can be sown at any time from April to September - ideally when the soil is warm and moist or when rain is forecast and the weather is frost free.

Ryegrasses germinate around soil temperature 10°C, and established swards restart spring growth around soil temperature 5°C.





Return on Seeding Investment

Reasons to Reseed

Reseeding is a time of investment. While the cost outlay can feel daunting, the improvement in quantity and quality of home-grown forage, especially over several years or many tonnes of feed, is very well worth the time and money.

According to the calculations on page 39, reseeding costs about xxx/ha. However, depending on conditions, reseeding can also double the dry matter tonnage per hectare of grass yield, and can also increase the quality of that forage (metabolisable energy or D-value).

Higher quality pasture is also more palatable and more easily grazed by livestock. New swards are more digestible and have a higher protein content.

Actual Costs

Here's an example of costs associated with reseeding and overseeding, when going from grass to grass. Every farm is different.

Cost of Reseeding (per ha)*

Soil sample		£25.00
Termination spray	4L/ha	£25.00
Termination spray application		£24.24
Lime & application	5T/ha	£150.00
Ploughing		£87.22
Power harrow		£82.00
Rolling		£35.11
Seed		£150.00
Drilling		£52.14
Rolling (2 passes)		£70.22
Fertiliser	200kg/ha 10-24-24 subject to soil test and advice from FACTS qualified agronomist - £520/T	£04.00
Fertiliser application		£15.93
Post emergent spray	ProClova XL - £128 pack, 1 pack does 3ha	£42.00
Post emergent spray application		£24.24
Total		£887.10

Seed cost is 17% of total reseeding cost

Cost of Overseeding (per ha)*

Soil sample		£25.00
Lime & application	5T/ha	£150.00
Liming		£47.65
Harrow		£63.06
Seed		£150.00
Drilling		£52.14
Rolling		£35.11
Fertiliser		£104.00
Fertiliser application		£15.93
Total		£642.89

*This is an example using contractor prices from the National Association of Agricultural Contractors Contracting Prices Survey 2025. Every farm is different; input prices subject to market conditions.

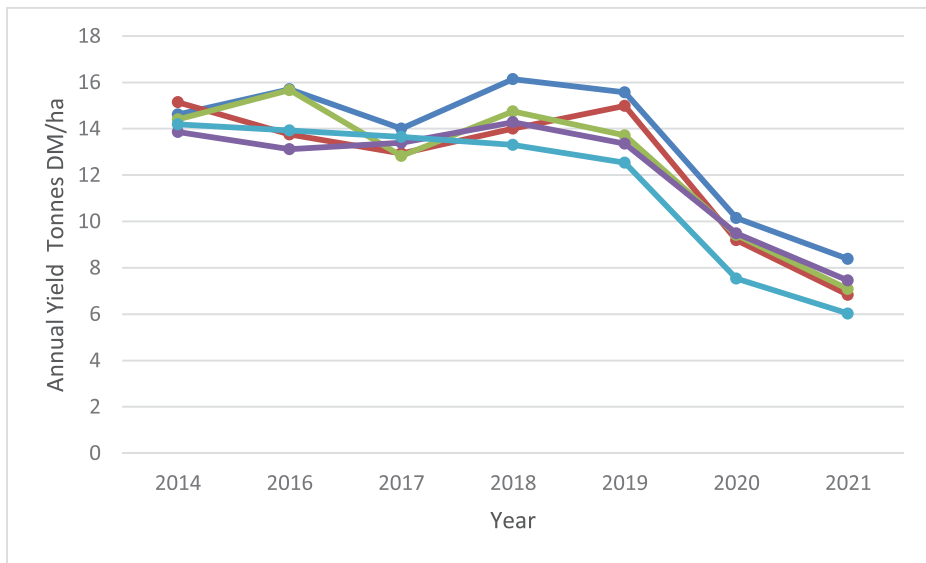


The Cost of Doing Nothing

As fields age, returns from that field can diminish. Resilience and persistence are affected by environment and management, and even with the best of both, weeds can take hold and the sown species can begin to diminish. Not only does this result in lower quantity and quality of feed, but also a decreasing response to nitrogen, meaning money is being wasted with fertiliser applications.

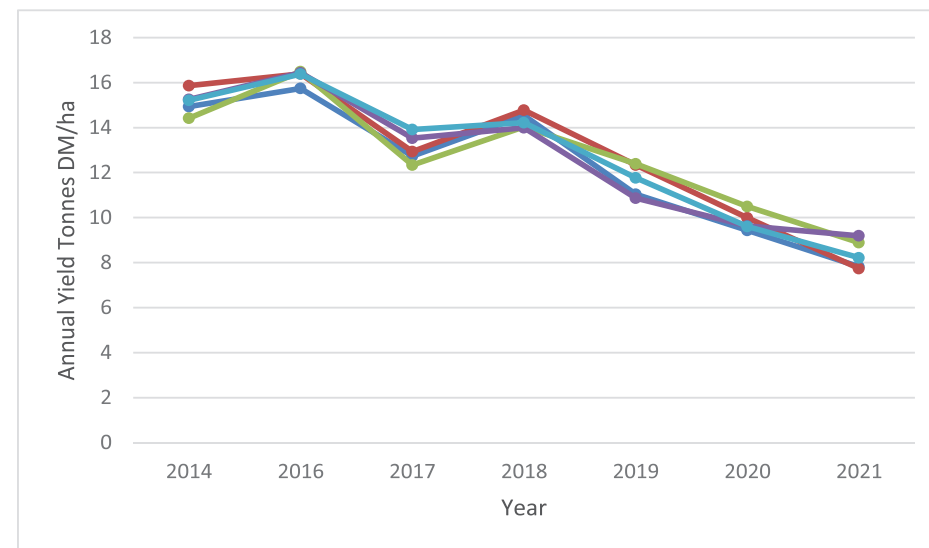
See the graphs below that illustrate the decrease in biomass production of ryegrass varieties over time.

Intermediate Heading Varieties (5 varieties)



The average decrease in yield from 2016 to 2021 was 50%.

Late Heading (5 varieties)



The average decrease in yield from 2016 to 2021 was 48%.

Credit of graphs: SAC Consulting Sheep & Beef News, January 2023.

Older fields will also prove problematic when it comes to the use of fertiliser due to a less efficient response to nitrogen from non-ryegrass species.

Overseeding

A Short to Medium Fix

Overseeding is a short- to medium-term option that can provide a quick fix and is an effective method of improving pasture productivity with lower costs than a full reseed. Overseeding is ideal for not entirely taking a field out of rotation, but needing to ameliorate the quality of some fields and the productivity of the overall platform.

While new swards typically outperform older ones, overseeding can help to increase dry matter yields short-term – reducing reliance on purchased feed. Implemented carefully, overseeding has the potential to improve pasture productivity between 30%-40% for 3-4 years, depending on field quality and species used.

When overseeding, it is crucial to use a mixture designed specifically for this purpose. Existing grasses in the ley already have an established root system to access nutrients, moisture and an established leaf canopy to capture light for photosynthesis. Any grass seed that is introduced needs to be able to compete in these conditions and overseeding mixtures are formulated accordingly. White clover can also fill in gaps to reduce weed ingress and improve pasture quality.



THIS SIDE
Not overseeded last year

THIS SIDE
Overseeded last year



4. Establish & Develop



Reseeding

For Fields Beyond Repair

Reseeding is an investment. Taking the time to reseed properly will set up a field for a long and productive contribution to the farm. Careful consideration of all the steps for reseedling will be well worth the time taken (see page 45).

An important consideration for reseedling is the product being sown, taking into consideration the production goals and other questions for the field that were considered in step 3. Careful selection of species, variety, and mixtures will be very important so that all goals can be met practically.

For up to date information on mixture products, please consult the Barenbrug UK website at www.barenbrug.co.uk

Overseeding Steps

Step 1

Dig a soil assessment pit to look for compaction and plant rooting structure, which should go 30cm deep. Address compaction as needed.

Step 2

Soil test to assess pH and nutrient levels in the top 4" of the soil. Take steps required to correct any deficiencies.

Step 3

If grass weeds make up more than 30% of the sward, harrow hard to remove them as they are usually shallow rooted and pull out easily. With a sward of more than 70% weed grasses the best option is to reseed the sward.

Control perennial weeds before seeding by spraying with a selective herbicide on advice from a BASIS qualified agronomist. Observe chemical withdrawal periods for adding grass and clover.

Step 4

Minimise competition to new seedlings by grazing tightly with sheep or taking a silage cut. Do not fertilise before overseeding, as this will favour existing plants and increase competition to the new seedlings.

Step 5

Choose a grass seed mixture designed for the job. Sow when the soil temperature and moisture levels are appropriate, or when moisture is forecast.

Use a slow seeding speed and shallow seeding depth, as forage seed is small and not tolerant to misplacement.

Step 6

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

Step 7

As soon as practicable, graze lightly, do not pull out of the ground. Allow light into the sward. Continue until the plants are well established.

Reseeding Steps

Step 1

Dig a soil assessment pit to look for compaction and plant rooting structure, which should go 30cm deep. Address compaction as needed.

Step 2

Soil test to assess pH and nutrient levels in the top 4" of the soil. This is particularly important in high rainfall areas where nutrients can leach out with water. Take necessary steps to rectify any and all issues as well as practically possible. Check which species are present, particularly weeds, as this will inform a plan for weed control before and/or after tillage and early in the life of a new pasture.

Step 3

Seed bed preparation. This will depend on the farm's approach to tillage, and can include a full plough followed by cultivation, a chemical termination of the existing sward with glyphosate, direct drilling, or a light till with a rotovator. These decisions will depend on philosophical approach to tillage, weed species present, farm rotation, and other environmental and management goals. Regardless of the approach, the goal of seed bed preparation is to plant into a fine, firm and clean seed bed to give the seed the best chance of establishment.

Step 4

Drill. Regardless of the type of machinery being used, it is important to plant forage seeds at an appropriate ground speed, so that the relatively small seeds are placed at a consistent and appropriate depth. Seeds placed too deep can take extra time to emerge or may not emerge at all, resulting in a patchy sward which allows ingress of weeds.

Step 5

Ensure good seed to soil contact by rolling. Seeds absorb moisture from the soil to begin the germination process, so good contact with soil means the process starts promptly, and germination is faster and more uniform.

Step 6

Weed control by all means possible will always benefit the quality of the new sward. The best defence against weeds is a strong grass stand, so protecting the young forage plants while the sward fills in will pay dividends over the life of the field. Grass and clover seedlings are not particularly competitive and can be overwhelmed by high weed populations, making the stand patchy and thin later on.



First Grazing of a New Sward

The role of first grazing is to allow light to the base of the sward and enable clover to flourish.

Remember:

- First grazing is not about feeding animals, its about removing the tips of the plant to encourage growth and ensuring clover has access to light and an opportunity to establish
- Don't graze too soon. Understand how the 'Pluck Test' (bottom left) can help timing. This may be 6 – 8 weeks under good conditions for perennial species
- Always use the lightest stock class available and leave a 4-5cm residual to allow the plants to recover quickly
- In spring, don't let the cover build up too much as this can reduce quality and limit tillering

When to Graze

Grazing Too Early

Grazing grass too early – before a 2.5 - 3 leaf stage – can damage grass persistency. If a plant's reserves have not been fully restored, it will require more time for the plant to regrow and recover. Repetitive early grazing can permanently decrease grassland yield, resilience and persistence. Grazing at the right time is especially important through dry summer periods when plants are under dry stress; grazing the first new growth after a period of dryness and before a tiller has 2.5 new leaves in place can seriously harm the sward.

Grazing Too Late

If grass is left to grow too long (>3500 kg DM ha or more than 3 leaves per tiller), bottom leaves will start to die off, and there will be little additional contribution to biomass. If the sward isn't grazed or cut this can cause a build-up of dead material at the base of sward leading to:

- Reduced quality
- Increased risk of disease, as rust and other fungi can build up on dying leaves
- Reduced clover content due to shading
- Decreased grazing intake and utilisation

Developing your Grassland

The First 12 Months Are Critical

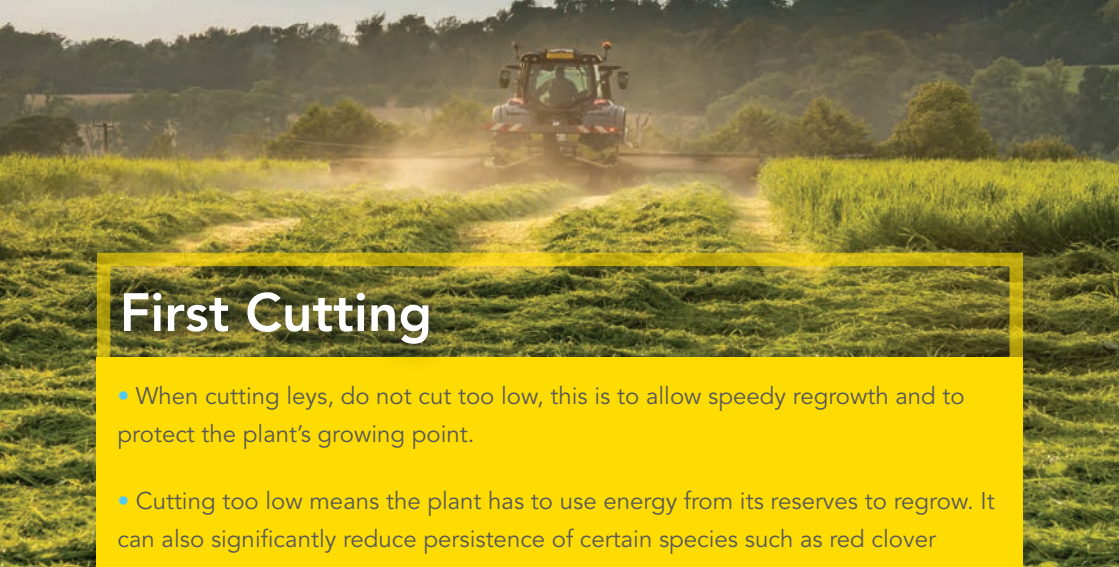
Newly sown leys should be considered as 'establishing' for the first 12 months. Many new leys can achieve high DM yields in the first year, even though their rooting structures are still developing - but management during the first year is critical to achieve long-term persistency and performance.

- Treat your grass like a high value crop
- New grassland responds well to light applications of fertiliser
- Be mindful of weeds, and control early
- Wherever possible, use grazing best management practices, and avoid damaging the new ley
- Measure and monitor field performance

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 (bottom picture), the pluck test is passed. If the entire plant's roots pull out of the ground (top picture), it is too early to graze.





First Cutting

- When cutting leys, do not cut too low, this is to allow speedy regrowth and to protect the plant's growing point.
- Cutting too low means the plant has to use energy from its reserves to regrow. It can also significantly reduce persistence of certain species such as red clover
- Try and avoid making heaving cuts of silage, haylage or hay within the first 12 months as this reduces tillering and persistency

Weed Control

Weeds compete with the grass ley, nutrients and moisture. Many weeds will thrive in newly sown leys where competition is lower.

Tackling weeds is essential as they can:

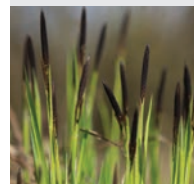
- Lead to grazing rejection of weeds as well as the grass around them; this means wasted feed but also increasingly patchy and lumpy fields
- Reduce the palatability of the sward
- Decrease the digestibility of the sward
- Be injurious when ingested
- Be poisonous e.g. Ragwort
- Set seed, contributing to the growing weed population and soil seed bank
- Host diseases and pests

Weed control can take many forms, and is best approached with a combination of methods and timings. Depending on the weed species present, consider mechanical removal such as mowing or grazing, and chemical options where appropriate.

Weed Identification

TOOLS

BLACKGRASS - *Alopecurus myosuroides*



An annual weed, commonly found on arable ground. Particularly problematic in winter crops as the majority of blackgrass seed germinates in the autumn. Requires a careful and multi-faceted control plan to prevent infestation.

Bluish-green plant, with short and hairless leaves. Tall and erect plant, with a spike inflorescence.

ANNUAL MEADOWGRASS - *Poa annua*



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.

COUCH GRASS - (Twitch Grass) - *Elymus repens*



A very competitive perennial grass weed. Spreads rapidly using sharp rhizomes (underground stems). It can be found growing on most soil types except those with low pH. It prefers heavy land but better able to spread in lighter soils. Germination mainly occurs during the autumn, but seedlings also emerge in spring especially when autumn germination is delayed by cold temperatures or lack of moisture. Reproduction is primarily using rhizomes, so cultivation that spreads the plant segments can worsen the problem.

CRESTED DOGSTAIL - *Cynosurus cristatus*



A common, tufted perennial grass weed in grassland and meadows. It tolerates many different soil types but is generally a lowland species. It grows in compacted tufts, and is stiff looking with narrow green leaves. Its dense tillering habit mean it is sometimes added to sheep pasture mixes or amenity mixtures.

SWEET VERNAL - *Anthoxanthum odoratum*



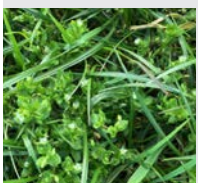
Sweet Vernal is a common perennial in grassland and meadows. Flowers early between April and July. Early seed set allows for improved population regeneration from seed, increasing persistence. This species contributes to the sweet smell of cut hay.

YORKSHIRE FOG - *Holcus ianatus*



A tufted, perennial species abundant in the UK. Seed can germinate over a wide range of soil temperatures and emerge mainly from April to October. Produces tillers that form large spreading clumps in established swards. Plants are relatively deep rooted and there is some evidence to suggest that it may have allelopathic effects on other plants in the sward. Purplish seed head, and soft hairy leaves.

COMMON CHICKWEED - *Stellaria media*



Common Chickweed is a 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.

- 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.

CLEAVERS - *Galium aparine*



A distinctive annual weed, with long rope-like square stalks, with whorls of lance-shaped leaves that are covered in sticky hairs. The stalks can create large mats that can smother or pull down other plants, and the stalks and seeds can be a nuisance for livestock.

FAT HEN - *Chenopodium album*



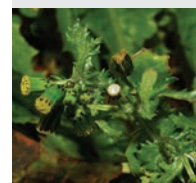
A summer annual weed that establishes quickly, particularly if soil is open. Competes with a grass sward for water and nutrients. A prolific seed producer, with seeds that can remain dormant for many years.

REDSHANK - *Persicaria maculosa*



A summer annual weed typically found in acidic soils. Establishes quickly and can smother out grass seedlings. Plant fragments can root at the nodes.

GROUNDSEL - *Senecio vulgaris*



An annual weed, common on disturbed soil. Though it can produce a lot of seed and multiple generations each year, it is not highly competitive and often disappears from a pasture after a couple of defoliations.

Deeply-cut leaves in a basal rosette, and yellow flower in a tube shape.

DAISY - *Bellis perennis*



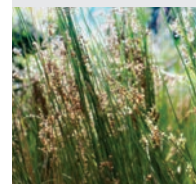
A small, low-growing weed typically found in over-grazed pastures, as it is shaded out and out-competed by tall, strong grass stands. Found particularly on poorly drained or compacted soils. Growing from a rosette, spoon-shaped leaves, and small white flowers with a yellow centre. A low-impact weed on production, but symptomatic of other problems

DANDELION - *Taraxacum officinale*



A perennial weed, common on disturbed ground. Palatable to livestock but competitive with sown species, it has a broad rosette that takes up a lot of space, and a deep strong taproot. Tooth leaved and distinctive bright yellow flowers.

RUSHES - *Juncus sp.*



Typically on poorly drained, low-lying, wet ground. Out-compete sown species, and are not palatable to livestock. Can usually be partially remedied by improving drainage and soil fertility.

BUTTERCUPS - *Ranunculus spp.*



Creeping buttercup 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.

DOCKS - *Rumex spp.*



- 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.
- Presence of docks in silage can affect fermentation, reducing overall quality.

NETTLES - *Cirsium spp.*



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 avoid mature nettles, reducing the productivity of the swards. Nettles in hay or silage may cause rejection by stock. Best controlled in the spring when they are 30-45cm tall. Frequently cutting nettles often results in more vigorous regrowth.

RAGWORT - *Senecio jacobea*



This weed is potentially deadly to livestock and is listed in the Injurious Weeds Act, which requires occupiers 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.

THISTLES - *Cirsium spp.*



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, and can increase the incidence of Orf.
- The 2 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 with the grass.

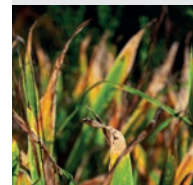
- Spear Thistle (*Cirsium vulgare*): A biennial that grows from seed, and in the first year often goes unnoticed, since it produces only a small rosette. In the second year the plant can grow to over a metre in diameter before flowering.

RYEGRASS MOSAIC VIRUS



The most important viral disease affecting ryegrass. Symptoms are more common in Italian than Perennial varieties. The virus is transmitted through a mite that thrives in dry conditions and so it is more prevalent in the East of England. Can also infect cocksfoot. Appears as light green to yellow mosaic pattern on leaves, which decreases the vigour of the plant. Severe cases can result in leaf death.

BROWN RUST - *Puccinia sp.*



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 infect wheat and barley. It can reach moderate levels in some varieties, but most have good resistance.

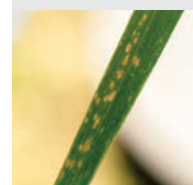
CROWN RUST - *Puccinia coronata*



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.

Tends to reduce yield as a result of plant stress and decrease in palatability. Spread by wind and rain splash. A problem particularly in the southwest of England and Wales.

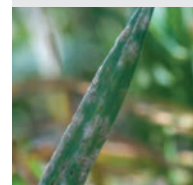
LEAF SPOT - *Drechslera sp.*



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. Spread by spores, wind and rain.

POWDERY MILDEW - *Blumeria graminis*



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.

CHAFERS



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.

FRIT FLY - *Oscinella frit*



This larva of the Frit fly 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 5mm long. To help prevent Frit fly, 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 and more risky in summer and autumn reseeded.

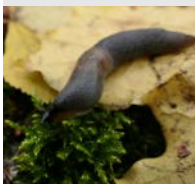
LEATHERJACKET - *Tipula spp*



Leatherjackets are the larvae of crane flies, 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.

SLUGS - *Deroceras reticulatum*



The Grey Field Slug 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.



Our Team

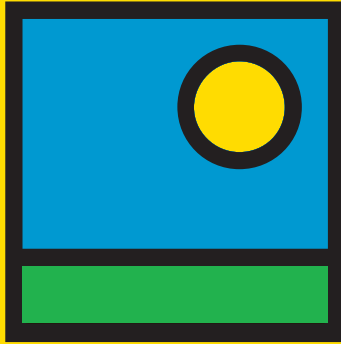
Grass experts since 1904

We have teams of regional technical grass experts, as well as research and development, production, and warehouse sites across the UK; working together as a team to serve our customers wherever they need us.

We remain at the forefront of innovation, coupled with consistent investment in people, training through the next generation of grass seed specialists, and as part of the wider Barenbrug Group we share the collective knowledge and experience from the global network with our UK customers.

If you have any questions or need expert technical advice, your local Barenbrug agriculture representative will be happy to help, contact them here:

www.barenbrug.co.uk/meet-agriculture-team



BARENBRUG

Grow with Confidence

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Conditions of sale

In case of unavailability Barenbrug UK Limited reserves the right to substitute any variety in any mixture with one of similar merit. Any change will be detailed on the bag.

The placing of an order constitutes an acceptance of our terms and conditions of sale by the buyer.

Full terms and conditions can be found at www.barenbrug.co.uk.

