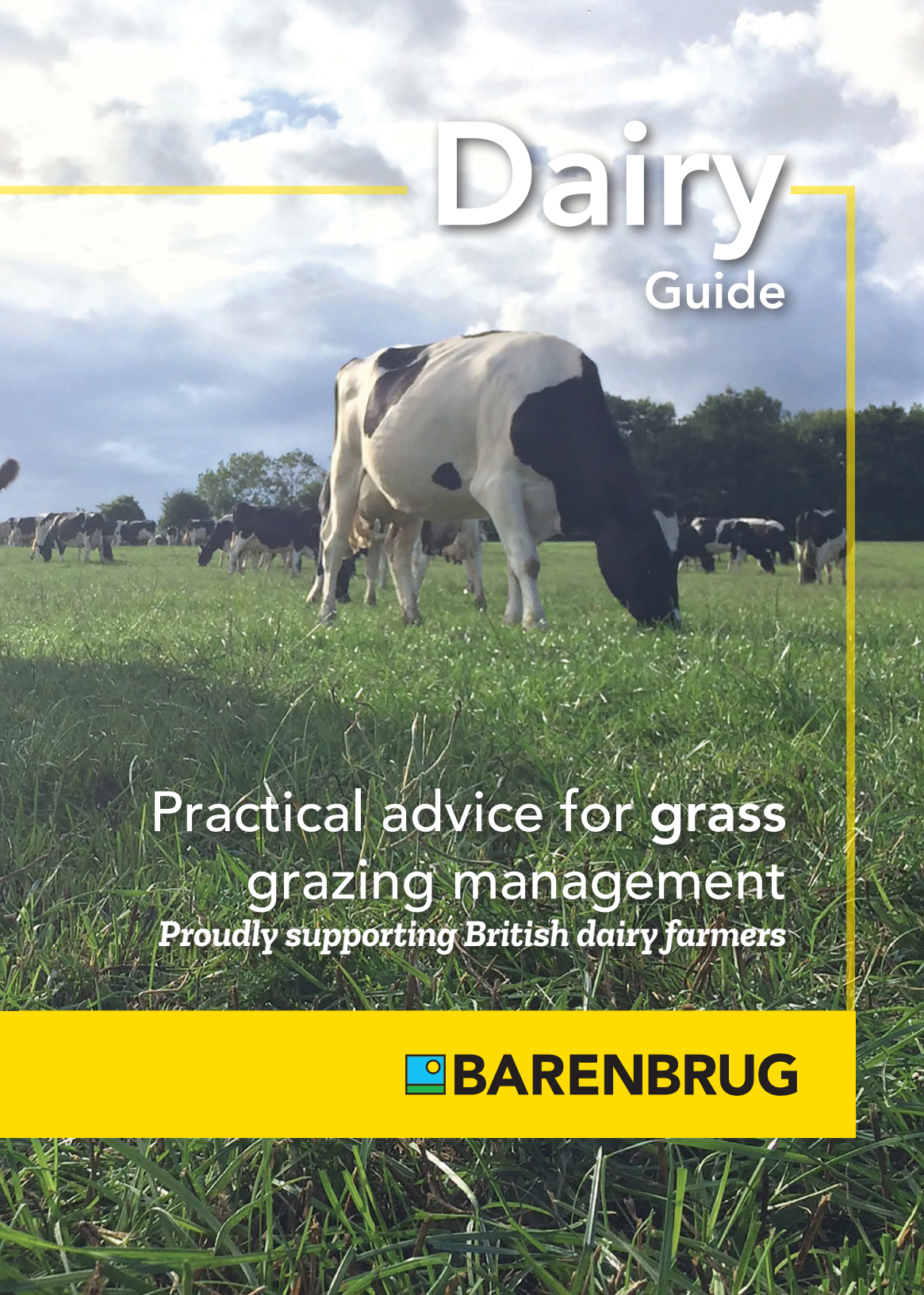


Dairy Guide

Practical advice for **grass** grazing management

Proudly supporting British dairy farmers

BARENBRUG

Welcome

Good quality grazed grassland is the cheapest feed for ruminant livestock and is the base upon which profitable farming is built. Around 70% of utilisable agricultural land in the UK is given over to grass – making it one of our nations' most important crops.

To help UK farmers get more from their grassland, Barenbrug has created a series of enterprise- and application-specific guides that set out a clear and compelling case for proactively managing grassland performance, whatever the farm focus.

Recognising that market conditions have been difficult for some time, and that farmers have more forage options available to them than ever before, Barenbrug's guides are designed to help UK farmers make the right choices and pick the right products as they work to achieve their grassland goals.

Each guide contains useful information about grassland growth and practical advice on perfecting grassland performance and looking after leys long-term. There are also details about the different grassland management techniques, and varieties and species available to UK farmers. This particular guide assesses the importance of good grassland management to dairy farming. Over the following pages we explore the science behind successful swards and how to manage grassland efficiently to maximise yields and profitability.

Sources

1: http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN02721#fullreport
2: http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN02721#fullreport
3: http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN02721#fullreport
4: http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN02721#fullreport
5: https://dairy.ahdb.org.uk/market-information/farming-data/producer-numbers/uk-producer-numbers/#.WZrsoyMrJHY
6: https://dairy.ahdb.org.uk/resources-library/market-information/farming-data/cow-numbers/#.WZro5CMrJHY
7: https://dairy.ahdb.org.uk/resources-library/market-information/farming-data/average-herd-size/#.WZroZyMrJHY
8: http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN02721#fullreport
9: https://dairy.ahdb.org.uk/resources-library/market-information/farming-data/average-milk-yield/#.WZrwsCMrJHY
10: The Agronomy Guide

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 20 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.

Guide Contents

UK Dairy Industry Facts and Figures

The UK is the third largest producer of milk in the European Union after Germany and France, and the tenth largest producer in the world[1]. In 2014, milk accounted for 17.8% of total agricultural output in the UK with the nations' dairy sector producing 14.6 billion litres of milk[1], with a market price of around £4.6bn[2].

Fluctuating farm gate prices and an increase in alternative milk products mean that the dairy industry has had an incredibly tough few years. In August 2015, farm-gate milk prices were 23.3 pence per litre, the lowest monthly figure since August 2009[3]. Over the last two years, prices have begun to rise again but the overall fall in the average income of UK dairy farms has taken its toll and the size of the sector has shrunk considerably.

In 1995 there were 35,741 registered dairy producers in the UK. By 2014 that number had fallen to just 13,815 – a 61% reduction[4]. In England and Wales alone, the last ten years has seen the number of registered dairy producers drop from 12,739 in August 2007 to 9,383 in August 2017[5]. In line with falling producer numbers, the size of the UK dairy herd fell from around 2.6 million in 1996 to around 1.9 million in 2016[6].

While the overall number of UK dairy cows has decreased, the size of the average herd has actually risen over the last twenty years. In 2016 the average number of cows per UK herd was 143, compared to 97 in 2004, and 75 in 1996[7].

In parallel, yields per cow have increased by 93% since 1975. In the mid seventies the average cow was producing around 4,099 litres per annum. By 2014 that figure had almost doubled to 7,916 – demonstrating the impact of better genetics and a greater understanding of feed requirements[8]. For 2016/17, the volume of milk in litres per cow per year is expected to be roughly the same[9].

A Shifting Landscape

Uncertainties over Brexit mean that the next few years are set to remain challenging for UK dairy farmers.

While it's almost impossible to influence external market factors, producers need to find alternative ways to maximise the efficiency of their operations to ensure that their business remains as profitable as possible.

The past 18 months have seen farm gate prices improve across the board in the ruminant sector – driven in part by increases in world milk prices. With imports of milk down, consumers are buying more UK produced foods than ever, which is helping to improve cash flow for farmers.

This trend is likely to continue for the foreseeable future with current exchange rates and a lack of clarity about the implications of Brexit. In parallel, consumers are showing more interest than ever in the provenance of food, animal welfare standards and food hygiene and safety.

With a bit more money available, now is the time for farmers to 'mend the fences' – in other words, invest in those things that have not been a priority for the last few years. For farmers looking to make improvements, increasing on-farm food production – e.g., growing more grass – is an obvious place to start.

Reasons to Invest in Grass

Regardless of breed or location, all UK dairy farmers have one thing in common: the need to provide their animals with grass to eat, whether grazed or silaged.

In dairy production, where margins are incredibly tight, high quality grass can be the key to profitability – so keeping a constant supply in front of livestock makes sound financial sense.

Essential to the production of milk, grass is a cost effective form of feed that can be utilised all year round – in spring and summer by grazing livestock; and in winter as silage.

On average, a good crop of silage will cost around £30 per tonne to produce; while hay is around £75 per tonne; and grazed grass costs just £15 per tonne (fresh weight).

Costing far less than manufactured animal feed, well-managed grassland can supply almost all of the energy and protein requirements of a dairy herd.

Consumers are also waking up to the benefits of feeding grass to livestock. Over the last few years there has been an increase in demand for produce from animals that are 100% grass-fed. With a pull from the market, many of the UK's leading supermarkets and dairy producers are starting to introduce ranges of meat and milk from cows that have a 100% grass-based diet or are out in the field for at least six months of the year.

Grass Growing
The Facts

Providing major health benefits for animals, as well as improvements in dairy produce quality, good grassland management can have a positive impact on farm finances. It can also be beneficial to the environment.

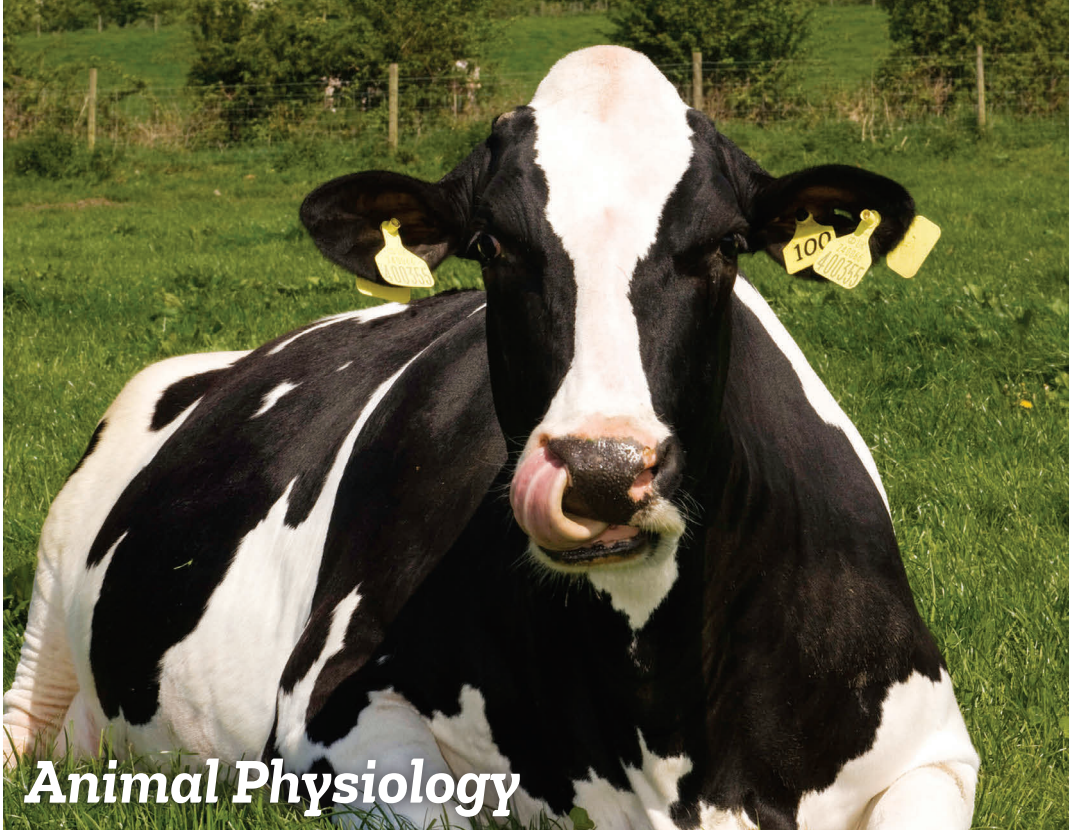
- Growing grass and other grassland crops is cheaper than buying in manufactured feed
- Grazed livestock will typically produce a better output per hectare, which will help profitability
- Animals fed on grass tend to be healthier and require less veterinary attention
- Enabling animals to graze for longer can reduce labour, machinery and housing costs
- Grazing animals recycle nutrients back into the soil through dung and urine
- Growing clover alongside grass fixes soil nitrogen, reducing the need to buy in fertilisers
- On mixed farms, growing grass in between other crops can help improve soil structure
- Farms that graze livestock have a lower carbon footprint than those that buy in food
- Growing grass makes farmers more self sufficient and less reliant on feed suppliers
- Produce from grass-fed animals is recognised as being high quality and can often command a premium.

The Science of Good Grass

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.

Making up 70%[7] of utilisable agricultural land, grass is our national crop. 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.

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.



Animal Physiology

Cattle are highly efficient at turning grass into protein and find it easier to digest than manufactured feeds. Like other ruminant animals, cows like to spend much of their day feeding. In fact, they are most efficient when small volumes of forage travel through their digestive system throughout the day.

Cows have prehensile tongues, which they wrap around grass to graze it. Once the grass has been pulled out of the sward, cows tend to swallow it almost without chewing. The grass then passes to the rumen – the first part of a cow's complex digestive system. One of four chambers of the stomach, the rumen houses a diverse ecosystem of bacteria that can break down the complex fibres in grasses, which are indigestible to most other animals.

A calf's rumen is fully developed from around 180kg – meaning the animal can receive almost all of its nutrition from forage. As a general rule of thumb, above 180kg, the dry matter intake (DMI) requirement per animal is generally around 2-3% of bodyweight – but this will differ depending on the stage of production and grazing quality.

At different stages of development, the nutritional requirements of dairy cows will be different.

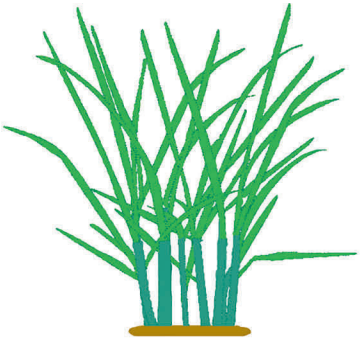
Plant Physiology

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.

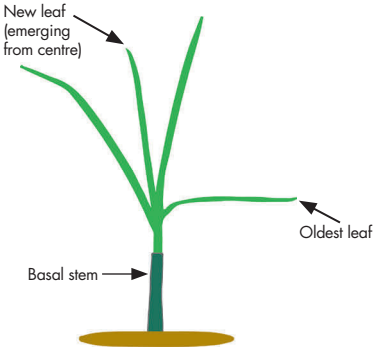
When the tiller has developed three leaves it will continue to grow. As a fourth new leaf is produced the oldest leaf starts to die. Then a fifth leaf is produced and the second leaf dies – and so the process continues.

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.

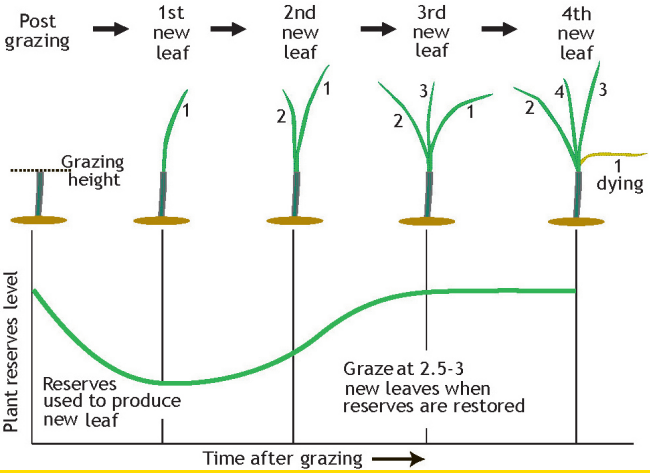


Ryegrass clump



Ryegrass tiller

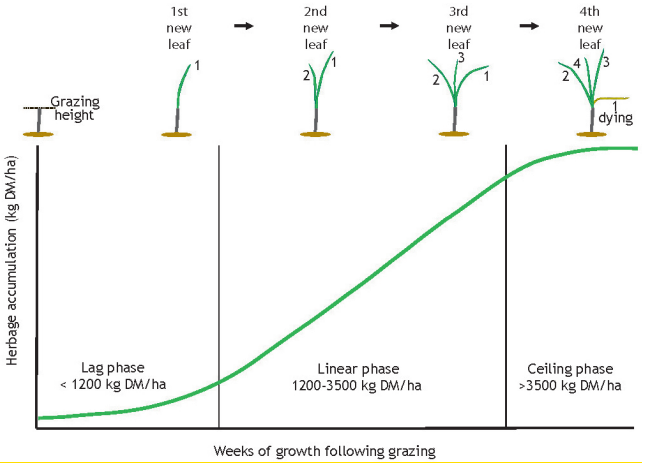
In mid spring it may take 15 days for a tiller to produce three leaves, with a new leaf produced every five days thereafter. In colder periods, it may take up to 50 days for a tiller to reach the three-leaf stage, with a new leaf produced every 17 days.



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.



Three phases of grassland development

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.

Good Grazing Management

Good grazing management relies on keeping grass plants leafy and actively growing while matching supply to livestock needs.

The best time to graze ryegrass is when there are two and a half to three leaves per tiller in place. This new growth is a sign that the plant has sufficient reserves to recover quickly from defoliation.

Grass grows by storing the energy it produces through photosynthesis as carbohydrates in its stems. Once the first tiller leaf is established, photosynthesis becomes the main energy source, providing energy for the growth of subsequent leaves as well as replenishing carbohydrate stores.

In the phase immediately after grazing, when tiller leaves have been eaten, plants must mobilise stored carbohydrates to provide energy for regrowth. It is therefore important that the tiller has had adequate time to replenish its reserves.

How animals are managed on fields can have a major impact on forage production and persistence as well as animal production. The most important factors for influencing the level of animal output under grazing are:

- The concentration of animals per hectare/acre (stocking rate)
- The system of grazing management
- The intensity of grazing pressure

Grazing pressure – the closeness to which a field is grazed – is affected by the stocking rate and the amount of available forage (kg of forage per hectare/acre).

Perfecting Grassland Pressure

Having invested in your grass it is important to get the grazing pressure right to ensure that available forage matches animal needs as closely as possible.

Throughout the growing season it is important to carefully manage grazing pressure to ensure both grass quality and high grass utilisation – getting animals to eat as much as possible of what is grown.

For optimum grazing, farmers should maintain available grass at 180-265kg of dry matter per hectare (450-650kg/acre).

The secret is keeping a close eye on post-grazing residuals and grazing the sward to the same level each time. If you set 1500kg DM/ha (or about 5cm) as your grazing height, you should try to stick to this level – adjusting the stocking rate as required so that forage is maintained.

Naturally there will need to be some adjustments throughout the grass-growing season, depending on weather and other external factors. Get your grazing pressure and your residuals right, and fields will be fit to regrow leafy, high quality, nutritious grass again and again.

For dairy cattle, indicators of good grazing quality generally include:

- Little or no seed heads
- High clover content (greater than 30%)
- A high proportion of leaf and low stem content
- Low levels of dead matter at the base of the sward.

Grass
When to Graze

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.

Photo Left: Roots being pulled from the ground.
Photo Right: Leaves breaking = a good time to start first grazing.

Adjusting Grazing Pressure

Correcting high grazing pressure

If grazing pressure becomes too high – e.g., if there are too many animals grazing the same area of grass for too long – the result will be short grass stubble, which will ultimately affect animal performance. With short grass stubble, cattle are forced to consume all portions of grass including poorer quality forage. This can lead to low animal intake and subsequently, low gain rates. Periods of excessively high grazing pressure can result in a decrease in grass production.

Grazing a field to a low residual, where there is too little grass left, can put it back into the lag phase – where regrowth is slow due to the plant's sole reliance on its carbohydrate reserves. Where high grazing pressure needs to be relieved, the most effective option is to remove some animals from the grassland by allowing access to other fields. Feeding concentrates or buffer feeding the animals on grassland with silage are other options.

Correcting low grazing pressure

With low grazing pressure, animals gain per head per day will typically be higher but production levels per hectare/acre will be poor. Put simply, low grazing pressure is likely to result in wasted forage. As with prolonged periods of high grazing pressure, extended phases of low grazing pressure can damage a sward, causing a loss of legumes from the stand. Where there is a need to increase grazing pressure this can be achieved by intensifying the stocking rate or by temporarily fencing out part of a field for silage.

Short periods of high grazing pressure can be useful; one to two weeks of high grazing pressure, three or four times throughout the grazing season, can help maintain legumes in the stand and utilize forage that might otherwise be wasted.

Other options for using up grass that's not being grazed quickly enough might include round baling swards. This can bring the field back under control while creating a useful buffer feed for later in the season when grazing pressure may exceed grass growth. If fields are under grazed and growth gets ahead of the animals, topping with a rotary mower or topper to remove tall, rank vegetation and encourage new growth can also be helpful.

Different Grazing Methods

Dairy cows will typically graze for about eight hours a day, with the heaviest grazing periods in the early morning and later in the evening. Dairy farmers face a number of choices when it comes to managing how their animals graze grass. Typically, grassland growth rates should determine how long grass should be grazed and rested for and will therefore have a bearing on the grazing method chosen.

Growth rates are influenced by a number of factors including season, weather, soil structure and soil nutrients, and may vary from field to field, and even within individual fields – depending on size, geography and the stocking rate.

The Agronomy Guide has developed the following table as a rough guide to rest periods at different times of the year.

Season	Weather	Growth rate	Rest period
Spring	Cool and moist	Fast	10-14 days
Spring	Warm and dry	Medium	14-20 days
Summer	Hot and moist	Slow	30-35 days
Summer	Hot and dry	Very slow	40-60 days

Actively Grazing Grass for Improvements

Continuous grazing:

With continuous grazing, a fixed area of land is normally grazed non-stop for a specific period. Time-frames vary from just a few weeks to the entire grass-growing season. Continuous grazing can be controlled or uncontrolled. To maintain a productive field in an uncontrolled, continuously grazed system it's important to avoid under- or over-grazing by maintaining the correct grazing pressure and adjusting stocking rates accordingly.

Continuous grazing can lower grass production and persistency so it's vital to pick a suitably hardy grass variety. It's also important to ensure that a field used for continuous grazing has more than one water source. Cattle like to gather around watering points, which means recycled nutrients can become concentrated in one area. Providing multiple drinking points will ensure nutrients get evenly spread across a wider area. Having more than one water trough will also help minimize poaching when conditions are wet.

Rotational grazing:

Rotational grazing is where fields are subdivided and then grazed and rested alternately. Once one field has been grazed, livestock are moved to a new patch of grass. The first field is then rested and the sward given time to regenerate. Some farmers have a rotational grazing pattern of one to two weeks. Others opt for a more intense approach – moving livestock every few days. This method provides more control over what animals are eating and can result in better plant growth but requires more land and can be time consuming from a land management perspective.

Creep grazing:

Creep grazing is when young animals are allowed to move onto an area of grass ahead of older livestock to gain access to better quality forage. This method of grazing works well within a rotational grazing system, giving calves access to the top layer of more succulent, nutritious grass, which enables them to gain weight more quickly. Creep grazing is typically managed via a series of fences or gates that only allow smaller animals into a designated area first.

Mixed grazing:

Grazing different animals together can have huge benefits in terms of grassland management and can increase grass utilisation. Different species of livestock prefer different types of forage and have different in-take levels. Cows generally prefer legumes to grasses while the opposite is true of sheep, which will generally always opt for immature grasses and weeds first. Cattle and sheep also eat differently. While cattle use their tongues to pull and tear, sheep use their teeth to nibble, grazing much closer and getting into parts of the grass that cattle either ignore or can't reach. This can increase grass tillering and sward productivity – meaning animals will, long-term, gain more weight.

Silage Production

The dairy industry uses more silage than any other part of the farming sector with this form of feed making up more than 50% of the diet of dairy animals – excluding spring and calving dairy herds.

To help livestock farmers produce greater quantities of silage – of a higher quality – the team at Barenbrug has developed a separate guide to silage production, management and utilisation.

For more information or to obtain a copy of the guide, please visit our website.

To find out more about our field indexing you can watch a special video online at www.barenbrug.co.uk/GoodGrassGuide where you can also register to receive a copy of our Good Grass Guide.

Looking After Leys Long-term

5 INDEXES

Whatever method of grazing you adopt, long-term it is essential to maintain swards in the best possible condition to ensure consistently good yields. This means measuring and monitoring growth regularly and getting up close with your grass. Many fields look good at a glance and it is not until you get right up to the sward that you can spot problems. Most farms will have fields at different stages of maturity – and this variation can make it difficult to know which tasks to prioritise.

To help farmers decide where to focus their efforts, Barenbrug has devised a simple field indexing system to monitor field performance, which can be employed regardless of grass type or management technique. The system is easy to use and draws on the stock conditioning method that many farmers use to grade their livestock. It provides a five-step scoring system that enables farmers to grade grass and decide what, if any, action is required to keep fields productive.

Barenbrug's field indexing system is based around the following principles:

INDEX 1: An index 1 field will have less than 25% sown, productive species left and any ryegrass remaining is likely to be of very poor quality. Fields with a classification of Index 1 are not nutritious, have no feed value and are therefore of no use to ruminant livestock.

INDEX 2: 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. Fields with an index 2 classification need urgent attention otherwise they will be a complete write-off.

INDEX 3: An index 3 field will have a total of 50-60% sown, productive species. At this level, fields should respond well to remedial action that will help extend its life.

INDEX 4: An index 4 field will have a total of 60-70% of sown, productive species with ryegrass accounting for 60-70% of the plant population and clover making up the rest. Fields with this classification should be good for the coming season but will need to be monitored carefully.

INDEX 5: An index 5 field will have at least 80% sown, productive species with clover making up around 30-40% of the plant population. The only work required on fields of this grade will be regular soil testing and soil structure monitoring.

Six Steps to Sward Success

Once you've classified your field – the next step is to take action.

1

Get a grasp on your grass:

As soon as conditions allow complete a visual assessment of your field/s – using our field indexing system.

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.

2

Dig deep for a solution:

The best way to assess the extent of any damage is to dig a pit to around 30cm or to the depth of any pan.

Take a close look at the soil structure. 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 you have compaction.

3

Correct any compaction:

Until you have addressed compaction there is little point doing anything else. Compaction can drastically affect the growth rate and rooting structure of newly sown grasses – reducing productivity by 10-20%. It can also prevent the uptake of nutrients; restrict drainage; and ultimately cut down on the number of working days you'll get from a field. To correct compaction down to six to eight inches use a sward lifter to aerate the soil. For compaction of just one to two inches, a sward slitter will suffice.

4

Assess acidity:

Once any compaction has been dealt with, think about tackling any pH problems. Soil pH can have a massive impact on grassland success and high levels of water, like we've seen this winter, can drastically affect pH. To optimise nutrient use, as well as grass growth and quality, the target pH should be 6, increasing to 6.5 for grass and clover mixtures. 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.

5

Know your nutrients:

Getting a handle on soil phosphate (P) and potash (K) status is critical. P is primarily associated with energy transfer within plants and is crucial at the establishment phase for root development. K plays an important role in water regulation within plants.

The P and K needed by crops can be supplied by reserves in the soil or – after a prolonged wet period – through the addition of bagged fertilisers and livestock manures. Achieving a target soil index of 2 for P and K is the aim.

6

Lay new leys:

Once soil structure has been addressed, new leys can be drilled into place or overseeding can occur. If the aim is to get grass producing quickly then it's best to overseed with a mix of fast growing vigorous tetraploid ryegrass species.

These will start delivering results after six to eight weeks of establishment – improving ground cover and giving a real spring boost to yield and quality. But remember, overseeding is only a short-term solution. For longer-term results on problem fields it is advisable to replace the grass with a more suitable ley come the autumn.

Soil Management to Sward Success

It isn't the animal or the bag that feeds the crop, it's the soil, so looking after soil fertility and structure are the two key fundamentals of any good grassland management scheme. Soil pH is more important than NPK because in order for nutrients to be optimally available to the plant's roots, pH must be maintained at 6.0 or above, especially for clover swards.

P & K statuses should be maintained at Index 2 (Moderate + in Scotland) and soils should be sampled every 3-5 years, depending on management practice and rotation. Where silage or hay is being made, remember to feed the crop as well as addressing any soil deficiencies. Nitrogen should be applied when conditions allow and as appropriate depending on field use e.g., grazing or silage. Nitrogen can have an acidifying effect on the soil, so higher N users may also need to lime more frequently.

Remember to consider trace element status of the farm too. 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.

Farmers looking for advice on soil management best practice can contact the Barenbrug team for more information or can consult RB209 – the Nutrient Management Guide produced by the Agriculture & Horticulture Development Board. Last updated in May 2017, this document provides specific recommendations on the use of sulphur, nitrogen, phosphate and potash in relation to grass and forage crops.

Getting Soil Nutrition Right

Get soil structure right to optimise grass growth and quality. Also regularly dig soil assessment pits to examine soil structure and check for compaction. An easy way to look for signs of compaction is to take a spade and dig a hole in the field.

Why?

Soil structure affects root penetration, water availability to plants and soil aeration. This simple, quick test assesses soil structure based on the appearance and feel of a block of soil dug out with a spade. The top layer is very important to a grass life cycle.

How?

The best way to assess the extent of any damage is to dig a pit to around 30cm or to the depth of any pan.

Equipment needed:
Garden spade approx. 20 cm wide, 22-25 cm long. Optional: light-coloured plastic sheet, sack or tray ~50 x 80 cm, small knife, digital camera.

When?

Any time of year, but preferably 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.

Outine soil sampling should be conducted every 4 – 5 years.

Where?

In grassland take at least 20 samples, 10 cm deep, across a representative field area avoiding gateways and hedges etc. Select an area of uniform crop or soil colour or an area where you suspect there may be a problem.

Grass Seed Quality

Important Facts to Consider When Buying Seed

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 have been tried and tested by farmers, who've seen real results.

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 Lolium perenne	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 Lolium perenne	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 Lolium multiflorum	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 Lolium mul. westerwoldicum	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)

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 dairy farmers.

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

Seed Quality

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Species	Description	Min germ temperature	Seeds/kg
OTHER GRASSES			
TIMOTHY *Phleum pratense*	A very useful perennial species within grazing leys, timothy grass is much or tolerant of colder wetter soils. A very small seed means per kg, a high number of seeds are available resulting in a high plant population for wear tolerance and productivity. Timothy generally yields around 85% of ryegrass and is very palatable.	7-8°C	4,000,000
COCKSFOOT *Dactylis glomerata*	Modern, soft leaved varieties of cocksfoot are highly digestible, palatable and yield well. They are ideal in drought prone areas as they can persist well in these conditions and help fill the 'summer gap'. The growth habit can be strong so cocksfoot grass is ideal for systems requiring high dry matter yields early in the year. Cocksfoot is perennial and will produce as much ryegrass on lower Nitrogen applications and really comes to the fore in clover only situations making it ideal for less intensive systems. Can be a useful species where conditions are less favourable.	7-8°C	960,000
TALL FESCUE *Festuca arundinacea*	Modern soft leafed tall fescues are very digestible, palatable and high yielding much like the modern cocksfoot varieties. They are perennial and their aggressive root system can grow to over 6' deep where soil conditions allow making them very useful in both light, dry soils and heavy, wet soils. Tall fescue is more responsive to Nitrogen fertiliser than cocksfoot however also performs very well under a clover based, lower input system. Can be a useful species where conditions are less favourable.	7-8°C	420,000

Species	Description	Min germ temperature	Seeds/kg
FORAGE CROPS	Brassica crops such as stubble turnips, kale, forage rape, grazing turnips and swedes can provide a nutritious, cost-effective form of feed for dairy cattle. They can provide a late summer supplement to grass in a dry season; extend grazing over autumn and winter months; and provide a winter feed for animals kept out or housed. With a vast array of forage crops available to UK farmers, we have produced a separate guide in this series dedicated to brassica and forage varieties. To request a copy of Barenbrug's forage crop guide visit the website.		
Stubble turnips	Stubble turnips have a high leaf to bulb ratio resulting in high levels of protein, and a tankard bulb shape to enhance utilisation.	8°C	275,000
Forage rape	A flexible forage option. It can be spring sown for a late summer feed behind turnips or autumn sown for winter grazing.	8°C	275,000
Kale	Kale is a well-proven, highly adaptable fodder crop which consistently provides very high yields of succulent green fodder.	8°C	275,000
Lucerne	Lucerne is a highly nutritious forage for livestock. It combines good digestibility with high proteins providing excellent milk yields or daily live weight gains. A more mature hay crop would be more suitable for feeding young stock.	9-10°C	500,000
Vetch	A common vetch can fix large amounts of nitrogen and is high in protein. Can be used for annual forage production either alone or in a mixture with grasses. It is also ideal for green manuring.	9-10°C	18,000
Chicory	Chicory is a perennial herb, which is an excellent source of high quality feed for finishing stock.	9-10°C	820,000
Plantain	Plantain can be used to boost summer milk production and to finish lambs. Historically used in grassland mixtures it is suited to many soil types and can increase daily intakes during the summer.	9-10°C	400,000

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