

# FORAGER



Issue 28 / Summer 2022

## CLOVER

Why is it a superhero?

THE POWER OF PERENNIAL RYEGRASS

HOW TO FILL FEED SHORTFALLS

FARMERS WEEKLY GRASSLAND FINALIST

BEEF | SHEEP



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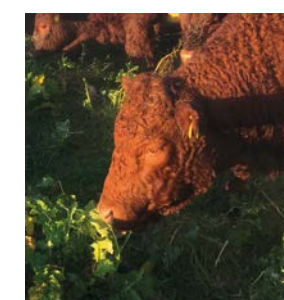
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## FORAGER

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## CLIMATE-SMART GRASS ON TV

BBC's 'Follow the Food' series recently featured Germinal's research farm in an episode looking at what needs to be done to meet the protein needs of a rapidly growing population. Germinal's Paul Billings explained to James Wong how the environmental and production benefits of Aber High Sugar Grasses allow livestock farmers to be more efficient at producing milk and increasing liveweight gain.

Watch now at [bbc.in/3LIIXhi](https://bbc.in/3LIIXhi) (Series 3, Episode 4 - 'Protein Planet')

## GRACE WELLING IS BASIS QUALIFIED

Congratulations to Grace Welling, Herbage Seed Production and Product Development Officer at Germinal Horizon Wiltshire, who has achieved her BASIS Certificate in Crop Protection. This means she is now qualified to offer agronomy advice to UK farmers and seed growers. Grace did so well in her BASIS qualification she has been short-listed for the Barrie Orme Shield, awarded to the most outstanding candidate passing the BASIS Certificate in Crop Protection IPM exam.



**BASIS**



## GERMINAL ON THE ROAD

Have all your forage and reseedling questions answered by dropping in on the Germinal stand at one of the shows the Grass and Forage Production Specialist team is attending this year.

Wed 22nd/Thurs 23rd June	Groundswell	Lannock Manor Farm, Hertfordshire
Saturday 25th June	Carbon Calling	Sleastonhow, Kirkby Thore, Penrith, Cumbria
Wednesday 27th July	National Sheep Event	Three Counties Showground, Malvern
Wednesday 14th September	UK Dairy day	The International Centre, Telford, Shropshire
Wednesday 16th November	Agriscot	Royal Highland Centre, Edinburgh

Can't wait? Call 01522 20868714 to contact your local Germinal specialist.

## BUILD YOUR GRASSLAND KNOWLEDGE

*What is the best way to fix P&K?*

*Are clover varieties becoming more competitive?*

*Can lucerne be direct drilled?*

Recent webinars include:

- How to Fill the Forage Gap amid Price Rises
- Are multi-species swards right for your farm?
- Managing multi-species in your rotation
- Growing Lucerne
- Boosting forage supplies using brassicas
- Choosing the right grass mixtures
- Making reseedling work for you
- Assessing swards and winter grazing plans
- Successful overwintering with good brassica management

These are just a handful of the questions posed to the presenters at Germinal's recent webinars. Covering a wide range of topics, the webinars are designed to provide you with information to make your grassland management as effective as possible, plus give you the opportunity to share any challenges you are having and put questions to the team.

You can watch recordings of all past events by visiting the Knowledge Hub on [Germinal.co.uk](https://Germinal.co.uk) and clicking on 'Webinars'. Here, you will also find the answers to questions there wasn't time to address during a presentation.





# WHY CLOVER IS A SUPERHERO

*Clover sales are rocketing as farmers move to more self-sufficient models of production to combat the astronomical input price hikes. But how can clover help? Kate Yarwood finds out.*



Adam Simper, Germinal

## Why is everyone talking about clover?

Prices for the big three inputs – feed, fuel and fertiliser – continue to rise. While clover has been touted as a secret weapon for some time, this year the secret is out as farmers re-evaluate their options for filling the forage gap.

“The headline is usually about clover’s nitrogen-fixing properties,” says Adam Simper, grass and forage production specialist with Germinal. “Clover has nodules on its roots, where Rhizobia bacteria live and fix nitrogen. If the nodules have a reddish-pink interior, this indicates nitrogen fixing is happening.”

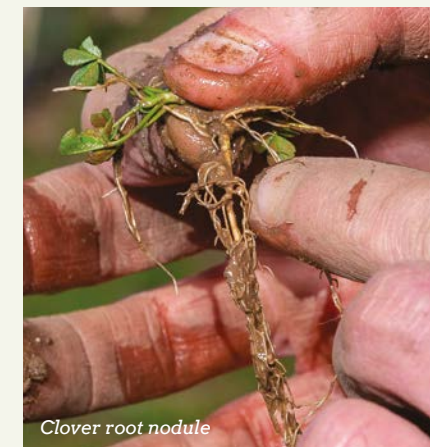
Nitrogen fixing tends to happen in warmer months from May onwards. “You need about 30% clover in the sward to fix around 150-250kg N/ha per year. We expect it to take 6-12 months after drilling before fixing happens and, once clover is well established, you could see 75-100kg transferred to the surrounding crop.” The residual nitrogen left in the soil helps the follow-on crop thrive.

**“YOU NEED ABOUT 30% CLOVER IN THE SWARD TO FIX AROUND 150-250KG N/HA PER YEAR”**

But clover also provides much more than nitrogen. It is a homegrown protein, it improves feed quality, increases soil fertility and enhances soil structure, attracts pollinators and is drought tolerant. Adam explains, “Clover is often disregarded as a valuable source of energy, but research proves it has a bigger role to play. If we look at red clover, for example, it can reach high DM percentages, with high ME content and crude protein when compared with average grass silage.”



Clover crown



Clover root nodule

**“RED CLOVER IS ROCKET FUEL FOR LIVESTOCK”**

## Red clover versus white clover

“Red clover is rocket fuel for livestock,” Adam says. “It improves milk yields, liveweight gain and ewe condition.” However, you must also manage red clover correctly as it can be vulnerable to grazing damage. Grazing over winter isn’t recommended as exposing and damaging the crown of the plant can reduce its persistency.

“Older varieties of red clover only offer two to three seasons, but Germinal’s red clover breeding programme has produced varieties which give four to five seasons, and we have further developments in the pipeline.”

The animal performance benefits from red clover can’t be ignored. Germinal Horizon found red clover shortened lamb finishing times by nine days, which has economic and environmental wins, plus increased carcass weight.



Red clover grows a long taproot - making it tolerate drought well

## Grazed red clover and ryegrass lamb performance

	Red clover	Ryegrass
Growth rate (g/day)	229	182
Days to finish	40	49
Eye muscle depth	27.1	25.9
Subcutaneous fat depth	4.1	3.9
Cold carcass weight	18.8	17.7
Killing out %	51	48

Source: IBERS

Red clover’s long taproots grow down deeply, whereas white clover’s stolons spread across the ground, with roots anchoring the plant. Adam explains, “White clover offers different leaf sizes, and we generally say match the leaf size to your system. Small leaf varieties provide long-term leys for continuous sheep grazing, a medium leaf variety is ideal for rotational grazing and cutting with the larger leaf varieties working well for cutting and cattle grazing systems.”

White clover generally has good persistence and can last years with good management. However, as warm temperatures are needed for both red and white clover, it can suffer from poor spring growth. This is where a tactical early nitrogen application encourages grasses to start moving and provide sufficient forage before the clover springs into action.

## Establishing clover in your swards

Typically, a full reseed is best for establishing clover. Concentrate first on your soil, as you need pH >6.3 and P&K index >2 for clover and soil temperatures of 8°C or above.

“Spray off your old sward and create a firm, fine seedbed. Don’t drill too deep, 10mm at most, and roll before and after sowing,” says Adam. “Sow from the end

of April to mid-August, so the crop is well established before the winter.”

With improved animal performance, and environmental and economic gains for farmers, it is fair to say clover deserves the title of superhero and lives up to the hype!

To find out more about clover, and other legumes, visit the Germinal knowledge hub for webinars, videos and how-to-guides. [germinal.co.uk/knowledge-hub/](https://germinal.co.uk/knowledge-hub/)

## TOP TIPS FOR OVERSEEDING WITH CLOVER

While a full reseed is ideal, sometimes it’s not possible. Adam shares his top tips for overseeding with clover.

- **Timing is everything.** March, April, July and August are best for providing the warmer temperatures clover needs. May and June should be avoided, as grass growth is at its most vigorous and will compete with the clover
- You need an **open sward**, where you can see the soil
- Use **3.7kg/ha** for white clover and up to **7.4kg/ha** for red clover
- **Avoid** drilling too deep, it’s a small seed so you only need to scratch the surface
- Make sure you have good **seed-to-soil** contact – roll it after drilling
- **Don’t** apply nitrogen fertiliser – it will cause the grass to outcompete the clover





Germinal's  
Helen Mathieu

# CAPTURING THE FULL POWER OF PERENNIAL RYEGRASS

*Perennial ryegrass (Lolium perenne) is the foundation of forage-based systems and the UK's go-to grass species. Helen Mathieu explains why and unwraps the importance of understanding its full potential.*



Perennial ryegrass and its distinctive reddish-pink at the base of each culm

**Decades of research in one seed**

“To appreciate the potential of perennial ryegrass, you need to understand its history,” says Helen Mathieu, Germinal grass and forage production specialist. In the early 20th century, the grasslands of Britain, except for the so-called ‘fattening pastures’, provided only for animal maintenance; production requirements were met by other crops such as swede, mangold, red clover and rolled oats. Keen to capture and cultivate the value of those fattening pastures, research scientists at the then newly established Welsh Plant Breeding Station in Aberystwyth studied the dominant grass species.

“Perennial ryegrass now has decades of breeding improvements behind it making it a powerful tool in modern agriculture,” explains Helen. “It is optimised for persistence, nutrition and quality, and it’s this legacy of research which makes perennial ryegrass so valuable to farmers.”

The work in Aberystwyth continues today at what is now part of Germinal Horizon, the research and innovation team of specialist plant breeder, Germinal. Their work has led to the development of the Aber High Sugar Grass (Aber HSG) range, ryegrass varieties with higher levels of water-soluble carbohydrates (sugars). “You’ll

recognise them by the ‘Aber’ prefix. They feature prominently in the Recommended Grass and Clover Lists year after year as new and improved varieties continue to be produced.”

**Powerful production**

One reason to maintain a high percentage of perennial ryegrass in your swards is its nitrogen use efficiency – whether from the bag, slurry or legumes. “When compared to other indigenous species, like Yorkshire fog or rough stalk meadow grasses, perennial ryegrass has two or three times as much yield response to nitrogen,” says Helen.

This is particularly useful for farmers struggling with this year’s high input costs and trying to reduce use of applied nitrogen.

Perennial ryegrass grows easily in temperate climates which suits the northern hemisphere – especially the UK. Ryegrasses in general are particularly aggressive in establishment, so can be reseeded almost anywhere in the country. “It’s easy to manage, versatile and is pretty hardy to rough treatment from grazing or being trampled on,” says Helen. “And of course, it is a high-quality grass, by which I mean D-value. D-value rules livestock production, whether in liveweight gain or milk yield.”

**How do you select the right mixture?**

“You need to really think, in granular detail, about how and when you’re using your grass,” advises Helen. “If you’re using it purely for silage, pick a multi-cut mix with more tetraploids to take advantage of their excellent conservation characteristics. But a high percentage of tetraploids leaves the ley open at the bottom so with silage ground often seeing a lot of traffic and slurry, it’s susceptible to weed ingress and capping.” She also suggests thinking about winter management of the ley. If grazing, or cleaning up, with sheep over winter ground cover is important. “Germinal’s multi-cut mixtures contain a balanced mix of diploids and tetraploids with a narrow heading date range to cover all these requirements,” she says. For grazing leys, Helen recommends farmers consider what they’ll need just after turnout, looking for mixtures with good spring growth.

“A blend of perennial ryegrass varieties within a grass seed mixture is best for giving an even growth curve. Different varieties offer solutions for a multitude of challenges.”

**Gaining the most from perennial ryegrass**

“For grazing swards, I cannot emphasise enough the importance of measuring your grass. Walk your swards once, even twice, a week and measure. This way you will know your supply, can change your stocking rate and be on top of fertiliser or weed control planning.” There are plenty of reliable ways to measure grass availability in kg DM/ha, and estimates can be cross-checked by cutting and weighing grass from a known area.

The approach is slightly different for silage, Helen explains. Being fast growing, ryegrass is quick to mature but can lose some quality if not used or cut

soon enough. “Set your swards up, clean them out after grazing and be tactical and timely with your fertiliser applications. Then monitor to mow at the optimum stage of ear emergence. There can be a compromise between yield and quality once grass reaches ear emergence as the D-value starts to decline, potentially losing 3% per week.” Multi-cut systems capitalise on the virulent regrowth and extra energy of high-performing perennial ryegrass varieties before quality declines. Helen adds: “Of course there are extra costs associated with additional cuts but these are balanced by the savings made through the extra energy in the clamp reducing the requirement for bought-in feed.”



**RECOMMENDED GRASS AND CLOVER LISTS (RGCL)**

Varieties on the RGCL are independently tried and tested across the UK over a four-year period, guaranteeing they perform well in UK conditions. Only 1 in 20 varieties make it to the final selection. Using RGCL-listed varieties means you are accessing the latest plant genetics to maximise the productivity of your grassland. The new list is published annually in May by AHDB.

**Example figures for multi-cut versus a traditional silage system**

MULTI-CUT (four cut)				
1st cut (early May)*	2nd cut (3rd week of June)	3rd cut (mid-July)	4th cut (end of August)	Total
4,000kgs @ 12.16 ME = 48,640	3,500kgs @ 12.16 ME = 42,560	3,000kgs @ 12 ME = 36,000	2,500kgs @ 12 ME = 30,000	13.0t DM 157,200 MJ ME/ha

TRADITIONAL (three cut)			
1st cut (end of May)	2nd cut (mid/late July)	3rd cut (end of August/ early September)	Total
5,500 kgs @ 11 ME = 60,500	4,500 @ 10.7 ME = 48,150	3,000 @ 10.5 ME = 31,500	13.0t DM 140,150 MJ ME/ha

\*Dates vary to suit system, climate and start dates





# WHAT DOES SUSTAINABILITY REALLY MEAN?

*Sustainability has become something of a buzzword, but what does it really mean for agriculture, how does it relate to productivity and where do regenerative principles come into it? Clemmie Gleeson asks three industry experts.*

“Sustainability covers everything - profitability, the environment and people too,” says Germinal’s managing director, Paul Billings. “In agriculture it is the balance of production versus the environment. We need to produce enough food, but with as light a footprint as possible.”

The definition varies across the supply chain, suggests Sarah Haire, head of agriculture for Dawn Meats/Dunbia. “We have tried to define sustainability alongside the European Roundtable for Beef Sustainability.” They decided it has four elements – environment, animal health and welfare, animal medicines and economics, she explains. “They are all non-negotiable because they are intertwined. It’s all about minimising the unintended consequences of our actions.”

Meanwhile, First Milk’s sustainability director, Mark Brooking, puts regenerative principles centre stage: “For me, sustainable agriculture is regenerative and by regenerative it has to put back more than it is taking out.” The five pillars of regenerative farming are, therefore, all fixed aspects of sustainability. However, it is not just

about what is happening on the farm – Mark takes it a step further to include impacts elsewhere in the supply chain or even in the world.

## Sustainability vs productivity

When it comes to the age-old debate of productivity or sustainability, it seems there is some consensus. “The two definitely go hand in hand and shouldn’t be seen as opposing challenges,” says Sarah. “Better productivity will hopefully make you more sustainable in the long run too.”

With the global population estimated to reach 10 billion by 2050 we can’t afford to let either productivity or sustainability slip, adds Paul. “We have to maintain productivity but reduce the impact of farming on the environment.”

Unlike other industries, agriculture has the added potential of carbon sequestration in the land, he says. “It’s a real trump card if used properly.

“However, if farmers are involved in carbon trading, they must remember they can only count that carbon once,

which means they can’t then use it to balance their own systems.”

Mark argues adopting regenerative principles should deliver both sustainable and productive agriculture.

“A regenerative approach by its very nature will improve productivity. It’s all about producing more from less,” he says. “In my mind the regenerative principles are the best way to ensure we have thriving soil health in order to grow crops and reduce inputs.”

While not disagreeing, Paul believes the definition of regenerative farming is not clear enough. “It needs a comprehensive definition, as the term has been used to mean different things. If you have an area of unproductive land then rewilding could be a great solution, but if it is your most productive land rewilding is difficult to justify.

He believes government policy is heading in the right direction, though. “Farmers know their land and where best to have environmental projects and make them work, rather than being paid subsidy to have five metre strips around every field.”

Regenerative principles are about going back to basics, adds Sarah. “I grew up in Norfolk learning about the four-course rotation, which is all about leaving the soil fit for the next crop. We moved away from that with monocropping and pushing the soil as far as we can, but regenerative principles are putting the focus back on improving soil health.

“That means better conditions for plants and, by definition, improved productivity. However, the danger with a label like regenerative agriculture is you risk creating factions within the industry, when in reality everyone needs to think about soil health.”

## Priorities at farm level

Soil health should be the priority, agrees Mark. “It is central to everything – it is the engine room of your business. Anything that improves soil health will improve productivity in the long run.”

By default, cattle and sheep farmers have several regenerative principles covered including maintaining living roots and livestock. “Something we could do more of is plant diversity, achieved by looking at multi-species leys. These have increased capacity to capture sunlight, while also putting nutrients into the soil at different depths.”

Efficiency is a priority, suggests Paul. “If you are efficient, you are in a better place and will reduce your environmental footprint. Over the last 50 years of grassland management, it has been easy to spread cheap nitrogen. Now it’s so expensive you need to target its use to where you’ll gain the best return. That makes financial sense as well as being more environmentally friendly.”

Fertiliser and feed prices are a real problem, agrees Sarah. “But have farmers done as much as possible to control the things they can? Have they accurately evaluated the amount of fertiliser they need through soil analysis? Have they looked at different grassland species? How can they achieve the same end goal with a different approach?”

Sustainability is really about being able to continue to produce food without depleting nature or having a detrimental impact on the climate or wider society. While there is consensus in some areas, there is probably no ‘one size fits all’ solution.

“There are lots of things farmers can do, but mindset change is perhaps the biggest challenge,” Sarah concludes. “We will all need to adapt to the changing pressures on the agricultural industry, so probably the most important factor in sustainability is having a positive attitude to change.”

**SARAH HAIRE** is head of agriculture for Dawn Meats/Dunbia and Chair of UK Cattle Sustainability Platform. She’s spent 20 years in the meat industry with Assured British Meats, Hilton Meats Retail and now Dawn Meats since 2011.



**PAUL BILLINGS** has been Managing Director of Germinal GB since 2012 and oversees the research and innovation division, Germinal Horizon. In the seed industry for 30 years, he is passionate about new technologies allowing farmers to grow sustainable grassland.



**MARK BROOKING** is Sustainability Director of First Milk. With over 30 years’ experience in agriculture, he has a particular interest in socially responsible food production. He has also had a diversified farming enterprise in Devon for 22 years.



## Five pillars of regenerative farming

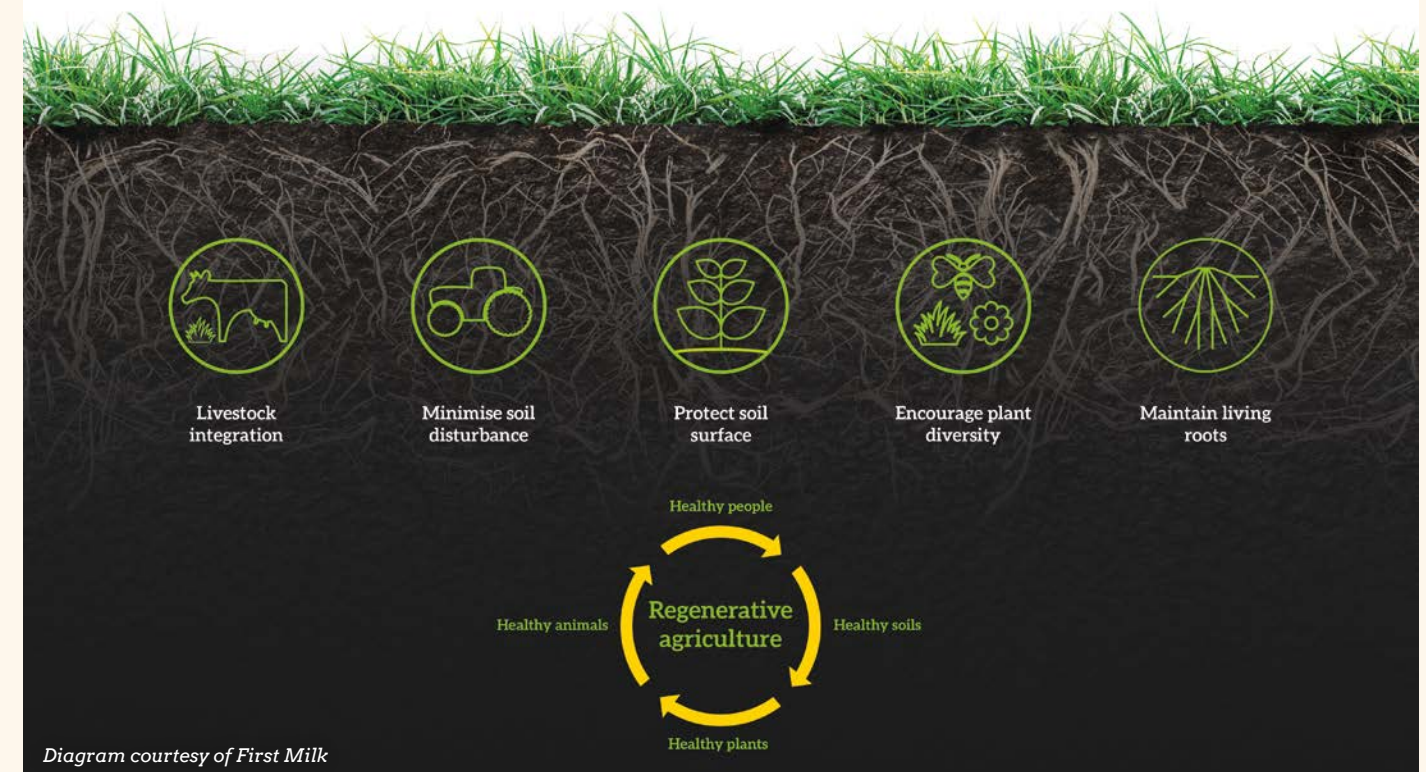


Diagram courtesy of First Milk





# ALTERNATIVE FORAGES CAN HELP FILL FEED GAPS

*Livestock farmers are turning to alternative homegrown forages as they work to fill predicted feed gaps resulting from high fertiliser and purchased feed prices. James Marshall examines the benefits of growing clover and brassica crops.*

Livestock farmers know this year is going to be particularly challenging. With fertiliser and feed prices at record highs, farmers are understandably nervous about how they will feed livestock economically. Many are also facing the possibility of substantial forage deficits, with reduced expenditure on inputs negatively impacting grass growth.

As a result, there is more interest in growing alternative forages on farms. Brassicas, for example, can provide a nutritious source of quick-growing feed, for under 10p per kilo DM. The choice of available forages is wide, so it's important farmers select the crop that best suits their specific forage requirements.

## Red and white clovers

The nitrogen fixing properties of red and white clover make it a popular choice in light of current fertiliser prices. But clover's high feed value can also help alleviate pressure on forage stocks and provide a useful source of homegrown protein.

"We shouldn't overlook clover's feed value," says Adam Simper, Germinal grass and forage production specialist. White clover is an excellent source of protein, with a high mineral content and high DM value. It's very palatable and passes through the rumen more quickly than grass, resulting in high intake potential."

Trials on sheep rearing systems have shown a mixed grass-clover ley with an application of 90kg nitrogen/ha produced 300kg more dry matter and reduced lamb finishing time by 14



Adam Simper, Germinal grass and forage production specialist

days, compared to a pure ryegrass ley receiving 145kg nitrogen/ha.

"As well as reduced input costs, the quicker finishing times meant stocking rates could be increased or leftover forage given to other livestock once finished lambs were moved off," continues Adam. "Both options result in better utilisation of the homegrown forage with improved productivity."

## WHITE CLOVER ESTABLISHMENT

- Aim for 30% white clover in a grass-clover ley
- Soil pH 6.3 or above, with P & K index of 2
- Drill from end of April to August, when soil temperatures are 8°C and rising
- For a full reseed, sow at 13-14kg grass seed/ha and 1-1.5kg of clover

## GERMINAL RED CLOVERS

Traditionally red clovers only last two to three years in cutting leys. New generation red clovers, including AberClaret, bred at Germinal Horizon Aberystwyth, last at least four years under cutting and are significantly more tolerant of grazing. Scientists are now working on the development of varieties resistant to common disease challenges.

All red clovers fix nitrogen at a rate of around 150kg N/ha reducing the need for fertiliser applications.



Red clover is also a high-quality, cost-effective feed giving yields of 10-15 tonnes DM/ha and a consistent, high protein content. With new varieties lasting four to five years and with options to sow as part of a mixed sward or as a monoculture, red clover provides another excellent alternative forage option.

"Average red clover silage consistently produces 15-19% crude protein, roughly 3-5% above average grass silage," continues Adam. "Livestock also benefit from the polyphenol oxidase [PPO] enzyme found in the plant. The PPO protects the protein as it travels through the rumen until it reaches the abomasum. Once in the abomasum, bacteria can break down the protein more efficiently in the highly acidic conditions, resulting in better animal performance."



Finishing lambs on stubble turnips

## Benefits of brassicas

Brassicas incorporate a wide range of main and catch crops, providing fast-growing feed with good nutritional value. If managed correctly, livestock can also be overwintered on brassica crops, alleviating the costs and labour associated with winter housing.

"If farmers foresee forage gaps later in the season, I urge them to sow brassicas," explains Paul Morgan, Germinal grass and forage production specialist. "Brassicas can deliver a kilo of DM for just 4-6 pence, with some catch crops ready to graze two months after sowing. They provide a quick, cost-effective way to plug forage shortfalls in late summer or autumn."

"They are also versatile with stubble turnips a good example of this versatility. Stubble turnips can be sown in May and grazed just eight weeks later; providing DM yields of 5-7.5 tonnes/ha, with 10-13 ME and crude protein at 16-17%. They are great for topping up later season grazing during the summer months."

Other popular brassica crops include Maris Kestrel kale, a very winter hardy crop suitable for overwintering and with DM yields of 10-14 tonnes/ha. Triumph swedes are often used to support lamb and ewe condition over winter. Their

**"BRASSICAS CAN DELIVER A KILO OF DM FOR JUST 4-6 PENCE, WITH SOME CATCH CROPS READY TO GRAZE TWO MONTHS AFTER SOWING."**

PAUL MORGAN, GERMINAL GRASS AND FORAGE PRODUCTION SPECIALIST



Paul Morgan

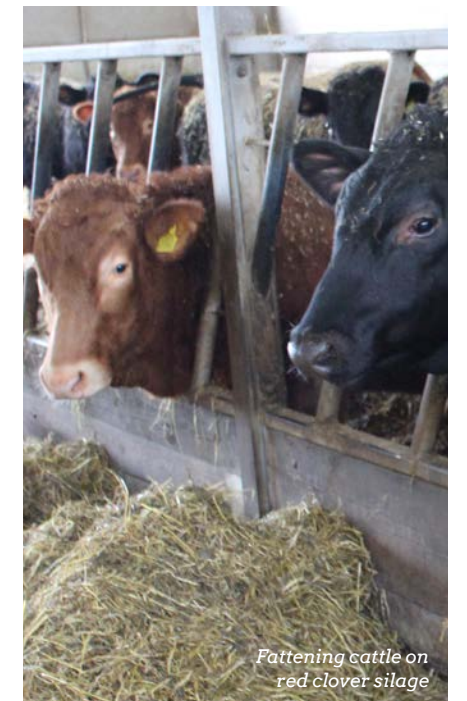
high DM yield and ME value of 12-14 means they support high stocking rates on small areas of land.

"Hybrid brassicas such as Swift or Redstart grow rapidly and mature 100 days after sowing," continues Paul. "They represent another source of winter grazing and farmers can multigraze the crop when effective back fencing is in place. Managed well, the crop should achieve 50% regrowth after an initial graze."

Brassicas are best strip grazed using long, narrow breaks to maximise utilisation, with livestock moved on to fresh growth every day. It is also important to supplement livestock with high-quality fibre and mineral supplements.

Most main crops of brassicas need to be sown by the end of June at the latest if farmers want to graze them over the autumn and winter period. For a quick catch crop, farmers should look to establish brassicas between May and the end of August.

"Now is a good time for farmers to work out when they will need extra forage on their farm, working backwards to plan establishment dates," concludes Paul. "They need to factor in what land is required and how much is available at different times of the year. By taking these steps now, farmers can hope to alleviate some of the feed-related pressures they know are coming later in the season."



Fattening cattle on red clover silage



# FORAGER IS CHANGING



**THIS SUMMER ISSUE IS THE LAST EDITION OF FORAGER AS YOU KNOW IT. THE MAGAZINE IS MOVING ONLINE AND WE'RE TAKING THE OPPORTUNITY TO DEVELOP IT INTO SOMETHING NEW.**

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# RESEARCH UPDATE

*Continuing demands for climate-sensitive production and inflationary costs making farmers review every nitrogen application carefully mean the emerging benefits of combining grasses, legumes and herbs are well timed. Germinal Horizon's long-term trial studying multi-species swards is generating results just when farmers need them most. Backed up by their latest results, the specialist plant breeding team's scientifically robust recommendations is advice farmers can trust.*

## TRIAL DESIGN

Germinal Horizon Wiltshire's multi-species trial plots were drilled in spring 2020. A multi-species mixture usually includes at least one type of grass, legume and herb. This trial was no different with replicated plots of six mixtures ranging from a control of perennial ryegrass alone to a mix of 16 different species, comprising five grasses, five legumes and six herbs. Seasonal growth performance, dry matter (DM) yield, persistency, metabolic energy (ME) and protein were measured from multiple cuts across the season. The impact of two levels of applied nitrogen was also assessed.

## QUANTIFYING THE BENEFITS

Nitrogen fixation, drought tolerance and a greater nutritional value are some of the advantages already being seen by farmers using multi-species

leys. Environmental and production gains are brought about by the distinct characteristics of each species within the sward. What this trial adds to the understanding of these benefits is the detail – how the species interact, the role of the smaller species and how different conditions affect yield. By using scientific methodology to study these elements, farmers can overcome the unpredictability of taking a 'suck it and see' approach.

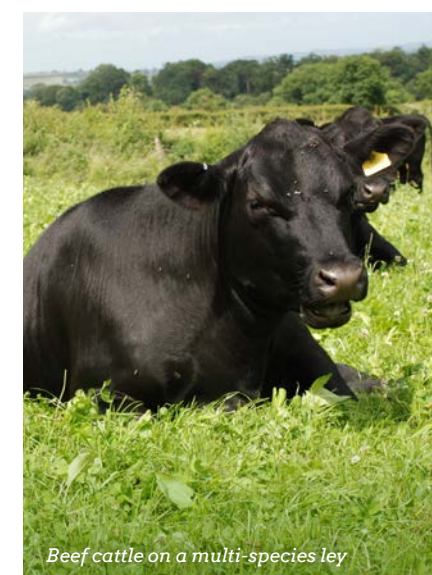
## YIELD PROFILE

Good DM yields were seen from all the trial plots. The perennial ryegrass yielded well at 14.8tDM/ha and adding species to it drove yields even higher. Around 19tDM/ha was produced by the multi-species mixtures except for the most diverse mix of 16 species. This diverse sward would be of more use where the focus is on biodiversity, whereas the others all offer high-quality grazing.

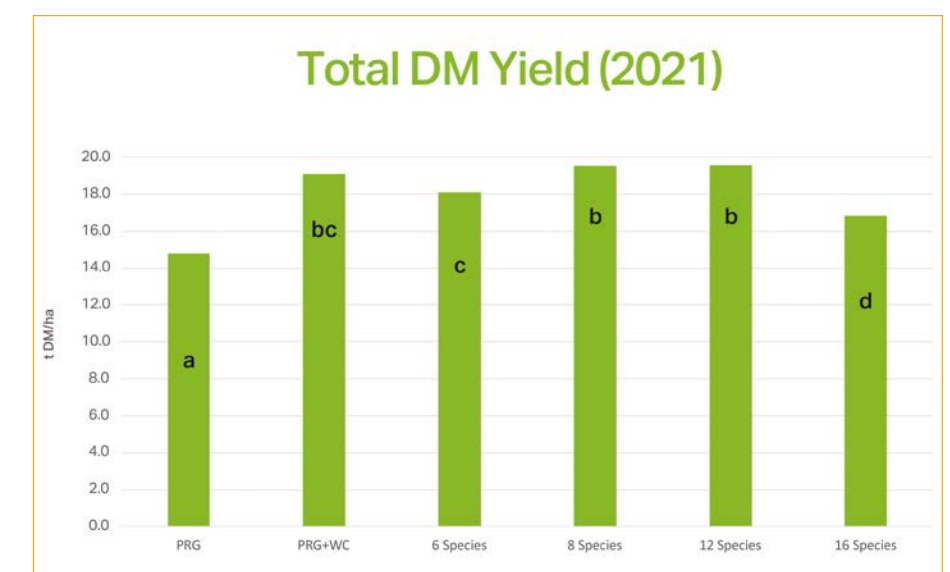
When tracked across the season, yields reflected the growing cycle of each species. Perennial ryegrass was critical to sward establishment at the beginning of the season, its spring growth also playing a valuable role in suppressing weed growth. Adding species to perennial ryegrass stabilised supply across the season, particularly during parts of the summer when grass growth is known to fall.

## SWARD QUALITY

In those mixtures containing a variety of grass species, perennial ryegrass showed a significantly higher metabolisable energy (ME) content, but the other species offered useful levels of crude protein. The fescues, better able to withstand dry conditions, appeared to use soil nitrogen more effectively in the drier summer period.



Beef cattle on a multi-species ley







Grace Welling studying the trial plots at Germinal Horizon Wiltshire

The common forage herbs, chicory and plantain, dominated the multi-species mixtures initially and made a significant contribution to sward performance and quality in the first year. They didn't have the persistency of the legumes, however, with the proportion of chicory and plantain in some swards halving in year two. The secondary herbs of sheep's parsley, yarrow and burnet made little impression in either growing season and were all but lost in the second year.

The slower establishment pattern of clover was seen clearly in the first year of this trial, but its overall contribution was indisputable. Both red and white clovers showed high energy density, with white clover highest early in the season, and their superior protein levels were particularly significant. The average protein content across the season exceeded 20%, building to a high of 26-27%; both clovers always contributing more protein than the herbal elements.

## IMPACT OF FERTILISER

Positive interactions with fertiliser were closely aligned to the proportion of perennial ryegrass in the mixture. This is most likely due to the ability

of perennial ryegrass to use nitrogen during its period of highest growth potential.

In contrast to its effect on perennial ryegrass, higher levels of applied nitrogen suppressed clover growth significantly, thereby reducing crude protein levels in those plots. As well as lowering protein, when clover is inhibited one of its greatest benefits is lost – its ability to fix atmospheric nitrogen. This underlines the need for using artificial nitrogen carefully. While it can help grass growth early in the season, further use is unnecessary and detrimental where clover is included.

## SOWING TIME

The trial established spring as the best time for sowing multi-species mixtures. This benefits the herbs and legumes, providing the warmer temperatures they need to germinate and grow.

## FURTHER WORK

The trial continues with further exploration of how ley composition is influenced by inputs, climatic conditions and soil types.

## TAKE-HOME MESSAGES

- **Spring establishment** is recommended over sowing in the autumn
- **Legumes**, such as red and white clover, are critical for sward quality and reducing the requirement for applied nitrogen, and proliferate over time
- **White clover, chicory and plantain** increase sward performance and influence quality, stabilising yield mid-season but the herbs show low persistency
- **Secondary herbs** and legumes may be useful for biodiversity rather than grazing performance. They are potentially more site specific and may be of benefit in certain circumstances
- **Diverse swards** containing a lower proportion of perennial ryegrass are open and more vulnerable to weed ingress



# HAVE YOU CONSIDERED UNDERSOWING MAIZE?

*Much has been made of the environmental and soil erosion risks associated with leaving agricultural land bare over winter. This has prompted many UK farmers to explore the environmental and soil health benefits of undersowing maize with clover ground covers. James Marshall finds out more.*

Undersowing maize with grass is already common practice in many European nations, but it hasn't been widely adopted here in the UK. Concerns regarding plant competition and subsequent impact on maize yields have traditionally deterred livestock farmers from implementing the technique.

However, interest in undersowing is growing within the domestic livestock industry. It's becoming clear that with effective management in place, maize can flourish alongside undersown ground covers and achieve multiple soil health benefits. As well as improving soil retention over the winter period (especially on sloping ground) and reducing nutrient leaching, undersowing maize helps improve soil health and structure.

"Vigorous growing grasses, such as Italian ryegrass, will create a thick ground cover but are more likely to negatively impact maize yields due to competition between plants," explains Helen Mathieu, Germinal grass and forage production specialist. "However, we've been carrying out trials at Harper Adams University and they've highlighted maize crops can be successfully undersown with perennial ryegrass and white clover, without negatively impacting maize yields.

"But it's important the right management and establishment practices are in place to ensure undersowing is a success."

## ENVIRONMENTAL AND SOIL HEALTH BENEFITS

Leaving soil bare over winter represents a significant soil erosion and nutrient run off risk. Travel anywhere in the UK over winter and the sight of maize stubble fields with eroded channels through the soil is a worryingly common sight.

"Soil and nutrients are the building blocks on which successful crop growth is achieved, so anything to help retain these two things is really important," explains Helen. "Undersowing does add extra work for a farmer, but the result is a cover crop already established when maize is harvested. This represents an instant, large-scale ground cover and system of root structures immediately providing soil protection."



Helen Mathieu, Germinal grass and forage production specialist



**"UNDERSOWING WHILE MAIZE IS STILL GROWING ALSO AVOIDS THE RISKS ASSOCIATED WITH ESTABLISHMENT OF POST-HARVEST COVER CROPS."**



The foliage of the cover crop lessens the impact of rainfall on the soil. The network of established root structures also creates underground channels and air pockets to aid effective water infiltration. This, coupled with the structural integrity provided by root systems, can be a significant factor in reducing soil and nutrient run off during wet, winter weather.

When compared to leaving a field bare over winter, this approach brings soil biology benefits too. The live root structures provided by a cover crop help increase levels of soil organic matter. This increased organic matter fuels higher levels of soil microbial activity encouraging more beneficial organisms, such as earthworms, that return additional organic matter to the soil.

“Undersowing while maize is still growing also avoids the risks associated with establishment of post-harvest cover crops,” says Helen. “After maize is harvested, poor autumn weather conditions can sometimes delay or prevent the sowing of cover crops and limit the successful growth of anything planted.”

## TIMINGS, CROP VARIETIES AND ESTABLISHMENT TECHNIQUES

Maize does not perform well with competition from other plants and this often deters farmers from implementing an undersowing policy. However, by using a slow-growing cover crop like clover, selecting early varieties of maize and sowing at the optimum time, maize performance shouldn't be negatively affected.

“For anyone looking to establish maize in late April, the best time to undersow a maize crop with clover is the end of June or early July,” continues Helen. “In terms of optimum maize height, farmers should aim for the bulk of the crop to be between the top of a Wellington boot and their knee, and at the eight-leaf growth stage.

“The advantage of clover is it isn't as aggressive or competitive as Italian ryegrass and shouldn't pose a significant competition threat if managed correctly. The vital point is to establish the clover before the maize grows too high and overshadows the rows between the maize plants. But you also don't want the maize too short, as the clover will compete more effectively with the main crop.”

While clover can be broadcast, drilling has been shown to be the most

successful approach. Undersown clover should be drilled using an inter row weaving drill, at a rate of around 2.5kg/acre, and medium to smaller-leaf clover blends such as AberSheep usually work well in combination with maize.

And just as farmers need to carefully consider weed management when establishing a traditional clover-based ley, the situation is the same when undersowing.

“Maize can throw up quite a lot of weeds, so it's important to consider this when timing an undersown clover crop,” says Helen. “In May, farmers should provide their maize with two treatments of post emergence weed control. This allows plenty of time for chemicals to work out of the soil, and not affect the clover later in the summer.”

While the numbers of UK farmers undersowing maize crops is relatively low compared to countries such as Denmark and Germany, many are optimistic about its role in the industry.

“There is still a lot of research and refinement to be done,” concludes Helen. “But the potential benefits of undersowing maize are significant and I think it is something we shall see an increasing number of farmers implementing in the future.”

## TOP TIPS FOR UNDERSOWING SUCCESS

- Avoid use of **fast growing**, competitive grasses
- Opt for **early varieties** of maize and establish in late April
- Treat maize with **two rounds** of post-emergence weed control
- Undersow with clover when maize at **eight-leaf stage** - usually end of June or early July
- Drill clover at **2.5kg/acre** using an inter row drill
- **AberSheep** is a successful, small-leaf clover blend to use for undersowing

*Undersowing maize helps improve soil biology and structure*



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*Like many other farmers across Britain and Ireland, Brian Nicholson and Graham Lofthouse are looking for new ways to reduce input costs.*



Brian Nicholson



## LOOKING AT ALTERNATIVES TO KEEP COSTS DOWN

**Brian Nicholson, Johnstown, County Kilkenny, Ireland**

This spring, Brian Nicholson was thinking a little differently about how he managed his flock and forage due to soaring input costs and uncooperative weather.

### FARM FACTS

- **96ha** (237 acres) tillage and grasslands
- **15 ha** (37 acres) forestry
- **1 ha** (2.5 acres) wild bird cover
- **780** ewes + 220 replacement ewe lambs (run dry)
- **1.8** lambs/mature ewe
- **1,400** grass-finished lambs
- **300g** average daily gain (ADG)

After lambing, ewes and lambs spend a night in individual pens and a second night in a group pen before, weather permitting, they move onto the grazing platform. But as lambing came to an end, grass cover was a little behind where Brian would have liked.

“We have had little regrowth since early March due to the cold weather,” he explains. “Currently, we have around 15 days of grazing in front of the flock. My hope is we will have a bit of heat over the next few weeks to drive more grass growth, but if we don’t, I will have to start looking at alternative feed sources. The cost of nut is going up on a weekly basis, and currently €100 higher than it was last year.

“I also have the option of moving the flock on to the land we have closed up for silage, but that will mean extra expense later in the year. It’s not ideal but if I have to, I have to.”

The high price of fertiliser has also left Brian looking seriously at options that

will continue to keep cost of production as low as possible.

“Across the farm, we have reduced chemical fertiliser by 20% and will increase our use of clover to help bridge the gap,” he continues. “We won’t do a full reseed but will stitch in additional clover in areas where the cover isn’t as good.

“We reseeded our leys last year so with input prices going up, I might take a break this year and then do a bit of extra seeding next year. Additionally, our P and K levels are good, so I will probably focus on using pig slurry and farmyard manure this year instead of chemical inputs.

“However, I am not sure how that will affect the grass and, in effect, our stocking rates,” he concludes. “We will keep a closer eye on performance across the farm and monitor how things progress with the change in fertiliser. In the end, the return we see on the lambs will ultimately decide the direction we go. The system must pay for itself.”

## TRYING FOLIAR NITROGEN TO REDUCE INPUT COSTS

**Graham Lofthouse, Bankhouse Farm, Stow, Galashiels, Scottish Borders**

After a few years of experimenting with his use of forage crops and refining his grassland management, Graham Lofthouse was not planning anything drastically new for the months ahead. But as on most farms this year, the soaring cost of fertiliser has meant one distinct change of direction at Bankhouse Farm.

March was dry, sunny and warm, which put grass production ahead of this time last year at 1,732kgDM/ha (787kgDM/acre). “We were able to put 50 cows out to graze in late March, which was earlier than last year,” Graham says. “The cover was also great for the ewes around lambing time.”

In the lead up to lambing, Graham brings the sheep off winter forage crops and feeds high quality silage and dark grains.

“We lamb 602 ewes and ewe lambs between 6th April and 8th May, with 90% of the lambs arriving in the first 17 days. Those with twins are fed 3.5kg silage at 34% DM and 0.3kg of wheat dark grains before they lamb outside, then we just make sure they have plenty of fresh grass in front of them after lambing.”

Singles and triplets lamb indoors and are fed 3.5kg silage, with singles fed 150g and triplets 500g of wheat dark grains.

“The ewes came through the winter very well on forage crops,” he adds. “So, we will put in 4ha (10 acres) of Triumph swedes and 7ha (15.4 acres) of Redstart hybrid brassicas again, just the same as last year.”

The major change Graham has made this year was switching to foliar nitrogen. “We used a little bit of foliar nitrogen successfully last year so trying more this year,” he explains. “It hasn’t been used much on grasslands but is commonly done in the arable sector. Instead of putting on 100kg granular nitrogen per hectare (45.45kg/acre), I now only apply 10kg urea/ha (4.5kg/acre) mixed in about 150kg water. This mix also contains humate to encourage leaf absorption and a bit of foliar phosphate to help spring growth.

“So far the foliar products are more time consuming because you have to mix it all and travel at a slower speed during application,” Graham says. “From speaking with others, I believe we can improve this down the line. Our hope is this change reduces the amount of nitrogen applied per hectare, lowering both our costs and our carbon footprint.”



### FARM FACTS

- **109 ha** (269 acres) owned, plus 35ha (86.5 acres) rented
- **7.74tDM/ha** (3.13tDM/acre)
- **450** Easycare ewes + **150** ewe lambs
- **1,000** grass-finished lambs
- **0.3kg** average daily gain (ADG) lamb to weaning
- **89** Angus x Stabiliser suckler cows & in-calf heifers
- **85** weaned calves
- **1.24kg** beef ADG



Graham Lofthouse



# LEADER-FOLLOWER GRAZING SLASHES INPUTS ON UPLAND FARM

*Scottish upland farmer John Ritchie has cut nitrogen use by over 60 per cent across his 250 hectares and dramatically reduced his reliance on concentrates. Ann Hardy reports.*

Beef and sheep producer John Ritchie believes he was lucky to have been ‘enticed by a carrot’ away from set stocking. As a member of various grazing groups, as well as a participant in GrassCheckGB (an industry, academic and levy board collaboration to improve grassland management), he says the promise of better grass yields and lower concentrate use encouraged him to switch system.

Today, he’s thankful livestock performance on his Scottish upland farm has been transformed by rotational grazing, using a leader-follower system, in time to reap the benefits as input prices soar.

“Now, the cost of nitrogen would be the big stick,” he says.

Farming at Montalt Farm in the Ochil Hills, near Perth, he uses just three tonnes of bagged nitrogen each year across his silage ground.

On a holding which includes 125ha (309 acres) of hill and the remainder improved pasture, he says total use was nine tonnes when the farm was set-stocked.

“We use nothing on grazing land now and just 40 units N/acre on cutting swards,” he says. “At today’s prices that’s a saving of about £5,000.”

This supports some 550 breeding ewes and 100 Salers suckler cows. All are being kept through the winter on a mainly forage-based diet, with a small amount of concentrate being fed to growing youngstock.

Reaching this point has been a process of trial and error, with mistakes along the way. These include having the wrong balance of sheep and beef, failing to rest swards through the winter (he says they must rest for at least 100 days to build roots and retain enough ‘solar panel’ to burst into life in spring), and expecting sheep to achieve low residuals by grazing after cattle.

“Having the right balance between ewes and suckler cows is everything,” he says. “In our early years of rotational grazing we responded to the higher output of grass by increasing our ewe numbers, but with hindsight, I don’t think that was right.

“Ewes and lambs don’t like the pressure of rotational grazing, especially in summer when grass is stemmy. We were trying to bring residuals down to 1,500-1,600kgDM/ha, but our ewes were getting leaner and lamb performance was impaired.

“Putting them on to the grass first, we found they picked out the best leaf and clover and were spared the burden of worms by not grazing down too low.”

In contrast, he describes his suckler cows as ‘dustbins’ and says they are essential for clearing up the sward in a leader-follower rotation.

“There are few virtues in the suckler cow when it comes to making money but if you can use her to eat poorer quality fodder and still perform, she resets the sward like a mower for the next grazing round,” he says.

Hence, once rotational grazing was started about six years ago, it was quickly appreciated the cattle should follow the sheep.

Today, the farm’s improved pasture is sub-divided into 1.2ha (3 acre) paddocks suiting a mob of around 200 ewes and their twin lambs for two days. These are followed by 20-25 cows and calves to tidy up for two further days. With two groups of ewes and twin lambs, one of ewes and singles and three groups of suckler cows and calves, there will be three rotations on the go this summer.

“Depending on the time of year, the sheep go in at covers of 2,500-2,700kgDM/ha and the cattle come out at a residual of 1,500-1,600kgDM/ha,” he says.

“We’ve seen no effect on the cows’ performance from them grazing residuals down quite hard.”

This is confirmed by numerous performance parameters, including an average liveweight gain of 1.3kg/day in calves to weaning at 200 days, and in-calf rates in the nine-week bulling period in 2021/22 of 99 per cent.

## THE ANNUAL GRAZING CYCLE ON MONTALT FARM

- Strict adherence to rotational grazing principles is achieving 8-9tDM/ha at around 11.5MJ/kg DM with little nitrogen
- Ewes are moved off silage and on to the first rotation in mid-March
- Ewes are rotated daily during March so the whole platform is grazed
- Set-stocking begins on 8-9 April in preparation for lambing from 12 April
- Rotational grazing resumes in May, when cows and calves follow ewes and lambs
- Time on each block varies according to grass growth, ranging from 10kg to 80kgDM/day
- Lambs are weaned on 26-27 July. Ewes over body condition score 3 (BCS3) are moved on to the hill for six weeks
- Thinner ewes or cattle follow the lambs in the next rotation. Lambs are mainly sold off grass in October
- The latest lambs are supplemented on forage rape and mostly sold by December
- Higher body condition score (BCS) ewes return from the hill for the final grazing round and tugging from 16 November
- Cattle move away on to deferred hill grazing and silage/forage rape in mid-October
- Paddocks start to close from the third week of October, with the whole platform shut by 28 December. Target closing cover is 1,650kgDM/ha
- Fields are opened in the same order so everything is rested for 120 days

Meanwhile the lambs, whose growth rate dropped to 260-270g/day when grazed after cattle, have averaged a daily liveweight gain of 311g/day (for twins) from birth to weaning under this system over the past two years.

All of this is dependent on achieving a high metabolisable energy in the grass across the grazing platform, which usually begins the season at 11.5MJ/kg DM and rarely drops below this level.



John Ritchie

### Keys to success include:

- Leader-follower grazing using sheep followed by beef
- Correct stock numbers and types to suit system
- Meeting target sward residuals for each class of stock
- Resting swards over winter for at least 100 days

## FARM FACTS

- **250** hectares (618 acres) including hill and improved pasture
- **550** breeding ewes and **100** Salers suckler cows
- Farm nitrogen use cut from 9t to **3t/year**

**“WE ARE GRATEFUL WE HAVE A BETTER GRAZING MANAGEMENT SYSTEM WHICH MEANS WE DON’T HAVE TO CONSIDER DESTOCKING AS INPUT PRICES RISE.”**



Julian Bowers

# HERBAL LEYS TRANSFORM BEEF PRODUCTION AND FARMER'S MINDSET

*The introduction of herbal leys signals a big change in approach at Julian Bowers' farm in Shropshire. Clemmie Gleeson learns what the transformation means for Top House Farm.*

**The Bowers family are not afraid to make changes to their farming business. Their current move away from intensive beef production to an extensive low-input system is the second significant shift for the former dairy farmers.**

Having arrived at Top House Farm, Cockshutt in 1997 the family settled into dairy production, milking 150 cows and growing maize and cereals. Julian, his younger brother Robert and their parents Bill and Anne all worked together. "We did everything between us but in 2010 our parents wanted to retire. We knew by then we either needed to milk more cows and have staff to help, or leave dairying," says Julian.

They decided on the latter and looked for another opportunity for the 89ha (220 acre) farm. This came along in the form of dairy bull calves which they reared intensively in existing cattle sheds. Fast forward to 2021 and sustainability and regenerative farming techniques were becoming of more interest to Julian, so the time came for another change.

The calves required a lot of cereal-based feed to finish and spent their time on the farm indoors. "With prices beginning to

go crazy, I was starting to think we were not sustainable as we were," explains Julian. "I was thinking about how we can do better for the environment and for the animals." So, with the 'safety net' of a Countryside Stewardship Scheme agreement he decided to drill 82 acres of herbal leys. This prompted a change from dairy bull calves to Angus and Longhorn crosses, which were better suited to grazing.

"They will finish outside without lots of cereals," says Julian. "Those that do need to come in for the winter have silage rather than the corn-based diet we fed before." This means a much slower-maturing animal, but he believes it gives a better end product. "It's a premium grass-fed beef animal now and you can't do much better than that. Plus, it is nice to see cattle outside grazing – the visual aspect is so much better."

The herbal leys provide a complete food for the cattle and have enabled a reduction in all inputs, which is a big positive for Julian. "Our stewardship agreement covers the herbal leys, plus low input spring cereals and winter cover crops. I'm looking to use a lot less chemical of any description." This includes wormers as the herbal leys have

natural anthelmintic properties.

"Hopefully the herbal leys have four to five years' life in them while keeping within the GS4 rules of no artificial fertilisers or sprays." Instead, manure from grazing cattle plus some liquid digestate will be enough to maintain fertility, he says.

Drilled in August 2021 the leys were established with a min till or no till approach. "One of the three fields was lightly disced first, and we had a contractor direct drill the others." Establishment was good, he says. By the winter, one field had a chickweed problem, so Julian enlisted the help of a local sheep producer whose flock grazed the field for him. "It gave the crop the chance to be more competitive with the chickweed, which is quite a strangling weed and seems to do most of its damage over winter." The other fields were just lightly grazed by cattle in the autumn months.

The seed used is a bespoke mix, explains Julian. "I've known Helen Mathieu from Germinal for many years and told her what I wanted to achieve. She suggested that because we have quite heavy soil here, a bespoke mix would be best."

The mixture includes five different grasses, three clovers, plantain, chicory and birdsfoot trefoil. Lucerne or sanfoin were left out as they both prefer lighter land.

Moving to mixed species leys has required a mindset change too, he explains. "We were used to monocrops and seeing consistency across the field, not the variety and diversity we have now." His working day is different too, with time spent moving electric fencing and checking stock rather than feeding from a tractor. Fuel use has reduced with the telehandler, straw chopper and feeder wagon clocking up far fewer hours over the year.

"I'm really pleased with the herbal ley. It has established well and had a great start this spring," says Julian. "We have changed massively in the past 12 months. Our new approach is giving us the opportunity to continue farming in a more sustainable way, spending less money on inputs while producing a premium product."



Angus/Longhorn dairy crosses have replaced the milking herd



The bespoke seed mixture from Germinal includes five grasses, three clovers, plantain, chicory and birdsfoot trefoil

## FARM FACTS

- Around **200** Angus/Longhorn dairy crosses, plus a few remaining Friesian bulls
- **33ha** (82 acres) GS4 herbal leys, drilled 10th August 2021
- **Bespoke mix** from Germinal to suit soil conditions
- **24ha** (60 acres) low input spring cereals
- Remainder of land is **short term grass**, some grown for haylage for local stud farm
- **Min till** and no till approach



24ha (82 acres) herbal leys drilled in August 2021



# FARMERS WEEKLY GRASSLAND MANAGER OF THE YEAR 2021 FINALIST

Photo credits: Emily Fleur

The suckler herd was originally South Devon but Angus and Stabiliser genetics are being used to create a three-way cross

Increasing productivity while reducing fertiliser use saw Bill and Suzanne Harper from Cornwall being named as finalists in the Farmers Weekly Grassland Manager of the Year Award 2021. Clemmie Gleeson speaks to Bill to discover more about their approach.



Bill & Suzanne Harper use plate meter readings and experience to make grazing decisions

Introducing herbal leys was a 'light bulb moment' for Bill and Suzanne Harper. The first GS4 mixes were drilled on their farm under a mid-tier Countryside Stewardship Scheme agreement which started in January 2019. "We had always worked hard at our grassland management, but this was a light bulb moment. They have revolutionised our farming and we have been so much more productive since," says Bill.

Bill and Suzanne farm a total of 222.6ha (550 acres) in North Tamerton in the Tamar Valley. Within that they produce around 40.5ha (100 acres) of cereals for animal feed and the remainder is grassland. "We are as self-contained as we can be," says Bill. Livestock on the farm includes 350 breeding sheep, 125 suckler cows and they also finish 100 dairy calves each year. The suckler herd was originally pedigree South Devon, but the Harpers are currently creating

## FARM FACTS

- **First** generation farm
- **222.6ha** (550 acres) farmed in total including 60.7ha (150 acres) rented
- **40.5ha** (100 acres) cereals grown for feed
- **125** suckler cows - South Devon/Angus/Stabiliser cross
- **350** breeding sheep
- **100** dairy calves sourced from one local farm
- Extensive use of **herbal leys** & rotational grazing
- Production and use of **bokashi** on farm



Herbal leys have 'revolutionised' production for the Harpers and helped increase productivity

## "WE ARE SO IMPRESSED WITH HERBAL MIXES AND THEIR PERSISTENCE. THEY ARE HELPING US TO CASH IN ON THE FERTILITY OF OUR LAND."

a three-way cross with Red Angus and Stabiliser. "We wanted the Angus genetics for functionality, particularly ease of calving, and the premium was appealing too." The Stabiliser input will reduce cow size and improve vigour, he adds.

"Trepoyle Farm is a first-generation farm business which sprung out of an animal feed enterprise I built up and sold on 10 years ago," explains Bill. He continues to work for Holsworthy-based Harpers Animal Feeds alongside running the farm with wife Suzanne.

Use of herbal leys has allowed the Harpers to reduce fertiliser use considerably. Meanwhile output has increased to 1,400kg liveweight gain per hectare for the dairy cross calves and 1,000kg for the suckler calves. The sheep flock has reached 795kg liveweight gain per hectare and Bill believes they will do better this year with more herbal leys available to the sheep. Liveweight gain per hectare is influenced by both stocking rate and growth rate, he explains. "You've got to get both right."

Rotational grazing has been a long-term feature, but in recent years the Harpers have developed a better understanding of the detail needed with grassland management, says Bill. "We use a plate meter, knowledge of the weather conditions and experience of the land to make informed decisions." They have paddocks of 5-6 acres for the dairy calves and three fields totalling 30 acres for groups of 35-40 suckler cows with calves. "We continue to develop our approach and have begun splitting fields up to gain more from them."

It hasn't all been plain sailing with the herbal leys, he adds. "We have had some issues. There's one field where chicory won't grow and we're not sure why. We are also learning that red clover

is inconsistent in our part of the world. And we have lots to learn about how to establish the leys and manage them to avoid pests like wireworm and chafer grubs."

Despite those challenges Bill and Suzanne remain committed to their management and plan to build on their success. "We would like to reduce our permanent pasture so 90% of the grassland is younger leys," says Bill. "We are so impressed with herbal mixes and their persistence. They are really helping us to cash in on the fertility of our land."

Bill applies a single dressing of 75kg nitrogen per hectare which is half the previous level. "We use bokashi now too which has become critical to our system. From this year everything in the grazing platform will have one bokashi dressing in July or August."

Bokashi is the Japanese name given to the process of treating farmyard manure with 1% crushed seashells to reduce pH, followed by application of an inoculant to stimulate fermentation. It is then stacked, covered in sheeting and left to ferment for eight to ten weeks. The resulting compost is full of beneficial bacteria, yeasts and sugars. "It converts the farmyard manure into a more digested, plant-friendly product," says Bill. "Its persistence was what really impressed me. Chemicals give a flush of growth then nothing, but with this it grows continually for three months."

Another advantage is the bokashi breaks down quickly so the land can be grazed 21 days after application. "I'm very keen on it so we will be more than doubling the quantity we make this year to 400 tonnes.

"It could not have come at a better time with fertiliser prices as they are."





2022 Nuffield Scholar Rob Havard is using holistic management on his family's Worcestershire farm

# CHEWING THE CUD

*For ten years, Rob Havard has adopted principles of holistic management and used holistic planned grazing to make the most of his farm's diverse pastures, restoring acres of native, species-rich land. He tells Laurence Brown about why he chose these techniques.*

**Rob Havard runs his family farm in Worcestershire with his father while also working as an ecologist. The farm has 130 Aberdeen Angus cows grazing over 1000 acres of extensive pasture, their main operation being the production of pedigree, grass-fed breeding cattle.**

## What is holistic management?

In a nutshell, it involves looking at the tools available to you and using them to determine the direction of the farm. Goals are set by which decisions can be tested against social, financial and environmental criteria. It is underpinned by flexibility. For example, we have fields being grazed six or seven times a year and grow back fine while others only manage two grazes. It's a case of matching your management to your land. Sometimes pinning your colours to the mast of one grazing system may not be the best approach.

To give this some context, with our grazing rotations we initially started moving our herd every two days and eventually settled on twice a week. The

key principle for us was not to graze the grass as it was regrowing giving it chance to re-establish itself. When this goal is met, we can be flexible with the grazing system we choose.

Within our social criteria, consideration is given to quality of life for everybody involved and we are keen to avoid overworking staff unnecessarily. This approach gives us the freedom to respond to questions such as "What benefit is there in staff moving cattle every day compared to every other day?" and "Could staff be spending that time more productively elsewhere, adding more value to the business?" Using the holistic management framework, decisions are made based on several aspects of the operation.

## What are you looking to develop further?

Ultimately, we would like to achieve the maximum stocking rate possible while still improving and regenerating the land ecologically. We are already working on the cow genetics, but plant genetics are equally important. We are

**"A HOLISTIC MANAGEMENT FRAMEWORK LOOKS BEYOND THE GRAZING SYSTEM TO ENCOMPASS EVERYTHING ABOUT YOUR OPERATION, INCLUDING PEOPLE, CATTLE AND THE ENVIRONMENT."**



Rob believes plant genetics are as important as livestock genetics to the success of his holistic approach

developing swards with tall fescue and cocksfoot, mixed with native species such as meadow foxtail. This is very important in spring when we are trying to grow as much grass as possible. Its proving beneficial for us with the current high cost of fertiliser. At a time when costs are soaring, we are yet to see an increase in marginal costs.

## How quickly did you see the benefits of holistic planned grazing?

It really depends on your land. Some permanent pasture we took on has plenty of deep-rooted grasses already. The sooner we allowed bunch grasses such as tall fescue and cocksfoot to reach their potential, the sooner we reaped the benefits. Some of those root structures are up to two metres deep, which in our clay soils made an enormous difference and allowed us to outwinter our cattle within 2-3 years, saving housing costs. It may take 10-12 years to see the same results on land previously in arable.

## Would you recommend adopting holistic management?

I wouldn't necessarily say people should or shouldn't do it. I would explain what we have done and what has worked for us and leave others to work out if it applies to their own situation. Currently, there is a lot of interest in high-density grazing methods, such as mob-grazing and tall grass grazing. These are very intensive but certainly can offer benefits in weed control and kick-starting

production. A holistic management framework looks beyond the grazing system to encompass everything about your operation, including people, cattle and the environment. If the approach is compatible with other farm operations and is of interest or a passion, then, yes, I would recommend it.

## Lastly, can you elaborate on your genetics focus?

The most important trait we breed for is fertility, with additional focus on traits such as longevity, excellent forage conversion, good structure, udders and feet. We have found selecting for these traits has resulted in a typical size of 500-550kg. Our herd is a slightly line bred population which is closely related and will have some inbreeding depression. When our bulls are used over unrelated commercial cows, the resulting cow is smaller, but she has hybrid vigour making her very fertile and robust. If bred with an unrelated, easy calving terminal sire, the cow produces a calf almost as big as herself and I believe this demonstrates where our genetics blend well with the terminal, production-focused genetics. We recently sold some bulls to the owners of an 800-strong suckler herd, who needed to reduce their herd frame size as it was costing them a lot to feed. Our bulls introduced genetics that reduced maintenance requirements and costs.

## FARM FACTS

- **20ha** (50 acres) Phepson Farm
- **77ha** (190 acres) rented
- **73ha** (180 acres) National Trust tenancy
- **24ha** (60 acres) rented meadows
- **222ha** (550 acres) at Kemerton Estate and Bredon Hill Nature Reserve
- **Diverse** native pastures
- **130** Aberdeen Angus cattle



**NUFFIELD**  
Farming Scholarships

## NUFFIELD FARMING SCHOLARSHIPS

Rob is a current 2022 Nuffield Scholar studying the 'Evaluation of beef cattle selection methods for profitability in grass-fed production systems' for his scholarship. He is investigating the effectiveness of different selection methods and how farmers can learn from them to improve the profitability of grass-fed cattle operations.

If there is an area of agriculture you are keen to explore to further your farming career, consider a Nuffield Farming Scholarship. A scholarship offers you the opportunity to travel, to develop knowledge and understanding of your chosen topic and to meet industry leaders around the world. Applications for 2023 Nuffield Farming Scholars are open; closing date 31 July 2022. To find out more: [nuffieldscholar.org](https://nuffieldscholar.org)



# IMPROVE FORAGE PRODUCTION THROUGH COST-EFFECTIVE WEED CONTROL

*Escalating input prices are leading to tough decisions being made on how to control costs on farm. Forager explores why it's important to make sure your weed control strategy isn't scaled back to the detriment of your winter feed.*

**Cost-saving decisions can often be a trade-off; saving money in the short term can end up costing more further down the line. Weed control falls into this category and farmers are being urged to have a plan for it this year. Cutting back on weed control risks feed quality and quantity for next winter, at a time when homegrown forage will be more important than ever.**

## Improving forage production

Keeping grass productive, extending the life of swards and providing quality nutrition for livestock is always a priority, but even more so in the current economic environment. Making the best use of grass through good grazing management and optimal cutting regimes is important, but so too is making sure the right plant species dominate without allowing weeds to take over.

It is vital to control docks, thistles, ragwort, buttercup and nettles as they offer little nutritional value, can cause animal health issues if there is nothing else to eat and are invasive perennial weeds. Left uncontrolled, they can quickly dominate a sward. Their management is essential to reduce competition for nutrients, light, water and space, allowing grass to reach its full potential as a valuable source of forage.

Even at low populations, weeds pose a threat to grassland productivity. For example, a 10% dock or thistle infestation can equate to a 10% reduction in grass dry matter leaving significantly less grass



growing for feeding to livestock. With a low feed value, weeds in silage can cause nutritional shortfalls resulting in the need for supplements of more expensive, bought-in feed.

## Managing weeds in a cost-effective way

To manage weeds cost-effectively and sustainably, consider the following:

- Select the right herbicide for the job. For example, if docks are the problem, select a high-performing dock control solution, such as Corteva's Doxstar® Pro. The Corteva decision tree (Figure 1) helps you decide on the best herbicide for your weed situation.

- Timing is critical. Apply herbicides to weeds when they show active growth and in a vegetative phase before moving into a reproductive or flowering state.
- Carry out as much weed control as possible in new sown leys. Controlling weeds when they are young is more effective and requires less herbicide than more established swards. It also encourages the new grass species to dominate, restricting the potential for further weeds. Corteva has two selective herbicides for use in new sown leys. Both Envy® and Leystar® kill weeds down to the roots. The best time to apply them is when weeds are small and actively growing – six to eight weeks



Figure 1 – Using the Corteva decision tree helps determine which product is best for your situation

after reseeding – and when there are three leaves on the grass.

- In multi-species leys, where valued species other than grass are present – typically white and red clover, chicory, vetch, birdsfoot trefoil, sainfoin or lucerne – weed control is more challenging. A more targeted approach is required, such as the use of clover-tolerant herbicides or precision applications using a knapsack and Grazon® Pro.
- Make applications as efficient as possible. Use a properly calibrated sprayer and apply the water volume as stipulated on the label to ensure good coverage. Use a nozzle, such as an air inclusion nozzle, to minimise drift.
- Topping or cutting may remove annual weeds such as fat hen and redshank but have minimal effect on perennial weeds such as docks, thistles and nettles. It is an expensive operation and a false economy if the weeds return.
- Plan your spray using the Corteva Forage App. Taking the time to plan

a spray in your grassland is vital for success. A well-timed spray, using the right product can significantly reduce weed burden and encourage grass growth, as well as minimise the risk of a costly repeat spraying. Corteva's Forage App provides a decision support tool which helps you plan and execute an effective application.



## DON'T FEED THE WEEDS

With the cost of applied nitrogen at an all-time high, another way to reduce costs is to make sure fertiliser is spread on grass not weeds. Control weeds to protect your forage quality and quantity and make a return from every kilo of fertiliser spread.

The economic conditions are tough at present and ensuring you gain the most from grazed grass and winter forage is imperative. Carefully planning your weed control for the summer months could save you money in the long run.

*The free Corteva Forage App provides resources to help maximise production of homegrown forage.*



# Breathe new life into old pasture.

## Forefront® T

HERBICIDE

Forefront® T is a high performance herbicide.

It is the most effective, broad spectrum weed control solution for grassland.

Use it on permanent pastures or grazing leys to control long established or high populations of weeds.

It is your cost effective alternative to a full re-seed, quickly increasing the amount of available grass.

Let your grass breathe again. Talk to your advisor or find out more at [corteva.co.uk](http://corteva.co.uk)



Docks



Nettles



Thistles



Buttercups



Dandelions



Ragwort

