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Issue 27 / Spring 2022



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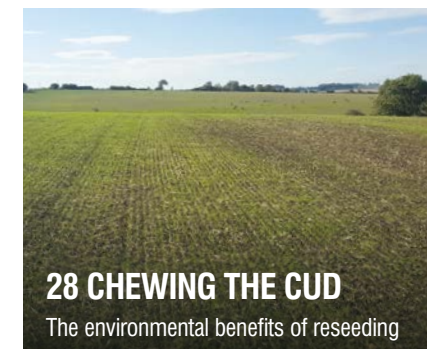
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NEW ENVIRONMENTAL ADVISERS REGISTER



BASIS has announced it's launching a new register of specialist and accredited environmental advisers.

Launching in June, the register will mean those looking for environmental advice on farm can be assured a registered adviser has a knowledge base across all environmental facets of the farm business. The directory of individuals establishes a baseline of professional standards for those advising in the farm and land management sector and recognises their expertise.

With the introduction of the ELM schemes bringing new policies and legislation, more farming businesses are seeking advice. This register provides the 'go-to' resource for finding qualified assistance.

Teresa Meadows, BASIS head of environment and public affairs, explains: "Working in a similar format to our current BASIS Professional register for crop production advisers, the new register should give farmers peace of mind that their chosen adviser is appropriately qualified to deliver advice

on environmental farming practices, such as the ELM schemes."

To continue demonstrating competence after qualifying for the register, members will be required to collect Continuing Professional Development (CPD) points each year through extended learning.

The new Register will open from June 2022. For more information, contact Teresa Meadows at teresa.meadows@basis-reg.co.uk.

CPD POINTS FOR FORAGER SUBSCRIBERS



The RoSA (Register of Sheep Advisers) has confirmed its members can collect 2 CPD points for subscribing to Forager magazine. To collect these points, quote code: PD/116326/2122/G.

You can submit this code, along with the publication title, into the 'Submit CPD points' area of the member login and the points will be credited to your account.

NEW PRODUCT TARGETS PH AND SULPHUR



The makers of Calcifert Lime and Calcifert Sulphur have released a new product combining the benefits of both products in one application. Calcifert LS11 neutralises soil to maintain a balanced pH and also contains 11% SO₃ to help address the widespread sulphur deficiency in UK farmland.

Recent data suggest up to 85% of arable land and 88% of grassland is deficient in sulphur, with some soils now at critically low levels. This follows a dramatic reduction in atmospheric deposits over the last 30 years. Sulphur is an essential nutrient required for

the healthy development of all plants and vital to efficient nitrogen utilisation.

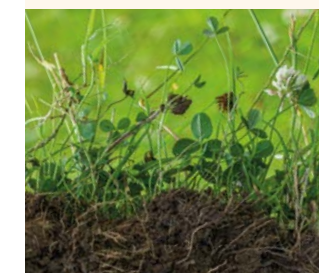
"Trials on one Scottish grassland farm have shown a single spring application of just 200kg of Calcifert LS11 per hectare improved DM yield by 9.2% between May and August," explains LKAB's technical specialist and agronomist, Mark Tripney. "This equates to a return of 12:1. It is the result of improved nutrient use efficiency and plant uptake when available calcium and sulphur are applied early in the growing season and pH is maintained at the target level.

"With increasing fertiliser prices, it is more important than ever farmers gain the most from the inputs they apply. Calcifert LS11 is a quick, easy and cost-effective way to target two essential areas of soil health that need addressing annually in nearly all cropping situations - pH level maintenance and sulphur supply," concludes Mark.

Calcifert LS11 is suitable for all crops and is best suited to spring application but can also be used for autumn drilled grass reseed.

SFI FOCUS ON GRASSLAND SOILS

The Sustainable Farming Incentive (SFI) scheme opens for applications in England later this year. The Improved Grassland Soils standard 'introductory level' will pay £28/ha to farms soil testing for organic matter with a soil management plan and 95% green cover over winter. For the £58/ha 'intermediate level' payments, farmers must also establish herbal leys on at least 15% of land. An 'advanced' standard is planned for 2023. The scheme will also pay for an annual livestock health and welfare review. Visit: www.gov.uk



SCHOLARSHIPS FOCUS ON SUSTAINABILITY

Maximising pasture continues to be a popular topic in forward-thinking agriculture, with a number of 2022 Nuffield Scholars being awarded two-year scholarships to carry out research projects in this area.

Beef and sheep farmer Emily Padfield is looking at improving farm incomes with mob-grazed herds by improving soil and biodiversity through grassland management, while Highlands farmer Vic Ballantyne is exploring maximising profit from pasture using rotational grazing and progressive genetics.



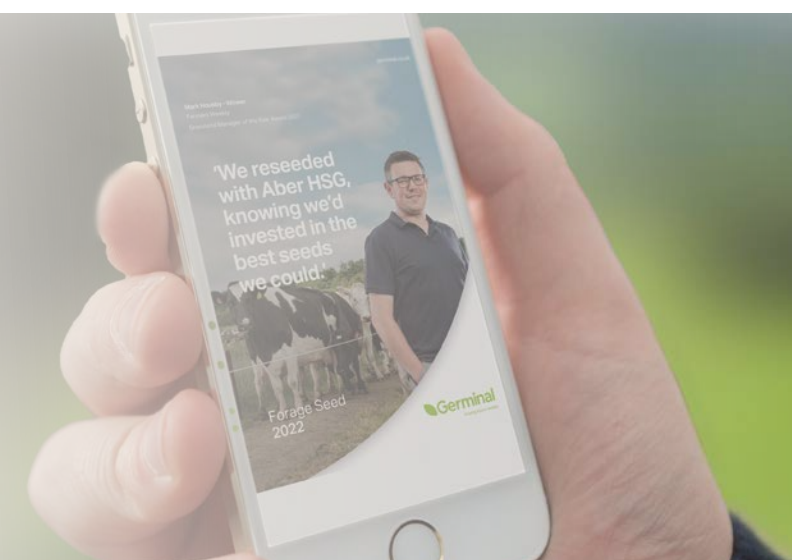
NUFFIELD
Farming Scholarships

Other topics include: investigations into sustainable methods to improve gastrointestinal parasite management in the UK sheep flock, working towards Net Zero in the dairy sector, the evaluation of beef cattle selection methods for profitability in grass-fed production systems, cover and catch cropping opportunities in UK arable agriculture.

FORAGE SEED 2022

Germinal's Forage Seed 2022 catalogue is now available. The catalogue details all Germinal's forage products, including the Aber High Sugar Grass range, and lists their team of grass and forage experts. Successful grassland farmers also share their experiences of how they've gained from selecting products best suited to the needs of their production system.

Download your copy from the Germinal website (<https://germinal.co.uk/catalogues/>) or request a printed copy from your local seed merchant.



HELPING RUMINANT LIVESTOCK PRODUCERS TOWARDS NET ZERO

The climate crisis increasingly dominates the news and often agriculture, particularly ruminant livestock production, is positioned at the heart of the problem. But does that have to be the case? Forager investigates.

Undoubtedly, humanity faces a major challenge in dealing with the climate emergency. This is already impacting agriculture, and ruminant livestock producers find themselves at the sharp end of this transformation, as they are often seen as the bad guys when it comes to greenhouse gas emissions.

As a result, most dairy, beef and lamb supply chains are now demanding a reduction in carbon footprint on farm, often with ambitious 'net zero' targets. But while the need for change is without dispute, the way to achieve it on farm remains unclear for many. Thankfully, a collaboration of organisations from across the industry not only believes livestock production from grassland is a key part of the future of UK farming, but is committed to helping make that a reality.

The Net Zero from Productive Grasslands Partnership (NZPGP) has been brought together by grass and forage seed specialist, Germinal, and Aberystwyth University. Partners currently include Dalehead Foods, Pilgrim's UK, Müller UK & Ireland, Sainsburys, Waitrose, Mole Valley Farmers, Kingshay, LEAF, AHDB, NFU/ NFU Cymru, CIEL, KTN and Hybu Cig Cymru.

"There is no doubt that agriculture faces huge change," explains Paul Billings, Managing Director of Germinal. "But there is definitely confusion over where the solutions lie and how to implement them, and some farmers are concerned about whether net zero is compatible with profitable food production."

The NZPGP aims to develop integrated approaches that demonstrate grassland can be productive for livestock farmers while also helping them achieve net zero. After all, grassland is the UK's biggest crop and largest carbon sink – holding more carbon per hectare than forestry.

"It is easy for some to dismiss ruminant livestock production as incompatible with mitigating climate change, but that is too simplistic," says Paul. "While there are calls to simply reduce red meat and dairy consumption as a way of saving the planet, the reality is well-managed grassland is fundamental to achieving net zero. Ruminants can transform the nutrients in grass into nutrients humans can access, while being a natural part of the carbon cycle."

As a result, the NZPGP aims to develop solutions that range from soil and grassland management to livestock and plant nutrient use efficiency, sharing knowledge across the industry with a common goal.

"Undoubtedly, some of the solutions to this challenge will come from real innovations and these are already happening," says Paul. "For example, at Germinal we are working through our specialist Germinal Horizon innovation division to develop climate-smart forages that can reduce input requirements and livestock emissions, while still delivering productivity, and are making significant progress. But these new technologies and management techniques are actually implemented on farm, and that is the unique benefit of the NZPGP collaboration. We have organisations from across the supply chain that can drive change across all aspects of farm production and beyond."

Of course, that's all very well, but how is it taking account of farmers' views?

In addition to having farmers within the NZPGP, it also commissioned farm research to understand where efforts should be targeted. Responses from dairy, beef and sheep farmers showed reducing fertiliser use is seen as a major focus area.

"Asked to choose the two most important from a list of options, 76% of respondents believed the biggest step they could take to reduce emissions was to use forage legumes in place of mineral N. And 48% said reduced fertiliser use was important," explains Paul.

"Reducing ploughing and improving livestock nutrition were also seen as areas of focus." Yet, perhaps unsurprisingly, less than 1% of farmers saw cutting livestock numbers as a solution.

When it comes to where research should be focused, almost two thirds of farmers felt attention should be given to developing forages that require less N and P, with 44% feeling soil management and 43% the conversion of plant protein to livestock protein was most important.

Farmers also recognised areas where they needed more knowledge, with around half looking for more information on measuring soil carbon stocks and on the roles of different forages and diverse pastures in reducing carbon emissions.

"What seems clear from our survey is farmers feel forage and forage management have an important part to play in helping them remain productive and profitable while also addressing carbon emissions," concludes Paul. "But many don't know where to start, with conflicting information, and no clear plan. We see a real appetite for change and a willingness to do things differently, but a need for clear guidance and a focus on relevant research that can be easily applied on farm. We are confident by working together across the supply chain, the NZPGP can make a demonstrable difference to farmers in the short term and beyond, helping to facilitate the transformation of the industry at pace, while maintaining a productive, profitable ruminant livestock sector for the future."

76% of farmers believe using forage legumes in place of mineral N is the biggest step they can take today to reduce emissions while maintaining profitability



48% think reducing fertiliser use is central to reducing emissions



63% of farmers consider research into forages requiring less N and P a priority to achieve net zero by 2040



53% identify their main knowledge gaps as measuring soil carbon and the role of different forages and diverse pastures in reducing carbon emissions



Less than **1%** suggest reducing livestock numbers is the best way to reduce emissions today



GOOD PASTURE MANAGEMENT: WHY IT MATTERS

Professor Jude Capper has been an authoritative voice on sustainable livestock farming for over a decade. With the environmental impact of the meat and dairy industry remaining under public scrutiny, Professor Capper shares her insights into how good pasture management plays a central role.

Professor Capper believes a more holistic approach to pasture farming can achieve outcomes for the environment, people and livestock, and improve the public's perception of the industry if communicated effectively. Adopting a philosophy which considers how systems and practices affect animal, human and ecosystem health could lead to prosperity in multiple ways by avoiding negative trade-offs among the three wherever possible.

At Harper Adams University, Professor Capper is abiding by these principles in her work on the University's farm, aiming to help farmers integrate them into their businesses.

"There is no silver bullet when it comes to pasture farming helping to build a more sustainable meat and dairy industry," comments Professor Capper. "The simple answer is to do absolutely everything better. If we meet or exceed key performance indicators on every farm, we can reduce resource use and greenhouse gas emissions while improving animal performance."

For example, if livestock growth rate and meat and milk yields are increased, fewer livestock are needed. Time is also saved achieving the same results compared to a less efficient system. In turn, this leads to a reduction in greenhouse gas emissions and land, water and fuel use lowering cost of production.

"There's a real need to be better at linking ruminant livestock into arable

and pasture rotations," continues Professor Capper. Her current research is looking at integrating the University's sheep flock into the crop rotation and moving towards outdoor lambing. This integration will help make the very best of dual-purpose land and fertiliser use will be reduced. The benefits of the resulting improved soil quality include increased organic matter building resilience to weather extremes such as floods and drought.

Through her work with the ABP Food Group, Professor Capper is also examining cattle grazing systems. She is looking at how improving the species, duration and type can improve soil carbon sequestration and biodiversity as well as cattle performance, providing a triple benefit for beef producers. Professor Capper encourages the use of multi-species swards having seen promising results in several trials and on commercial farms. This work demonstrates how the environment, cattle and farming business can all benefit from improved management.

A key technique underpinning these farming methods is soil testing, which provides important information on soil characteristics such as organic matter and pH. Looking for positive indicators, such as an increase in organic carbon and nitrogen, helps decision-making on farm.

When implementing more sustainable farming practices, Professor Capper suggests farmers examine both current and new science relating to pasture farming and stay abreast of developments. Advice about what can be achieved is constantly changing as the science progresses. Staying up to date is the best way to maximise the opportunities.

Speaking to other established pasture farmers, going to discussion groups and joining farm walks is invaluable. Seeing what has worked for others can help determine what could support your own system, and Professor Capper suggests learning from producers based in other areas or even overseas can be useful.

Regarding the consumer view of meat and dairy, there is a perception cattle and other livestock "should" be kept on pasture, despite potentially conflicting with the need to make best use of available resources or fit processor and retailer specifications.

Professor Capper argues pasture farming certainly can improve the public view of meat and dairy production, even if the advantages and disadvantages of different systems aren't widely understood outside agriculture. "The challenge is to explain that all production methods can and should be sustainable and it's not limited to specific systems or feeds," she concludes.

"THE SIMPLE ANSWER IS TO DO ABSOLUTELY EVERYTHING BETTER."



PROFESSOR JUDE L. CAPPER PhD DSc (h.c.) ARAgS is an independent livestock sustainability consultant and ABP Chair of Sustainable Beef and Sheep Production at Harper Adams University. She is an expert on sustainable beef production systems and is using her knowledge to help the industry reach Net Zero. She emphasises the importance of communication, and often speaks about factors affecting the sustainability of the livestock industry to enhance the knowledge of all food production stakeholders from farmer to consumer.

THE FINANCIAL POTENTIAL OF SOIL CARBON



Much has been discussed about carbon trading and soil sequestration. Wading through the rhetoric and sorting fact from speculation is no easy task. Not much is set in stone yet, but we know carbon markets will be part of UK farming's future. So, what do farmers need to know in preparation? Kendra Hall finds out.

1 Grasslands and soils store carbon and can help achieve net zero

The amount of carbon stored in soil depends on what grows in it, how it's managed and the soil type. Changes in land management can improve the soil's storage capacity and help pull additional carbon dioxide (CO₂) from the atmosphere. With 72% of UK land used for agriculture, farmland has come into sharp focus for stakeholders looking to reduce their carbon footprints, including the farming industry itself.

2 Soil carbon markets are coming, but the specifics are as clear as, well, mud!

A 'carbon credit' represents 1 tonne CO₂e either removed from the atmosphere permanently or prevented from being emitted in the first place. These credits need to be measured and verified, but scientists and regulators are still determining how this should be done for soil carbon in the UK. Questions about how these agreements should work also remain: How long should carbon offsets be 'locked away'? How do changes of land use or ownership affect status?

To help address this, the Sustainable Soils Alliance is developing the UK Farm Soil Carbon Code, a free, open access set of formal protocols: sustainablesoils.org/soil-carbon-code

3 Farmers and landowners should proceed in carbon trading agreements with caution

There is no doubt carbon markets present a considerable financial opportunity at a time when margins are increasingly squeezed. It's important to remember carbon can only be counted once; if someone else owns your carbon credits, you cannot also claim them for your own business. This could limit contract options as more processors and retailers consider carbon footprints when choosing suppliers.

4 Before entering into an agreement, know what's involved

As with any contract, it is essential to fully understand the details of an agreement you consider entering. This is especially true when it comes to carbon trading due to the relative permanence of terms and conditions and the novelty of the market. Be sure to understand your milk and/or meat buyer's plans for carbon measurement; you may need your farm's carbon credits to fulfil future contracts.

Despite the unknowns, many in the industry are taking steps to better understand how farmers can benefit from future opportunities and answer some of the big questions around carbon in our soils.

FIRST MILK INVESTS IN SOIL CARBON MEASUREMENT

Dairy cooperative First Milk has ambitious sustainability targets to reach net zero by 2040 and to be sequestering an additional 100,000 tonnes of CO₂e in the soil per year by 2025.

To help achieve this, the company has undertaken a large-scale pilot to measure and establish a baseline of soil carbon on First Milk member farms. This is being completed alongside Nestlé and soil carbon measurement start-up Agricarbon, in which First Milk acquired a 5% stake in August 2021.

Covering 7,000 hectares and using data from 40,000 soil samples, the project is one of the largest datasets of real-world soil carbon measurements in the world. The data will also evidence the capture and storage of atmospheric CO₂ into regeneratively-farmed soils.

The company is offering a 0.5ppl payment to members planning to reduce carbon emissions and increase carbon



Measuring soil carbon on a Scottish dairy farm

sequestration and biodiversity through regenerative farming methods. A unique digital mapping tool developed by Kingshay will assist members through this process, enabling quick and accurate completion of regenerative plans and provide field-level data.

"We are convinced dairy farmers can be part of the solution to the climate crisis by adopting regenerative principles that store carbon in soil for the long term," explains First Milk Sustainability Director Mark Brooking.

"The response [to the regenerative farming bonus] from members has been overwhelmingly positive, and we will support them as they develop their own regenerative farming plans. We will test and monitor soil carbon levels across our members' farms through our partnership with Agricarbon, providing clear, robust data on soil carbon sequestration levels and progress towards net zero as we move forward."



Ben Hunt

NUFFIELD SCHOLAR TO EXPLORE NET ZERO OPPORTUNITIES BETWEEN FARMERS AND UTILITY COMPANIES

As a Catchment Source Manager for a major water company, Ben Hunt has built a career around working with farmers to improve raw drinking water quality. Now a 2022 Nuffield Scholar, he will explore how farmers and the utility sector can continue to work together to develop local soil carbon markets – and ultimately help each other achieve their ambitious net zero goals.

"The existing relationship between the two sectors, plus a shared interest in the same pieces of land, presents a real opportunity for a local soil carbon market to be mutually beneficial in many ways," explains Ben. "The utility sector is well placed to offset some of their own emissions by helping farmers increase soil carbon storage on their land, which also delivers a range of productivity benefits to farmers."

"Doing this would not only help mitigate climate change, but also deliver a range of other benefits like better air and water quality, flood mitigation and making farmland more resilient to the effects of climate change. These are beneficial to both parties, making this a real win-win situation if we can get it right!"

There are many unanswered questions about this burgeoning industry, but Ben hopes he can find answers as he explores soil carbon markets in the USA, India, Australia and Europe, speaking to a wide range of stakeholders including farmers, brokers, investors, advocates and sceptics.

You can follow Ben's Nuffield journey on Twitter at @soilcarBEN.

WHICH IS THE RIGHT CARBON MEASUREMENT TOOL FOR YOUR FARM?



Rachael Madeley Davies,
Kite Consulting

The demand from supply chain drivers, consumers and producers' own interest in understanding their carbon footprint is gathering pace, increasing the requirement for farmers to measure carbon impact. Having written a report for National Milk Records on carbon measurement tools available to UK ruminant farmers, Kite Consulting's Rachael Madeley Davies tells us why measuring is so important and what to look for in a tool.

Net Zero and Scope 3

"Retailers' commitments to net zero and their increased focus on Scope 3 emissions (from their supply chain), as well as other external pressures to decarbonise, will require food and drink supply chains to have an accredited carbon calculation for on-farm emissions," says Rachael Madeley Davies. "Many aligned producers are already undertaking carbon measurements and the rest will have to follow to secure the best outlets for their produce. So, being able to demonstrate your farm's carbon footprint is important.

But it is unlikely just having a figure for your carbon footprint will be sufficient, says Rachael. "Businesses will need to demonstrate their total carbon impact figures are reliable and, at some point, will probably have to demonstrate a



"THERE ARE ALSO POTENTIAL OPPORTUNITIES IN SUPPLY CHAINS FOR 'INSETTING' ANY CARBON CREDITS GENERATED"

plan to reduce them. But choose the right carbon measurement tool for your business and there is an opportunity to both improve farm efficiency and carbon emissions," she adds.

Potential opportunities

"There are also potential opportunities in supply chains for 'insetting' any carbon credits generated within the primary source – possibly via sequestration. For this to happen, carbon footprints at farm level need to be undertaken.

"One of the current barriers for calculating carbon emissions is the conflict between carbon calculators, academics and industry in relation to how certain elements are calculated. Carbon sequestration in soils is one example. But there are greater risks with not starting the process and it is likely further legislation and regulation will come sooner rather than later, in addition to supply chain pressure."

"GOOD QUALITY, PRECISE DATA REMAINS THE STUMBLING BLOCK"

It's not too late to start measuring

If you haven't started measuring your carbon footprint yet it's not too late; there is a range of reliable, recognised tools available. The report 'Measuring your carbon impact - which is the right tool?' looked at nine carbon measurement tools satisfying three criteria:

- Broadly available either free to use or for a fee as part of a comprehensive package
- Applicable to UK agriculture
- Include ruminant livestock systems

The report looks at the following areas:

- The tool's compliance with industry standards
- Which data are required by the tool
- How data is inputted
- What results are generated
- What else the tool offers ruminant farmers
- Recommendations on the tool's suitability

Focus on existing data sources

"Good quality, precise data remains the stumbling block, with the availability of consistent and accurate data at farm level being a challenge," says Rachael. "The future must focus on pre-existing farm data sources, using technology where available. Until farm data capture is universally reliable and accurate it is unlikely a 'level playing field' in terms of understanding farm-level carbon emissions will exist. Nevertheless, problems with data should not postpone the use of carbon calculation at farm level.

"All the tools in the report help identify areas where greater carbon efficiency can be gained. The targeted results aid UK ruminant farmers to make informed decisions regarding greenhouse gas (GHG) mitigation on their farm and to start decarbonising the ruminant livestock sector," she adds. "It is imperative businesses opt for the tool most appropriate for both their needs and objectives, as well as understanding any limitations within the tool and how to account for these at farm level.

"UK ruminant livestock farmers must start to calculate their carbon impact no matter which tool is used. They need to see carbon footprinting as a management tool to aid effective business decision-making and not an administrative burden," Rachael concludes.

The full report is available online at <https://www.kiteconsulting.com/category/publications/>

CARBON MEASUREMENT TOOLS EVALUATED IN THE REPORT:

- The Farm Carbon Toolkit
- Cool Farm Alliance Tool
- Agricultural Resource Efficiency Calculator (AgRECalc)
- Solagro Carbon Calculator
- Promar International (Genus PLC)
- Intellync
- Alltech E- CO₂
- Sustell, Royal DSM
- Sandy, Trinity AgTech



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RESEARCH UPDATE

Multi-species, or herbal leys, are becoming popular with farmers looking to benefit from the gains these diverse swards bring to livestock performance, soil health and biodiversity. They fit well with the demand to produce food efficiently and sustainably. But there's been a tendency for a 'hope for the best' approach to species selection. Here we look at the results of some science-based methodology.



CLOVERS SHOWING THEIR VALUE IN MULTI-SPECIES TRIALS

In the last few issues of Forager, we've been following the progress of the multi-species trials at Germinal Horizon's research farm in Wiltshire. We now have the 2021 results, with clovers continuing to prove their worth.

The trial results are derived from a series of eight cuts across the season, taken each month between April and October. Trials involving multiple species are unsurprisingly complex in nature, with the analysis and statistical tests taking up to three weeks to complete.

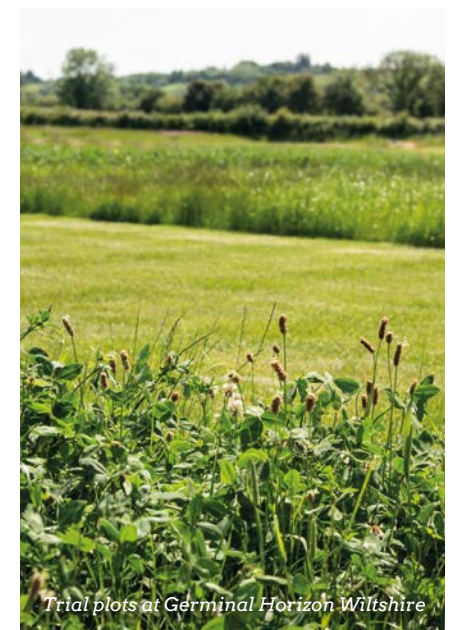
The species being investigated in the trial at Germinal Horizon Wiltshire include grasses, legumes and herbs, reflecting the three elements of most multi-species leys now popular with grassland farmers.

The latest results underline the role of legumes in providing the largest proportion of the protein derived from multi-species leys, at over 20%. As seen previously, this is likely to be due to clover's ability to fix nitrogen.

Within the grass components, the timothy, cocksfoot and fescues showed slightly lower metabolisable energy (ME) levels but higher protein. The chicory and plantain herbs tended to have lower ME and crude protein, more closely aligned to the grasses than legumes, varied depending on the time of cutting.

When looking at dry matter yield, the drivers change considerably over time. Yield appears to reflect the growing cycle of the species and is strongly influenced by the time of flowering/heading. Initially, the primary drivers were the herbs, chicory and plantain, but replaced over time by the clovers.

The significance of these results to a farming system is the impact on sward composition. As the type of species within a mix influences the yield and quality parameters, it is an important factor to consider when selecting a multi-species mixture.



Trial plots at Germinal Horizon Wiltshire

MULTI-SPECIES TRIAL MIXTURE

Grasses

- Perennial ryegrass
- Timothy
- Cocksfoot
- Tall Fescue / Meadow Fescue

Legumes

- White clover
- Red clover
- Alsike

Herbs

- Chicory
- Plantain
- Sheeps Parsley
- Black medick
- Other legumes



Multi-species grazing trial at Lyons Farm, University College Dublin

GRAZING MULTI-SPECIES SHOWN TO BENEFIT LIVESTOCK

Grazing studies involving multi-species leys being run by Professor Tommy Boland at University College Dublin (UCD) are showing positive results.

Lambs grazing herbal leys showed an increased weaning weight of 2.5-4kg/lamb and reached their slaughter weight up to a month earlier. Another encouraging benefit was the reduced faecal egg counts and subsequent use of anthelmintics; halved in some cases.

A faster growth rate and reduced finishing time was also seen in the dairy beef steers grazing multi-species leys. An increase of 15-20% in performance overall was seen. This study compared perennial ryegrass, multi-species and ryegrass with white clover.

The multi-species mixture yielding these results at UCD's Lyons Farm included perennial ryegrass, timothy, red and white clovers, plantain and chicory. A greater variety of species has been tried, investigating smaller components such as birdsfoot trefoil, but no significant benefits over the six species mix have been seen to date.

As well as the performance gains, environmental benefits have also been seen. Nitrogen fertiliser applications have reduced by up to 50%, attributed to the nitrogen-fixing ability of the red and white clover, and improvements in soil health also measured. The increased earthworm activity and biomass under the multi-species swards, and a faster water infiltration rate, are all indicators of a healthier, well-functioning soil ecosystem.

RESULTS SEEN IN LIVESTOCK GRAZING HERBAL LEYS

- Increased lamb weaning weight of **2.5-4kg/lamb**
- **Reduced** finishing time in lambs and dairy beef steers
- **15-20%** increase in performance overall in dairy beef steers
- Anthelmintic use cut by up to **50%**
- Fertiliser applications reduced by up to **50%**
- **Increased** earthworm activity and faster water infiltration rate

SPRING FOCUS

DON'T OVERLOOK THE BENEFITS OF OVERSEEDING

Overseeding is traditionally employed to provide a short to medium-term boost to grassland productivity. But some livestock farmers opt to overseed to achieve specific forage-based objectives. James Marshall finds out more.



Overseeding with clover has been a success story on South Dyke Farm

While a full reseed is the most reliable way to improve grassland performance in the long-term, sometimes it just isn't practical. This can be due to pressure on farm finances or the need to keep grassland in production. But rather than doing nothing and letting the quality of a grass ley deteriorate, a better option is to overseed.

When managed well, an oversown grass ley can increase dry matter production by 10%, show an increased D-value of 1MJ/kg ME and provide a return on investment within a year. This productivity boost will be particularly welcome to livestock farmers working to increase utilisation of homegrown forage in light of rising purchased feed costs.

When is it time to overseed?

The best time to overseed is when weather conditions are warm and damp, so most farmers oversow between July and September. Swards should be tightly grazed or cut before sowing to ensure soil is visible and grass seed can germinate successfully.

Overseeding is also a good option for livestock farmers wanting to kick-start a reseeding programme but are heavily stocked. However, competition from existing grass can inhibit new plant growth and slow establishment, so it is important to give a newly oversown sward plenty of time to establish properly before grazing with livestock.

A premature graze can cause permanent damage if young grass plants are uprooted.

Grass leys with around 50% perennial ryegrass still in the sward represent the best opportunity for overseeding and deliver the greatest return on investment. For leys that have dipped well below this figure, with a high proportion of bare ground or weed ingress, a complete reseed is the most effective option.

Overseeding with clover

The tactical, targeted approach to oversowing is useful for achieving a specific production objective within a farm's overall business strategy, as illustrated by James Tweedie, who runs an intensive grazing, spring block calving dairy system in Cumbria: "Our whole system is geared towards converting grazed grass into milk as cost-effectively as possible. We started overseeding grass leys with clover about four years ago having been inspired by research carried out in Ireland.

"The plan was to introduce clover into some of our grass leys to reduce spending on purchased nitrogen and increase the cows' protein intakes to support constituent levels. It seemed like a no-brainer to give it a try."

Low density grass swards are selected for overseeding with clover as part of the annual assessment of grassland



performance on South Dyke Farm. Overseeding takes place between mid-May and August when soil temperatures are high, but the soil is not too dry.

James initially stitched clover into grass using a grass seeder, at a rate of approximately 1kg/acre. Germination rates were very good, but the soil disturbance, combined with the farm's high weed burden, led to a significant weed challenge in the swards.

"Once clover is down, you can't spray anything for weed control, so now we broadcast seed using a variable rate fertiliser spreader. Although we use more seed – generally 1.5 - 2.5kg/acre – this method works well, and we adjust the seeding rates according to the existing density of the sward."

Careful management of oversown leys during their first season is crucial to prevent existing grass overshadowing and inhibiting clover growth. Grazing cows are usually moved into paddocks of established grassland at 2,800-3,200kgDM/ha, but first season clover swards are grazed at 2,400-2,500kgDM/ha.

Positive results

James is pleased with the benefits of integrating clover into the farm's existing grass swards. Despite the hot, dry summer in 2021, and having an annual application of only 80kg nitrogen per hectare, clover-sown swards performed above the farm's average DM yield.

"High clover percentage swards tend to grow less in early spring but benefit later in the season, when grass growth traditionally declines," concludes James. "And if we find a sward has a low clover percentage, we cut silage from it in its second year, helping to increase the clover content the following season."

"While it is hard to quantify the impact the clover has on cow performance, milk solids production and percentages continue to climb, year on year. Improving the quality and quantity of forage we provide the cows has to be helping and I plan to carry on overseeding with clover in the future."

SOUTH DYKE FARM, CUMBRIA

- **James** farms in partnership with his parents, Margaret and Gordon
- Became a GrassCheck GB monitor farm in **2018**
- Milk is supplied to **Arla** on a manufacturing contract
- **120ha** (296 acres) grazing platform and 75ha (185 acres) support ground
- **380** New Zealand Friesian and Jersey cows, managed on a rotational grazing system
- Young herd with **35%** first lactations cows, achieving current yields of 470kg milk solids
- Forage production increase from 9tDM/ha to **14.5tDM/ha** over last five years.

James Tweedie (centre) farms in partnership with his father Gordon and mother Margaret



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WHERE THERE’S MUCK THERE’S MONEY



Dr Lizzie Sagoo, ADAS

Photo credit: ADAS

By following some key rules in the management and application of farmyard manures, sheep and beef producers could save around £520 per hectare in artificial fertiliser costs. Ann Hardy reports.

Sheep and beef producers with access to farmyard manure (FYM) find themselves with an increasingly valuable resource in today’s economic climate. As artificial fertiliser prices soar, so the value of FYM has spiralled. Today, FYM is potentially worth around £520/ha, purely in terms of its N, P and K - double its value in spring 2020. And that’s before considering the merit of its organic matter content providing an essential role in building soil quality.

Dr Lizzie Sagoo, principal soil scientist with ADAS, has led AHDB and Defra-funded research into FYM and slurry applications, which is informing government policy and guiding farmers. She says cattle FYM, broadcast at 40t/ha in spring, supplies, on average, 24kg/ha of crop-available nitrogen, 128kg/ha phosphate and 376kg/ha potash.

Valued at November 2021 fertiliser prices, this is said to be worth £524/ha, compared with £263/ha in spring 2020 (table 1). This could increase further if fertiliser prices continue to rise.

Table 1: The value of cattle manure applied at 40t/ha

	kg/ha	Spring 2020 fertiliser prices		November 2021 fertiliser prices	
		£/tonne	£/ha	£/tonne	£/ha
Crop-available nitrogen	24	0.41	16	1.07	43
Total phosphate	128	1.95	78	3.65	146
Total potash	376	4.21	169	8.37	335
Total £		6.57	263	13.09	524

Assumes spring surface broadcast application

£ values based on:	Spring 2020	November 2021
ammonium nitrate	£236/t (N = £0.68/kg)	£616/t (N = £1.79/kg)
triple super phosphate	£280/t (P2O5 = £0.61/kg)	£525/t (P2O5 = £1.14/kg)
muriate of potash	£269/t (K2O = £0.45/kg)	£534/t (K2O = £0.89/kg)

But as the value of FYM and slurries has risen, so too has the potential for significant financial losses through its poor handling and application. Dr Sagoo recommends taking steps to maximise the nutrient content of manures and subsequent crop nutrient values, while avoiding the pollution caused by poor management (table 2).

Nitrogen losses

Nitrogen in particular does not always stay where it’s wanted due to leaching and volatilisation.

“When you apply manure, some nitrogen is in the readily available ammonium form, with the rest as organic nitrogen which mineralises slowly over time,” she explains.

Some of the readily available nitrogen can be lost as ammonia gas soon after application or lost through leaching, particularly in wet conditions.

TABLE 2: MAKING THE MOST OF MANURE NUTRIENTS

1. Know your farm manure’s nutrient content
2. Estimate the crop-available nitrogen supply
3. Minimise nitrogen losses
4. Spread accurately and evenly
5. Build into the farm nutrient management plan

“AS ARTIFICIAL FERTILISER PRICES SOAR, SO THE VALUE OF FYM HAS SPIRALLED”

How and what to sample

“The nutrient content of manures and slurries can be very variable for a number of reasons, the main factors being livestock type and diet,” she says.

So, it’s important to obtain reliable information on your farm’s manure. Although typical figures can be used as published in AHDB’s Nutrient Management Guide (RB209), these only provide guidance and are less accurate for nutrient management planning.

“When taking samples, analyse dry matter, total nitrogen, ammonium nitrogen, total phosphate, potash, magnesium and sulphur,” she advises.

The sample should be representative of the manure being spread so mix at least 10 sub-samples before sending to the lab.

“Once you know the nutrient content, estimate the crop-available nutrient supply,” she continues.

For nitrogen, this comes mainly in the ammonium form readily taken up by the crop. But this form is easily lost so efforts must be made to minimise losses.

“The good news is nitrate-leaching losses are lower from solid manures than slurries, but are at their greatest after autumn and winter applications, before the onset of overwinter drainage,” she says.

Similarly, if manure is stored in a heap before spreading, some of its ammonium nitrogen can be lost through volatilisation.

“The main benefit of storage is to spread the manure at a time that’s convenient to you,” she says.

“We’re also seeing more interest in composting manure by turning during storage. This makes the composted material more friable and easier to spread but increases ammonia loss.

The jury is out for me. I’m not convinced there is real benefit to composting.”

Spring or autumn spreading

The Farming Rules for Water have focused attention on the optimum time for spreading. It is currently advised in spring, and only permitted in autumn or winter if a crop has a nitrogen requirement in that season.

New AHDB-funded studies into the impact of moving all manure applications from autumn to spring have found while nitrate pollution declines by around 60%, phosphate and ammonium water pollution increase.

“High concentrations of phosphate and ammonium are bad news for water quality,” says Dr Sagoo, who remarks that manure (slurry in particular) applied to wet, drained soils where it rains soon after application, is likely to result in higher ammonium and phosphate concentrations in drain flow.

Describing these unintended consequences as ‘pollution swapping’, she says: “It highlights the need to be careful. If we’re trying to minimise the loss of one nutrient, we don’t want to cause knock-on consequences for others.”

Based on this risk, she says manure (particularly slurry) applications in spring should be avoided on wet soils at or close to field capacity.

Application methods

Methods of application also influence nutrient loss although, again, this applies more to liquid slurries than manure. Shallow injection reduces ammonia emissions by 70% compared with broadcast slurry, while a trailing hose or trailing shoe reduce emissions by 30% and 40% respectively.

For solid manures, she says it’s important to have overlap to achieve an even

application from rear discharge or broadcast spreaders and if the manure is to be incorporated, it’s best done quickly to reduce ammonia losses.

“You need to take the same care over your manure application rates as you would your mineral fertiliser,” she says.

“The best approach with FYM is to weigh the trailer empty and full,” she says. Failing this, its capacity can be estimated by multiplying its length, width and depth and adding the overfill.

“The bulk density of manure is typically 0.7 tonnes per meter cubed,” she says.

Nutrient management plan

Finally, she says the information should be incorporated into a nutrient management plan, with particular consideration given to P and K.

“For cattle manure, the vast majority of its value is in the P and K, so it’s important it is targeted to low P and K index fields,” she says.

However, she cautions that the value of the nutrients in manure is not realised if artificial fertiliser is not cut back accordingly.

This article forms part of the AHDB Grass Campaign which aims to help producers make better use of homegrown grass swards, both grazed and conserved.

BENEFITS OF INCREASING SOIL ORGANIC MATTER

- Improves soil structure and workability
- Increases water-holding capacity and infiltration
- Increases biological activity
- Improves retention and turnover of nutrients
- Gives greater resilience to dry weather conditions

We're on farm again with Graham Lofthouse and Brian Nicholson. Graham describes his use of forage crops over winter and how he's mitigating rising input prices, echoing Brian's current focus. Targeted deworming, precision drilling and an increased use of multi-species can all be seen on his Co. Kilkenny farm.



A FOCUS ON GOOD GRASSLAND MANAGEMENT AND INCREASED DIVERSITY FOR 2022

Brian Nicholson, Johnstown, County Kilkenny, Ireland

In an effort to reduce inputs on farm, Brian Nicholson spent last year trialling a more targeted approach to de-worming. "By only worming lambs not meeting their daily live weight gain targets, we've cut our anthelmintic use in half," he explains. "This also meant we caught and treated parasites earlier and didn't see losses as a result."

Last year, precision drilling fertiliser was also used for the first time while stitching in clover, and Brian is pleased with the results. "This method of applying fertiliser worked exceptionally well for us. We weren't overlapping or spreading in areas it wasn't needed, we aren't polluting our boundaries and we reduced wastage."

"The clover we planted established well along with our grass and chicory. We are also trying more multi-species swards

and to increase persistency in them. We may drop an extra field out of grass and put it back into spring barley to give me more homegrown straw bedding. So that loss of acreage is bringing my focus back onto grass management and maximising the quality of what we produce."

Over the winter, Brian closes the grazing fields to rest the grass for 120 days before ewes go back out after lambing. During this time, they graze Redstart hybrid brassica and forage rape planted in barley fields after harvest.

"Once the forage crops are grazed down, ewes come into the lambing shed, divided up by due dates and litter size. Most of our ewes lamb down in early March, and so far, the flock has scanned at 198%. Around 60% of those will have twins, 20% singles and 20% triplets and quads."

The entire flock is fed a base TMR of 78 DMD (73 D-value), 12% protein and 13 ME, which comprises grass silage, mineral

and soya. This provides sufficient protein and energy for the singles and twins, and those with triplets are topped up with extra ration and protein.

For the future, Brian is considering growing peas to provide a homegrown source of protein and replace soya in his pre-lambing diets. But he's looking to do more research about what is needed to grow and store peas so this move is probably a little further down the road.

"The biggest challenge ahead of us is how to control weeds as we establish more multi-species swards on the farm," he concludes. "The dry weather last year gave the weeds a real chance, so this year we need to focus on how to increase our plant diversity while also controlling the weeds more effectively. Because of the herbs in our swards we spot spray, but that isn't going to work well if a field is overtaken by nettles!"



Brian Nicholson

FARM FACTS

- **96ha** (237 acres) tillage and grasslands
- **15ha** (37 acres) forestry
- **1ha** (2.5 acres) wild bird cover
- **950** ewes + **250** replacement ewe lambs
- **1.8** lambs/mature ewe
- **1,440** grass-finished lambs
- **300g** average daily gain (ADG)



Graham Lofthouse

SWEDES PROVE TO BE A TRIUMPH

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

Poor weather in 2021 meant Graham Lofthouse's grass yields maintained lower growth rates than 2020 levels through most of the year. Yield dropped to an average 7.74 tonnes DM/ha, leaving the farm's grass supply lower than expected as autumn approached.

"Last year's weather left us two weeks behind with silage," he explains. "However, its quality was very good across the board at 30-34% dry matter with ME around 11, and it is feeding really well. Our forage crops have also made a big difference, leaving us with more feeding overall than we had in 2020."

"The Redstart hybrid brassica has grown really well, yielding 7.2tDM/ha since being sown in early July. We put 40 cows on 3ha, which will feed them 100 days, and the ewe lambs go onto the remaining 4.5ha."

The real success story has been the Triumph swedes, planted for the first time after a "disastrous" fodder beet crop last winter. "The Triumph is yielding 11.6tDM/ha and that will take ewes up to within a month of lambing," he says. "We may have sown them a little too thick this time, so I believe once that's fixed, they'll do even better."

With interest in Easycare sheep rising due, in part, to low wool prices, Graham was able to sell 180 breeding ewe lambs, 10 tup lambs and 3 shearlings at premium prices in 2021. Finishing lambs performed well, and from a scan of 175% he ended the year selling or retaining 160%. Topping has also been successful this winter, with less than 10% returning for a second cycle.

Calves were weaned in November at an average weight of 251kg, having grown an average 1.24kg/day with no creep feed, just grass and their mother's milk.

Graham is also feeling positive about grass growth heading into spring. With covers in December at around 1500kgDM/ha, he hopes it will reach 1800kgDM/ha by turnout to give stock a good start on grazing.

One cause for concern this year, however, is the cost of fertiliser, and he has been proactive to mitigate the extra cost.

"We have done a lot of soil sampling and analysis so far to make sure lime and phosphate are correct in all the fields," he says. "We will make as much use of clover as we can and probably use it behind the Redstart and Triumph in our rotations, as well as putting more red clover in our grass leys."



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

BALANCING FEED SYSTEMS TO MEET AMBITIOUS PRODUCTION GOALS

By combining creep feeding and precision grazing, Glynllifon College farm manager Rhodri Owen is now finishing lambs earlier than ever and seeing great returns. Forager investigates.

“COMBINING ROTATIONAL GRAZING WITH CREEP FEEDING MEANS WE ARE ABLE TO FIND THE BALANCE BETWEEN HOW BEST TO USE OUR HOMEGROWN FEEDS AND MEETING OUR PRODUCTION GOALS.”

Since 2014, Rhodri Owen has managed 162 hectares (400 acres) of farmland and 121 hectares (300 acres) of forest at Glynllifon College, Gwynedd. As well as 565 Lleyn ewes, the college also has a 200-cow dairy herd, and to work them alongside each other, Rhodri decided to try lambing earlier in the year.

As part of this move, Rhodri switched from Mule ewes to Lleyns; “We decided to start using Lleyns as they are a breed well known for being prolific, but also good mothers. They seem to suit our farm well and have enabled us to close the flock and preserve a high health status, as well as allowing us to start lambing earlier in the year.

“We have gradually moved lambing earlier over the past few years and now aim to start lambing our seasoned ewes in early January, our younger ewes in mid-February and ewe lambs in March. Our students help out with lambing and we are normally finished by the end of March. All lambing takes place indoors, with ewes and lambs spending 24 hours in individual pens before turnout, if the weather is good enough.”

Managed rotational grazing

Rhodri uses TechnoGrazing, a form of planned rotational grazing, to manage the flocks. “We put a 20ha TechnoGrazing system in place in 2017. The system splits up what was seven fields into three lanes. These lanes are then subdivided into 24 paddocks using electric fencing and surface water pipes to provide the necessary grazing infrastructure.

“Using this system, we set aside two lanes for sheep each year and they stay within that lane for the whole grazing season. The sheep move paddocks every three days, and we use weekly measurements with a plate meter to determine grass supply matching demand and rotation length. We’ve been very pleased with the TechnoGrazing system, the paddocks recover well between grazings and we’ve seen some very good grass growth. Ensuring there is plenty of grass in front of our rearing ewes is really important and helps us to achieve good weight gains.”

Introducing creep feeding

However, Rhodri wanted to build on this and ensure all his finishing lambs were seeing consistent weight gains and finishing in time for the early lamb markets. “We were seeing some good results with just grazing but we did have some straggler lambs who were taking a little bit longer than we’d like to reach finishing. As we are aiming for the early market, we decided to try creep feeding to make sure all our lambs were finishing in good time and at the right weights.”

Working with Guto Jones at ForFarmers, the college put in place a creep feeding plan. Guto explains: “All lambs, including replacement ewe lambs, are creep fed from around three weeks old using Ewbol Prestige Lamb. Starting with small amounts and gradually increasing as intakes rise avoids wastage. On average, each lamb has consumed 26kg of Ewbol Prestige Lamb by the time they reach finishing.”

Ewbol Prestige Lamb is a specific pelleted diet for the intensive lamb system. By supplying the lambs with high levels of starch and digestible fibre, it promotes good daily liveweight gain and excellent lean meat production. The combination of both rumen degradable and ‘by-pass’ proteins also ensures good frame development and tissue growth, helping lambs achieve their full potential.

Consistent results

By combining careful grazing management with creep feeding, Rhodri is now finishing all his lambs by September. In 2020, 85% of lambs were sold in the E, U, R grades and 2-3L fat class. “We are now seeing lambs achieving daily liveweight gains of 500g+ per day. By finishing them earlier they are reaching market when demand is

at its highest, so we achieve optimum prices and lambs reach target weights faster,” explains Rhodri.

“We also creep feed our replacement ewe lambs in order to give them the best start and help them reach the correct tupping weight earlier. Creep feeding them with Ewbol Prestige Lamb definitely helps ensure they tup well. Our replacement ewe lambs born in January 2020 and tupped later that year have achieved a scanning of 136%.

“Combining rotational grazing with creep feeding means we are able to find the balance between how best to use our homegrown feeds and meeting our production goals. This combination has been very successful and has helped us achieve consistent results with our finishing lambs,” Rhodri concludes.



Rhodri Owen

FUTURE-PROOFING FORAGE PRODUCTION PROVIDES WINNING FORMULA



Angus dairy crosses graze fodder beet through the winter

Welshpool beef and sheep farmer Marc Jones was named British Grassland Society's Grassland Farmer of the Year 2021. Clemmie Gleeson finds out about his winning approach.



Marc Jones received his BGS Grassland Farmer of the Year 2021 award from Drew McConnell, BGS President. Credit: British Grassland Society.

The drought of 2018 posed major problems for Marc Jones, but it was also a turning point. The combination of free-draining soil and south-facing slopes on Trefnant Hall Farm, a tenancy on the Powys Estate, meant his traditional ryegrass leys burned off. Forage production was worryingly low at just 6tDM/ha compared to a typical 12-13t. But he could see a way forward.

Marc had been trialling some alternative grasses and the difference in performance was clear. "During the drought the herbal leys were the only green fields growing on the farm," he says.

Marc had first become interested in herbal mixes and their drought tolerance while visiting New Zealand as a Hybu Cig Cymru scholar in 2010. Since then, he has also taken note of British farmers taking a similar approach and kept up to date with research.

He started to move more of the farm into herbal leys with species such as chicory, plantain, birdsfoot trefoil, cocksfoot and both red and white clover, and they have continued to prove invaluable with the changes in rainfall.

"Ideally, we would have rain once a week during the summer months, but we tend to have six to eight weeks without rain

then six to eight weeks when it rains consistently. If it comes at the wrong time we are in trouble."

Marc works in partnership with his parents, Jane and David, and together they rear Angus dairy crosses and New Zealand Romney sheep. Finishing at 24 months, there are typically two batches of 350 beef animals on the farm at any time. They have around 800 sheep, including ewe lambs, and therefore a lot of mouths to feed through the winter months.

Fodder beet has proven itself for winter grazing for both cattle and sheep, he says. "We find it is a very consistent crop at Trefnant producing 15 to 25tDM/ha even in very dry years. It means we can outwinter the cattle for about 50 per cent of the cost of housing them." It also helps maintain growth rates of 0.7kg/day during the winter months, he adds.

For the sheep it provides a high energy diet but as it is low in protein Marc moves the ewes onto grass at the beginning of March, a month before lambing starts. "Fodder beet provides the majority of our winter forage, but we still need quality silage," he says.

For this he uses an Italian and hybrid ryegrass mix with red clover aiming for a 2 to 3-year ley. "We wanted a fast-



New Zealand Romneys grazing the herbal leys

growing crop to outcompete weeds after beet and to produce some silage as quickly as possible," he explains. Red clover offers both drought resistance and adds bulk to the crop.

"It is cut twice in its first season and three times in the second. The plan is to stitch in herbal leys about three-quarters of the way through the second or third season to give it a bit of shade and help. Then we still have some Italian Ryegrass and red clover in the system for grazing or silage if needed."

There is now around 40.5ha of herbal leys across the farm. They have performed consistently during the summer months, says Marc. "Ryegrass heads as soon as it's stressed in a dry period and we lose the quality. Changing the mix of species allows us to grow grass in those very dry periods and the stock do exceptionally well on it."

Use of fodder beet, followed by rotational grazing means Marc doesn't need to feed any concentrates around lambing time. After weaning, the lambs are given priority, grazing the herbal leys ahead of the cattle to maximise growth rates.

Once finishing cattle start grazing, typical growth rates are 1.3-1.4kg/day says Marc. Animals are weighed monthly which helps highlight problems such as

worms. "The extra data helps us run the business much more efficiently."

Involvement in Grasscheck GB has also proven invaluable and his weekly plate measurements give in-depth knowledge of the farm's grass growth, says Marc. "It is good to compare what we are doing with other farms. The weather station is a key part of that. We were the driest farm in the UK for periods of the summer months; not what you'd expect for the Welsh borders!"

The Agrinet app also helps with budgeting, he explains. "It tells us when we are running short and helps us make decisions on selling stock."

In the future, Marc plans to extend his approach across a new 81-ha block taken

TREFNANT HALL FARM

- **202ha** (500 acres) tenanted on Powys Estate + **81ha** (200 acres) at neighbouring farm
- Finish **700** Angus dairy crosses
- **800** New Zealand Romney sheep including lambs
- Use of **herbal leys** for drought resistance
- **Fodder beet** for winter forage



April born New Zealand Romney lambs

on nearby. "Some of the older fields will go into diverse cover crops and then herbal leys to improve soil quality, outcompete weeds and start the soil working for us.

"Like many farmers, we also plan to drop our applied nitrogen rates and focus on soil. Regenerative agriculture is a big part of our future."



Herbal leys provide drought-resistant grazing at Trefnant Hall Farm

Germinal recognises excellence in grassland management and is proud to sponsor the BGS Grassland Farmer of the Year competition. Commenting on Marc Jones, Germinal's grass and forage expert, Helen Mathieu, said: "Marc has challenging terrain with steep fields and shallow free-draining soils. His emphasis is to grow more grass and forage all year round. His use of different species to cope with drought and extending his grazing with fodder beet is particularly impressive. All three finalists are very good grassland managers but Marc's production levels and focus on diversity and the environment gave him the edge."

"DURING THE DROUGHT THE HERBAL LEYS WERE THE ONLY GREEN FIELDS GROWING ON THE FARM."

CHEWING THE CUD

The natural nitrogen-fixing properties of clover shouldn't be overlooked

With sustainability and net zero firmly at the top of agriculture's agenda, we chew the cud on the role of reseed, with Germinal's grass and forage expert Ben Wixey.

Newer leys outperform older ones in several important ways that have implications for sustainability, says Ben Wixey. "As perennial ryegrass leys grow older, they open up and weed grasses start to appear.

"We see more and more weed grasses ingress, annual meadow grasses native to the UK living in our soils." Not only are these weed grasses not as digestible for livestock and therefore not converted to meat or milk as well as modern perennials, they also don't have the perennials' rooting structure.

"A reseed drilled in 2021 will perform much better in 2022 than a grass ley drilled three to five years earlier," he says. "We see this time and time again and when clover is included the value of the reseed is even higher."

Changes in climate and rainfall patterns mean resilience to drought must also be a consideration, he says. "In a drought year your reseed is much more productive providing more forage. You can't reseed everything every year across a whole farm of course, but you must keep up with your reseed programme."

Cutting back

Skyrocketing nitrogen prices have forced most farmers to look at reducing their applications. "There is much research and anecdotal evidence to show newer leys and modern varieties respond so much better to nitrogen than annual weed grasses," says Ben. "And that has never been more important than now."



Germinal grass and forage expert, Ben Wixey

Where applications are lower, it is essential to pay attention to the basics, he advises. "Soil pH and inclusion of clover when reseed should all come into that." While ploughing is a great way to level the ground and create a new seedbed, increasing numbers of farmers are choosing to leave the plough in the barn. As an alternative, burning off old leys with glyphosate and stitching in the new leys can be very successful, says Ben. "This releases less carbon into the atmosphere than ploughing. Another benefit is the ground will be firmer and take livestock better than if it had been power harrowed and cultivated."

But there are situations where ploughing is essential says Ben. "If you have any soil compaction and haven't taken some remedial mechanical action, you are going to run into problems." He therefore recommends digging holes to investigate potential compaction points before deciding which cultivations are necessary.

Consider clover

With reduced nitrogen applications on the table, clover should become a bigger consideration, says Ben. "As well as its ability to fix nitrogen, red clover has an aggressive tap root which helps break down pans and is better in a drought situation.

"Including clover also increases the protein content if you are making silage for dairy cows, but you do need to be careful of bloat, especially if you are turning out hungry or stressed animals."



Cutting back on reseeding grazing or silage leys can be a false economy

With sheep there is also the issue of phytoestrogen which can affect fertility, so clover leys should not be grazed six weeks either side of tupping. But the benefits of red clover outweigh this issue and can be overcome through correct management, he stresses. "A red clover ley with no nitrogen input can produce a similar yield to a silage without clover but with nitrogen applied."

Variety development

Modern grass varieties also play a role in reducing methane and ammonia emissions with Germinal's high sugar grasses (Aber HSG) delivering up to 17% more energy from water-soluble carbohydrates (sugar) than conventional diploid ryegrass.

This creates a better balance of energy and protein in the rumen, allowing the microbes responsible for the breakdown

of forage to operate more efficiently. The result is more of the grass protein is converted to meat and milk so less is wasted and ammonia and methane emissions are reduced.

Research in New Zealand indicated methane emissions from sheep fed Aber HSG varieties are as much as 9% lower than those fed conventional ryegrass. Another trial suggested rumen ammonia was significantly lower in cows grazing Aber HSG varieties.

Scientists within Germinal Horizon – the company's research and innovation team spread across three sites in the UK and New Zealand – continue to work on varieties to further benefit sustainability. These focus on improved resistance to pests and diseases and the ability to produce more forage with less inputs, while also addressing the carbon capture demands on grassland.



Aber HSG varieties can help reduce methane and ammonia emissions

RESEEDING AND SUSTAINABILITY

- **Older leys are more open** and susceptible to weed grasses
- **Weed grasses are much less nutritious** and yield is poor compared to modern perennials
- **Weed grasses don't respond well** to nitrogen applications
- **Modern varieties are more drought resistant**, particularly if sown with clover
- **High sugar grass varieties** (Aber HSG) help reduce methane and ammonia emissions
- **Pay close attention to the basics** including soil health and pH

DON'T LET WEEDS AFFECT RESEED SUCCESS

Reseeding is important for good quality grazed grassland. Make sure it is done well with early weed control to achieve the best return on your investment. Forager finds out more.

Depending on the weather, 40 to 60% of grassland reseeds are planted between March and May, going into moist and warming soils, conditions suitable for good establishment and rapid growth. This helps outcompete weeds, but around half of new leys have problems requiring attention. Keeping a close eye on signs of infestation and treating issues quickly makes good financial sense. Herbicides are more effective on seedling weeds than after establishment.

What to look out for

Soil cultivation disturbs the weed seedbank and encourages germination, so it's important to check new leys regularly for weed infestations. The most common after reseeding are chickweed, docks and thistles. But a wide range of perennial and annual weeds may take

advantage of warm temperatures and a moist seedbed, including mayweed, knotgrass, bindweed, annual meadow grass, red shank and fat hen.

Chickweed is likely to be the most significant. It can establish rapidly, continue to grow in cooler temperatures and outcompete emerging grass. As an annual, if left uncontrolled it dies back after flowering to leave bare patches of ground easily colonised by other weeds, such as docks. Tackling grassland weeds early helps improve sward palatability and productivity, and reduce losses, so keep an eye on what is coming through.

The cost of not controlling weeds

Reseeding represents a significant investment, averaging £400-£700/ha, but is essential for maintaining productive grassland. As well as selecting the most

suitable grass varieties, a good seedbed and the right soil pH and nutrients levels prior to sowing increase the success of a new ley. Once sown, protection from weeds is as important as these other factors, boosting the long-term performance of your investment.

"The impact of not treating weeds in a new ley can be as significant as losing the ley altogether," explains Mark Shaw, area manager at Corteva. "Abundant in nature, you can have a field of weeds with some grass, rather than a field of grass with a few weeds.

"Treating them early prevents weeds reducing the productivity of the grassland from the outset. Even a small infestation vies for light, water and space, with the ability to smother the more nutritious grass."



Weeds can establish quickly in a young grass reseed

FORAGE APP

The Forage App's grassland herbicide decision tree outlines the benefits of an application and the best product for each situation, including those for use as early as the three-leaf growth stage. And the app's Weed Wizard identifies the best product for a specific problem. It lists 74 common weeds, using photos as well as familiar names, for identification and suggests the best method of control.



Address the problem quickly

"While the ley is young and open, weeds are still small and actively growing," explains Mr Shaw. At this stage, the roots of weeds such as docks, thistles, chickweed, buttercup and dandelion are not fully developed, offering the best chance of control.

"The herbicide is translocated down into the roots of the actively growing weeds, killing them from the root up," continues Mr Shaw. "Spraying early gives the ley a clean start and allows grass to establish quickly, without competition."

"Some farmers are concerned about travelling over a new sown ley, but the young grass is in its infancy and very capable of growing back," says Mr Shaw. "More of a concern is delaying the application. Spraying established weeds is more expensive, requiring a higher herbicide dose, and grass productivity may already be impacted."

Choose the right product

Some grassland herbicides can only be used on grass leys over a year old risking a costly delay in spraying. But Corteva has

two selective herbicides for use in new sown leys, able to be applied from as early as the three-leaf growth stage.

"Both Envy™ and Leystar™ are best applied six to eight weeks after reseeding," suggests Mr Shaw. "Using the decision tree available on the Corteva Forage App helps determine exactly which product is best for your situation."

"Like most herbicides, Leystar™ and Envy™ are not safe to clover. We recommend clover is left out of a new ley and stitched in later when weeds are under control – around three months after application."

Leystar™ and Envy™ can be applied from 1 February, making them ideal for spring reseeds. They can also be used later in the year - Leystar until 31 August and Envy up to 30 November - so equally suitable for autumn reseeds.

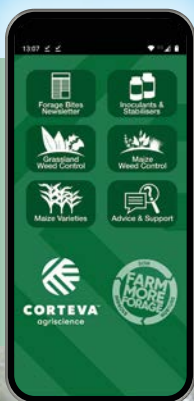
"Monitor new reseeds closely in spring for infestations. As soon as any are detected, act quickly and book your contractor so you don't miss the best opportunity to tackle the problem and protect your investment," concludes Mr Shaw.

FOCUS ON DOCKS

Docks are often found in new sown leys with one plant able to produce 60,000 seeds a year, lasting for up to 80 years in the soil. Seeds can also be spread in slurry and quickly outcompete young grass.

The best defence against perennial broad-leaved weeds such as docks is to stop them establishing in the first place. Early treatment significantly increases the chance of elimination, rather than waiting for grass productivity to be impacted.

With a feed value only 60% that of grass, a dock population within a grass ley potentially reduces overall feed value by 40%; costly to replace at today's high feed prices.



Forage knowledge at your fingertips.

Completely FREE and easy to use, Corteva's 'Forage App' is packed with advice and support including tools to help you select the best solution for your weed control problem.

Download the Forage app now.

Simply scan the QR code.



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Give your leys the start they need by removing unwanted, competitive broad-leaved weeds. Leystar® is very safe to your grass and will give you the confidence that your new sown investment will deliver to its full potential.

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Chickweed



Mayweeds



Seedling
Docks



Seedling
Thistles



Dandelions



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