

FORAGER

Issue 27 / Spring 2022

NET ZERO

Supply chain backing
grassland farmers

CARBON TRADING

MORE MILK FROM FORAGE

FARMERS WEEKLY GRASSLAND MANAGER OF THE YEAR

DAIRY

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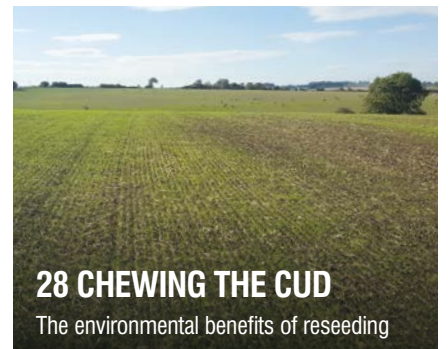
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Germinal
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NEW ENVIRONMENTAL ADVISERS REGISTER



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.

DAIRY-TECH POSTPONED TO APRIL



Dairy-Tech is returning to Stoneleigh Park for its 2022 event, but at the slightly later date of Thursday 7 April. It remains an influential dairy event, bringing new products and ground-breaking technology to the industry, as well as expert speakers on the topics of today and tomorrow.

Tickets available from dairy-tech.uk. FREE to RABDF members.



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.

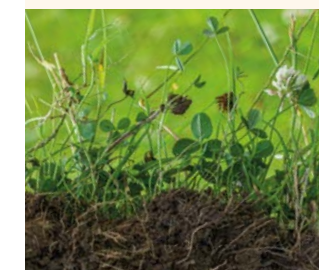
"Trials on one Scottish grassland farm have shown a single spring application of just 200kg of Calcifert LS11 per hectare improved DM yield by 9.2% between May and August," explains LKAB's technical specialist and agronomist, Mark Tripney. "This equates to a return of 12:1. It is the result of improved 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.



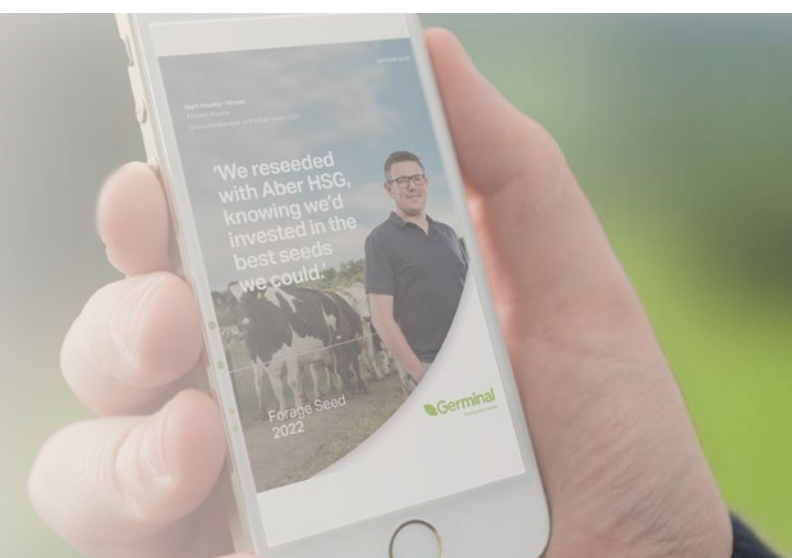
NUFFIELD
Farming Scholarships

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 more than 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 has a central role to play.

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.



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 SIMPLE ANSWER IS TO DO ABSOLUTELY EVERYTHING BETTER."

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



JAMES TWEEDIE, SOUTH DYKE FARM

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MORE MILK

FROM FORAGE

With profit margins being squeezed due to increased input costs, many dairy farmers are looking to produce more milk from homegrown forage. James Marshall examines some of the management steps they can take to boost milk from forage yields.

Grass is an extremely cost-effective feed source, so increasing its use in any dairy system will help keep spiralling costs of production in check.

“There have been milk price rises of around 3ppl over recent months for many dairy farmers,” explains Richard Lane, Dairy Business Consultant from The Dairy Group. “But in the same timeframe, fuel and power prices have increased by an equivalent of 1ppl, purchased fertilisers by 1ppl and bought-in feed costs by more than 1ppl on most systems.

“So, that 3p milk price rise is soon eroded, and farmers find themselves standing still or going backwards, in terms of profit. Maximising use of good quality, homegrown forage is increasingly important to mitigate the increased costs of milk production.”

Start with the basics

Recent figures highlight most dairy farms are producing an average 2,800 litres of milk from forage each year. Taking into consideration costs of production and the current economic state of the industry, Richard suggests farmers should be aiming for 4,000 litres as a minimum.

With plenty of scope for most dairy farms to increase milk from forage, now is the time to assess forage management plans and start implementing changes.

“Start by setting a milk from forage objective,” suggests Richard. “Assess how much forage is needed to meet feed



Richard Lane,
The Dairy Group

requirements and how you could fulfil this need. The next steps are to identify the nutrient state and performance standard of your grassland. You can then prioritise the areas of the farm needing remedial interventions to support higher levels of forage production.”

Targeted approach to inputs

Up-to-date soil samples are essential to determine an accurate picture of pH, N, P and K values. These should be considered alongside a field’s grass yield – be it tonnes DM cut or grazing production achieved – to create a targeted nutrient management plan.

“We need to move away from the habit of just spreading a set volume of fertiliser on grassland,” continues Richard. “I see dairy farms where fields already have soil phosphate and potash indices of 3 and above. We have to seriously question whether it makes financial and environmental sense to apply more.”

Slurry will continue to be a cost-effective way to help fuel forage growth, but regular testing is required to assess dry matter and nutrient content. The use of dribble bars, trailing shoes or shallow injection methods of application reduces nitrogen losses.

Grass management

Using more grazed grass benefits any system, but extending the grazing period poses challenges. Farmers need to plan how the grazing period could be extended and the infrastructure needed to make this possible.

This could take the form of cow tracks and extra water troughs, as well as the

“MAXIMISING USE OF GOOD QUALITY, HOMEGROWN FORAGE IS INCREASINGLY IMPORTANT TO MITIGATE THE INCREASED COSTS OF MILK PRODUCTION.”



Make sure contractors are cutting and ensiling grass to meet your requirements

sub-division of paddocks to enable on/off grazing for a few hours a day during the fringes of the season. If the right infrastructure isn’t in place for turnout, efforts to extend the grazing period could cause more damage than good.

“I am trying to encourage farmers to include legumes, such as white and red clover, in their grass covers,” says Richard. “Clovers lock in nitrogen, which is important given fertiliser costs, but they also provide a useful source of forage when grass growth starts to decline.

“Red clover is a source of high-protein silage and often grown as a standalone crop. It can be integrated with grass, but because it is slower to grow it’s important to try and match red clover with a grass that has a similar heading date and longevity. When grown with Italian ryegrass, the clover can be overwhelmed or by the time the clover/grass mixture is harvested, the grass has gone past its best.”

Harvest time

When it comes to cutting and ensiling grass silage, farmers are encouraged to take a more managerial role in the process. This increases the odds of producing high-quality silage and minimises the risk of silage losses.

“When using contractors, it can be tempting to save money by helping bring in the grass harvest yourself,” concludes Richard. “But in the long run, farmers are better off spending their time overseeing the whole process - assessing dry matter levels, making sure contractors are cutting at the optimum length and filling the clamp in thin layers, with adequate rolling and proper sheeting.”

ALTERNATIVE INPUTS

- **When soil pH drops** below 6, up to 20% of vital nutrients are locked in soil becoming inaccessible to plants. This limits grass growth and quality.
- **Rather than buying nitrogen**, consider investing your money in granulated lime to help correct pH levels.
- **At a pH value of 6.5**, applied P and K is readily available in the soil and used more effectively.
- **Consider applying sulphur** to grassland to help improve grass quality and protein levels.

Returning to dairy farmers, Brian Hogan and Tony Ball, we learn how both are benefitting from using clover to reduce demand for applied nitrogen.



CLOVER SEEN AS THE FUTURE



Brian Hogan

Brian Hogan, Horse & Jockey, County Tipperary, Ireland

Autumn was good in County Tipperary with excellent weather and continued grass growth helping milk solids to remain on track securing a milk price of over 50c/litre. But with a 6-week calving rate expected to be well over 90%, Brian Hogan housed his cows in early November as usual to ensure their high demands were met. Prior to housing, he was only feeding 1.5kg nuts and without additional silage. The long autumn allowed him to keep his in-calf heifers out longer until 8 December, and cow condition remained high. The farm's closing cover was 875kgDM/ha on 1 December.

Forage stocks were strong going into winter. The silage was dry so the cows

milked well without going through it too quickly. Brian and Pat grew 15tDM/ha, down about a tonne from the previous year's new high, but still 2tDM/ha up on the 2019 figures. Brian puts the slight reduction down to a late spring and small drought in early summer when they lost growth. Despite this, they didn't have to supplement too much.

Brian and Pat have more cows this year, so they sowed a crop of Redstart hybrid brassicas in July to cover the increased requirement. The crop was slow to take off in the dry weather but then grew excellently with a yield of approximately 6tDM/ha. The dry, mainly young, cows went on to it and put on good condition. Every second day, they were also given a bale of silage which Brian put in the field at sowing to minimise travel and protect both the ground and crop.

Seven hectares of new grazing platform ground were reseeded on 1 August to give one cut before grazing for the rest of year. The reseeds of AberGain and Gracehill with clover gave two grazings before winter and are well set up for 2022.

The Hogans' plan is to grow more clover. Although the increased amount oversown in 2021 didn't go as well as planned due to the drought, they have had great success with it previously and plan to sow more from April onwards. Brian comments: "Overseeding successfully requires a good deal of care, but we must do it to reduce nitrogen use. The current high fertiliser prices are really focusing the mind on making a success of clover. Where we've been sowing it for the last few years, we've cut back on our applications and the clover has grown well, increasing its percentage of the sward."

FARM FACTS

- **99ha** (244 acres). Includes 53ha (131 acres) grazing platform
- **160** cow spring calving, Holstein/Friesian herd with some Jersey crossbred
- Calve from **29** January to **15** April
- **7,000 litres** a cow a year at 4.43% fat and 3.66% protein
- **550kg** of milk solids per cow per year.



Tony Ball

FARM FACTS

- **300ha** (750 acres). Includes 162ha (400 acres) grass leys, 64ha (160 acres) maize, 52ha (130 acres) wheat, 8ha (20 acres) barley/pea/vetch wholecrop and 24ha (60 acres) miscanthus as an energy crop
- **500** all-year-round calving Holsteins milked through robots
- **10,000 litres** a cow a year at 3.9% fat and 3.3% protein. 3,000-3,500 litres a cow from forage
- Cows fed **zero** grazed grass, grass and maize silage and wholecrop silage
- Separate **200** cow, autumn block calving system on an additional 134ha (330 acres).

CLOVER AND ON-FARM SLURRY HELP TO REDUCE BOUGHT-IN NITROGEN REQUIREMENTS

Tony and Michael Ball, Vernon's Oak Farm, Sudbury, Derbyshire

The late lactation cows were in full-time from the end of October on Vernon's Oak Farm. The in-calf heifers came in about a month later, having not been at all impressed when November's storm Arwen went through and turned things cold, wet and miserable! The far-off dry cows remained out during the day with one group of heifers having continued access to the outdoors until Christmas.

Autumn was generally very kind. The maize harvest went smoothly with fields relatively dry and travelling well. The maize had dried down well resulting in an earlier harvest. Yields were exceptional filling the clamps, giving the Balls plenty to carry over for the new season. As a result, they decided to take 20 acres out of next year's planned maize acreage and sow more winter wheat. The good maize harvest and mild, dry weather in October/November, allowed them to put the winter wheat into a sound seedbed in

good time; a big improvement on the two previous years.

As well as the maize, grass silage stocks were also good, although wet weather at the wrong times meant they cut later than they would like. This resulted in both first and second cuts not analysing as well as in 2020. But the solid grass-growing year and subsequent healthy silage stocks allowed Tony and his brother to save on fertiliser. This was particularly true towards the back end of the season as they weren't chasing extra grass.

The red clover swards, grown in a grass ley, performed well again in 2021. After a slow start to spring, grass growth was tremendous, particularly from the new seeds, giving good silage stocks from less acreage and leaving more grass for grazing/zero grazing. Youngstock weren't overly keen on grazing down the more mature red clover plants, but the cows fed well on relatively strong red clover as part of the zero-grazing rotation.

Weed control is a concern in the new clover-containing leys, whether red or white clover. Zero grazing helped clean up two fields sown at the end of July following spring barley/pea wholecrop, but those established in September following winter wheat were slow to germinate in dry conditions and looked quite weedy going into winter.

Tony reported no significant impact on their 2022 plans from the input price volatility. Milk price increases helped offset feed price rises and the brothers buy fertiliser in the summer or autumn, once the new prices are available, and had managed to cover next season before prices escalated. Tony commented: "I can't see prices dropping back to what we once considered 'normal', so we need to make sure our applications are made to achieve maximum effect. We will also look to make the most of our slurry's nutrient value to reduce reliance on bought-in nitrogen."

FIGHTING BACK AGAINST FEED COSTS WITH BETTER FERMENTATION

With the grass in a silage clamp potentially worth tens of thousands of pounds, achieving a good fermentation to preserve it is critical. But how well do you understand the fermentation process?

The grass in a typical silage clamp could be worth about £30,000, estimates Ecosyl silage expert, Jason Short.

Moreover, at higher feed prices, having good silage in the clamp becomes an even more valuable asset, he says, so it is well worth protecting its nutritional value from the outset – by ensuring it has a good fermentation.

“When you think about it, fermentation is a key process that can underpin the profitability of a livestock farm for six months of the year or more,” says Mr Short.

“Whenever grass is put in the clamp some sort of fermentation will occur. The issue is some fermentations are poor ones – resulting in much more of the silage’s dry matter (DM) and nutrient content being lost – while other fermentations are much more efficient.

“Exactly which type of fermentation occurs will be influenced by the steps taken during cutting, harvesting and ensiling and whether a quality additive is used, as well as how the grass was managed beforehand. If you have a working knowledge of fermentation, it’s easier to get these steps right.”

Efficient fermentation

In essence, Mr Short says fermentation is a natural process, in which some sugars in the grass are converted into acid by bacteria. In a good fermentation, a beneficial acid is produced, which in turn ‘pickles’ the grass and preserves it against the growth of undesirable microorganisms that would otherwise feed on its nutrients. In poorer fermentations, less desirable products are produced.

“In a perfect fermentation, sugar is converted solely to lactic acid,” explains Mr Short. “This is ideal because lactic acid produces a very swift ‘pickling’ effect through a rapid pH drop. In this way, the growth of undesirable microorganisms is halted before they



have chance to cause major nutrient losses. But there’s also another important benefit from this type of fermentation,” he stresses.

“Because no undesirable by-products are produced during the process, very little energy is wasted. Indeed, the lactic acid produced contains over 99% of the energy of the original sugar. So it’s a highly efficient process.

“This type of fermentation occurs when a quality silage additive containing a high number of efficient lactic acid-producing bacteria is applied. It is called homofermentative because there is only one end product: lactic acid.”

“MAXIMISING SUGAR IN GRASS AIDS FERMENTATION QUALITY, AS WILL ENSILING WITH A PROVEN ADDITIVE PROVIDING A HIGH NUMBER OF EFFICIENT LACTIC ACID-PRODUCING BACTERIA”

Poorer fermentation

At the opposite end of the scale, Mr Short says poorer fermentations can occur for two reasons. Firstly, if they are carried out by bacteria naturally present on the grass that still produce lactic acid but do so less efficiently. Or secondly, if certain ‘bad’ bacteria are present on the grass.

“These bad bacteria produce a range of less desirable end products besides lactic acid. This type of fermentation is termed heterofermentative.

“These end products can include volatile fatty acids (VFAs). VFAs are weaker than lactic acid, which means the pickling process is slower and the pH may not fall as low, so undesirable microbes can continue feeding on the valuable nutrients in the silage for longer. On top of this, carbon dioxide is produced resulting in dry matter being lost. Another by-product is ethanol, which is not a preservation acid at all.”

Mr Short says particularly poor fermentations occur if enterobacteria, the bacteria associated with slurry, are present on the grass and allowed to persist in the clamp, or if clostridia bacteria are present, which are introduced from soil. These can waste around 17 - 18% of the original energy content of the sugar, he points out.

“Clostridial fermentations are particularly unwelcome because they convert beneficial lactic acid into much less desirable butyric acid, which makes silage unpalatable. So not only is the silage less nutritious, but livestock want to eat less of it,” he adds.

Treatment benefits

With all these types of fermentation possible, what can be done to maximise the chance of achieving the best one?

Avoiding slurry or soil contamination is crucial in order to minimise losses from these worst types of bacteria, says Mr Short. However, even if slurry and soil bacteria are minimised, and natural lactic acid-producing bacteria are present on the grass, these may only be present in low numbers and not necessarily the most efficient strains.

Silage fermentation results in DM and energy losses. How big these are depends on the end products of fermentation. The best silage fermentation is when sugars are fermented only to lactic acid as with inoculant bacteria.

| Type of fermentation | Food source | End Product | Dry matter (DM) loss | Energy loss |
|----------------------|------------------|-------------|----------------------|-------------|
| Homo-fermentative | Glucose/Fructose | Lactic acid | Zero | 0.7% |

Ideal fermentation for producing beneficial lactic acid and preserving energy in silage

Less efficient lactic acid bacteria and other less desirable bacteria, e.g. enterobacteria and clostridia, ferment sugars to a mixture of end products. Some can also ferment lactic acid to highly undesirable end products, such as butyric acid.

| Type of fermentation | Food source | End Product | Dry matter (DM) loss | Energy loss |
|----------------------|-------------|-----------------------|----------------------|-------------|
| Hetero-fermentative | Fructose | Lactic & Acetic acid | 4.8% | 1% |
| Hetero-fermentative | Glucose | Lactic acid & Ethanol | 24% | 1.7% |
| Entero-bacterial | Glucose | Acetic acid & Ethanol | 41.1% | 16.6% |
| Clostridial | Lactic acid | Butyric acid | 51.1% | 18.4% |

Other types of fermentation and their dry matter and energy losses

“Maximising the sugar content in grass – for example by cutting at the optimum growth stage and achieving a rapid wilt – will aid the fermentation quality. As too will ensuring the clamp is well consolidated and airtight, restricting the growth of undesirable organisms. But another integral step is to also ensile with a proven additive that bombards the clamp with a high number of efficient lactic acid-producing bacteria.

“Ecosyl, for instance, applies 1 million, highly-efficient *Lactobacillus plantarum* MTD/1 bacteria per gram of forage treated when used correctly – to dominate the fermentation in favour of lactic acid production.

“Research on the MTD/1 strain in Ecosyl has shown it not only produces much faster pH falls than an untreated fermentation (e.g. fig 1) but also halves DM losses (e.g. fig 2) and conserves better nutritional quality – with improved energy content and true protein preservation over untreated silage recorded in trials.

“Perhaps most important of all, results from 15 dairy feeding trials on a range of forages showed silage preserved with MTD/1, as in Ecosyl, gave an average extra 1.2 litres milk per cow per day.”

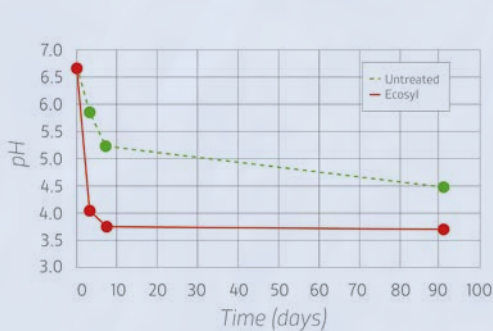


Fig 1: Speed of pH fall in untreated silage and silage preserved with a proven additive

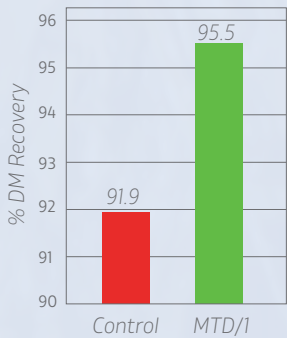


Fig 2: Improved dry matter recovery in silage preserved with *Lactobacillus plantarum* MTD/1

FARMERS WEEKLY GRASSLAND MANAGER OF THE YEAR 2021



Mark Housby

Mark Housby beat strong competition to be crowned Farmers Weekly Grassland Manager of the Year 2021. Francesca Harding talks to Mark about his approach to grassland management.



Photos courtesy of Farmers Weekly
(credit: Jim Varney)

Mark Housby, Peeply Farm, Bywell, Northumberland

In just three years as farm manager at the recently converted Peeply Farm, Mark Housby has established a thriving dairy enterprise. Never afraid of a challenge, Mark jumped at the opportunity take the historic farm back to its dairy roots after being run as an arable system.

Having previously worked alongside tenants Robert and Jackie Craig on similar conversions, their aim was simple: create a profitable dairy business.

"Starting from scratch meant we really needed to ensure the farm was economically viable," explains Mark. "Now we have established a profitable business we can focus on the longer term aims, such as environmental sustainability and further enhancing cow welfare."

"One of the most important steps in building our system was producing high-quality grass and continues to be a priority today."

Mark began by selecting a quality seed mixture. As part of the conversion, Mark reseeded the whole farm using a mixture of high sugar grasses with white clover. The seed mixture provided a solid foundation for producing exceptional grass to support cow performance and drive efficiency.

Grazing management

Ensuring this high-quality grass is used as effectively as possible is also central to the system. Mark leaves nothing to chance and measures grass growth weekly using a plate meter. Results are fed into AgriNet to create a grazing wedge, visualise the grazing platform and run through potential scenarios. In 2020, the farm grew 12.96tDM/ha with his best paddocks achieving 16.50tDM/ha.

"Regular measurement helps to give us a clear idea of grass availability," explains Mark. "Using a plate meter is a great starting point for understanding grass supply. Going out and regularly walking the farm is an essential part of my week. It helps me fully understand the grazing



Mark leaves nothing to chance and measures grass weekly

platform and comes with the bonus of being able to spot any problems with grazing infrastructure early."

Having a clear understanding of grass supply across the platform gives Mark the confidence to try new methods and be flexible with grazing management. Last year, to increase carrying capacity, he brought turnout forward from 5 February to 26 January, and opened with a starting cover of 2,450kgDM/ha compared to the usual 2,100-2,200kgDM/ha.

Being a split block calving herd also gives Mark flexibility when it comes to grazing management. This is vital during the summer months, when the farm experiences dry conditions which can limit grass growth.

With the autumn block beginning to calve on 1 September, they can be dried off as grass growth slows and supply begins to drop to reduce the demand on grazing. If supply is still tight during this time, the spring calvers are fed silage as needed.

"ONE OF THE MOST IMPORTANT STEPS IN BUILDING OUR SYSTEM WAS PRODUCING HIGH-QUALITY GRASS AND CONTINUES TO BE A PRIORITY TODAY."

Overseeding to increase sward diversity

Looking to further support grass supply during dry summer months, Mark recently trialled overseeding 20ha (50 acres) with a mix of chicory, plantain, red and white clover. Selecting this mixture for its drought resistance brought by the herbs, and the nitrogen-fixing properties of the clovers, Mark wanted to boost grass performance during dry conditions.

Mark has been impressed with how the multi-species leys are performing and plans to overseed another 73ha (180 acres) with the same mixture of species this year. In the long term, he hopes increasing sward diversity also benefits soil health and moves them towards their goal of reducing fertiliser input to improve profitability and environmental performance.

Reducing fertiliser costs

Mark also plans on reducing fertiliser costs by making better use of slurry. Central to this are ambitious plans to build a new lagoon which can store up to six months' worth of slurry.

PEEPY FARM

- **200 ha** (494 acres) + 50 ha (124 acres) for grazing youngstock
- **460** Irish and New Zealand Friesian, Jersey crossbred cows
- **Split** spring and autumn block calving
- Average yield **6,800 litres** (58% milk from forage)
- **4.70%** butterfats, **3.78%** protein
- **First Milk** supplier
- Annual rainfall **575mm**

Current storage is limited and dictates when they can spread slurry, meaning it is not always used as effectively as possible. But with the new lagoon Mark aims to be more targeted with how he uses slurry in spring to support grass growth and overall soil health, while reducing the need for fertiliser.

Adopting a new approach and investing in infrastructure to improve the system has always been important to Mark.

"I've never been afraid of trying new things," concludes Mark. "Farming is a very proud industry that can be afraid of failure, but sometimes I think we're not failing enough. If you never fail, it means you're not pushing the boundaries far enough or experimenting with what is really possible."



SUPPORTING EXCELLENCE

As part of our commitment to supporting exceptional grassland management, Germinal is proud to sponsor the Farmers Weekly Grassland Manager of the Year Award. The award celebrates those leading the way to higher industry standards and forging a path towards a sustainable future. Our sincere congratulations to Mark and the team at Peeply Farm, and all the 2021 finalists. Applications for the 2022 awards are now open at fwi.co.uk

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.

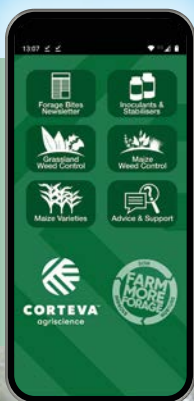
"Monitor new reseeds closely in spring for infestations. As soon as any are detected, act quickly and book your contractor so you don't miss the best opportunity to tackle the problem and protect your investment," concludes Mr Shaw.

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.

Don't delay, talk to your advisor or find out more at corteva.co.uk



Chickweed



Mayweeds



Seedling
Docks



Seedling
Thistles



Dandelions



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